

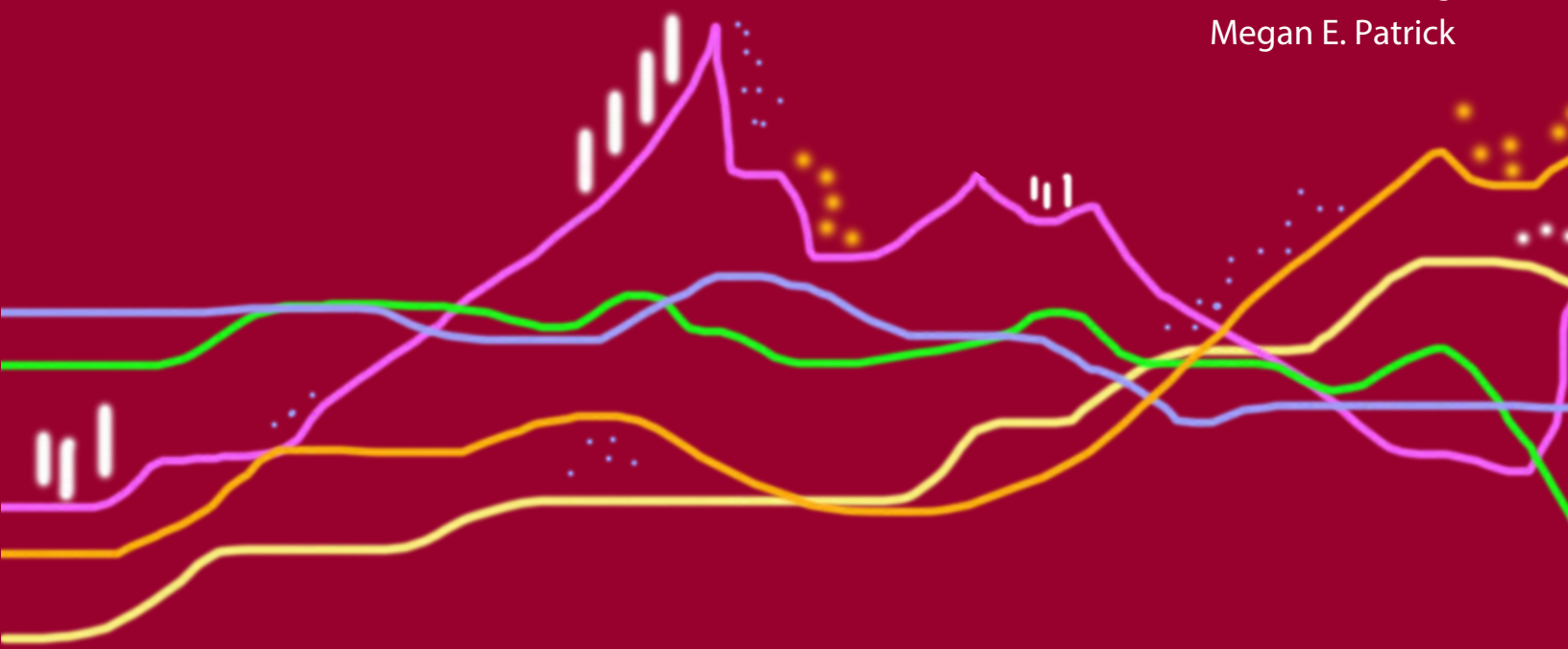
MONITORING *the* FUTURE

NATIONAL SURVEY RESULTS
ON DRUG USE
1975-2018

2018
Volume I

Secondary School Students

Richard A. Miech
Lloyd D. Johnston
Patrick M. O'Malley
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John E. Schulenberg
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by

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The University of Michigan
Institute for Social Research

Sponsored by:
The National Institute on Drug Abuse
National Institutes of Health

This publication was written by the principal investigators and staff of the Monitoring the Future project at the Institute for Social Research, the University of Michigan, under Research Grant No. R01 DA 001411 from the National Institute on Drug Abuse.

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute on Drug Abuse or the National Institutes of Health.

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Recommended Citation

Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). Monitoring the Future national survey results on drug use, 1975–2018: Volume I, Secondary school students. Ann Arbor: Institute for Social Research, The University of Michigan.

Available at

<http://monitoringthefuture.org/pubs.html#monographs>

Institute for Social Research
The University of Michigan
Ann Arbor, Michigan
Published June 2019

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Chapter 1

INTRODUCTION

Substance use is a leading cause of preventable morbidity and mortality; it is in large part why, among 17 high-income nations, people in the U.S. have the highest probability of dying by age 50.^{1,2} Substance use is also an important contributor to many social ills including child and spousal abuse, violence more generally, theft, suicide, and more; and it typically is initiated during adolescence. It warrants our sustained attention.

Monitoring the Future (MTF) is designed to give such attention to substance use among the nation's youth and adults. It is an investigator-initiated study that originated with, and is conducted by, a team of research professors at the University of Michigan's Institute for Social Research. Since its onset in 1975, MTF has been funded continuously by the National Institute on Drug Abuse – one of the National Institutes of Health – under a series of peer-reviewed, competitive research grants. The 2018 survey, reported here, is the 44th consecutive survey of 12th grade students and the 28th such survey of 8th and 10th graders.

MTF contains ongoing national surveys of both adolescents and adults in the United States. It provides the nation with a vital window into the important but often hidden problem behaviors of use of illegal drugs, alcohol, tobacco, and psychotherapeutic drugs (not under a doctor's orders). For four decades, MTF has helped provide a clearer view of the changing topography of these problems among adolescents and adults, a better understanding of the dynamics of factors that drive some of these problems, and a better understanding of some of their consequences. It has also given policymakers, government agencies, and nongovernmental organizations (NGOs) in the field some practical approaches for intervening.

A widespread epidemic of illicit drug use emerged in the 1960s among U.S. youth, and since then dramatic changes have occurred in the use of nearly all types of illicit drugs, as well as alcohol and tobacco. Of particular importance, as discussed in detail below, are the many new illicit drugs that have emerged, along with new forms of alcoholic beverages and tobacco products. Among the substances that have arisen over the life of the survey are new classes of drugs that include over-the-counter medications, synthetic marijuana, synthetic stimulants such as “bath salts,” and drugs taken for strength enhancement. New devices for taking drugs, such as vaporizers and e-cigarettes, provide novel ways to use substances and in new combinations. Unfortunately, while many new substances have been added to the list over the years, very few have been removed because they have remained in active use. Throughout these many changes, substance use among the nation's youth has remained a major concern for parents, teachers, youth workers, health professionals, law enforcement, and policymakers, largely because substance abuse is one of the largest and yet most preventable causes of morbidity and mortality during and after adolescence.

¹ Case, A. & Deaton, A. (2015) [Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century](#). *Proceedings of the National Academy of Sciences*, 112(49), 15078-15083.

² Murphy, S. L., Xu, J., Kochanek, K. D., & Arias, E.s (2018). [Mortality in the United States, 2017](#). NCHS Data Brief, no 328. Hyattsville, MD: National Center for Health Statistics.

The MTF annual monograph series has been a primary vehicle for disseminating MTF's epidemiological findings. The current monograph presents the results of the 44th survey of drug use and related attitudes and beliefs among U.S. high school seniors and 28th such survey of 8th and 10th grade students. The next monograph in the series covers substance use prevalence and trends among U.S. college students and same-age youth who do not attend college, as well as among adults through age 55; it will be the 39th and will be published later this year.³ The annual monograph on risk and protective behaviors for the spread of HIV/AIDS⁴ among young adults was added in 2009. (In years prior to 2009, findings from the study on risk and protective behaviors related to the spread of HIV/AIDS were contained in *Volume II*.) All [MTF publications](#), including [press releases](#), are available on the project website at <http://monitoringthefuture.org>.

CONTENT AREAS COVERED

Two of the major topics included in the present volume are (a) the *prevalence and frequency* of use of a great many substances, both licit and illicit, among U.S. secondary school students in 8th, 10th, and 12th grades and (b) *historical trends* in use by students in those grades. Distinctions are made among important demographic subgroups in these populations based on gender, college plans, region of the country, population density, parent education, and race/ethnicity. MTF has demonstrated that key attitudes and beliefs about drug use are important determinants of usage trends, in particular the amount of risk to the user perceived to be associated with the various drugs and disapproval of using them; thus, those measures also are tracked over time, as are students' perceptions of certain relevant aspects of the social environment – in particular, perceived availability, peer norms, use by friends, and exposure to use by others of the various drugs. Data on grade of first use, discontinuation of use, trends in use in lower grades, and intensity of use are also reported here.

Drug Classes

Initially, 11 separate classes of drugs were distinguished in order to heighten comparability with a parallel series of publications based on the National Survey of Drug Use and Health (NSDUH, formerly titled the National Household Survey of Drug Abuse): marijuana (including hashish), inhalants, hallucinogens, cocaine, heroin, narcotics other than heroin (both natural and synthetic), amphetamines, sedatives, tranquilizers, alcohol, and tobacco. Separate statistics have been presented for a number of subclasses of drugs within these more general categories: PCP and LSD (both hallucinogens), barbiturates and methaqualone (both sedatives), methamphetamine, crystal methamphetamine (“ice”), and crack and cocaine other than crack.

In the years since the study was launched, many additional categories of abusable substances have been added to the MTF questionnaires, in many but not all cases to the questionnaires used with all three grades. Relatively few substances have been dropped due to very low prevalence. The substances added and dropped are shown in Table 1-1 sequentially by year and within year by the grades affected.

³ Scheduled for publication August 1, 2019. Prior year versions are available at the [MTF website](#).

⁴ Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., Patrick, M. E., & Miech, R. A. (2018). [HIV/AIDS: Risk & protective behaviors among adults ages 21 to 40 in the U.S., 2004-2017](#). Ann Arbor: Institute for Social Research, The University of Michigan.

The large number of substances added over the years illustrates the dynamic and multidimensional nature of the country's drug problems. As time passes and new trends develop, additional drugs will be added to the study's coverage; occasionally ones that prove to have very low prevalence (such as "look-alike" pseudo-amphetamines, kreteks, bidis, PCP, and Provigil) will be dropped. It is important, given this rapidly shifting smorgasbord of drugs, that information be gathered relatively quickly to inform legislators, regulatory agencies, scientists, practitioners in the field, parents, and educators about the extent to which newer drugs are making inroads in the youth population and what subgroups are proving most vulnerable.

Most of the information reported here deals with illicit use of controlled substances. The major exceptions are alcohol, cigarettes, other tobacco products, inhalants, nonprescription stimulants, medicines taken appropriately by prescription in the treatment of ADHD, creatine, cough and cold medicines, and salvia. In the questions about nonmedical use of psychotherapeutic drugs, respondents are asked to exclude any use under medical supervision.

Throughout this report, we also focus attention on drug use at the higher frequency levels in addition to reporting proportions that have ever used various drugs. This is done to help differentiate levels of seriousness, or extent, of drug involvement. While there is no public consensus on what levels or patterns of use constitute abuse, there is a consensus that higher levels of use are more likely to have detrimental effects for the user and for society. We have also introduced indirect measures of dosage per occasion by asking respondents about the duration and intensity of highs they usually experience with each type of drug. These items have shown some interesting trends over the years, detailed in Chapter 7.

Attitudes, Beliefs, and Early Experiences

Separate sections or whole chapters are devoted to the following issues related to a number of licit and illicit drugs:

- grade of first use;
- noncontinuation of use;
- respondents' own attitudes and beliefs about specific drugs;
- degree and duration of the highs attained;
- perceptions of availability of the drug; and
- perceptions of attitudes and behaviors of others in the social environment.

Some of these variables have proven to be very important in explaining changes in use, as we discuss in detail in Chapter 8.

Over-the-Counter Substances

This Volume discusses use of *nonprescription* stimulants, including diet pills and stay-awake pills. Questions on these substances were added in 1982 because their use appeared to be on the rise, and it seemed that some respondents inappropriately included these substances in their answers about amphetamine use. That inappropriate inclusion affected some of the observed trends in amphetamine use until the clarification in 1982. Tables on the performance-enhancing substances anabolic steroids androstenedione (andro) – previously an over-the-counter substance – and creatine are also included.

Cumulative Lifetime Daily Marijuana Use

Also included are trend results from a set of questions about cumulative lifetime marijuana use at a daily or near-daily level. These questions were added to enable us to develop a more complete individual history of daily use over a period of years. They reveal some important facts about frequent users of this drug.

Trends in Use of Specific Alcoholic Beverages

Twelfth grade data are reported for a wide spectrum of substances, including beer, liquor, wine, wine coolers, and flavored alcoholic beverages. (For 8th and 10th graders, the measures of specific alcoholic substances are restricted to beer and wine coolers, though the category of wine coolers was dropped from the questionnaires in 2004 to make space for the more general class of flavored alcoholic beverages.) Results on these various substances are discussed in Chapters 4 and 5. Beginning in 2003, and in every year since, we have also published an occasional paper on subgroup usage and trends for all substances with tables including prevalence and trend estimates for use of specific classes of alcoholic beverages.⁵

Sources of Prescription Drugs

MTF has previously reported on the growing importance of prescription-type psychotherapeutic drugs used without medical supervision. In 2007, new questions regarding where users secured several such drugs were added to one 12th grade questionnaire form. A section in Chapter 9 reports responses to these questions, as well as to other questions, which have since been elaborated. Since 2008, Chapters 4 and 5 also contain estimates of the proportion of 12th grade students who use *any* psychotherapeutic drugs in each prevalence period; these estimates can be made only for 12th graders, because estimates of use of sedatives and narcotics other than heroin are not reported for students in the lower grades due to concerns about the validity of their reports of these substances.

Synopses of Other MTF Publications

Chapter 10 contains short synopses of other MTF publications produced during the past year (journal articles, chapters, occasional papers, etc.). References to the full documents are provided, and some are available on the [MTF website](#).

Appendixes

Appendix A addresses the issue of whether absentees and school dropouts affect MTF results and, if so, to what extent. For illustrative purposes, the appendix provides estimates of prevalence and trends for marijuana and cocaine use adjusted for these missing segments of the population.

Appendix B gives the definitions of the various demographic subgroups discussed.

Appendix C provides trends for 12th grade only on various *subclasses* of drugs within each of the following five general classes: hallucinogens other than LSD, amphetamines, tranquilizers,

⁵ Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). [Demographic subgroup trends among adolescents in the use of various licit and illicit drugs 1975-2018](#) (Monitoring the Future Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research, University of Michigan.

narcotics other than heroin, and sedatives. These tables provide annual prevalence levels over time and show how the mix of subclasses has changed over the years within each of the general classes.

Appendix D provides trends since 1991 in drug use for the *three grades combined*, as well as the absolute decline and the proportional decline in the prevalence of each drug since the most recent *peak* level. Such tables are helpful in getting a quick read on the trends. By combining the three grades, however, much of the meaningful detail available from grade-specific estimates is lost, including evidence of cohort effects.

In years 2017 and earlier the Appendix C of Volume 1 reported information on how to calculate confidence intervals for point estimates and how to calculate statistics that test the significance of changes over time or of differences between subgroups. This appendix is no longer necessary with the opening of MTF's secure remote portal at the [National Addiction and HIV Data Archive Program](#), which now allows researchers to compute such statistics directly using MTF weights and clustering variables, after completing an application process that includes a signed pledge to protect the confidentiality of the data. Interested readers may refer to Appendix C of earlier volumes for the information it provides about design effects and how their computational influence varies by substance.

PURPOSES AND RATIONALE FOR THIS RESEARCH

Perhaps no social problem has proven more clearly appropriate for and in need of the application of systematic research and reporting than that of substance abuse. Substance-abusing behaviors are often hidden from public view, can change rapidly and frequently, and are of great importance to the well-being of the nation. Many legislative and programmatic interventions are aimed at these behaviors, such as the policies that were put into place in response to the increases in adolescent smoking and illicit drug use we reported in the 1970s and then again in the 1990s as a relapse in the drug epidemic unfolded.

Young people are often at the leading edge of social change, and this has been particularly true of drug use. The substantial changes in illicit drug use during the last 50 or so years have proven to be largely a youth phenomenon. MTF documented that the relapse in the drug epidemic in the early 1990s initially occurred almost exclusively among adolescents. Adolescents and adults in their 20s fall into the age groups at highest risk for illicit drug use. Moreover, for some drug users, use that begins in adolescence continues well into adulthood. This is indicated in the cohort effects that we report for a number of substances (and even in some attitudes and beliefs about them). The original epidemic of illicit drug use in the 1960s began on the nation's college campuses and then spread downward in age. By way of contrast, MTF has shown that the relapse phase in the 1990s first manifested itself among secondary school students and then started moving upward in age as those cohorts matured.

One purpose of MTF is to develop an accurate description of these important changes as they are unfolding. An accurate picture of the basic size and contours of the illicit drug use problem among youth in the U.S. is a prerequisite for informed public debate and policymaking. In the absence of reliable *prevalence* data, substantial misconceptions can develop and resources can be misallocated. The same is true for different forms of alcohol and tobacco use. In the absence of reliable *trend* data, early detection and localization of emerging problems are more difficult and

societal responses, more lagged. For example, MTF provided early evidence that cigarette smoking among U.S. adolescents was rising sharply in the early 1990s, which helped stimulate and support some extremely important policy initiatives that culminated in the tobacco settlement between the tobacco industry and the states. MTF documented and described the sharp rise and subsequent decline in ecstasy use, illustrating the important role that *perceived risk* played in these changes, as it has done for a number of other drugs in the past. The study also helped draw attention to the rise in steroid and androstenedione use among adolescents in the late 1990s, resulting in legislative and regulatory action. It exposed a rise in the use of narcotic drugs other than heroin (especially certain prescription-type analgesics), stimulating an initiative at the White House Office of National Drug Control Policy aimed at reducing use. More recently, MTF has become a key source of information on use of electronic vaping devices, which in just a few years have become one of the most common forms of substance use among adolescents. In addition to enabling early detection and localization of problems, valid trend data make assessments of the impact of major historical and policy-induced events much less conjectural.

The accurate empirical comparison of subgroup differences has challenged conventional wisdom in some important ways. Accurately characterizing not only differences but also differential changes among subgroups has been an important scientific contribution from MTF. For example, dramatic racial/ethnic differences in cigarette smoking emerged during the life of the study – differences that were almost nonexistent when MTF began in 1975. Further, the misinformed assumption by some that African-American students use illicit drugs more than do White students has been disconfirmed since the beginning of the study, which shows lower levels of use for African-American students in most years, though these differences have been narrowing in recent years as overall use of many substances declined, thus leaving less room for differences.

MTF also monitors a number of factors – peer norms regarding drugs, beliefs about the dangers of drugs, and perceived availability – that help explain the historical changes observed in drug use. Monitoring these factors has made it possible to examine a central policy issue in this nation’s efforts to reduce drug use – namely, the relative importance of supply versus demand factors in bringing about some of the observed declines and increases in drug use.⁶ Our group has also put forth a general theory of drug epidemics that uses many of these concepts to help explain the rises and declines that occur in use and emphasizes the importance of demand-side factors.⁷

In addition to accurately assessing prevalence and testing explanations of their causes, the integrated MTF study of adolescents and adults has a substantial number of other important research objectives that are addressed in our other publications. These include (a) helping to determine which young people are at greatest risk for developing various short- and long-term patterns of drug abuse; (b) gaining a better understanding of the lifestyles and value orientations associated with various patterns of drug use, and monitoring how subgroup differences shift over time; (c) determining the immediate and more general aspects of the social environment associated with drug use and abuse; (d) determining how major transitions in the social environment (e.g., entry into military service, civilian employment, college, homemaking, and unemployment) or in

⁶ Other major studies have adopted many of these measures including the National Survey on Drug Use and Health (NSDUH) and the European surveys of substance use in nearly forty European countries (ESPAD), which is largely modeled after Monitoring the Future.

⁷ See Johnston, L. D. (1991). [Toward a theory of drug epidemics](#). In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–132). Hillsdale, NJ: Lawrence Erlbaum.

social roles (e.g., engagement, marriage, pregnancy, parenthood, divorce, and remarriage) affect changes in drug use; (e) determining the life course trajectories and comorbidity of the various drug-using behaviors from early adolescence to adulthood, and distinguishing such age effects from cohort and period effects; (f) evaluating possible explanations of period and age effects, including determining the effects of social legislation – for example, marijuana legalization – on various types of substance use; (g) examining possible consequences of using various drugs; (h) examining linkages between educational success or failure and substance use; and (i) determining the changing connotations of drug use and changing patterns of multiple drug use among youth.⁸ Readers interested in publications dealing with any of these topics should visit the MTF website at www.monitoringthefuture.org.

The differentiation of period, age, and cohort effects in the use of various substances has been a particularly important contribution of MTF and one for which the study's cohort-sequential research design is especially well suited.

Over the past decade, we have also been reporting about factors related to the spread of HIV/AIDS. These factors include number of sexual partners, gender of sexual partners, condom use, injection drug use, injection drug use using shared needles, illicit drug and alcohol use more generally, and getting tested for HIV/AIDS. Most of the research objectives listed above for licit and illicit drug use can also be addressed in relation to these very important behaviors. Our emphasis is on measuring and reporting prevalence and trends in HIV/AIDS-related behaviors in the general population of young adults ages 21–40 who are high school graduates. We have also been measuring the extent to which these various risk and protective behaviors are correlated. Increasingly, as the numbers of cases cumulate, we will be looking at cross-time predictions and differences associated with age, period, and cohort effects.

Thus, our efforts over the years and going into the future cover both the epidemiology and etiology of substance use and related risk behaviors. Including both sets of efforts within the same large-scale study, and keeping measurement constant across historical and developmental time, allows us to provide the nation with scientifically reliable, nationally representative estimates of historical trends of substance use as well as the developmental trends and possible causes, correlates, and consequences of substance use and other risk behaviors from adolescence through adulthood.

⁸ For an elaboration and discussion of the full range of MTF research objectives in the domain of substance abuse, see Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). *The objectives and theoretical foundation of the Monitoring the Future Study* (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research, University of Michigan.

TABLE 1-1
Added and Deleted Prevalence of Use Questions
for 8th, 10th, and 12th Graders

Drug Name	Year in which added	Grades in which added			Year in which dropped	Grades in which dropped		
		8th	10th	12th		8th	10th	12th
PCP	1979			X	2014 ^c			X
Nonprescription Diet Pills	1982			X				
Stay-Awake Pills	1982			X				
Smokeless Tobacco ^a	1986, 1992			X	1990			X
Crack ^b	1986–1987, 1990			X				
Cocaine other than Crack	1987			X				
Steroids	1989			X				
Crystal Methamphetamine (Ice)	1990			X				
Been Drunk	1991			X				
Heroin With a Needle	1995	X	X	X				
Heroin Without a Needle	1995	X	X	X				
Ecstasy (MDMA)	1996	X	X	X				
Rohypnol	1996	X	X	X	2002 ^h			X
Methamphetamine	1999	X	X	X				
GHB	2000	X	X	X	2012 ⁱ	X	X	
Ketamine	2000	X	X	X	2012 ⁱ	X	X	
Androstenedione	2001	X	X	X	2016 ⁱ			
Creatine	2001	X	X	X				
Ritalin	2001	X	X	X				
OxyContin	2002	X	X	X				
Vicodin	2002	X	X	X				
Flavored Alcoholic Beverages (Alcopops) ^d	2003 2004			X				
ADHD Stimulant-type drug—prescribed	2005	X	X	X				
ADHD Non-stimulant-type drug—prescribed	2005	X	X	X				
Any Prescription Drug—not prescribed ^e	2005			X				
10+ drinks in a row in past two weeks	2005 2016		X X	X				
15+ drinks in a row in past two weeks	2005			X				
Over-the-counter Cough/Cold Medicines	2006	X	X	X				
Adderall	2009	X	X	X				
Salvia	2009 2010			X				
Tobacco using a Hookah	2010, 2016 2016			X				
Small Cigars	2010			X				
Energy Drinks	2010	X	X	X				
Energy Shots	2010	X	X	X				
Synthetic Marijuana ^g	2011 2012			X				
Alcohol Beverages containing Caffeine ^f	2011	X	X	X				
Dissolvable Tobacco Products	2011 2012			X				
Snus	2011 2012			X				
Bath Salts (synthetic stimulants)	2012	X	X	X				
Large Cigars	2014	X	X	X				
Flavored Little Cigars	2014	X	X	X				
Regular Little Cigars	2014	X	X	X				

(Table continued on next page.)

TABLE 1-1 (cont.)
Added and Deleted Prevalence of Use Questions
for 8th, 10th, and 12th Graders

	Year in which added	Grades in which added			Year in which dropped	Grades in which dropped		
		8th	10th	12th		8th	10th	12th
Electronic Cigarettes	2014	X	X	X	2016 ⁱ	X	X	
Powdered Alcohol	2016	X	X	X				
Vaping Nicotine	2017	X	X	X				
Vaping Marijuana	2017	X	X	X				
Vaping Just Flavoring	2017	X	X	X				
Marijuana Under a Doctor's Orders	2017	X	X	X				
Methaqualone	1975			X	1990/2013			X
Nitrites	1979			X	2010			X
Provigil	2009			X	2012			X
Bidis	2000	X	X		2006	X	X	
	2000			X	2011			X
Kreteks	2001	X	X		2006	X	X	
	2001			X	2015			X
Electronic Vaporizers	2015	X	X	X	2017	X	X	X
Look-Alikes	1982			X	2018			X

Source. The Monitoring the Future study, the University of Michigan.

Note. All prescription-type drugs listed refer to use without a doctor's orders, unless otherwise noted.

^aSmokeless tobacco was added to one questionnaire form in 1986, dropped in 1990, then added to a different questionnaire form in 1992.

^bA question on annual use of crack was added to a single form in 1986. The standard triplet questions (lifetime, annual, and 30-day use) were added to two forms in 1987 and to all forms in 1990.

^cFor 12th grade only: Lifetime and 30-day prevalence of use questions were dropped in 2002. A question on annual use remains in the study.

^dFor 12th grade only: A question on annual use of Alcopops was added to a single form in 2003. In 2004 it was replaced by the standard triplet questions (lifetime, annual, and 30-day use) about use of flavored alcoholic beverages.

^eFor 12th grade only: The use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers...without a doctor telling you to use them.

^fFor all grades: In 2012 the alcoholic beverages containing caffeine question text was changed. See text for details.

^gFor all grades: Questions on the annual use of synthetic marijuana were added to the survey in the year specified in the table.

^hFor 12th grade only: Lifetime and 30-day prevalence of use questions were dropped in 2014. A question on annual use remains in the study.

ⁱOnly 8th and 10th grade questions were dropped from the study.

Chapter 2

KEY FINDINGS IN 2018¹

Monitoring the Future (MTF), now having completed its 44th year of data collection, has become one of the nation's most relied-upon scientific sources of valid information on trends in use of licit and illicit psychoactive drugs by U.S. adolescents, college students, young adults, and adults up to age 60. During the last four decades, the study has tracked and reported on the use of an ever-growing array of such substances in these populations of adolescents and adults.

The annual MTF series of monographs is one of the primary mechanisms through which the epidemiological findings are reported. Findings from the inception of the study in 1975 through 2018 are included – the results of 44 national in-school surveys and 42 national follow-up surveys.

MTF has conducted in-school surveys of nationally representative samples of (a) 12th grade students each year since 1975 and (b) 8th and 10th grade students each year since 1991. In addition, beginning with the class of 1976, the study has conducted follow-up surveys of representative subsamples of the respondents from each previously participating 12th grade class. These follow-up surveys now continue well into adulthood, currently up to age 60. This volume focuses on the results from the in-school surveys of 8th, 10th, and 12th grade students; Volume II² focuses on the results from the follow-up surveys.

MTF is designed to detect age, period, and cohort effects in substance use and related attitudes. Age effects are similar changes at similar ages seen across multiple class cohorts; they are common during adolescence. Period effects are changes that are parallel over a number of years across multiple age groups (in this case, all three grades under study – 8, 10, and 12). Cohort effects are substance use behaviors or attitudes that distinguish a class cohort from other that came before or after them and are maintained as the cohort ages. The key findings for 8th, 10th, and 12th graders surveyed across the coterminous U.S. in 2018 are summarized below.

EXECUTIVE SUMMARY

One Form of Drug Use Showed a Sharp Increase in Use in 2018

The most important finding to emerge from the 2018 survey is the dramatic increase in *vaping* by adolescents. Vaping is a relatively new phenomenon, so we are still developing measures related to this behavior, which included asking separately for the first time in 2017 about the vaping of three specific substances – *nicotine*, *marijuana*, and *just flavoring*. In 2018 vaping of all three of these substances increased significantly and substantially, including some of the largest absolute increases MTF has ever tracked for any substance. Given that nicotine is involved in most vaping and is a highly addictive substance, this presents a serious threat to all of the hard-won progress in reducing cigarette smoking among adolescents since the mid-1990s.

¹ Many of the findings in this chapter were previously reported in [Monitoring the Future national survey results on drug use, 1975-2018: Overview, key findings on adolescent drug use](#).

² Scheduled for publication August 1, 2019. Prior year versions are available at the [MTF website](#).

With the increase in nicotine vaping came an increase in *any nicotine use* in the past 30 days, which significantly increased among 12th grade students in 2018 by 6.9 percentage points to 33%. This increase was driven by vaping, as indicated by a decline of 2.1 percentage points in *any nicotine use other than vaping*. While vaping may be diverting nicotine-curious youth to a new form of nicotine use that is less dangerous and harmful than cigarette smoking, at the same time these results suggest vaping is also recruiting to nicotine use adolescents who would not otherwise have used nicotine.

Little Change in Marijuana or the Three Indexes of Overall Drug Use

Annual *marijuana* prevalence rose by a nonsignificant 0.5 percentage points to 23.9% in 2018 based on data from the three grades combined.³ This follows a significant increase in 2017. The 2018 annual prevalence stood at 11%, 28%, and 36% in grades 8, 10, and 12. *Daily marijuana* prevalence changed little this year, with levels at 1%, 3%, and 6%, respectively.

Annual use of *any illicit drug*, which tends to be driven by marijuana – by far the most prevalent of the illicit drugs – also rose nonsignificantly in grades 8 and 10, but declined nonsignificantly in 12th grade. Change in 2018 for the three grades combined also did not reach significance. Since 2006 there has been rather little systematic change in this index across the three grades.

The index of *any illicit drug other than marijuana* showed no change in annual prevalence in 2018 for the three grades combined, but has shown a very gradual decline since 2001 when it was 16% compared to 2018 when it was 9%.

The annual prevalence of the index of *any illicit drug including inhalants* changed little in 2018 for the three grades combined, after rising significantly the previous year. Since 2006 there has been little systematic change in this index.

Illicit Drugs Showing Declines in Use in 2018

Relatively few drugs exhibited a significant decline in use in 2018, although the use of most drugs is well below the peak levels reached in recent years.

Annual prevalence for *salvia* continued its gradual decline in 2018 with a significant drop of 0.2 percentage points to 0.8%. It appears that the use of this drug is close to ending.

Annual *tranquilizer* prevalence among 12th graders continued to fall significantly in 2018 by 0.8 percentage points to 3.9% – well below the 7.7% observed in 2002. There has been little change among 8th and 10th graders, however, since 2013.

Narcotics other than heroin, reported only for 12th grade, also declined, as will be discussed below under psychotherapeutic drugs.

Use of Most Illicit Drugs Held Steady in 2018

There are many classes of drugs tracked in the MTF study, and the majority of them held relatively steady in 2018. These include an *index of any illicit drug other than marijuana*,

³Prevalence refers to the percent of the study sample that reports using a drug once or more during a given period – i.e., in their lifetime, during the past 12 months [annual prevalence], during the past 30 days, or on 20 or more occasions during the past 30 days [daily prevalence].

synthetic marijuana, LSD, hallucinogens other than LSD, MDMA (ecstasy, Molly), *cocaine, crack, bath salts, heroin* (overall, and when used with or without a needle), *narcotics other than heroin* (reported for 12th grade only), *Oxycontin, Vicodin, amphetamines* (taken as a class), *Ritalin, Adderall, sedatives* (reported at 12th grade only), *tranquilizers, methamphetamine, crystal methamphetamine*, and *steroids*.

While strictly speaking not illicit drugs, over the counter *cough and cold medications* used to get high (most of which contain dextromethorphan) also remained level in 2018, with an annual prevalence of 3.2% for the three grades combined.

Psychotherapeutic Drugs

Use of *psychotherapeutic drugs* outside of medical supervision warrants special attention, given that they came to make up a substantially larger part of the overall U.S. drug problem in the 2000s. This was in part due to increases in nonmedical use of many prescription drugs over that period, and in part due to the fact that use of many of the street drugs declined substantially after the mid- to late-1990s.

It seems likely that young people are less concerned about the dangers of using these prescription drugs outside of medical regimen because they are widely used for legitimate purposes. (Indeed, the low levels of perceived risk for sedatives and amphetamines observed among 12th graders illustrate this point.) Also, many prescription psychotherapeutic drugs are now being advertised directly to the consumer, which implies that they are both widely used and safe.

Fortunately, the use of most of these drugs by youth began to decline by the start of the current decade. The proportion of 12th graders misusing any of these prescription drugs (i.e., amphetamines, sedatives, tranquilizers, and narcotics other than heroin) in the prior year continued its gradual decline in 2018 (-1.1%, not significant) to 10%, down from a high of 17% in 2005, when this index was first calculated. Use of *narcotics other than heroin* without a doctor's orders (reported only for 12th grade) continued a gradual decline begun after 2009, when annual prevalence was 9.2%; it was down to 3.4% after a significant decline of 0.8 percentage points in 2018.

Given the epidemic of narcotics use in older populations along with concurrent rise in medical emergencies and overdose deaths, it is particularly good news that young people are moving away from the use of these drugs. This is good news not only because they will be less vulnerable to tragedies resulting from the use of these drugs during adolescence, but also because they may well take their more cautious behaviors with them into their twenties, thirties, and beyond – ages in which overdose deaths are currently most prevalent. In other words, a cohort effect may emerge.

Most Forms of Tobacco Use Continue to Decline

Cigarette smoking continued its long decline in 2018 and is now at or very close to the lowest levels in the history of the survey. For the three grades combined, 30-day prevalence of cigarette use, which reached a peak in the mid 1990s, has fallen by 84%. Daily prevalence has fallen by 88%, and current half-pack-a-day prevalence by 91% since their peaks in the 1990s. Current

prevalence of half-pack-a-day smoking stands at just 0.3% for 8th graders, 0.7% for 10th graders, and 1.5% for 12th graders. Because of the strong cohort effect that we have consistently observed for cigarette smoking, we have predicted use at 12th grade to continue to show declines, as the lighter-using cohorts of 8th and 10th graders become 12th graders; and, indeed, 30-day smoking fell another significant 2.0 percentage points in 2018. Use by 10th graders fell a smaller, nonsignificant, 0.8 percentage points to 4.2%.

Initiation of *cigarette* use also continued its long-term and extremely important decline in 2018, but only in 12th grade. Lifetime prevalence declined between 2017 and 2018 in 12th grade by a significant 2.8 percentage points to 23.8%. The fact that fewer young people now initiate cigarette smoking is an important reason for the large declines in their current use. The proportion of students who have ever tried cigarettes has fallen from peak levels reached in 1996 or 1997 by roughly four fifths, three quarters, and three fifths in 8th, 10th, and 12th grade, respectively.

Overall increases in perceived risk and disapproval appear to have contributed to the downturn in cigarette use. Perceived risk of smoking one or more packs of cigarettes per day increased substantially and steadily in all grades from 1995 through 2004, with 62%, 68%, and 74% of 8th, 10th, and 12th graders seeing great risk in 2004. Since then, changes have been small and uneven, and the corresponding figures in 2018 are only slightly changed, at 61%, 70%, and 74%. Disapproval of smoking one or more packs of cigarettes per day has increased somewhat steadily in all three grades since 1996 and has reached very high levels. In 2018 disapproval stood at 88%, 89%, and 89% in grades 8, 10, and 12, respectively.

It seems likely that some of the long-term attitudinal change surrounding cigarettes is attributable to the considerable adverse publicity aimed at the tobacco industry in the 1990s, as well as a reduction in cigarette advertising and an increase in antismoking campaigns reaching youth.

Various other attitudes toward smoking became more unfavorable during that interval as well, though most have since leveled off. For example, among 8th graders, the proportions saying that they “prefer to date people who don’t smoke” rose from 71% in 1996 to 81% by 2004, about where it remained through 2018. Similar changes occurred in 10th and 12th grades. Thus, at the present time, smoking is likely to make an adolescent less attractive to the great majority of potential romantic age-mates. Likewise, most of the other negative connotations of smoking and smokers have leveled off in the past few years after rising previously.

In addition to changes in attitudes and beliefs about smoking, price almost surely also played an important role in the decline in use. Cigarette prices rose appreciably in the late 1990s and early 2000s as cigarette companies tried to cover the costs of the 1998 Master Settlement Agreement, and as many states increased excise taxes on cigarettes. A significant increase in the federal tobacco tax passed in 2009 may have contributed to the continuation of the decline in use since then.

Cigarillos. One consequence of the rise in cigarette prices is that it may have shifted some adolescents to less expensive alternatives, like cigarillos (little or small cigars), which are taxed at a lower rate than cigarettes. Taking into account this form of smoking of tobacco raises the 30-

day prevalence of students smoking tobacco – by about three-fourths among 8th and 10th graders and by more than half among 12th graders – over what it would be if just cigarette smoking were counted. It does appear, however, that the prevalence of using small cigars is also in decline, with 9% of 12th graders in 2018 reporting any past-year use, down substantially from 23% in 2010. Of note is the fact that the majority of users of small cigars in each grade smoke flavored ones.

Hookah. Annual prevalence of smoking tobacco using a hookah (water pipe) had been increasing steadily until 2014 among 12th graders (8th and 10th graders are not asked about this practice), reaching 23% in 2014; but use has been declining steadily since, reaching 8% by 2018.

Smokeless tobacco. From the mid-1990s to the early 2000s, smokeless tobacco use declined substantially, but a rebound in use developed from the mid-2000s through 2010. Since 2010, prevalence levels have declined modestly in all three grades. Perceived risk and disapproval appear to have played important roles in the earlier decline in smokeless tobacco use. In all three grades, perceived risk and disapproval rose fairly steadily from 1995 through 2004, accompanying the declines in use. However, there was not much change in use between 2004 and 2010, suggesting that other factors may have led to the increases in smokeless tobacco use during that time interval; such factors may include increased promotion of these products, a proliferation of types of smokeless tobacco products available, and increased restrictions on places where cigarette smoking is permitted. The decline in smokeless tobacco use from 2010 through 2018 may be attributable, at least in part, to the 2009 increase in federal taxes on tobacco. Perceived risk has not changed appreciably since 2010 at any grade level.

Snus is a form of smokeless tobacco. Its annual prevalence is down considerably from when it was first measured in 2011 (or 2012 in the lower grades) but it showed little change this year.

Vaping

Vaping involves the use of a battery-powered device to heat a liquid or plant material that releases chemicals in an inhalable aerosol. Examples of vaping devices include e-cigarettes such as the popular brand JUUL and “mods.” The aerosol may contain any of the following: nicotine, THC – the active ingredient of marijuana, flavored propylene glycol, and/or flavored vegetable glycerin. Liquids that are vaporized come in hundreds of flavors, many of which are likely to be attractive to teens (e.g., bubble gum and milk chocolate cream).

Vaping of all substances increased dramatically in 2018. **Nicotine vaping** in the last 12 months increased by 3.4, 8.9, and 10.9 percentage points in 8th, 10th, and 12th grades, respectively. In 10th and 12th grades these increases are the largest ever recorded for any substance in the 44 years that MTF has tracked adolescent drug use. Past 12-month nicotine vaping prevalence levels in 2018 were 11%, 25%, and 30%, respectively, in the three grades in 2018.

Marijuana vaping also increased significantly in 2018 as this new way of using marijuana becomes more mainstream. In 2018 prevalence of use in the last 12 months increased 1.3, 4.2, and 3.6 percentage points in 8th, 10th, and 12th grades to levels of 4.4%, 12.4%, and 13.1%, respectively.

Vaping *just flavoring* also significantly increased in 2018 to past-year prevalence levels of 15%, 25%, and 26% in 8th, 10th, and 12th grades.

Adolescents associate little risk of harm with vaping. MTF asks separately about regular use of “e-cigarettes” and also regular vaping of nicotine. Levels of perceived risk for these behaviors rank near the lowest of all substances, with little change in recent years.

Alcohol Use Continues Declining in Upper Grades

Alcohol remains the substance most widely used by today’s teenagers. Despite recent declines, by the end of high school six out of every ten students (59% after a significant 3 percentage point drop in 2018) have consumed more than just a few sips of alcohol at some time in their lives; and about a quarter (24%) have done so by 8th grade. (Only the 12th grade showed significant change in 2018.)

Alcohol use began a substantial decline in the 1980s. To some degree, alcohol trends have tended to parallel the trends in illicit drug use. These include a modest increase in *binge drinking* (defined as having five or more drinks in a row at least once in the past two weeks) in the early to mid-1990s, though it was a proportionally smaller increase than was seen for cigarettes and most of the illicit drugs. Fortunately, binge drinking rates leveled off in the early 2000s, just about when the illicit drug rates began to turn around, and in 2002, a drop in *drinking* and *drunkenness* resumed in all grades. Gradual declines in 30-day prevalence continued in the upper grades into 2018, which marked the lowest levels for alcohol use and drunkenness ever recorded by the survey, at 30% and 18%, respectively in 12th grade.

However, the decline in the annual prevalence of alcohol use has halted among 8th and 10th graders. Only in 12th grade is the decline continuing, likely as the result of a cohort effect that started in earlier years. This development may herald the end of the long-term decline in adolescent alcohol use.

Still, prior to this year lifetime prevalence and annual prevalence for the three grades combined both declined by roughly 40-45% from the peak levels of use reached in the mid-1990s; 30-day prevalence was down by about one-half since then, and daily prevalence by three-fourths. These are dramatic declines for such a culturally ingrained behavior and good news to many parents.

Chapter 3

STUDY DESIGN AND PROCEDURES

Monitoring the Future (MTF) incorporates several survey designs into one study, yielding analytic power beyond the sum of those component parts. The components include cross-sectional studies, repeated cross-sectional studies, and panel studies of individual cohorts and sets of cohorts. The annual cross-sectional surveys provide point estimates of various behaviors and conditions in any given year for a number of subpopulations (e.g., 8th graders, 10th graders, 12th graders, college students, all young adult high school graduates ages 19–30, 35-year-olds, 40-year-olds, etc.), as well as point estimates for various subgroups within these different populations. Repeating these annual cross-sectional surveys over time allows an assessment of change across history in consistent age segments of the population, as well as among subgroups. The panel study feature permits the examination of developmental change in the same individuals as they assume adult responsibilities, enter and leave various adult roles and environments, and continue further into adulthood. It also permits an assessment of a number of outcomes later in life that MTF has shown to be linked to substance use in adolescence and beyond.¹

Finally, with a series of panel studies of sequential graduating class cohorts we are able to offer distinctions among, and explanations for, three fundamentally different types of change: period, age, and cohort. It is this feature that creates a synergistic effect in terms of analytic and explanatory power.^{2,3}

RESEARCH DESIGN AND PROCEDURES FOR THE 12th GRADE SURVEYS

Twelfth graders have been surveyed in the spring of each year since 1975. Each year's data collection has taken place in 120-140 public and private high schools selected to provide an accurate representative cross-section of 12th graders throughout the coterminous United States (see Figure 3-1).

The Population under Study

Senior year of high school is a strategic point at which to monitor drug use and related attitudes of youth. First, completion of high school represents the end of an important developmental period in this society, demarcating both the end of universal education and, for many, the end of living full-time in the parental home. Therefore, it is a logical point at which to take stock of cumulated influences. Further, completion of high school represents a jumping-off point—a point from which

¹ Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008) *The Education–Drug Use Connection: How Successes and Failures in School Relate to Adolescent Smoking, Drinking, Drug Use, and Delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis; Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Bryant, A. L., & Merline, A. C. (2002) *The Decline of Substance Use in Young Adulthood: Changes in Social Activities, Roles, and Beliefs*. Mahwah, New Jersey: Lawrence Erlbaum; Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (1997). *Smoking, Drinking, and Drug Use in Young Adulthood: The Impacts of New Freedoms and New Responsibilities*. Mahwah, NJ: Lawrence Erlbaum Associates.

² Bachman, J. G., Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., & Miech, R. A. (2015). [The Monitoring the Future project after four decades: Design and procedures](#) (Monitoring the Future Occasional Paper No. 82). Ann Arbor, MI: Institute for Social Research, University of Michigan.

³ For a more detailed description of the full range of research objectives of Monitoring the Future, see Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). [The objectives and theoretical foundation of the Monitoring the Future study](#) (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research.

young people diverge into widely differing social environments and experiences. Thus senior year is a good time to take a “before” measure, allowing for the subsequent calculation of changes that may be attributable to the environmental transitions occurring in young adulthood, including college attendance, civilian employment, military service, and role transitions such as marriage, parenthood, divorce, etc. Finally, there are some important practical advantages built into the original system of data collections with samples of 12th graders. The need for systematically repeated, large-scale samples from which to make reliable estimates of change requires that considerable emphasis be put on cost efficiency as well as feasibility. The last year of high school constitutes the final point at which a reasonably good national sample of an age-specific cohort can be drawn and studied economically.

The Omission of Dropouts

One limitation in the MTF study design is the exclusion of individuals who drop out of high school before graduation—approximately 7–15% of each age cohort nationally, according to U.S. Census statistics. (The dropout rate has been declining in recent years; 6% is the most recent estimate.⁴) Clearly, the omission of high school dropouts introduces biases in the estimation of certain characteristics of the entire age group; however, for most purposes, the small proportion of students who drop out sets outer limits on the bias. Further, since the bias from missing dropouts should remain relatively constant from year to year, their omission should introduce little or no bias in year-to-year change estimates. Indeed, we believe the changes observed over time for those who are surveyed in the 12th grade are likely to parallel the changes for dropouts in most instances. Appendix A in this volume addresses in detail the likely effects of the exclusion of dropouts (as well as absentees from school) on estimates of drug use prevalence and trends for the entire age cohort.

Sampling Procedures and Sample Weights

A multistage random sampling procedure is used to secure the nationwide sample of 12th graders each year. Stage 1 is the selection of particular geographic areas, Stage 2 is the selection of one or more high schools in each area (with probability proportionate to the student enrollment size for the grade in question), and Stage 3 is the selection of 12th graders within each high school. Up to 350 twelfth graders in each school may be included. In schools with fewer 12th graders, the usual procedure is to include all of them in the data collection, though a smaller sample is sometimes taken to accommodate the needs of the school (either by randomly sampling entire classrooms or by some other unbiased, random method). Weights are assigned to compensate for differential probabilities of selection at each stage of sampling. Final weights are normalized to average 1.0 (so that the weighted number of cases equals the unweighted number of cases overall). In order to be able to check observed trends in any given one-year interval, schools participate in the study for two consecutive years on a staggered schedule, with one half of them being replaced with a new random half-sample of schools each year. Therefore, in any given year about half of the schools in the sample are participating for the first time and the other half are participating for their second and final year. This three-stage sampling procedure, with annual replacement of half of the sample of schools each year, has yielded the numbers of participating schools and students shown in Table 3-1.

⁴ U.S. Child Trends Databank. (2018). [High school dropout rates](#). Bethesda, MD..

Questionnaire Administration

About three weeks prior to the questionnaire administration date, parents of the target respondents are sent a letter by first-class mail, usually from the principal, announcing and describing the MTF study and providing parents with an opportunity to decline participation of their son or daughter if they wish. A flyer outlining the study in more detail is enclosed with the letter. Copies of the flyers are also given to the students by teachers in the target classrooms in advance of the date of administration. The flyers make clear that participation is entirely voluntary. Local Institute for Social Research representatives and their assistants conduct the actual questionnaire administrations following standardized procedures detailed in an instruction manual. The questionnaires are administered in classrooms during a normal class period whenever possible; however, circumstances in some schools require the use of larger group administrations. Teachers are asked to remain present in the classroom to help maintain order, but to remain at their desks so that they cannot see students' answers.

Questionnaire Format

Because many questions are needed to cover all of the many topic areas in the MTF study, much of the questionnaire content for 12th graders is divided into six different questionnaire forms distributed to participants in an ordered sequence that ensures six virtually identical random subsamples. (Five questionnaire forms were used between 1975 and 1988.) About one third of each form consists of key, or “core,” variables common to all forms. All demographic variables are contained in this core set of measures. Key drug use variables are also in the core, while many of the specific drugs that have been added over time are not in the core set, but are in one or more forms. Many questions on attitudes, beliefs, and perceptions of relevant features of the social environment are in fewer forms, and data are thus based on fewer cases—a single form would have one fifth of the total number of cases in 1975–1988 (approximately 3,300 per year) and one sixth of the total beginning in 1989 (approximately 2,500 per year). All tables in this report list the sample sizes upon which the statistics are based, stated in terms of the weighted number of cases (which, as explained above, is roughly equivalent to the actual number of cases).

RESEARCH DESIGN AND PROCEDURES FOR THE 8th AND 10th GRADE SURVEYS

In 1991, MTF was expanded to include nationally representative samples of 8th and 10th grade students surveyed on an annual basis. Separate samples of schools and students are drawn at each grade level. In general, the procedures used for the annual in-school surveys of 8th and 10th grade students closely parallel those used for 12th graders, including the selection of schools and students, questionnaire administration, and questionnaire format. A major exception is that only two different questionnaire forms were used in 8th and 10th grade from 1991 to 1996, expanding to four forms beginning in 1997. The same four questionnaire forms are used for both 8th and 10th graders; most of the content is drawn from the 12th grade surveys, including the core section. Thus, key demographic variables and measures of drug use and related attitudes and beliefs are generally identical for all three grades. Many fewer questions about other values and attitudes are included in the 8th and 10th grade forms, in part because we think that many of them are likely to be more fully formed by 12th grade and, therefore, are best monitored there.

About 15,000 8th grade students in approximately 130 schools (mostly middle schools) and about 15,000 10th grade students in approximately 130 schools are surveyed each year (see Table 3-1).

Mode of Administration

Since 1999, all surveys for 8th and 10th graders have been fully anonymous. In previous years, MTF collected confidential, personal identification information from these respondents, and from 1991 to 1993 this information was used to follow up with 8th and 10th graders in a manner similar to follow-ups of 12th graders (see below).⁵ Follow-up of 8th and 10th graders was discontinued after 1993, precluding the need for further collection of confidential, personal identification information. Considerations supporting a switch to fully anonymous surveys in 8th and 10th grade included the following: (a) school cooperation might be easier to obtain; and (b) to the extent that collecting contact information had any effect on survey responses such an effect would be removed from the national data, which are widely compared with results of state and local surveys (nearly all of which use anonymous questionnaires), thus making those comparisons more valid.

MTF considered in detail the effects of an anonymous survey as compared to a confidential survey that collected personal identification information. In 1998 the half-sample of 8th and 10th grade schools beginning their two-year participation in MTF received fully anonymous questionnaires, while the half-sample participating for their second and final year continued to get the confidential questionnaires that had been previously in use by MTF since 1991.

Examination of the 1998 results, based on the two equivalent half-samples at grades 8 and 10, revealed that there was no effect of anonymous as compared to confidential surveys among 10th graders and only a very modest effect, if any, in self-reported substance use rates among 8th graders (with prevalence levels slightly higher in the anonymous condition).⁶ All tables and figures in this volume combine data from both half-samples of 8th graders surveyed in a given year. This is also true for 10th graders, for whom we found no methodological effect, and 12th graders, for whom we assumed no such effect since none was found for 10th graders. (See this chapter's later section entitled "Representativeness and Sample Accuracy" for a further discussion of half-samples among all three grades.)

Questionnaire Forms and Sample Proportions

Beginning in 1997, in order to increase the measurement content in the study of 8th and 10th graders, the number of forms was expanded from two to four, although they are not distributed in equal numbers. Forms 1, 2, 3, and 4 are assigned to one third, one third, one sixth, and one sixth of the students, respectively. Thus, if a question appears on only one form, it is administered to either one third or one sixth of the sample. A question in two forms may be assigned to one third of the sample (one sixth plus one sixth), one half of the sample (one third plus one sixth), or two thirds of the sample (one third plus one third). A question in three forms may be assigned to two thirds (one third plus one sixth plus one sixth), or five sixths of the sample (one third plus one third plus one sixth). Footnotes to the tables indicate what proportion of all respondents in each grade was

⁵ A book reporting results from analyses of these younger panels was published in 2008. See Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education–drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis.

⁶ We have examined in detail the effects of administration mode using multivariable controls to assess the effects of the change on 8th-grade self-report data. Our findings generally show even less effect than is to be found without such controls. See O'Malley, P. M., Johnston, L. D., Bachman, J. G., & Schulenberg, J. E. (2000). [A comparison of confidential versus anonymous survey procedures: Effects on reporting of drug use and related attitudes and beliefs in a national study of students](#). *Journal of Drug Issues*, 30, 35–54.

asked the question, if that proportion is other than the entire sample. All of the samples, whether based on one or more forms, are random samples.

RESEARCH DESIGN AND PROCEDURES FOR THE 12th GRADE FOLLOW UP SURVEYS

Beginning with the graduating class of 1976, some members of each 12th grade class have been selected to be surveyed by mail after high school. From the 12,000–19,000 twelfth graders originally surveyed in a given senior class, a representative sample of 2,450 is randomly chosen for follow-up. In order to ensure that drug-using populations are adequately represented in the follow-up surveys, 12th graders reporting 20 or more occasions of marijuana use in the previous 30 days (i.e., daily users), or any use of the other illicit drugs in the previous 30 days are selected with higher probability (by a factor of 3.0) than the remaining 12th graders. Differential weighting is then used in all follow-up analyses to compensate for these differential sampling probabilities. Because those in the drug-using stratum receive a weight of only 0.33 in the calculation of all statistics to correct for their overrepresentation at the selection stage, there are actually more follow-up respondents than are reported in the weighted numbers given in the tables; in recent years actual numbers average about 20% higher than the weighted numbers. The 2,450 participants selected from each 12th grade class are randomly split into two groups of 1,225 each—one group to be surveyed on even-numbered calendar years in a series of biannual follow-up surveys, and the other group to be surveyed on odd-numbered years also in a series of biannual follow-up surveys. By alternating the two half-samples, MTF collects data from every graduating class each year (through age 30), even though any given respondent participates only every other year.

Until 2002, each respondent was surveyed biennially up to seven times; at the seventh follow-up, which would occur either 13 or 14 years after graduation, the respondents had reached modal age 31 or 32. In 2002, as a cost-saving measure, the seventh biennial follow-up was discontinued, and since then each respondent is surveyed every other year until modal age 29 or 30. Additional follow-ups then occur at modal ages 35, 40, 45, 50, 55, and beginning in 2018, age 60. These data, gathered on national samples over such a large portion of the life span, are extremely rare and can provide needed insight into the etiology and life-course history of substance use and relevant behaviors.

For the past several years, we have been conducting experiments with extra panel samples of young adults, comparing our typical mail surveys to web-based surveys. Findings suggest that there are some mode differences in responses.⁷ Starting with 2018 data collections among young adults (19–30), one random half of the sample received our typical mail surveys, and half received web-based surveys. This splitting of the sample (which we are also doing with 2019 data collections) allows us to calibrate our historical and developmental trends, as discussed in more detail in the upcoming Volume 2. In 2020, we plan to go fully to web-based data collections with young adults.

Follow-Up Procedures

⁷ Patrick, M. E., Couper, M. P., Laetz, V. B., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., & Miech, R. A. (2018). [A sequential mixed mode experiment in the U.S. National Monitoring the Future study](#). *Journal of Survey Statistics and Methodology*, 6(1), 72-97. doi: 10.1093/jssam/smx011.

Using information provided by 12th grade respondents on a tear-off card (requesting the respondent's name, address, phone numbers, and more recently, email address), contact is maintained with the subset of people selected for inclusion in the follow up panels. Newsletters are sent to them each year, providing a short summary of results on a variety of survey topics. Name and address corrections are requested from both the U.S. Postal Service and the individual. Questionnaires are sent in the spring to each individual biennially through age 30, then at 5-year intervals. A check (for \$25 in recent years), made payable to the respondent, is attached to the front of each questionnaire.⁸ Reminder letters and postcards are sent at fixed intervals thereafter; telephone callers attempt to gather up-to-date location information for those respondents with whom we are trying to make contact; and, finally, those whom we can contact but who have not responded receive a prompting phone call from the Survey Research Center's phone interviewing facility in Ann Arbor, Michigan. If requested, a second copy of the questionnaire is sent. No questionnaire content is administered by phone. If a respondent asks not to be contacted further, that request is honored.

Follow-Up Questionnaire Format

The questionnaires used in the follow-up surveys of 19- to 30-year-olds parallel those used in 12th grade. Many of the questions are the same, including the core section dealing with drug use. Respondents are consistently sent the same form of the questionnaire that they first received in 12th grade so that changes over time in their behaviors, attitudes, experiences, and so forth can be measured directly. Questions specific to high school status and experiences are dropped in the follow-ups, and questions relevant to post-high school status and experiences are added (mostly in the core section). The post-high school questions deal with issues such as college attendance, military service, civilian employment, marriage, and parenthood. In the study's early follow-ups (through 1988), the sample size for a question appearing on a single form was one fifth of the total sample. A sixth form was introduced in 12th grade beginning with the class of 1989 and extended a year later beginning with the follow-up surveys of that same class. Therefore, since 1990, a question appearing on a single form has been administered to one sixth of the total sample in the 19-30 young adult age band. Single-form data from a single cohort are typically too small to make reliable estimates; therefore, in most cases where they are reported, single-form data from several adjacent cohorts are combined.

For the five-year interval surveys beginning at age 35, both half-samples from a class cohort are surveyed *simultaneously* and only one questionnaire form is used. Much of the questionnaire content is maintained but streamlined with a focus on the major family and work issues relevant to respondents ages 35, 40, 45, 50, 55, and 60; we have also added measures of substance use disorders and a number of health outcomes.

REPRESENTATIVENESS AND SAMPLE ACCURACY

School Participation

Schools are invited to participate in the MTF study for a two-year period. For each school that declines to participate, a similar school (in terms of size, geographic area, urbanicity, etc.) is recruited as a replacement. In 2018, either an original school or a replacement school was obtained

⁸ Until 1991, the follow-up checks were for \$5. After an experiment indicated that an increase was warranted, the check amount was raised to \$10 beginning with the class of 1992. The check amount was raised to \$20 in 2006, and to \$25 beginning in 2008.

in 90% of the sample units. With very few exceptions, each school participating in the first year has agreed to participate in the second year as well. Figure 3-2 provides the year-specific school participation rates and the percentage of units filled since 1977. As shown in the figure, replacements for schools that decline participation are obtained in the vast majority of cases.

Two questions are sometimes raised with respect to school participation rates: (a) Are participation rates sufficient to ensure the representativeness of the sample? (b) Does variation in participation rates over time contribute to changes in estimates of drug use?

With respect to participation rates ensuring that the sample is representative, the selection of a comparable replacement school that is demographically close to the original school occurs in practically all instances in which an original school does not participate. This should almost entirely remove problems of bias in region, urbanicity, and the like that might result from certain schools declining to participate.

Among participating schools, there is very little difference in substance use levels between the sample of participating schools that were original selections, taken as a set, and the schools that were replacements. Averaged over the years 2003 through 2015 for grades 8, 10, and 12 combined, the difference between original schools and replacement schools averaged 0.26 percentage points in the observed prevalence averaged across a number of drug use measures: two indices of annual illicit drug use, the annual prevalence of each of the major illicit drug classes, and several measures of alcohol and cigarette use. For half of the measures prevalence was higher in the replacement selections and in the other half it was higher in the original selections; specifically, out of 39 comparisons (13 drugs and drug indexes for each grade), prevalence was higher in 20 of the original selections and in 19 of the replacement selections.

Potential biases could be subtle, however. If, for example, it turned out that most schools with “drug problems” refused to participate, the sample would be seriously biased. And if any other single factor were dominant in most refusals, that reason for refusal might also suggest a source of serious bias. However, the reasons schools fail to participate tend to be varied and are often a function of happenstance events specific to that particular year, such as a weather-related event that reduced the number of school days or the fact that the school already committed to participate in a number of other surveys that year; only very few schools, if any, object specifically to the drug-related survey content.

If it were the case that schools differed substantially in drug use, then which particular schools participated could have a greater effect on estimates of drug use. However, the great majority of variance in drug use lies within schools, not between schools.⁹ For example, from 2003 to 2015 for schools with 8th, 10th, or 12th grade students, about 2% to 8% of the variance in smoking cigarettes or drinking alcohol in the past 30 days was between schools. Among the illicit drugs, marijuana showed the largest amount of between-school variation, averaging between slightly less than 4% up to 5% for annual use, and 3% to 4% for 30-day use. Annual prevalence of cocaine use averaged between less than 1% and 1.5%, while prevalence of annual heroin use averaged less than 0.5%. Further, some, if not most, of the between-schools variance is due to differences related

⁹ O'Malley, P. M., Johnston, L. D., Bachman, J. G., Schulenberg, J. E., & Kumar, R. (2006). [How substance use differs among American secondary schools](#). *Prevention Science*, 7, 409-420.

to factors such as region and urbanicity, which remain well controlled in the present sampling design.

With respect to participation rates and changes in estimates of drug use, it is extremely unlikely that results have been significantly affected by changes in school participation rates. If changes in participation rates seriously affected prevalence estimates, there would be noticeable bumps up or down in concert with the changing rates. But this series of surveys produces results that are very smooth and generally change in an orderly fashion from one year to the next. Moreover, different substances trend in distinctly different ways. We have observed, for example, marijuana use decreasing while cocaine use was stable (in the early 1980s), alcohol use declining while cigarette use held steady (in the mid- to late 1980s), ecstasy use rising sharply while cocaine use showed some decline (late 1990s, early 2000s); and marijuana use continuing to rise while alcohol use hit historic lows (since 2011). Moreover, attitudes and perceptions about drugs have changed variously, but generally in ways quite consistent with the changes in actual use. All of these patterns are explainable in terms of psychological, social, and cultural factors; they cannot be explained by the common factor of changes in school participation rates.

Of course, there could be some sort of constant bias across the years, but even in the unlikely event that there is, it seems highly improbable that it would be of much consequence for policy purposes, given that it would not affect trends and likely would have a very modest effect on levels of prevalence. Thus, we have a high degree of confidence that school refusal rates have not seriously biased the survey results.

Nevertheless, securing the cooperation of schools has become increasingly difficult. This is a problem common to the field, not specific to MTF. Therefore, beginning with the 2003 survey, we have provided payment to schools as a means of increasing their incentive to participate. (By that time, several other ongoing school-based survey studies already were using payments to schools.)

At each grade level, half of each year's sample comprises schools that started their participation the previous year, and half comprises schools that began participating in the current year. (Both samples are national replicates, meaning that each is drawn to be nationally representative by itself.) This staggered half sample design is used to check on possible fluctuations in the year-to-year trend estimates due to school turnover. For example, separate sets of one-year trend estimates are computed based on students in the half-sample of schools that participated in both 2017 and 2018, then based on the students in the half-sample that participated in both 2016 and 2017, and so on. Thus, each one-year matched half-sample trend estimate derived in this way is based on a constant set of schools (about 65 in 12th grade, for example, over a given one-year interval). When the trend data derived from the matched half-sample (examined separately for each class of drugs) are compared with trends based on the total sample of schools, the results are usually highly similar, indicating that the trend estimates are affected little by school turnover or shifting participation rates. As would be expected, levels of absolute prevalence for a given year are not as precisely estimated using just the half sample because the sample size is only half as large.

Student Participation

In 2018, completed questionnaires were obtained from 89% of all sampled students in 8th grade, 86% in 10th grade, and 81% in 12th grade (see Table 3-1 for response rates in all years). In the large

majority of cases, students are missed due to absence from school and/or class at the time of data collection; for reasons of cost efficiency, we typically do not schedule special follow up data collections for absent students. Because students with fairly high rates of absenteeism also report above-average rates of drug use, some degree of bias is introduced into the prevalence estimates by missing the absentees. Much of that bias could be corrected through the use of special weighting based on the self-reported absentee rates of the students who did respond; however, we decided not to use such a weighting procedure because the bias in overall drug use estimates was determined to be quite small and the necessary weighting procedures would have introduced greater sampling variance in the estimates. Appendix A in this report illustrates the changes in trend and prevalence estimates that would result if corrections for absentees had been included. Of course, some students simply refuse, when asked, to complete a questionnaire. However, the proportion of explicit refusals amounts to less than 1.8% of the target sample for each grade.

Sampling Accuracy of the Estimates

Confidence intervals (95%) are provided in Tables 4-1a through 4-1d for lifetime, annual, 30-day, and daily prevalence of use for 8th, 10th, and 12th grade students. As can be seen in Table 4-1a, confidence intervals for lifetime prevalence for 12th graders average less than $\pm 1.4\%$ across a variety of drug classes. That is, if we took a large number of samples of this size from the universe of all schools containing 12th graders in the coterminous United States, 95 times out of 100 the sample would yield a result that would be less than 1.4 percentage points divergent from the result we would get from a comparable massive survey of all 12th graders in all schools. This is a high level of sampling accuracy, permitting detection of fairly small changes from one year to the next. Confidence intervals for the other prevalence periods (last 12 months, last 30 days, and current daily use) are generally smaller than those for lifetime use. In general, confidence intervals for 8th and 10th graders are very similar to those observed for 12th graders. Some drugs (smokeless tobacco, PCP, and others, as indicated in the footnotes for Tables 2-1 to 2-4) are measured on only one or two questionnaire forms; these drugs will have somewhat larger confidence intervals because they are based on smaller sample sizes.

The Appendix C of Volume 1 published in years 2017 and earlier reported information on how to calculate confidence intervals for point estimates and how to calculate statistics that test the significance of changes over time or of differences between subgroups. This appendix is no longer necessary with the opening of MTF's remote portal at the [National Addiction and HIV Data Archive Program](#), which now allows researchers to compute such statistics directly using MTF weights and clustering variables. Interested readers may refer to Appendix C of earlier volumes for the information it provides about design effects and how their computational influence varies by substance.

PANEL SURVEYS

Results from the panel studies that follow respondents in each graduating class of 12th graders into adulthood are reported in Volume II¹⁰ of this series, which also provides detailed information on

¹⁰ Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A., & Patrick, M.E. (2018). *Monitoring the Future national survey results on drug use, 1975-2017: Volume II, college students and adults ages 19-55*. Ann Arbor: Institute for Social Research, The University of Michigan.

the panel research design and retention rates in its own chapter on study design and procedures (Volume II, Chapter 3).

VALIDITY OF MEASURES OF SELF-REPORTED DRUG USE

Are sensitive behaviors such as drug use honestly reported? Like most studies dealing with sensitive behaviors, we have no direct, totally objective validation of the present measures; however, the considerable amount of existing inferential evidence strongly suggests that the MTF self-report questions produce largely valid data. Here we briefly summarize this evidence.¹¹

First, using a three-wave panel design, we established that the various measures of self-reported drug use have a high degree of reliability—a necessary condition for validity.¹² In essence, respondents were highly consistent in their self-reported behaviors over a three- to four-year time interval. Second, we found a high degree of consistency among logically related measures of use within the same questionnaire administration. Third, the proportion of 12th graders reporting some illicit drug use has reached two thirds of all respondents in peak years and over 80% in some follow up years, constituting prima facie evidence that the degree of underreporting must be very limited. Fourth, 12th graders' reports of use by their unnamed friends—about whom they would presumably have considerably less reason to conceal information about use—have been highly consistent with self-reported use in the aggregate, both in terms of prevalence and trends in prevalence, as discussed in Chapter 9. Fifth, we have found self-reported drug use to relate in consistent and expected ways based on theory to a number of other attitudes, behaviors, beliefs, and social situations—strong evidence of “construct validity.” Sixth, the missing data levels for the self-reported use questions are only very slightly higher than for the preceding nonsensitive questions, in spite of explicit instructions to respondents immediately preceding the drug section to leave blank those questions they feel they cannot answer honestly. Seventh, an examination of consistency in reporting of lifetime use conducted on the long-term panels of graduating seniors found quite low levels of recanting of earlier reported use of the illegal drugs.¹³ There was a higher level of recanting for the psychotherapeutic drugs, suggesting that adolescents may actually overestimate their use of some drugs because of misinformation about definitions, and this knowledge improves as they get older. Finally, the great majority of respondents, when asked, say they would answer such questions honestly if they are or were users.¹⁴

As an additional step to assure the validity of the data, we check for logical inconsistencies in the answers to the triplet of questions about use of each drug (i.e., lifetime, annual, and 30-day use),

¹¹ A more complete discussion may be found in: Johnston, L. D. & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57 (ADM) 85 1402). Washington, DC: U.S. Government Printing Office; Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1984). *Drugs and American high school students: 1975–1983* (DHHS (ADM) 85 1374). Washington, DC: U.S. Government Printing Office; Wallace, J. M., Jr., & Bachman, J. G. (1993). Validity of self-reports in student-based studies on minority populations: Issues and concerns. In M. de LaRosa (Ed.), *Drug abuse among minority youth: Advances in research and methodology* (NIDA Research Monograph No. 130). Rockville, MD: National Institute on Drug Abuse.

¹² O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1983). *Reliability and consistency in self-reports of drug use*. *International Journal of the Addictions*, 18, 805–824.

¹³ Johnston, L. D. & O'Malley, P. M. (1997). *The recanting of earlier reported drug use by young adults*. In L. Harrison (Ed.), *The validity of self-reported drug use: Improving the accuracy of survey estimates* (NIDA Research Monograph No. 167, pp. 59–80). Rockville, MD: National Institute on Drug Abuse.

¹⁴ For a discussion of reliability and validity of student self-report measures of drug use like those used in MTF across varied cultural settings, see Johnston, L. D., Driessen, F. M. H. M., & Kokkevi, A. (1994). *Surveying student drug misuse: A six-country pilot study*. Strasbourg, France: Council of Europe.

and if a respondent exceeds a maximum number of inconsistencies across the set of drug use questions, his or her record is deleted from the data set. Similarly, we check for improbably high rates of use of multiple drugs and delete such cases, assuming that the respondents are not taking the task seriously. Fortunately, very few cases (<3%) have to be eliminated for these reasons.

This is not to argue that self-reported measures of drug use are necessarily valid in all studies. In MTF we have gone to great lengths to create a situation and set of procedures in which respondents recognize that their confidentiality will be protected. We have also tried to present a convincing case as to why such research is needed. The evidence suggests that a high level of validity has been obtained. Nevertheless, insofar as any remaining reporting bias exists, we believe it to be in the direction of underreporting. Thus, with the possible exception of the psychotherapeutic drugs, we believe our estimates to be lower than their true values, even for the obtained samples, but not substantially so.

Consistency and Measurement of Trends

MTF is designed to be sensitive to changes from one time period to another. A great strength of this study is that the measures and procedures have been standardized and applied consistently across many years. To the extent that any biases remain because of limits in school and/or student participation, and to the extent that there are distortions (lack of validity) in the responses of some students, it seems very likely that such problems will exist in much the same proportions from one year to the next. In other words, biases in the survey estimates will tend to be consistent from one year to another, meaning that they should have very little effect on our measurement of trends. The smooth and consistent nature of most trend curves reported for the various drugs provides rather compelling empirical support for this assertion.

TABLE 3-1
Sample Sizes and Response Rates

Grade:	Number of Public Schools			Number of Private Schools			Total Number of Schools				Total Number of Students				Student Response Rate (%)		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	Total	8th	10th	12th	Total	8th	10th	12th
1975	—	—	111	—	—	14	—	—	125	—	—	—	15,791	—	—	—	78
1976	—	—	108	—	—	15	—	—	123	—	—	—	16,678	—	—	—	77
1977	—	—	108	—	—	16	—	—	124	—	—	—	18,436	—	—	—	79
1978	—	—	111	—	—	20	—	—	131	—	—	—	18,924	—	—	—	83
1979	—	—	111	—	—	20	—	—	131	—	—	—	16,662	—	—	—	82
1980	—	—	107	—	—	20	—	—	127	—	—	—	16,524	—	—	—	82
1981	—	—	109	—	—	19	—	—	128	—	—	—	18,267	—	—	—	81
1982	—	—	116	—	—	21	—	—	137	—	—	—	18,348	—	—	—	83
1983	—	—	112	—	—	22	—	—	134	—	—	—	16,947	—	—	—	84
1984	—	—	117	—	—	17	—	—	134	—	—	—	16,499	—	—	—	83
1985	—	—	115	—	—	17	—	—	132	—	—	—	16,502	—	—	—	84
1986	—	—	113	—	—	16	—	—	129	—	—	—	15,713	—	—	—	83
1987	—	—	117	—	—	18	—	—	135	—	—	—	16,843	—	—	—	84
1988	—	—	113	—	—	19	—	—	132	—	—	—	16,795	—	—	—	83
1989	—	—	111	—	—	22	—	—	133	—	—	—	17,142	—	—	—	86
1990	—	—	114	—	—	23	—	—	137	—	—	—	15,676	—	—	—	86
1991	131	107	117	31	14	19	162	121	136	419	17,844	14,996	15,483	48,323	90	87	83
1992	133	106	120	26	19	18	159	125	138	422	19,015	14,997	16,251	50,263	90	88	84
1993	126	111	121	30	17	18	156	128	139	423	18,820	15,516	16,763	51,099	90	86	84
1994	116	116	119	34	14	20	150	130	139	419	17,708	16,080	15,929	49,717	89	88	84
1995	118	117	120	34	22	24	152	139	144	435	17,929	17,285	15,876	51,090	89	87	84
1996	122	113	118	30	20	21	152	133	139	424	18,368	15,873	14,824	49,065	91	87	83
1997	125	113	125	27	18	21	152	131	146	429	19,066	15,778	15,963	50,807	89	86	83
1998	122	110	124	27	19	20	149	129	144	422	18,667	15,419	15,780	49,866	88	87	82
1999	120	117	124	30	23	19	150	140	143	433	17,287	13,885	14,056	45,228	87	85	83
2000	125	121	116	31	24	18	156	145	134	435	17,311	14,576	13,286	45,173	89	86	83
2001	125	117	117	28	20	17	153	137	134	424	16,756	14,286	13,304	44,346	90	88	82
2002	115	113	102	26	20	18	141	133	120	394	15,489	14,683	13,544	43,716	91	85	83
2003	117	109	103	24	20	19	141	129	122	392	17,023	16,244	15,200	48,467	89	88	83
2004	120	111	109	27	20	19	147	131	128	406	17,413	16,839	15,222	49,474	89	88	82
2005	119	107	108	27	20	21	146	127	129	402	17,258	16,711	15,378	49,347	90	88	82
2006	122	105	116	29	18	20	151	123	136	410	17,026	16,620	14,814	48,460	91	88	83
2007	119	103	111	32	17	21	151	120	132	403	16,495	16,398	15,132	48,025	91	88	81
2008	116	103	103	28	19	17	144	122	120	386	16,253	15,518	14,577	46,348	90	88	79
2009	119	102	106	26	17	19	145	119	125	389	15,509	16,320	14,268	46,097	88	89	82
2010	120	105	104	27	18	22	147	123	126	396	15,769	15,586	15,127	46,482	88	87	85
2011	117	105	110	28	21	19	145	126	129	400	16,496	15,382	14,855	46,733	91	86	83
2012	115	107	107	27	19	20	142	126	127	395	15,678	15,428	14,343	45,449	91	87	83
2013	116	103	106	27	17	20	143	120	126	389	15,233	13,262	13,180	41,675	90	88	82
2014	111	98	105	30	16	17	141	114	122	377	15,195	13,341	13,015	41,551	90	88	82
2015	111	102	101	30	18	20	141	120	121	382	15,015	16,147	13,730	44,892	89	87	83
2016	117	92	100	25	18	20	142	110	120	372	17,643	15,230	12,600	45,473	90	88	80
2017	109	89	105	22	17	18	131	106	123	360	16,010	14,171	13,522	43,703	87	85	79
2018	110	106	106	28	21	22	138	127	128	393	14,836	15,144	14,502	44,482	89	86	81

Source. The Monitoring the Future study, the University of Michigan.

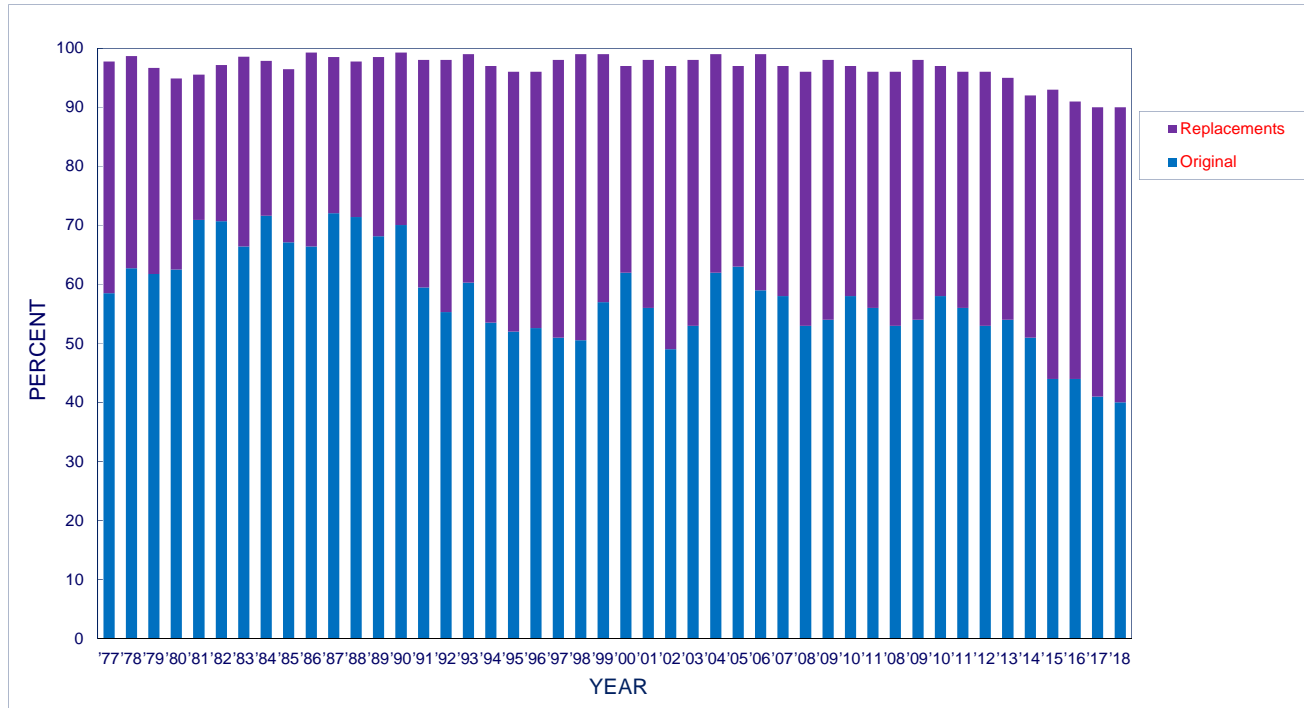
FIGURE 3-1
Schools included in 1 Year's Data Collection
8th, 10th, and 12th Grades



Source. The Monitoring the Future study, the University of Michigan.

Note. One dot equals one school.

FIGURE 3-2
School Participation Rates



Percent of slots filled by...	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07
Original	59	63	62	63	71	71	66	72	67	66	72	71	68	70	59	55	60	53	52	53	51	51	57	62	56	49	53	62	63	59	58
Replacements	39	36	35	32	25	26	32	26	29	33	26	26	30	29	39	43	39	44	44	43	47	48	42	35	42	48	45	37	34	40	39
Total	98	99	97	95	96	97	99	98	96	99	99	98	99	99	98	98	99	97	96	96	98	99	99	97	98	97	98	99	97	99	97

filled by...	'08	'09	'10	'11	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Original	53	54	58	56	53	54	58	56	53	54	51	44	44	41	40
Replacements	43	44	39	40	43	44	39	40	43	41	41	49	47	49	50
Total	96	98	97	96	96	98	97	96	96	95	92	93	91	90	90

Source: The Monitoring the Future study, the University of Michigan.

Chapter 4

PREVALENCE AND FREQUENCY OF DRUG USE

Drug use can be measured in terms of prevalence (the proportion of a defined population or subpopulation who have used a drug once or more in a particular time interval) or frequency (how many times a drug was used in a particular time interval). In this chapter, both of these important dimensions of drug use are addressed in relation to each of the three time intervals used in the MTF questionnaires – lifetime, past 12 months, and past 30 days – utilizing data from the most recently completed cross-sectional surveys of 8th, 10th, and 12th grade students, conducted in the spring of 2018. We also examine how use varies across six important demographic subgroups – defined by gender, college plans, region of the country, population density (or urbanicity), socioeconomic status (as measured by the average educational level of the parents), and racial/ethnic identification.

In addition, the prevalence of current *daily* use – defined as use on 20 or more occasions in past 30 days – is provided for selected drugs – in particular, marijuana, alcohol, and tobacco. For alcohol, the prevalence and frequency of being drunk and of having 5, 10, or 15 or more drinks in a row in the past two weeks are reported. For cigarettes, the prevalence of daily smoking – defined as use of one or more cigarettes per day in the past 30 days – is reported as is the prevalence of smoking a half pack or more per day. For some drug classes, only the prevalence and frequency of use in the past 12 months are reported because their use was addressed by only a single question. (We refer to such questions as “tripwire” questions, because their purpose is to alert us to emerging problems. If a tripwire question reveals a sizeable problem, we usually convert our measurement of that drug to a full set of questions covering the three standard time intervals.)

It should be noted that all prevalence statistics are based on students in attendance on the day of survey administration. Selected prevalence estimates for 12th grade students, reflecting adjustments for missing absentees as well as for dropouts, appear in Appendix A. On the day of the survey in 2018, 19% of 12th graders were absent. The adjustments are not particularly large and have virtually no effect on trend estimates. The absentee and dropout adjustments for 8th and 10th graders would be much smaller than those shown in Appendix A for 12th graders because 8th and 10th graders generally have lower rates of absenteeism and lower rates of dropping out (see Appendix A).

PREVALENCE AND FREQUENCY OF DRUG USE IN 2018: ALL STUDENTS

Prevalence of Lifetime, Annual, and 30-Day Use

Prevalence-of-use estimates are provided in Tables 4-1a through 4-1d for lifetime, past 12 months, past 30 days, and current daily use, respectively. For marijuana, prevalence estimates are provided also for the proportion of 12th grade students who ever used daily for a month or more in their lifetime. These tables include the 95% confidence intervals around each estimate, meaning that if samples of this size and type were drawn repeatedly from all students in that grade level in the coterminous United States, they would be expected to generate observed prevalence levels that fell within the confidence intervals 95 times out of 100. The confidence intervals take into account the effects of sample stratification, the clustering of the sample in schools, the size of the subgroup

samples and any unequal weighting. Of course, the single best estimate that we can make is the value actually observed in our sample – the point estimate.

To facilitate comparisons, Table 4-2 provides point estimates for all prevalence periods.

Below we group results into the categories of illicit and licit drugs. Illicit drugs refer to substances that are not legal (based on federal law) for recreational use among adults. This includes recreational use of marijuana, which remains illegal at the federal level despite a growing number of U.S. states that nevertheless consider recreational marijuana use by adults legal within their borders. Licit drugs are legal for recreational use in adulthood, such as alcohol and cigarettes. Of course, all such drugs are illicit for teens.

The key findings are summarized below.

Indexes of Any Illicit Drug Use

- About half of all 12th graders (48%) in 2018 reported ***any illicit drug use*** at some time in their lives.¹ One-third (36%) of 10th graders and (one fifth) 19% of 8th graders said they have used an illicit drug in their lifetime.
- When inhalants are included in the index of illicit drug use, the percentages categorized as having ever used an illicit drug rise, especially for 8th graders. The percentages using ***any illicit drug including inhalants*** in their lifetime are 23% for 8th graders, 39% for 10th graders, and 49% for 12th graders.
- The proportions having used ***any illicit drug other than marijuana*** (or *inhalants*) in their lifetime were 10% in 8th grade, 14% in 10th grade, and 19% in 12th grade. Thus, about one in five of the 2018 high school seniors tried an illicit drug other than marijuana at some time.¹
- Of all the students in each grade reporting any lifetime illicit drug use, not including inhalants, roughly half reported using ***only marijuana***: 48% of all 8th grade users of any illicit drug, which amounts to 9% of the total 8th grade sample; 61% of all 10th grade users of any illicit drug or 22% of the total 10th grade sample; and 60% of 12th grade users of any illicit drug or 29% of the total 12th grade sample. (These figures are not explicitly provided in the tables but can be derived from the information therein by comparing prevalence of “any illicit drug” to “any illicit drug other than marijuana.”) Put another way, 52%, 39%, and 40%, respectively, of those 8th, 10th, and 12th graders who have ever used any illicit drug have used ***some illicit drug other than marijuana***, usually in addition to marijuana.

¹ For 12th graders, “any illicit drug use” includes any use of marijuana, LSD, hallucinogens other than LSD, crack, cocaine other than crack, or heroin; and/or any use that is not under a doctor’s orders of narcotics other than heroin, amphetamines, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers. For 8th and 10th graders, the list of drugs is the same except that the use of narcotics other than heroin and sedatives (barbiturates) has been excluded both from the illicit drug indexes and from separate presentation in this volume. Questions on these drugs were included in the questionnaires given to 8th and 10th graders, but the results led us to believe that some respondents were including nonprescription drugs in their answers, resulting in exaggerated prevalence levels.

Marijuana

- ***Marijuana*** is by far the most widely used illicit drug. Nearly half of all 12th graders (44%), one third of 10th graders (33%), and about one in seven 8th graders (14%) reported some marijuana use in their lifetime. Among 12th graders, 36% reported some use in the past year, and 22% reported some use in the past month. Among 10th graders, the corresponding percentages were 28% and 17%, respectively, and among 8th grade students, 11% and 5.6%.
- Current ***daily marijuana*** use or near daily use (defined as use on 20 or more occasions in the past 30 days) is also noteworthy. About one in 17 twelfth graders (5.8%) used marijuana daily in the month prior to the survey, as did one in 29 tenth graders (3.4%) and one in 143 eighth graders (0.7%).
- Using the questions on duration of daily use, we have found that, since 1982, the ***lifetime prevalence of daily marijuana use for a month or more*** is, not surprisingly, higher than current daily use – 12% versus 5.8%. Thus, in 2018 about one in eight 12th graders report having used marijuana daily or near-daily for a month or more.
- Use of ***synthetic marijuana*** in 2018 is fairly low, with annual prevalence levels at 1.6%, 2.9%, and 3.5% in 8th, 10th, and 12th grade, respectively.
- ***Marijuana vaping*** has emerged in recent years as a new way to use marijuana. In 2018 the portion of adolescents who had ever tried it was 16%, 14%, and 6% in 12th, 10th, and 8th grade, respectively. About one in three 12th grade students who had ever used marijuana had vaped it at some point (estimate derivable from Table 4-1a).
- ***Medical marijuana*** prescriptions for adolescents are rare. In 2018 the percentage of adolescents who reported that they had ever used marijuana because a doctor told them to do so was 0.5%, 1.3%, and 1.2% in 8th, 10th, and 12th grade, respectively.

Other Illicit Drugs

- The ranking of illicit drugs by lifetime prevalence varies some by grade level (Figure 4-1). For 8th graders, ***marijuana*** and ***inhalant*** use are followed in the lifetime prevalence rankings of illicit drugs by amphetamines, at 5.9%.² Among 10th graders, the ranking for lifetime prevalence of use is ***marijuana*** (33%), ***amphetamines*** (8.6%), and ***inhalants*** (6.5%). Among 12th graders, lifetime use is highest for ***marijuana*** (44%), followed in order by ***amphetamines*** (8.6%), ***tranquilizers*** and ***hallucinogens*** (both 6.6%), ***narcotics other than heroin*** (6.0%), ***LSD*** (5.1%), ***hallucinogens other than LSD*** (4.5%), ***inhalants*** (4.4%), ***sedatives (barbiturates)*** (4.2%), and then ***MDMA*** (ecstasy, Molly) (4.1%).
- The illicit drug classes remain in roughly the same order whether ranked by lifetime, annual, or monthly prevalence of use, as Figure 4-1 illustrates. The only important change

² For findings on specific amphetamines, see Appendices.

in ranking occurs for *inhalant* use among 10th and 12th graders, for whom use of inhalants declines substantially with advancing age. Use of a number of inhalants such as glues and aerosols tends to be discontinued at a relatively early age.

- *Amphetamines* rank second in prevalence of illicit drugs for students in 10th and 12th grade. In 10th and 12th grade lifetime prevalence is 8.6% in each grade, and annual prevalence is 5.7% and 5.5%, respectively.
- *Inhalants* rank second among the illicit drugs in lifetime prevalence for 8th graders (8.7%) and third for 10th graders (6.5%); but they rank eighth for 12th graders (4.4%). Inhalants also rank second-highest in 30-day prevalence among the illicit drugs for 8th (1.8%) and third (1.0%) among 10th graders, but they rank much lower for 12th graders (0.7%). Note that the youngest respondents report the highest levels of use; this is the only class of drugs for which current use declines with age during adolescence.³
- *Tranquilizers* rank third in the prevalence rankings of illicit drugs, with lifetime prevalence levels of 3.5%, 6.0%, and 6.6% for grades 8, 10, and 12, respectively.
- Table C-3 in Appendix C reports trends for many of the *specific tranquilizers*. These more detailed questions about specific drugs within a class are asked only of 12th grade students. They are contained in a single questionnaire form and are asked in a branching format, wherein a respondent is first asked whether he or she used the general class of drugs (e.g., tranquilizers) in the prior 12 months, after which the respondent is branched to the more detailed questions about which specific drugs were used. As discussed above, the prevalence levels resulting for drugs in the branching format questions tend to be lower than levels obtained from questions asked directly about their use. Still, they should give good indications of trends in use and relative use in comparison to the other drugs in the same class. What follows is based on data obtained using the branching format.

In recent years *Xanax* has been the tranquilizer most commonly used by 12th grade students. Since 2016 its annual prevalence has been higher than the prevalence of all other tranquilizers combined and in 2018 was at 2.2%. *Xanax* displaced *Valium* as the most common tranquilizer used by 12th graders in 2006. Within this branching question *Valium* had the highest annual prevalence of use ever recorded at 6.9% in 1977 but has since dropped to 0.3% in 2018. Use levels of other tranquilizers has been less than 1%, with the exceptions of *Soma* which reached a level of 1.4% in 2008 and 2010 and *Klonopin* which reached a level of 1.7% in 2010.

³ The results also indicate declining lifetime inhalant prevalence at higher grades, which could be due to various factors. There might be lower lifetime prevalence at older ages because the eventual school dropout segment is included only in the lower grades. If those who will become dropouts are unusually likely to use inhalants, lifetime use rates could decline with grade level. That would lead to a relatively stable difference between the grades in lifetime use (because dropout rates have been fairly stable in recent years); however, the degree of difference has changed some over time, with larger differences emerging in the mid-1990s. Another possible factor is changing validity of reporting with age; but in order to account for the trend data, one would have to hypothesize that this tendency became stronger in the 1990s, and we have no reason to believe that it did. Cohort differences may be a factor, but cannot completely explain the large changes in lifetime prevalence. It seems likely that all of these factors contribute to the differences observed in the retrospective reporting by different ages, and possibly some additional factors as well.

- ***Narcotics other than heroin*** ranked high in lifetime prevalence among 12th graders at 6.0%. (Data for 8th and 10th graders are not reported for the general category of narcotics other than heroin due to questionable validity.)
- OxyContin and Vicodin have been among the most widely used narcotic drugs used by adolescents in recent years. ***OxyContin***, a brand of oxycodone, showed annual prevalence levels in 2018 of 0.8%, 2.2%, and 2.3% for grades 8, 10, and 12, respectively. ***Vicodin*** use was lower, with the comparable prevalence levels of 0.6%, 1.1%, and 1.7% across the three respective grades. These levels of use are far higher than for heroin.
- Lifetime prevalence of ***sedative (barbiturate)*** use in 12th grade was 4.2% in 2018. The sedative (barbiturate) questions are included in the 8th and 10th grade questionnaires, but the results are not reported because we suspect that these respondents inappropriately include the use of non-prescription drugs.⁴
- Considerably lower prevalence levels are found for the specific class ***methamphetamine***, with 0.7%, 0.8%, and 0.7% of 8th, 10th, and 12th graders, respectively, reporting any lifetime use. ***Crystal methamphetamine (“ice”)*** also has a low lifetime prevalence among 12th graders (1.1%); its use is not asked in the lower grades.
- ***Bath salts*** are products containing designer drugs – synthetic cathinones, which are stimulants that have effects similar to amphetamines. Only annual prevalence estimates are available, and they are low: 0.9%, 0.5%, and 0.6% for 8th, 10th, and 12th grade, respectively.
- ***Hallucinogens*** is another fairly widely used class of substances. Lifetime prevalence of use is 2.2% for 8th graders, 3.9% for 10th graders, and 6.6% for 12th graders. Until 2001, hallucinogen prevalence ranked this high primarily due to the prevalence of LSD use. But in 2018, similar proportions of students indicated lifetime use of ***hallucinogens other than LSD*** – 1.5%, 2.7%, and 4.5% for 8th, 10th, and 12th grade, respectively – (particularly “shrooms” or psilocybin), compared to 1.4%, 2.8%, and 5.1% for ***LSD***.
- ***MDMA*** (ecstasy, Molly), another drug used for its somewhat hallucinogenic properties, is reported at levels similar to LSD in all three grades. In 2018, the lifetime prevalence levels for this drug stood at 1.6%, 2.4%, and 4.1% in grades 8, 10, and 12, respectively, while annual prevalence stood at 1.1%, 1.4%, and 2.2%.
- A tripwire question asks about use of ***salvia*** (or ***salvia divinorum***) in the last 12 months. Salvia is an herb with hallucinogenic properties, common to southern Mexico and Central and South Americas. Although it currently is not a drug regulated by the Controlled Substances Act, several states have passed legislation to regulate its use, as have several countries. The Drug Enforcement Agency lists salvia as a drug of concern and has

⁴ Barbiturates were the dominant form of sedatives in use when these questions were first introduced, but have been largely displaced by the nonbarbiturate sedatives now on the market. In 2004 in what we call a “splicing design”, half of the questionnaires used the original question about barbiturates, while the other half had a question asking about “sedatives, which include barbiturates. . .” These two versions yielded 12th grade prevalence rates that were almost identical, suggesting that, in the past, the users of nonbarbiturate sedatives had been including them in their answers about barbiturate use. In 2005, the remaining questionnaire forms were changed as well in the same manner.

considered classifying it as a Schedule I drug, like LSD or marijuana. Annual prevalence of this drug has been in a steady decline, and in 2018 levels were less than 2% in all grades at 0.4%, 0.9%, and 1.5% among 8th, 10th, and 12th graders, respectively.

- **PCP** (phencyclidine) use is measured in 12th grade only, with a tripwire question. Annual prevalence in 2018 was 1.1%.
- Lifetime prevalence levels for **cocaine** use by 8th, 10th, and 12th graders in 2018 were 1.4%, 2.6%, and 3.9%, respectively.
- **Crack**, a form of cocaine that comes in small chunks or “rocks,” can be smoked to produce a rapid and intense but short-lasting high. In 2018, it had lifetime prevalence levels of under 2.0% in all three grade levels: 0.9% for 8th, 1.0% for 10th, and 1.5% for 12th graders.

Of all students reporting any cocaine use in their lifetime, significant proportions have some experience with crack: Nearly two thirds of 8th grade cocaine users (64%), and about two fifths of 10th grade and 12th grade users (38%) reported having used crack (estimates derivable from Table 4-1a).

- **Heroin** is one of the least commonly used illicit drugs at each grade level. Lifetime use in 2018 was 0.6% for 8th graders, 0.4% for 10th graders, and 0.8% for 12th graders. Annual prevalence levels were 0.3%, 0.2%, and 0.4% in 8th, 10th, and 12th grade. For many years, the heroin available in the United States had such a low purity that the only feasible way to use it was by injection, usually intravenously. However, due to the high production of opium in various countries, the purity of heroin available on the street rose substantially, thus making smoking and snorting more common modes of administration. Because of these changes, in 1995 we added separate questions on using heroin with and without a needle. We found that significant proportions of those reporting any lifetime heroin use reported using **heroin without a needle**. In 2018, for 8th graders the proportions reporting lifetime use by each of the three methods were 0.2% without a needle, 0.3% with a needle, and 0.1% using both ways. The proportions of 10th graders using heroin among these three methods were all 0.1%, and the proportions for 12th grade were 0.3%, 0.2%, and 0.2%, respectively. See Table 4-3 for more detail on heroin use by mode of administration.
- Three drugs have been labeled as “club drugs”: **Rohypnol**, **GHB**, and **ketamine**. None of these ever attained much popularity among teens. Currently, GHB and ketamine are measured with tripwire questions in 12th grade only. Annual prevalence levels in 2018 were 0.3% and 0.7%, respectively. **Rohypnol**, known as a “date rape drug” because it can induce amnesia, is measured with the standard triplet questions in grades 8 and 10, and a tripwire question in grade 12. Annual prevalence levels in 2018 were 0.3%, 0.3%, and 0.7% in grades 8, 10, and 12, respectively.

Alcohol, Cigarettes, and Vaping

- Alcohol and nicotine in all of its forms (including smoking cigarettes, using smokeless tobacco, and vaping nicotine) are the two major licit drugs that are included in the MTF surveys, though even these are legally prohibited for purchase by those the age of most of our respondents. **Alcohol** use is more widespread than use of illicit drugs. Nearly three fifths of 12th grade students (59%) have at least tried alcohol, and nearly one third (30%) are current drinkers – that is, they reported consuming some alcohol in the 30 days prior to the survey (Table 4-2). Even among 8th graders, nearly a quarter (24%) reported any alcohol use in their lifetime, and one in 13 (8.0%) is a current (past 30-day) drinker.⁵
- Of greater concern than just any use of alcohol is its use to the point of intoxication: In 2018 more than two out of five 12th graders (43%), one quarter of 10th graders (26%), and about one in eleven of all 8th graders (9.2%) said they had **been drunk** at least once in their lifetime. The levels of self-reported drunkenness during the 30 days immediately preceding the survey are high: 17.5%, 8.4%, and 2.1%, respectively, for grades 12, 10, and 8.
- Another measure of heavy drinking asks respondents to report on how many occasions during the last *two weeks* they had consumed five or more drinks in a row. In 2018 prevalence levels for this behavior, which we refer to as **binge drinking**, were 13.8%, 8.7%, and 3.7% in the 12th, 10th, and 8th grade, respectively.⁶
- **Extreme binge drinking**⁷ refers to the consumption of 10 or more drinks in a row or 15 or more drinks in a row on a single occasion. One of the most concerning findings from the alcohol frequency results relate to this outcome. Table 4-4b shows that prevalence of having 5 or more drinks in a row in the prior two weeks – our standard measure of “binge drinking” – was 13.8% for 12th graders in 2018, but 4.6% said that they had 10 or more drinks in a row, and 2.5% had 15 or more drinks in a row. Similarly, in 10th and 8th grade between 30% to 40% of youth who reported 5 or more drinks in a row in the prior two weeks reported 10 or more drinks in a row during the same period. (Questions about 15 or more drinks in a row were not asked of 8th and 10th graders).
- In 2018 past-year use of **alcoholic beverages containing caffeine** was considerable, at 6%, 10%, and 15% among 8th, 10th, and 12th grade students, respectively. In 2010 the Food and Drug Administration issued a [press release](#) directed to four major manufacturers of

⁵ In 1993, the text of the alcohol prevalence-of-use question was changed slightly in half of the questionnaire forms used at each grade such that the respondent was told explicitly to exclude those occasions when they had “just a few sips” of an alcoholic beverage. In 1994, this change was made to the remaining forms. In 2004, there was another minor wording change in half of the forms to encompass the broader range of alcoholic beverages that were becoming more popular, with the wording “. . . alcoholic beverages including beer, wine, and liquor, and any other beverage that contains alcohol.” Previously we had asked about “. . . beer, wine, wine coolers, or liquor . . .” An examination of the data did not show any effect from dropping the explicit mention of wine coolers and replacing it with “any other beverage that contains alcohol.” The remaining questionnaire forms were changed in the same manner in 2005.

⁶ We note that in 8th grade the portion who report have five more drinks in a row in the past two weeks is greater than the number who reported being drunk in the past 30 days, which is logically inconsistent. We suspect that some 8th grade students may misinterpret the question and report “sips” of alcohol instead of full “drinks,” which the survey question explicitly describes as a glass of wine, bottle of beer, a wine cooler, a shot of liquor, or a mixed drink. We believe that of the two measures, the self-reports of getting drunk or very high are likely to be the more accurate, at least for 8th graders.

⁷ This behavior is also referred to as “high-intensity drinking” in the alcohol literature. See [here](#) for an expert discussion of terminology for this behavior.

premixed alcoholic beverages containing caffeine, stating that the caffeine added to these beverages was “unsafe;” this effectively eliminated the sale of these products. Caffeine can mask the signs of alcohol impairment to the individual and to others and consequently increase risks of motor vehicle and other types of injury.

- **Powdered alcohol**, as the name suggests, can be added to water to form an alcoholic drink. In 2018 past-year use of this type of substance was low, at 0.8%, 1.2%, and 1.3% in 8th, 10th, and 12th grade, respectively. This product is not yet commercially available, although the U.S. Alcohol and Tobacco Tax and Trade Bureau approved labels for its sale with the brand name Palcohol in 2014. Questions on powdered alcohol were added to the survey in 2016 to assess baseline levels of use before the product becomes commercially available, if it ever does.
- Prevalence of **cigarettes** is generally higher than for any of the illicit drugs, except for marijuana. Nearly one quarter (24%) of 12th graders reported having tried cigarettes at some time, and one in thirteen (8%) smoked in the prior 30 days. Even among 8th graders, nearly one tenth (9.1%) reported having tried cigarettes and 2.2% reported smoking in the prior 30 days. Among 10th graders, 16% reported having tried cigarettes, and 4.2% reported smoking in the prior 30 days. The percentages reporting smoking cigarettes in the prior 30 days are actually lower in all three grades in 2018 than the percentages reporting using **marijuana** in the prior 30 days: 2.2% for cigarettes versus 5.6% for marijuana in 8th grade; 4.2% versus 16.7% in 10th grade; and 7.6% versus 22% in 12th grade. These numbers reflect mostly the considerable, steady decline in cigarette use that has occurred over the past two decades. Among 8th, 10th and 12th graders, lifetime prevalence of marijuana use in 2018 was also higher than lifetime prevalence of cigarette use. (Annual prevalence of cigarette use is not assessed.)
- **Nicotine vaping** has become a major avenue for nicotine consumption. In 2018 lifetime prevalence was considerably higher than lifetime cigarette prevalence in all grades, and was 34%, 29%, and 14% in 12th, 10th, and 8th grade respectively. Past 30-day nicotine vaping is at least twice as common as past 30-day cigarette use in all grades.
- Past MTF questionnaires included questions about use of **kreteks**, a type of clove cigarette that is usually imported from Indonesia. These questions were asked of all grades from 2001 to 2005 and for 12th grade students from 2001 to 2014. Because of low prevalence, the questions were dropped to make room for other drug-related questions. For a discussion of kretek prevalence see the [2006](#) and [2015](#) volumes in this monograph series.
- **Smokeless tobacco** is used by a surprisingly large number of young people. Among 8th, 10th, and 12th graders, lifetime prevalence levels are 6.4%, 10.0%, and 10.1%, respectively, and past 30-day prevalence is 2.1%, 3.9%, and 4.2%, respectively. As discussed later in this chapter, prevalence levels are considerably higher among males than among females.
- Two forms of tobacco use alternative to cigarettes are smoking using **hookah** water pipes and smoking **small cigars**. Questions about these forms of tobacco use in the prior 12 months (annual prevalence) are asked only of 12th graders. In 2018, 7.8% of them reported

using a hookah to smoke tobacco and 9.2% reported smoking small cigars in the prior 12 months.

- Two other forms of tobacco use, *snus* and *dissolvable tobacco*, are assessed. The question about *snus* – a moist form of snuff that is placed under the upper lip – asks on how many occasions in the past 12 months the student “...used snus (a small packet of tobacco that is put in the mouth).” Among 8th, 10th, and 12th graders, the annual prevalence in 2018 was 1.3%, 3.1%, and 4.7%, respectively. The question about *dissolvable tobacco* products asks on how many occasions in the past 12 months the student “... used dissolvable tobacco products (Ariva, Stonewall, Orbs).” These products, in the form of pellets, strips, or sticks, actually dissolve in the mouth unlike other forms of chewing tobacco. Among 8th, 10th, and 12th graders, the annual prevalence in 2018 was 0.6%, 1.1%, and 1.3%, respectively. It appears that these dissolvable tobacco products have not yet made significant inroads among secondary school students.

Steroids

- As with some other drugs covered by MTF, the distribution and sale of *anabolic steroids* are now legally controlled, but they often find their way into an illicit market. They also carry a particular danger for the transmission of HIV and other blood borne diseases when taken by injection using non-sterile needles. However, in contrast to most drugs, they are usually taken not for their direct psychoactive effects (although they may have some), but rather for muscle building and physical performance enhancement (which includes accelerated recovery times from injuries and workouts). Clearly, potential unintended consequences, including the transmission of HIV, make illicit use of anabolic steroids a public health concern.

The overall levels of use for anabolic steroids are modest relative to many other drugs. For 8th, 10th, and 12th graders, respectively, *lifetime* prevalence levels in 2018 were 1.1%, 1.2%, and 1.6%; *annual* prevalence levels were 0.6%, 0.6%, and 1.1%; and past *30-day* prevalence levels were 0.3%, 0.4%, and 0.8%.

- *Androstenedione*, a precursor to anabolic steroids, which is also used to enhance strength and physique, was legal to purchase over the counter until 2005, when it was scheduled as a controlled substance by the Drug Enforcement Administration. Concern grew about adolescents’ use of androstenedione when their reported use of anabolic steroids increased sharply in 1999, a year marked by press reports of androstenedione use by the prominent professional baseball player Mark McGwire. A single tripwire question was added in 2001 to determine how widespread use was, partly to ascertain whether some of the increase in reported steroid use was actually due to androstenedione use. The 2018 annual prevalence level for androstenedione in 12th grade was small at 0.5%.
- Another physique-enhancing substance is *creatine*, though it is not usually considered a drug at all but rather a type of over-the-counter protein supplement believed to help build muscle mass. Because we thought that a number of adolescents were probably using this substance along with steroids and/or androstenedione, we added a tripwire question about

its use in 2001. In 2018, the prevalence of past-year creatine use was 1.7%, 6.2%, and 9.3% in grades 8, 10, and 12, respectively.

Nonprescription Stimulants Taken Legally

Questions on the legal use of nonprescription stimulants focus on two general types: look-alike drugs (pseudoamphetamines, usually sold by mail order, which look like and often have names that sound like real amphetamines), and over-the-counter stimulants (primarily diet pills and stay-awake pills). These drugs usually contain caffeine, ephedrine, and/or phenylpropanolamine as active ingredient(s). Questions on these drugs provide a more complete picture of adolescent stimulant use and serve as a prompt for students to separate out their legal use of over-the-counter stimulants from their nonmedical use of prescription stimulants.

- In 2018, 6.2% of 12th grade students reported using over-the-counter ***diet pills*** in their lifetime, and 1.9% in the past 30 days (Table 4-2). Use was substantially higher for females as compared to males (discussed in more detail below).
- ***Stay-awake pills*** were used less often in 2018: 3.6% of 12th graders used in their lifetime, while the 30-day prevalence was 1.2%.
- Even fewer 12th grade students indicated use of ***look-alikes*** (2.6% lifetime and 0.8% monthly prevalence in 2017). As a result, questions on use of look-alikes were dropped from the surveys in 2018.

Drugs Used in the Treatment of ADHD under Medical Supervision

Attention deficit hyperactivity disorder, or ADHD, is a chronic condition that is usually diagnosed in childhood or adolescence and can persist into adulthood. ADHD symptoms – inattention and hyperactive, impulsive behavior – have been treated for some years with prescribed ***stimulant drugs***, often amphetamines. Such drugs have included Ritalin and more recently Adderall and Concerta, among others. ***Nonstimulant medications*** are also in use and are sometimes prescribed when stimulants have proven ineffective or not well tolerated. One of these is Strattera, which was approved by the FDA in 2003.

- Lifetime prevalence levels for using ***either type of drug*** under medical supervision were 11.0%, 12.1%, and 12.7% in grades 8, 10, and 12, respectively, in 2018. Thus, about one in every eight to ten 8th, 10th, and 12th grade students has received medication for ADHD at some time.
- Lifetime prevalence levels for ***stimulant*** drugs like Ritalin were 7.1%, 8.2%, and 8.6% for 8th, 10th, and 12th graders, respectively, in 2018.
- In 2018 lifetime prevalence for ***nonstimulant*** drugs like Strattera was somewhat lower, but still appreciable, at 4.4%, 5.1%, and 6.1% for 8th, 10th, and 12th grade, respectively.

- Current prevalence levels (as indicated by the answer, “I take them now”) for the use of *either type* of drug – stimulants or nonstimulants – were 5.2%, 5.1%, and 5.9% in grades 8, 10, and 12, respectively, in 2018. Thus, roughly one in every twenty students in each of these three grades is currently taking prescribed medication for ADHD.
- Current prevalence levels (as indicated by the answer, “I take them now”) for use of *stimulant* ADHD drugs in 2018 for the three grades were 3.7%, 3.9%, and 3.5% respectively in 8th, 10th, and 12th grade; for *nonstimulant* drugs levels were lower, at 1.2%, 1.4%, and 2.6%.

Thus, lifetime experience with *nonstimulant* drugs for treatment of ADHD is only modestly lower than it is for *stimulant drugs*, but current prevalence is considerably lower for the nonstimulant drugs.

DRUGS NO LONGER TRACKED ANNUALLY

The drugs listed below did not appear on the 2018 MTF surveys. In most cases prevalence levels fell so low that survey questions on the drug were removed to make room for questions on other drugs, as well as to reduce respondent burden. In some cases, as with ‘electronic vaporizers,’ questions were removed to make place for updated terminology and measures.

- The study tracked use of *look-alikes* from 1982 to 2017. The prevalence of these over-the-counter stimulants had been hovering at historical low levels among 12th graders since 2010, and in 2017 it was at 1.5% (Table 5-5b). In subsequent years it was no longer included in the survey in order to make room for questions on other drugs. From 1982 onward the trend in look-alikes resembles the trend for illicit drug use during the same period. Annual prevalence declined from 10.8% in 1982 to 5.2% in 1991, followed by a period of some increase during the 1990s drug relapse (to 6.8% in 1995), stabilization, and some decline again after 2001, to a historical low of 1.4% in 2014. Most of the initial decline in use occurred among those who had used illicit drugs other than marijuana – the group primarily involved in the use of look-alikes.
- *Amyl and butyl nitrites*, one class of inhalants, became somewhat popular in the late 1970s, but their use has been almost eliminated in the years since. The annual prevalence level among 12th grade students was 6.5% in 1979 but only 0.9% in 2009. Because of this decrease in use, and to allow for the addition of other questions, the questions on nitrite use have not been included in the study since 2010.

When nitrites were included in the definition of inhalants, they masked the increase that was occurring in the use of other inhalants, because their use was declining at the same time that the use of the other inhalants was increasing.

- *Methaqualone* use (brand name Quaalude) had an annual prevalence among 12th graders of 0.4% in 2012, after which it was no longer included on the survey in order to make room for questions on other drugs. Previously, use of this drug rose sharply from 1978 until 1981. Starting in 1982 use began to decline, helping to account for the overall adjusted sedative index resuming its decline that year. Annual prevalence for methaqualone plummeted from

7.6% in 1981 to 0.2% by 1993; it then inched up a bit during a relapse phase in the 1990s to 1.1% in 1996, where it remained in 1999. By 2012 it was 0.4%, a tiny fraction of its peak level.

- Questions on use of *Provigil* (a prescription stay-awake drug used for narcolepsy, shift work, etc.) were added to the 12th grade questionnaires in 2009. In 2011 past-year prevalence was 1.5%, suggesting that this drug had not made serious inroads among youth in terms of nonmedically supervised use. Given the low use, questions on Provigil were no longer included on the survey starting in 2012.
- A question about *bidis*, a type of flavored cigarette imported from India, was included in the MTF questionnaires for the first time in 2000, with a single tripwire question asking about the frequency of use in the past year. Some observers had been concerned that bidis might become popular among U.S. youth, but that does not seem to have been the case. The 2010 proportion of 12th graders using bidis during the past year was only 1.4%. Thirty-day and daily use would be appreciably lower. Given the low prevalence levels, the question on bidis was dropped from 8th and 10th grade questionnaires in 2006, and from 12th grade questionnaires in 2011.
- A question about *kreteks*, a type of clove cigarette that was usually imported from Indonesia, was added in 2001 to the list of tripwire questions that ask about past-year use. Because the prevalence levels turned out to be low, this question also was dropped in 2006 from the 8th and 10th grade questionnaires to make room for other questions. In 2014, only 1.6% of 12th graders reported any use of kreteks in the prior 12 months and the question has not been included on the survey since then.
- A question on use of ‘*electronic vaporizers*’ was added to the survey in 2015. While this term is technically accurate it may have not been familiar to many adolescents. In 2017 MTF revamped its vaping questions, which now use the term ‘vape.’

Frequency of Lifetime, Annual, and 30-Day Use

While this volume focuses largely on *prevalence* of use for different time periods, more detailed information about the *frequency* with which various drugs have been used is important for understanding severity of substance use. Table 4-4a provides data on frequency of use of various drugs for lifetime, 12-month, and 30-day time periods. Tables 4-4b, 4-4c, and 4-4d provide additional frequency-of-use estimates for binge drinking, cigarette use, and use of other tobacco products. As shown in these tables, a good proportion of lifetime users of many drugs could best be characterized as experimental users, reporting use on only one or two occasions.

- At the other extreme, certain drugs stand out for having had relatively high proportions reporting use on 20 or more occasions in their lifetime. For example, 1.4%, 8.6%, and 17.5% of all 8th, 10th, and 12th graders, respectively, have consumed *alcohol* on 20 or more occasions in their lifetimes.
- Another measure of heavy drinking called *binge drinking* asks respondents to report on how many occasions during the previous *two-week* period they had consumed *five or more*

drinks in a row. Table 4-4b shows that in 2018 more than half of students in each grade who had engaged in this behavior had done so more than once during the past two weeks.

- **Extreme binge drinking**⁸ refers to the consumption of 10 or more drinks in a row or 15 or more drinks in a row on a single occasion. In all grades, about half of the students who had 10 or more drinks in a row did so more than once in the last two weeks, the same pattern of use seen for regular binge drinking. In 12th grade, the students who reported 15 or more drinks in a row did so with alarming frequency, with about two-thirds of them reporting having done so more than once in the past two weeks (questions about 15 or more drinks in a row are asked only of 12th grade students).
- Among illicit drugs, *marijuana* shows some of the highest proportions reporting frequent use, with 3.0%, 11.5%, and 17.4% of 8th, 10th, and 12th graders, respectively, reporting use on 20 or more occasions in their lifetime.

Most other illicit drugs have far lower frequencies of using on 20 or more occasions. However, young people may tend to underestimate the frequency with which they have engaged in these behaviors in their lifetime or over a 12-month period, so the extent of frequent use may be somewhat underestimated.⁹

Prevalence of Current Daily Use

Frequent use of illicit or licit drugs is a great concern for the health and safety of adolescents. Tables 4-2 and 4-8, Table 5-4 in Chapter 5, and Figure 4-2 show the prevalence of current daily or near-daily use of the various classes of illicit drugs. For all drugs except cigarettes and smokeless tobacco, respondents are considered current daily users if they report use on 20 or more occasions in the preceding 30 days. Respondents are considered daily users of cigarettes if they explicitly state the use of one or more cigarettes per day in the past 30 days, and daily users of smokeless tobacco if they state using “about once a day” or more often in the past 30 days. Students who consume one or more energy drinks per day or one or more energy shots per day are considered daily users.

- The percentages who reported using one or more *cigarettes* per day in the last 30 days were 0.8%, 1.8%, and 3.6% in grades 8, 10, and 12, respectively. Many of these daily smokers say that they currently smoke a half pack or more per day (0.3%, 0.7%, and 1.5% of all respondents in grades 8, 10, and 12, respectively).
- In 2018 daily use of *marijuana* was more common than daily cigarette smoking in 10th and 12th grade.¹⁰ Daily or near-daily usage levels were 0.7%, 3.4% and 5.8% across 8th, 10th, and 12th grade, respectively.

⁸This behavior is also referred to as “high-intensity drinking” in the alcohol literature. See [here](#) for an expert discussion of terminology for this behavior.

⁹ Bachman, J. G., & O’Malley, P. M. (1981). [When four months equal a year: Inconsistencies in student reports of drug use](#). *Public Opinion Quarterly*, 45, 536–548. Reprinted in E. Singer & S. Presser (Eds.), 1989, *Survey research methods*. Chicago: University of Chicago Press.

¹⁰ Note that definitions of daily use are somewhat different for cigarette and marijuana use, making comparisons only approximate.

- Daily use of *smokeless tobacco* is considerably lower than daily use of cigarettes, at 0.3%, 1.0%, and 1.6% for 8th, 10th, and 12th grade, respectively. The levels among males are quite a bit higher, however, as discussed later in this chapter.
- For many years, *alcohol* was the second most frequently used drug on a daily basis behind cigarettes at all three grade levels, but it has fallen out of the top two as daily marijuana use has risen relative to use of other drugs. The daily prevalence levels for alcohol in 2018 were 0.1%, 0.5%, and 1.2% in grades 8, 10, and 12, respectively.
- Daily use of *all other illicit drugs* is reported by 0.4% or less of 12th grade respondents (Table 4-2). While low, these figures are not inconsequential, because 1% of the high school class of 2018, for example, represents in excess of 30,000 individuals nationwide.
- Ten percent of students in each of the three grades reported daily use of an *energy drink*. In each grade more than 4% of adolescents report consuming two or more of these drinks every day (Table 4-4e). Use of energy drinks is assessed with the question “‘Energy drinks’ are non-alcoholic beverages that usually contain high amounts of caffeine, including such drinks as Red Bull, Full Throttle, Monster, and Rockstar” and respondents are asked to report how many such drinks they consume daily.

Unlike most substances that MTF surveys energy drinks are legal for adolescents to purchase and consume (as are energy ‘shots,’ below). Caffeine is the primary active ingredient in these products and it is not considered an addictive stimulant because it does not produce large surges in dopamine such as those caused by other stimulants like methamphetamine. Nevertheless, use of the high levels of caffeine in these products may cause dependency and result in mild withdrawal symptoms with reductions in use. MTF tracks the extent to which adolescents use these products daily, a high level of use that may have adverse effects and may also negatively interact with use of other drugs.

- Four percent of students in each of the three grades reported daily use of an *energy shot*, which typically come in containers that are just two or three ounces.

NONCONTINUATION RATES

- One indication of the proportion of people who try a drug but do not continue to use it can be derived from calculating the percentage of those who ever used a drug (once or more) but did *not* use it in the 12 months preceding the survey.¹¹ We use the word “noncontinuation” rather than “discontinuation” to describe this situation because the latter term might imply discontinuing an established pattern of use, whereas our current operational definition includes noncontinuation by experimental users as well as established users. Figure 4-3 provides these noncontinuation rates for most drug classes and all three grades in 2018; drugs are ordered from highest to lowest rates based on the ranking shown for 12th graders. This set of three figures shows that noncontinuation rates

¹¹ This operationalization of noncontinuation has an inherent limitation in that users of a given drug who initiated use *during* the past year by definition cannot be noncontinuers. Thus, the definition tends to understate the noncontinuation rate, particularly for drug use initiated late in high school rather than in earlier years or for newly popular drugs.

vary widely by drug. Among 12th graders, the highest noncontinuation rate is observed for *inhalants* (64%), followed by heroin (53%) and *crystal methamphetamine (ice)* (51%). Many inhalants are used primarily at a younger age, and use is often not continued into 12th grade. The rank ordering for noncontinuation of other drugs is as follows: *MDMA (ecstasy, Molly)*, *narcotics other than heroin*, *tranquilizers*, *cocaine other than crack*, *cocaine*, *crack*, *LSD*, *sedatives (barbiturates)*, *amphetamines*, *hallucinogens*, *smokeless tobacco*, and *cigarettes* (all between 30% and 46%).

- The drugs most likely to be continued include *steroids* (only a 29% noncontinuation rate), *methamphetamine* (23%), alcohol use to the point of *being drunk* (21%), *marijuana* (18%), *nicotine vaping* (13%), and any *alcohol* use (9%). Note that several psychotherapeutic drugs are among those with the lowest noncontinuation rates. It is important to recognize, however, that substantial proportions of students who try the various illicit drugs do not continue use, even into later adolescence. (Note: Use of *heroin with and without a needle* is not included due to very low case counts, and PCP is not included because lifetime use is no longer assessed.)
- The low noncontinuation rate of 13% for *nicotine vaping* in 12th grade results in part from its prevalence surge in 2018, which was one of the largest year-to-year increases ever recorded by MTF (discussed more in Chapter 5). All the new users in 2018 who had vaped nicotine in the 12 months prior to the survey would by definition lower the noncontinuation rate. In the absence of a surge the noncontinuation rate would be somewhat higher. Nevertheless, even with a rate higher than its current level we expect in future years nicotine vaping will continue to have one of the lowest of all noncontinuation rates, given that nicotine is a highly addictive substance.
- Because a relatively high proportion of marijuana users continue to use *marijuana* at some level over an extended period, it has consistently had one of the lowest noncontinuation rates in the senior year of any of the illicit drugs (18% in 2018).
- It is noteworthy that, of all the 12th graders who have ever used *crack* (1.5%), only about one third (0.5%) report current use and 0.1% of the total sample report current daily use. While there is no question that crack is highly addictive, evidence from MTF has suggested consistently that it is not addictive on the first use, as was often alleged in the past.
- In contrast to illicit drugs, noncontinuation rates for licit drugs are extremely low. Among 12th grade students *alcohol* has a lifetime prevalence of 59% and an annual prevalence of 53%, yielding a noncontinuation rate of only 9% (53%/59%).
- Noncontinuation had to be defined differently for *cigarettes* because respondents are not asked to report on their cigarette use in the past year. The noncontinuation rate is thus defined as the percentage of those who say they ever smoked “regularly” who also reported not smoking at all during the past 30 days. Of the 12th graders who said they were ever regular smokers, only 30% have ceased active use.

- Noncontinuation is defined for *smokeless tobacco* much the same way as for cigarettes. It also has a relatively low rate of noncontinuation by senior year – only 32% of lifetime regular users did not use in the past 30 days.
- In addition to providing 12th grade data, Figure 4-3 presents comparable data on noncontinuation rates based on responses of 8th and 10th graders. As mentioned above, the drugs have been left in the same order as the rank-ordered drugs in 12th grade to facilitate comparison across grades
- The noncontinuation rates for *inhalants* are very high and rise with grade level (48%, 63%, and 64% in grades 8, 10, and 12).

PREVALENCE COMPARISONS FOR IMPORTANT SUBGROUPS

MTF examines differences in prevalence of drug use associated with gender, college plans, region of the country, population density, parents' education level, and racial/ethnic identification. Tables 4-5 through 4-8 provide statistics on levels of use for these various subgroups for all three grades in 2018. Additional information on demographic differences in drug prevalence and in trends in prevalence by demographic subgroup are presented in [Occasional Paper 92](#).

Gender Differences

In general, higher proportions of males than females are involved in drug use, especially heavy use. Below we note important examples of and qualifications to this generalization.

- *Daily marijuana* use shows substantial differences by gender, and in 2018 12th grade prevalence is more than twice as high for males as compared to females at 7.2% and 3.4%. In the lower grades, levels of use are about 50% higher for males as compared to females. In 10th grade, the respective prevalence levels are 4.2% vs. 2.5%, and among 8th grader the relative prevalence levels are 0.8% compared to 0.5%. *Lifetime prevalence of daily marijuana use for a month or more* is also more common among males as compared to females, at 12% and 9%, respectively, in 12th grade, though not dramatically so.
- Males also have considerably higher prevalence than females on most other illicit drugs – at least by 12th grade. The annual prevalence for 12th grade males, compared to 12th grade females, is more than twice as high for *hallucinogens, LSD, hallucinogens other than LSD, salvia, crack, Ritalin, methamphetamine, crystal methamphetamine (ice), ketamine, and steroids*.. Annual prevalence also tends to be one and a half to two times as high among 12th grade males as among females for *MDMA (ecstasy, Molly), cocaine, cocaine other than crack, heroin, and narcotics the than heroin*. Further, males account for an even greater share of the frequent or heavy users of many of these drugs.
- For many drugs, however, there is less gender difference in use in the lower grades, especially in 8th grade; this includes *marijuana*. For some drugs, females actually have higher levels of annual use in 8th grade (though in most cases, not statistically significantly higher), including *any illicit drug, any illicit drug other than marijuana, inhalants, amphetamines, Adderall, methamphetamine, and tranquilizers*. Thus, the gender

differences observed in 12th grade, with males more likely to use most drugs, emerge over the course of middle to late adolescence. The gender differences in the early grades may result, in part, from females tending to mature earlier and associating with older males (this gender difference may then dissipate as same-age males catch up in physical maturity and substance use opportunities).

- Annual prevalence for *amphetamine* use is higher among females than among males in grade 8, but it becomes higher for males by 12th grade. Indeed, it is due in part to their higher use of amphetamines in 8th grade – some of which may be for the purpose of weight loss – that females show higher levels of using some *illicit drug other than marijuana* in 8th grade. (Eighth grade females also tend to be higher than males in annual *tranquilizer* use.)
- Daily use of *energy drinks* is more popular among males, who have levels of use at least 50% higher than females in all grades.
- Among 12th graders, males are somewhat more likely to report using some *illicit drug other than marijuana* during the last year (13.9% for males versus 9.7% for females). In 8th and 10th grades the prevalence levels do not differ much by gender (Table 4-6 and Figure 5-7 in Chapter 5). If going beyond marijuana is an important threshold point in the sequence of illicit drug use, then fairly similar proportions of both genders at 8th and 10th grade appear willing to cross that threshold at least once during the year. However, on average, female users take fewer types of drugs and tend to use them with less frequency than their male counterparts do.
- Frequent alcohol use tends to be somewhat higher among males in 12th grade. Among 12th graders, *daily alcohol* use is reported by 1.6% of males versus 0.5% of females. Similarly, *binge drinking* is reported by 16% of males versus 12% of females, and *being drunk* in the past 30 days is reported by 19% of males versus 16% of females. Gender differences in these behaviors are smaller in 8th and 10th grades, with females sometimes being slightly higher than males.
- *Cigarette* smoking prevalence levels (30-day, daily, and half-pack or more per day) are currently higher among males than among females in 12th grade and 10th grade. Differences are minimal in 8th grade.
- *Vaping nicotine* in the past year follows the common pattern of higher prevalence among males as compared to females in 12th grade, at 33% vs. 27%. Prevalence differences by gender were negligible at the younger grades.
- Gender patterns for *vaping marijuana* are similar to that for vaping nicotine. In 12th grade gender differences were pronounced, with past year prevalence levels of 15% for males and 10% for females. Gender differences were negligible at the younger grades.
- Use of *smokeless tobacco* is almost exclusively a male behavior. Compared to 7.6% of 12th grade males in 2018 who reported some use in the prior month, only 1.0% of females did.

Prevalence of daily use by males is 0.5%, 1.8%, and 3.2% among 8th, 10th, and 12th graders, respectively. The comparable statistics for females are only 0.1%, 0.2%, and 0.3%, respectively.

- The use of other tobacco products like *hookah*, *large cigars*, *regular and flavored little cigars*, *dissolvable tobacco*, and *snus* also tends to be concentrated among males (Tables 4-6 and 4-7).
- Both *any nicotine use* and *any nicotine use other than vaping* in the past 30 days are substantially higher for males than females (these measures currently available in 12th grade only). “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.
- The use of *anabolic steroids* is concentrated among males in 12th grade, with prevalence levels of 1.5% for males compared to 0.4% for females. In 10th and 8th grade gender differences are negligible.
- Past-year use of over-the-counter *diet pills* is higher among females, with a prevalence level of 4.5% for females as compared to 2.0% for males in 12th grade (the only grade for which this outcome is reported).
- Males are considerably more likely than females to receive *any medication (stimulant or nonstimulant)* for ADHD, for both lifetime and current prevalence in all three grades.

Differences Related to College Plans

Overall, students who say they probably or definitely will graduate from a four-year college program (referred to here as the “college-bound”) have lower levels of illicit drug use in secondary school than those who say they probably or definitely will not (the “noncollege-bound”). (See Tables 4-5 through 4-8 and Figures 5-8 and 5-9 in Chapter 5.)

Today the great majority of students at all three grade levels expect to attend and graduate from a four-year college: 89% in 8th grade, 87% in 10th grade, and 81% in 12th grade (calculated from first three columns of Table 4-6). The proportions indicating college plans are higher at the lower grade levels, even though future high school dropouts (about 6% of today’s high school classes) are still contained in these samples. Cohort shifts in college attendance that have taken place since MTF began may partially explain this apparent anomaly, but there is probably a considerable age effect as well, wherein early aspirations become reality-tested (and adjusted) as secondary school experience cumulates and academic performance levels become more clearly established.

For any given drug, the differences between these two self-identified groups of college- or noncollege-bound students tend to be greatest in 8th grade, perhaps due to the inclusion of future high school dropouts, or the tendency of noncollege-bound students to have an earlier age of initiation of use, or both.

- Annual *marijuana* use, for example, was reported in 2018 by 35% of college-bound 12th graders versus 40% of the noncollege-bound; but among 8th graders it is reported by only 9% of the college-bound versus 22% of the noncollege-bound.
- Among 12th graders in 2018 use of *any illicit drug other than marijuana* in the prior year was almost 50% higher for the noncollege-bound compared to collegebound youth, at 16% and 11%, respectively (Table 4-6).
- Frequent use of many illicit drugs shows larger contrasts related to college plans (Table 4-8). *Daily marijuana* use, for example, is about five times as likely among the noncollege-bound as it is among the college-bound in 8th grade, about three times as likely in 10th grade, and about twice as likely in 12th grade. *Lifetime prevalence of daily marijuana use for a month or more* shows the same concentration among the noncollege-bound, for whom prevalence is 19% as compared to 8% among the college-bound in 12th grade (this outcome not measured in the lower grades).
- An examination of Table 4-6 shows that quite large ratio differences are found between the college-bound and the noncollege-bound for annual prevalence of use on virtually *all illicit drugs other than marijuana*; ratios tend to be highest in the earlier grades with the noncollege-bound having higher annual prevalence.
- Levels of frequent *alcohol* use are also considerably higher among the noncollege-bound. For example, *daily drinking* is reported by 2.4% of the noncollege-bound 12th graders versus 0.7% of the college-bound. *Binge drinking* (five or more drinks in a row at least once during the preceding two weeks) has less of a relative difference; it is reported by 17% of the noncollege-bound 12th graders versus 13% of the college-bound. There are fewer differences between the noncollege-bound and college-bound 12th graders in lifetime (58% vs. 59%), annual (52% vs. 55%), and 30-day (31% vs. 30%) prevalence of alcohol use. In the lower grades, the differences are larger in the various drinking measures between those who expect to go to college and those who do not (Tables 4-5 through 4-8). As shown in earlier editions of *Volume II*¹² in this monograph series, the college-bound eventually increase their binge drinking to a level exceeding that of the noncollege-bound – an important reversal with age and the changes it brings in social context.
- Noncollege bound students are more likely to receive *any medication* for ADHD, either *stimulant* or *nonstimulant* drugs. This has held generally for lifetime and current prevalence in each grade. The exception is current use of stimulant-type ADHD medications in 12th grade during the past 30 days, which does not show much variation by college plans.
- Noncollege-bound students are much more likely to use *energy drinks*, in all grades. The difference in use levels for noncollege-bound compared to college-bound are striking, at 20% v. 9% in 8th grade, 18% v. 8% in 10th grade, and 19% v. 8% in 12th grade.

¹² Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A. & Patrick, M. E. (2018). *Monitoring the Future national survey results on drug use, 1975-2017: Volume II, college students and adults ages 19-55*. Ann Arbor: Institute for Social Research, The University of Michigan.

- At all three grade levels, noncollege-bound students are more likely to use *steroids* compared to college-bound students.
- By far, the largest and most dramatic difference in substance use between the college- and noncollege-bound involves *cigarette* smoking – 0.8% of college-bound 12th graders report smoking a *half-pack or more daily* compared to 3.1% of the noncollege-bound. Proportional differences are even larger in the lower grades: 0.1% of college-bound versus 1.1% of noncollege-bound students in 8th grade and 0.4% versus 2.1%, respectively, in 10th grade. (The absence of dropouts undoubtedly reduces the ratio at 12th grade, because dropouts have very high levels of smoking as shown in Table A-1 in Appendix A.)
- In part because of the concentration of cigarette smoking among the noncollege-bound, both *any nicotine use* and *any nicotine use other than vaping* in the past 30 days are much higher for the noncollege-bound (these measures currently available in 12th grade only). “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.
- Vaping of all substances is higher for the noncollege-bound youth. Differences are particularly pronounced in 8th grade, with noncollege-bound youth twice as likely to vape nicotine, three times as likely to vape marijuana, and more than 50% more likely to vape ‘just flavoring’ in comparison to the college-bound. In 10th and 12th grades the noncollege-bound still have higher levels of vaping than the college bound, although the differences are smaller. The one exception is vaping of “just flavoring” in 12th grade, for which the difference between the two groups is negligible.
- As with cigarettes, use of *dissolvable tobacco, large cigars, flavored and regular little cigars, hookah* and *smokeless tobacco* use, including the use of *snus*, is substantially higher among the noncollege-bound than among the college-bound in all three grades (Table 4-7).

Regional Differences

Figure 4-4 provides a map showing the states included in the four regions of the country as defined by the United States Census Bureau – the Northeast, Midwest, South, and West (see Appendix B for detailed descriptions). The MTF study design is intended to permit such regional comparisons, but is not designed to permit state-level estimates, which would require far larger samples. Regional differences in drug use levels for the current year are provided in Tables 4-5 through 4-8 for grades 8, 10, and 12; Figures 5-10a through 5-10c provide graphical displays over time for selected drugs for 12th graders. Additional information on differences in drug prevalence by region are presented in [Occasional Paper 92](#).

- In 2018, the overall prevalence levels of *any illicit drug* use in the last 12 months differ some among the regions, but the differences are not consistent across grades. As examples, among 12th graders the South is lowest at 35% compared to the other three regions (at 40%–43%); among 8th graders the Northeast is lowest, and among 10th graders the Midwest is

lowest. These comparisons do not always replicate across years and most are not statistically significant.

- **Marijuana** use and **marijuana vaping** show a regional pattern similar to that for any illicit drug, not surprising given that marijuana (the most prevalent illicit drug) tends to drive the index.
- Regional variation in use in the past 12 months of **any illicit drug other than marijuana** is relatively small, with prevalence ranging from 3.6% to 8.2% among 8th graders, 7.4% to 10.3% among 10th graders, and 12% to 13% among 12th graders.
- The largest observed regional differences were previously in **cocaine** use, with the West tending to have the highest level of use. Recent regional differences in annual prevalence of cocaine use are much smaller, ranging from 0.5% to 1.4% in 8th grade, from 1.0% to 2.1% in 10th grade, and from 1.7% to 3.5% in 12th grade.
- **Tranquilizer** use in the past 12 months is lowest in the Northeast in all three grades.
- Past 12 month use of **sedatives (barbiturates)**, reported only for 12th grade, does not vary greatly by region, with a narrow range of prevalence from 2.5% to 2.9%.
- **Rohypnol** – which, like tranquilizers and sedatives (barbiturates), is a central nervous system depressant – does not show consistent regional differences across grades.
- Use of **MDMA** (ecstasy, Molly) in the last 12 months was higher in the West in 2018 among 12th graders. Annual prevalence among 12th grade students was at 3.1% in the West, which compares with 1.6% in the Northeast, 1.8% in the South, and 2.2% in the Midwest. Regional differences are smaller in the lower grades.
- Past year prevalence of **salvia** among 12th grade students was highest in Northeast, at 2.3%. The level varied between 0.2% and 1.2% in the other three regions. It was highest in the West at 10th grade. This regional difference is not present in 8th grade.
- For many years, the 30-day prevalence of **alcohol** use among 12th graders has been somewhat lower in the South and West than in the Northeast and Midwest regions, though there has been less regional difference in the lower grades. In 2018, regional differences were more modest, and 12th graders in the Northeast had a higher 30-day prevalence (33%) than the other regions (29%–30%).
- **Daily smoking** is lowest in the Northeast in all three grades (Table 4-8).
- Among 12th graders in 2018, prevalence of smoking tobacco with a **hookah** in the past year is lower in the South (5.8%) and the West (7.5%), and is higher in the Midwest (8.7%) and the Northeast (11.9%). Regional differences in hookah use do not show a consistent replication; while the Northeast had the highest level of use this year, last year it had the lowest.

- In 2018 use of *smokeless tobacco* in the past 30 days did not vary consistently across regions. In 12th grade prevalence was highest in the Midwest, in 10th grade it was highest in the South, and in 8th grade it was highest in the Northeast. Regional differences in the use of *snus* in the past 12 months also differed by grade.

Differences Related to Population Density

Three levels of population density (or urbanicity) have been distinguished for analytical purposes: (a) large Metropolitan Statistical Areas (large MSAs), (b) other metropolitan statistical areas (other MSAs), and (c) non-MSAs. (See Appendix B for exact definitions.)

Differences in drug use across these various-sized communities are generally small, reflecting how widely drug use has diffused through the population (Tables 4-5 through 4-8). There are a few minor exceptions:

- *Marijuana vaping* increases with population density (Table 4-6). It is nearly twice as common in the large MSAs as compared to the small MSAs in all three grades.
- *Cigarette* use in the past 30 days generally has been inversely related to community size at all three grade levels (see Table 4-7 showing 30-day prevalence). Prevalence in non-MSAs as compared to large MSAs is about double in 12th and 10th grade, and about three times as high in 8th grade. The differences illustrate the extent to which cigarette smoking is a rural phenomenon as well as one concentrated among the less educated.
- *Smokeless tobacco* use is similar to cigarette use in that it tends to be highest in non-MSAs at all three grade levels. For example, among 12th graders, 30-day prevalence is 1.7% in large MSAs, 4.3% in other MSAs, and 8.4% in non-MSAs. Daily use of smokeless tobacco also is concentrated in more rural areas (Table 4-8). Similarly, use of *snus* is highest in non-MSAs in all three grades.
- Consistent with trends in cigarette and smokeless tobacco, *any nicotine use* is concentrated in more rural areas. This concentration is driven by *any tobacco use other than vaping*, which is almost twice as common in non-MSAs in comparison to large MSAs (with 25% and 14% prevalence in the past 30 days, respectively). Levels of *nicotine vaping* differ little by population density. “Any nicotine use other than vaping” is indicated by any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

Differences Related to Parental Education

The best indicator of family socioeconomic status (SES) available in the MTF study is an index of parental education, which is based on the average of the educational levels reported for both parents by the respondent (or on the data for one parent, if data for both are not available). The respondent is instructed to indicate on the following scale the highest level of education each parent attained: (1) completed grade school or less, (2) some high school, (3) completed high school, (4) some college, (5) completed college, and (6) graduate or professional school after college. (It should be noted that the average educational level obtained by students’ parents has risen over the

years, as discussed in Chapter 5.) Tables 4-5 through 4-8 give the distributions for the prevalence of use at each grade level.

By 12th grade there is little association between family SES and most illicit drug use. This again speaks to the extent to which illicit drug use has permeated all social strata in American society.

However, an examination of Table 4-6 shows that in 8th grade, there tends to be a negative, largely monotonic relationship between socioeconomic level and annual prevalence of use of a number of drugs. The relationships are not always entirely monotonic because of racial and ethnic differences in SES, which will be discussed in the final section of this chapter.

- Many of the SES differences seen in 8th grade have diminished substantially or disappeared completely by 10th or 12th grade. This is true for *marijuana, inhalants, hallucinogens, LSD, hallucinogens other than LSD, MDMA* (ecstasy, Molly), *amphetamines*, and *tranquilizers*; but *not* for *synthetic marijuana, cocaine*, and *heroin*. For these latter drugs, the lower strata (or lowest SES stratum in some cases) generally continue to have the highest proportion of users, even at the upper grade levels. The diminished SES differences by 12th grade could be explained by the higher SES teenagers “catching up” with their more experienced peers from lower SES backgrounds, or by differential rates of dropping out of school out among the strata, or both.
- In 2018 the annual prevalence of *marijuana* use, for example, is more than three times as high in the lowest SES stratum as in the highest one among 8th graders (16% versus 5.2%, respectively), about one-third higher among 10th graders (31% versus 24%), but the same among 12th graders (both at 33%).
- Thirty-day prevalence of *alcohol* use is also negatively associated with SES in 8th grade, but that association declines in upper grades and becomes positively correlated with SES by 12th grade. The prevalence of getting *drunk* in the prior 30 days follows this same pattern by grade.
- Past 12-month *nicotine vaping* and *marijuana vaping* are concentrated among lower SES families in 8th grade, are about equally distributed across SES strata in 10th grade, and then are concentrated among higher SES families in 12th grade.
- Current use of either *non-stimulant-type* or *stimulant-type ADHD medication* is higher in the upper SES groups in 10th and 12th grades. To the extent that children from high-SES families tend to be treated more for ADHD than others, it probably reflects that those families are more likely to receive professional assessment and treatment.
- *Daily cigarette smoking* tends to bear a strong inverse relationship with parental education in all three grades (Table 4-8), indicating that cigarette smoking has become particularly concentrated among the children of less educated families.
- *Daily use of energy drinks* is concentrated in the lower social strata in all grades.

Racial/Ethnic Differences

Racial/ethnic comparisons are made here for students who identify exclusively as African American, Hispanic, or White.¹³ Although the MTF design did not include an oversampling of any racial/ethnic minority groups, the large overall sample sizes at each grade level do produce fair numbers of African-American and Hispanic respondents, and the size of these populations has increased in recent decades. Additionally, in the findings presented in this volume, we routinely present combined data from two adjacent years to augment the sample sizes on which estimates for these two minority groups (as well as Whites) are based and, thus, increase the reliability of the estimates. Otherwise, misleading findings about the size of racial/ethnic differences may emerge, as well as (and perhaps more importantly) misleading findings about their trends. We caution the reader that the sampling error of differences among groups is likely to be larger than would be true for other demographic and background variables such as gender or college plans because African Americans and Hispanics are more likely to be clustered by neighborhood, and therefore by school.

Tables 4-5 to 4-8 give the two-year *combined* (i.e., 2017–2018) prevalence estimates for lifetime, annual, 30-day, and selected daily use for the three racial/ethnic groups at all three grade levels, along with the numbers of cases upon which the estimates are based on the first page of each table.

For a number of years, 12th grade African-American students reported lifetime, annual, 30-day, and daily prevalence levels for nearly all drugs that were lower – sometimes dramatically so – than those for White or Hispanic 12th graders. That is less true today, with levels of drug use among African Americans more similar to the other groups. This narrowing of the gap between African Americans and other racial/ethnic groups is also seen in 8th and 10th grade, indicating that this narrowing in 12th grade is almost certainly *not* due primarily to differential dropout rates.

- Whites have the lowest levels of annual *marijuana* use in 8th grade, at 7.5% compared to 10.7% and 12.4% for African American and Hispanic students, respectively. In 10th and 12th grade annual marijuana use differs little by race/ethnicity.

¹³ We recognize that these categories are broad. The Hispanic category encompasses people with various Latin American, Caribbean, and European origins, but for the purposes of this monograph the sample sizes are unfortunately too small to differentiate among them in any one year. In addition, small numbers of cases present challenges in detailed analysis of students who indicate membership in the other racial/ethnic groups, as well as those who indicate membership in multiple racial/ethnic groups and the many specific combinations these students comprise. For more complete treatments of racial/ethnic differences, as well as interactions with other demographic characteristics, see Miech, R. A., Terry-McElrath, Y. M., O'Malley, P. M., & Johnston, L. D. (2019). [Increasing marijuana use for black adolescents in the United States: A test of competing explanations](#). *Addictive Behaviors*, 93, 59-64; Terry-McElrath, Y. M., & Patrick, M. E. (2018). [U.S. adolescent alcohol use by race/ethnicity: Consumption and perceived need to reduce/stop use](#). *Journal of Ethnicity in Substance Abuse*, 1-25; Bachman, J. G., O'Malley, P. M., Johnston, L. D., Schulenberg, J. E., & Wallace, J. M., Jr. (2011). [Racial/ethnic differences in the relationship between parental education and substance use among U.S. 8th-, 10th-, and 12th-grade students: Findings from the Monitoring the Future Project](#). *Journal of Studies on Alcohol and Drugs*, 72(2), 279-285; Bachman, J. G., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2010). [Impacts of parental education on substance use: Differences among White, African-American, and Hispanic students in 8th, 10th, and 12th grades \(1999-2008\)](#) (Monitoring the Future Occasional Paper No. 70). Ann Arbor, MI: Institute for Social Research; Wallace, J. M., Jr., Vaughn, M. G., Bachman, J. G., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2009). [Race/ethnicity, socioeconomic factors, and smoking among early adolescent girls in the United States](#). *Drug and Alcohol Dependence*, 104(Suppl. 1), S42–S49; Delva, J., Wallace, J. M., Jr., O'Malley, P. M., Bachman, J. G., Johnston, L. D., & Schulenberg, J. E. (2005). [The epidemiology of alcohol, marijuana, and cocaine use among Mexican American, Puerto Rican, Cuban American, and other Latin American 8th grade students in the United States: 1991–2002](#). *American Journal of Public Health*, 95, 696–702; Wallace, J. M., Jr., Bachman, J. G., O'Malley, P. M., Johnston, L. D., Schulenberg, J. E., & Cooper, S. M. (2002). [Tobacco, alcohol, and illicit drug use: Racial and ethnic differences among U.S. high school seniors, 1976–2000](#). *Public Health Reports*, 117 (Supplement 1), S67–S75; Bachman, J. G., Wallace, J. M., Jr., O'Malley, P. M., Johnston, L. D., Kurth, C. L., & Neighbors, H. W. (1991). [Racial/ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976–1989](#). *American Journal of Public Health*, 81, 372–377.

- A number of drugs have consistently been much less popular among African-American teens than among White teens. These include *nicotine vaping, marijuana vaping, use of hallucinogens, and nonmedical use of sedatives (barbiturates), tranquilizers, and narcotics other than heroin*. Several additional drugs have historically been less popular among African-American teens but did not show much difference in 2018 among 8th graders, though they still are less popular in the upper grades. These include *LSD, MDMA* (ecstasy, Molly), *cocaine* (in recent years), *cocaine other than crack*, and *nonmedical use of amphetamines* and *Vicodin*. (African American levels of Vicodin use are actually highest in 8th grade, but lowest in 10th and 12th grade.)
- By 12th grade, White students have the highest lifetime and annual prevalence levels among the three major racial/ethnic groups for many substances, including *marijuana, LSD, hallucinogens other than LSD, MDMA* (ecstasy, Molly), and *nonmedical use of narcotics other than heroin, amphetamines, and tranquilizers*. They also have the lowest lifetime and annual prevalence of *alcohol* use and *being drunk*. Not all of these findings are replicated at lower grade levels, however. See Tables 4-5 and 4-6 for specifics.
- Hispanics in 2018 had the highest annual prevalence at all three grade levels for *synthetic marijuana, cocaine, crack, and cocaine other than crack*. It bears repeating that Hispanics have a considerably higher dropout rate than Whites or African Americans, based on Census Bureau statistics, which should tend to diminish any such differences by 12th grade, yet there remain sizeable differences even in the upper grades.
- In 8th grade – before most dropping out occurs – Hispanics had the highest levels of use of almost all substances, whereas by 12th grade Whites have the highest levels of use of most. Certainly the considerably higher dropout rate among Hispanics could help explain this shift, and it may be the most plausible explanation. Another explanation worth consideration is that Hispanics may tend to start using drugs at a younger age, but Whites overtake them at older ages. These explanations are not mutually exclusive, of course, and to some degree both explanations may hold true.¹⁴
- Table 4-8 shows that White students have by far the highest prevalence of *daily cigarette smoking* while African American and Hispanic students are now fairly close to each other among all three grades, for example, 12th grade Whites have a 5.0% daily smoking prevalence, Hispanics, 1.8%, and African Americans, 2.0%.
- Thirty-day prevalence of *smokeless tobacco* use is highest among White students in all three grades.
- African-American students have the lowest 30-day prevalence for *alcohol* use in all three grades. They also have the lowest prevalence for self-reports of having *been drunk* during

¹⁴ A more extensive discussion of possible explanations (including the possibility of differential validity of reporting) can be found in Wallace, J. M., Jr., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1995). Racial/ethnic differences in adolescent drug use: Exploring possible explanations. In G. Botvin, S. Schinke, & M. Orlandi (Eds.), *Drug abuse prevention with multi-ethnic youth* (pp. 59–80). Thousand Oaks, CA: Sage.

the prior 30 days. The differences are largest at 12th grade, with 23% of Whites reporting having been drunk, 13% of Hispanics, and 10% of African Americans.

- Recent **binge drinking** (having five or more drinks in a row during the prior two weeks) is also lowest among African Americans in all three grades; in 12th grade, their level of use is 7.4% versus 19% for Whites and 12% for Hispanics. The corresponding prevalence levels for 10th grade are 3.9% for African Americans vs. 10.5% for Whites and 10.8% for Hispanics. In 8th grade, Hispanics have the highest prevalence at 5.2% compared to 2.9% for Whites and 2.6% for African Americans.
- There are important differences in ADHD treatment related to student race/ethnicity. In general, White students are considerably more likely to have used prescription ADHD drugs at each grade than African American or Hispanic students. Current use of **either subclass** of drugs (stimulant or non-stimulant) is also substantially higher among White students than among African American or Hispanic students in all three grades, with the exception that these differences are somewhat smaller for non-stimulant drugs in grades 10 and 12. In all three grades, African Americans and Hispanics have lifetime levels of use that are close to each other. However, in 8th grade, Hispanics have a somewhat lower level than African Americans in current use of each class of drugs and of any ADHD drug, while in 10th and 12th grade there is little difference in their use. As to why White students are more likely to be treated with ADHD drugs than African American and Hispanic students, it again may well be due to White families being more likely to get access to, or being able to afford, professional assessment and treatment.
- Levels of past-year use for **diet pills** are highest for Whites. In 2018, levels of past-year use were about two times as high for Whites as compared to Hispanics, at 4.4% and 1.9% respectively. Racial/ethnic differences have diminished in recent years as overall prevalence has declined.
- Levels of past-year use of **stay-awake pills** are about twice as high for Whites as they are for African Americans, at 2.2% and 1.1%, respectively, with Hispanic levels closer to Whites at 1.8%. Differences in these groups were larger in past years when overall prevalence was higher. Use of stay-awake pills has not varied consistently by any of the other subgroup categories.
- In all grades Whites have the lowest levels of **medical marijuana** use, although overall use levels are low. In 10th and 12th grade the differences are the largest, with use levels among Whites less than half of those among Hispanics and African Americans.

TABLE 4-1a
Lifetime Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Any Illicit Drug ^a	16.8	18.7	20.6	34.0	36.3	38.5	45.8	47.8	49.8
Any Illicit Drug other than									
Marijuana ^a	8.9	9.8	10.7	12.8	14.2	15.6	17.6	18.9	20.2
Any Illicit Drug including									
Inhalants ^{a,b}	21.1	23.2	25.4	36.2	38.7	41.2	46.8	49.0	51.2
Marijuana/Hashish	12.2	13.9	15.6	30.2	32.6	34.9	41.5	43.6	45.7
Inhalants ^{b,c}	7.9	8.7	9.5	5.8	6.5	7.2	3.7	4.4	5.1
Hallucinogens ^l	1.7	2.2	2.6	3.3	3.9	4.5	5.7	6.6	7.4
LSD ^l	1.0	1.4	1.7	2.4	2.8	3.3	4.5	5.1	5.7
Hallucinogens other than LSD ^l	1.2	1.5	1.8	2.2	2.7	3.1	3.8	4.5	5.2
Ecstasy (MDMA) ^{e,f}	1.3	1.6	2.0	2.0	2.4	2.9	3.4	4.1	4.8
Cocaine	1.2	1.4	1.7	1.5	2.6	3.6	3.3	3.9	4.4
Crack	0.7	0.9	1.1	0.7	1.0	1.2	1.3	1.5	1.8
Cocaine other than Crack ^g	0.9	1.2	1.4	1.3	2.4	3.5	2.7	3.3	4.0
Heroin ^c	0.4	0.6	0.8	0.2	0.4	0.5	0.6	0.8	0.9
With a Needle ^{b,c}	0.2	0.4	0.5	0.1	0.2	0.4	0.3	0.5	0.6
Without a Needle ^{b,c}	0.2	0.3	0.5	0.1	0.2	0.3	0.3	0.6	0.8
Narcotics other than Heroin ^h	—	—	—	—	—	—	5.4	6.0	6.7
Amphetamines ^h	5.3	5.9	6.6	7.8	8.6	9.3	7.7	8.6	9.6
Methamphetamine ^{f,i}	0.4	0.7	1.0	0.5	0.8	1.1	0.4	0.7	1.0
Crystal Methamphetamine (Ice) ^f	—	—	—	—	—	—	0.7	1.1	1.6
Sedatives (Barbiturates) ^h	—	—	—	—	—	—	3.7	4.2	4.7
Tranquilizers ^h	3.2	3.5	3.9	5.2	6.0	6.8	5.9	6.6	7.3
Rohypnol ^{d,j}	0.3	0.7	1.0	0.2	0.5	0.8	—	—	—
Alcohol	21.9	23.5	25.2	41.0	43.0	45.1	56.4	58.5	60.6
Been Drunk ^f	8.3	9.2	10.1	24.2	26.2	28.3	40.1	42.9	45.6
Flavored Alcoholic Beverages ^{d,i}	16.0	18.0	20.0	33.0	35.9	38.8	46.8	50.4	54.0
Cigarettes	7.9	9.1	10.3	14.1	16.0	17.8	22.0	23.8	25.6
Smokeless Tobacco ^{d,e}	5.2	6.4	7.5	8.7	10.0	11.3	8.3	10.1	12.0
Any Vaping ^{f,i}	19.2	21.5	23.8	34.0	36.9	39.8	38.9	42.5	46.1
Vaping Nicotine ^{f,i}	11.7	13.5	15.2	25.8	28.6	31.5	30.1	34.0	37.9
Vaping Marijuana ^{f,i}	4.5	5.5	6.5	12.6	14.2	15.9	14.0	15.6	17.3
Vaping Just Flavoring ^{f,i}	17.2	19.4	21.5	29.1	31.7	34.3	31.0	34.1	37.2

Table continued on next page.

TABLE 4-1a (cont.)
Lifetime Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Steroids ^{b,h}	0.9	1.1	1.3	1.0	1.2	1.4	1.2	1.6	2.0
Legal Use of Over-the-Counter Stimulants									
Diet Pills ^d	—	—	—	—	—	—	5.0	6.2	7.4
Stay-Awake Pills ^d	—	—	—	—	—	—	2.6	3.6	4.6
Legal Use of Prescription ADHD Drugs									
Stimulant-Type ^f	5.9	7.1	8.4	7.1	8.2	9.3	7.0	8.6	10.1
Non-Stimulant-Type ^f	3.6	4.4	5.1	4.2	5.1	6.1	5.1	6.1	7.1
Either Type ^f	9.6	11.0	12.4	10.8	12.1	13.4	10.7	12.7	14.7

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-1d.

TABLE 4-1b
Annual Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Any Illicit Drug ^a	11.8	13.4	14.9	27.9	29.9	31.9	36.8	38.8	40.8
Any Illicit Drug other than Marijuana ^a	5.4	6.1	6.8	8.5	9.6	10.6	11.4	12.4	13.5
Any Illicit Drug including Inhalants ^{a,b}	14.2	16.0	17.8	28.8	31.0	33.3	37.8	40.2	42.5
Marijuana/Hashish	9.1	10.5	11.8	25.5	27.5	29.5	33.9	35.9	38.0
Synthetic Marijuana ^{e,f}	1.1	1.6	2.0	2.3	2.9	3.6	2.8	3.5	4.2
Inhalants ^c	3.9	4.6	5.2	2.0	2.4	2.8	1.2	1.6	1.9
Hallucinogens ^l	1.1	1.4	1.7	2.2	2.7	3.1	3.5	4.3	5.0
LSD ^l	0.7	0.9	1.1	1.6	2.0	2.3	2.6	3.2	3.7
Hallucinogens other than LSD ^l	0.7	0.9	1.1	1.4	1.7	2.1	2.1	2.7	3.2
PCP ^d	—	—	—	—	—	—	0.3	1.1	1.8
Ecstasy (MDMA) ^{e,f}	0.8	1.1	1.3	1.1	1.4	1.7	1.5	2.2	2.8
Salvia ^{f,i}	0.3	0.6	0.9	0.5	0.7	1.0	0.4	0.9	1.4
Cocaine	0.6	0.8	1.0	0.9	1.5	2.2	1.9	2.3	2.7
Crack	0.3	0.4	0.5	0.3	0.6	0.8	0.7	0.9	1.1
Cocaine other than Crack ^g	0.5	0.7	0.8	0.8	1.4	2.1	1.6	2.0	2.3
Heroin ^c	0.2	0.3	0.5	0.1	0.2	0.3	0.2	0.4	0.5
With a Needle ^{b,c}	0.1	0.2	0.3	0.0	0.1	0.2	0.2	0.3	0.5
Without a Needle ^{b,c}	0.1	0.2	0.3	0.0	0.1	0.2	0.1	0.2	0.3
Narcotics other than Heroin ^h	—	—	—	—	—	—	3.0	3.4	3.8
OxyContin ^{b,h,i}	0.4	0.8	1.1	1.6	2.2	2.8	1.7	2.3	3.0
Vicodin ^{b,h,i}	0.3	0.6	0.8	0.8	1.1	1.5	1.3	1.7	2.2
Amphetamines ^h	3.2	3.7	4.3	5.1	5.7	6.2	4.8	5.5	6.2
Ritalin ^{f,h,i}	0.2	0.5	0.8	0.6	0.9	1.2	0.5	0.9	1.3
Adderall ^{f,h,i}	1.3	1.8	2.3	3.2	4.1	5.0	3.8	4.6	5.4
Methamphetamine ^{f,i}	0.2	0.4	0.7	0.2	0.4	0.7	0.2	0.5	0.9
Crystal Methamphetamine (Ice) ^f	—	—	—	—	—	—	0.3	0.6	0.8
Bath Salts (Synthetic Stimulants) ^{f,i}	0.5	0.9	1.2	0.3	0.5	0.8	0.3	0.6	0.9
Sedatives (Barbiturates) ^h	—	—	—	—	—	—	2.3	2.7	3.0

Table continued on next page.

TABLE 4-1b (cont.)
Annual Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Tranquilizers ^h	1.8	2.0	2.3	3.3	3.9	4.4	3.3	3.9	4.4
OTC Cough/Cold Medicines ^{f,i}	2.2	2.8	3.4	2.8	3.3	3.9	2.6	3.4	4.2
Rohypnol ^{d,j}	0.1	0.3	0.5	0.1	0.3	0.5	0.3	0.7	1.2
GHB ^d	—	—	—	—	—	—	0.1	0.3	0.6
Ketamine ^f	—	—	—	—	—	—	0.3	0.7	1.1
Alcohol	17.2	18.7	20.1	35.7	37.8	39.9	51.1	53.3	55.5
Been Drunk ^f	5.7	6.5	7.2	19.1	20.9	22.6	30.9	33.9	36.8
Flavored Alcoholic Beverages ^{d,i}	10.7	12.1	13.5	26.3	28.8	31.3	34.6	38.4	42.2
Alcoholic Beverages containing Caffeine ^{f,i}	4.9	6.0	7.2	8.5	9.8	11.1	12.8	14.7	16.6
Tobacco using a Hookah ^b	—	—	—	—	—	—	5.9	7.8	9.8
Small cigars ^d	—	—	—	—	—	—	7.4	9.2	10.9
Snus ^{d,i}	0.9	1.3	1.8	2.3	3.1	3.9	3.6	4.7	5.9
Dissolvable Tobacco Products ^{d,i}	0.3	0.6	0.8	0.7	1.1	1.4	0.7	1.3	1.9
Any Vaping ^{f,i}	15.5	17.6	19.7	29.4	32.3	35.2	33.6	37.3	41.0
Vaping Nicotine ^{f,i}	9.2	10.9	12.5	21.8	24.7	27.5	25.9	29.7	33.5
Vaping Marijuana ^{f,i}	3.5	4.4	5.2	10.7	12.4	14.0	11.5	13.1	14.7
Vaping Just Flavoring ^{f,i}	13.2	15.1	16.9	22.4	24.7	27.0	22.9	25.7	28.6
Steroids ^{b,h}	0.5	0.6	0.8	0.5	0.6	0.8	0.8	1.1	1.4
Androstenedione ^{f,i}	—	—	—	—	—	—	0.2	0.5	0.9
Creatine ^{f,i}	1.2	1.7	2.2	5.1	6.2	7.4	8.1	9.3	10.6
Legal Use of Over-the-Counter Stimulants									
Diet Pills ^d	—	—	—	—	—	—	2.6	3.5	4.5
Stay-Awake Pills ^d	—	—	—	—	—	—	1.6	2.4	3.3

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-1d.

TABLE 4-1c
30-Day Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Any Illicit Drug ^a	6.2	7.3	8.4	16.7	18.3	19.9	22.4	24.0	25.6
Any Illicit Drug other than Marijuana ^a	2.5	3.0	3.5	3.5	4.2	5.0	5.3	6.0	6.6
Any Illicit Drug including Inhalants ^{a,b}	7.0	8.3	9.5	16.9	18.7	20.5	23.1	25.0	27.0
Marijuana/Hashish	4.7	5.6	6.5	15.2	16.7	18.2	20.6	22.2	23.8
Inhalants ^c	1.4	1.8	2.1	0.7	1.0	1.2	0.4	0.7	0.9
Hallucinogens ^l	0.4	0.6	0.7	0.6	0.8	1.0	1.1	1.4	1.7
LSD ^l	0.3	0.4	0.6	0.4	0.5	0.7	0.8	1.0	1.2
Hallucinogens other than LSD ^l	0.2	0.4	0.5	0.3	0.5	0.6	0.7	0.9	1.1
Ecstasy (MDMA) ^{e,f}	0.3	0.4	0.6	0.3	0.4	0.6	0.3	0.5	0.8
Cocaine	0.2	0.3	0.4	0.3	0.6	0.9	0.9	1.1	1.4
Crack	0.1	0.2	0.3	0.1	0.3	0.4	0.4	0.5	0.7
Cocaine other than Crack ^g	0.2	0.3	0.4	0.2	0.5	0.8	0.8	1.0	1.2
Heroin ^c	0.0	0.1	0.2	0.0	0.1	0.1	0.1	0.2	0.3
With a Needle ^{b,c}	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.3
Without a Needle ^{b,c}	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.2
Narcotics other than Heroin ^h	—	—	—	—	—	—	0.8	1.1	1.3
Amphetamines ^{e,f,h}	1.5	1.8	2.2	2.1	2.4	2.8	2.0	2.4	2.8
Methamphetamine ^{f,i}	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.3	0.5
Crystal Methamphetamine (Ice) ^f	—	—	—	—	—	—	0.2	0.4	0.6
Sedatives (Barbiturates) ^h	—	—	—	—	—	—	1.0	1.2	1.4
Tranquilizers ^h	0.7	0.9	1.0	1.0	1.3	1.7	1.0	1.3	1.6
Rohypnol ^{d,j}	0.0	0.3	0.5	0.0	0.1	0.2	—	—	—
Alcohol	7.3	8.2	9.0	17.0	18.6	20.2	28.0	30.2	32.4
Been Drunk ^f	1.7	2.1	2.5	7.3	8.4	9.6	15.0	17.5	20.0
Flavored Alcoholic Beverages ^{d,i}	4.0	4.9	5.8	10.0	11.8	13.6	15.4	18.1	20.7
Cigarettes	1.7	2.2	2.6	3.4	4.2	5.1	6.7	7.6	8.6
Smokeless Tobacco ^{d,e}	1.5	2.1	2.6	3.1	3.9	4.7	3.1	4.2	5.2
Any Vaping ^{f,i}	8.7	10.3	11.9	19.1	21.5	23.9	23.0	26.5	29.9
Vaping Nicotine ^{f,i}	5.0	6.1	7.3	13.9	16.1	18.4	17.4	20.9	24.4
Vaping Marijuana ^{f,i}	2.0	2.6	3.3	5.8	7.0	8.2	6.3	7.5	8.6
Vaping Just Flavoring ^{f,i}	6.7	8.1	9.5	11.4	13.1	14.9	11.6	13.5	15.3
Large Cigars ^{f,m}	1.1	1.7	2.3	2.1	2.8	3.5	4.4	5.2	6.1
Flavored Little Cigar ^{f,m}	2.0	2.6	3.3	3.9	5.3	6.8	7.7	8.9	10.0
Regular Little Cigar ^{f,m}	1.1	1.6	2.0	2.3	3.1	3.9	4.9	5.8	6.8
Tobacco Using a Hookah ^{f,m}	1.2	1.6	2.1	1.7	2.4	3.0	3.4	4.4	5.4

Table continued on next page.

TABLE 4-1c (cont.)
30-Day Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
Any Nicotine Use ^d	—	—	—	—	—	—	28.6	32.5	36.3
Any Nicotine Use other than Vaping ^d	—	—	—	—	—	—	16.1	18.5	20.9
Steroids ^{b,h}	0.2	0.3	0.4	0.2	0.4	0.5	0.5	0.8	1.1
Legal Use of Over-the-Counter Stimulants									
Diet Pills ^d	—	—	—	—	—	—	1.3	1.9	2.6
Stay-Awake Pills ^d	—	—	—	—	—	—	0.6	1.2	1.7
Current, Legal Use of Prescription ADHD Drugs ⁿ									
Stimulant-Type ^f	2.8	3.7	4.5	3.1	3.9	4.7	2.6	3.5	4.3
Non-Stimulant-Type ^f	0.8	1.2	1.7	1.0	1.4	1.9	1.8	2.6	3.3
Either Type ^f	4.2	5.2	6.3	4.2	5.1	6.1	4.6	5.9	7.2

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-1d.

TABLE 4-1d
Daily Prevalence of Use for 8th, 10th, and 12th Graders, 2018,
With Ninety-Five Percent Confidence Limits

(Approximate weighted Ns: 8th grade = 14,000, 10th grade = 14,300, 12th grade = 13,300)

	8th Grade			10th Grade			12th Grade		
	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit	Lower limit	Observed estimate	Upper limit
Marijuana/Hashish									
Used Daily in Past 30 Days ^k	0.5	0.7	1.0	2.8	3.4	4.1	4.9	5.8	6.6
Ever Used Daily for Month or More in Lifetime ^d	—	—	—	—	—	—	10.3	12.3	14.3
Alcohol									
Daily ^k	0.1	0.1	0.2	0.3	0.5	0.7	0.9	1.2	1.5
Been Drunk ^f	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.7	1.0
5+ Drinks in a Row in Last 2 Weeks	3.2	3.7	4.1	7.6	8.7	9.8	12.2	13.8	15.4
Cigarettes									
Daily	0.6	0.8	1.1	1.3	1.8	2.4	3.0	3.6	4.3
1/2 Pack+/Day	0.2	0.3	0.5	0.4	0.7	0.9	1.1	1.5	1.9
Smokeless Tobacco ^{d,e}	0.1	0.3	0.5	0.6	1.0	1.5	1.0	1.6	2.2

Source. The Monitoring the Future study, the University of Michigan.

See footnotes on the following page.

Footnotes for Tables 4-1a through 4-1d

Notes. '—' indicates data not available.

^aFor 12th graders only: Use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders only: The use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

^bFor 12th graders only: Data based on three of six forms; N is three sixths of N indicated.

^cFor 8th and 10th graders only: Data based on three of four forms; N is four sixths of N indicated.

^dFor 12th graders only: Data based on one of six forms; N is one sixth of N indicated.

^eFor 8th and 10th graders only: Data based on two of four forms; N is one half of N indicated. For MDMA data based on three of four forms N is five sixths of N indicated.

^fFor 12th graders only: Data based on two of six forms; N is two sixths of N indicated. For MDMA data based on three of six forms N is one half of N indicated. For androstenedione data based on one of six forms beginning in 2016; N is one sixth of N indicated.

^gFor 12th graders only: Data based on four of six forms; N is four sixths of N indicated.

^hOnly drug use not under a doctor's orders is included here.

ⁱFor 8th and 10th graders only: Data based on one of four forms; N is one third of N indicated. Androstenedione was dropped from the 8th and 10th grade survey in 2016.

^jFor 8th and 10th graders only: Data based on one of four forms; N is one sixth of N indicated.

^kDaily use of marijuana and alcohol is defined as use on 20 or more occasions in the past 30 days.

^lFor 12th graders only: Data based on five of six forms; N is five sixths of N indicated.

^mFor 8th and 10th graders only: Data based on two of four forms; N is one third of N indicated.

ⁿFor the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

TABLE 4-2
Prevalence of Use of Various Drugs
for 8th, 10th, and 12th Graders, 2018

	Lifetime			Annual			30-Day			Daily		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	14,000	14,300	13,300	14,000	14,300	13,300	14,000	14,300	13,300	14,000	14,300	13,300
Any Illicit Drug ^a	18.7	36.3	47.8	13.4	29.9	38.8	7.3	18.3	24.0	—	—	—
Any Illicit Drug other than Marijuana ^a	9.8	14.2	18.9	6.1	9.6	12.4	3.0	4.2	6.0	—	—	—
Any Illicit Drug including Inhalants ^{a,b}	23.2	38.7	49.0	16.0	31.0	40.2	8.3	18.7	25.0	—	—	—
Marijuana/Hashish	13.9	32.6	43.6	10.5	27.5	35.9	5.6	16.7	22.2	0.7	3.4	5.8
Ever Used Daily for Month or More in Lifetime ^f	—	—	—	—	—	—	—	—	—	—	—	12.3
Synthetic Marijuana ^{c,d}	—	—	—	1.6	2.9	3.5	—	—	—	—	—	—
Inhalants ^b	8.7	6.5	4.4	4.6	2.4	1.6	1.8	1.0	0.7	—	—	*
Hallucinogens ^{e,m}	2.2	3.9	6.6	1.4	2.7	4.3	0.6	0.8	1.4	—	—	0.2
LSD ^m	1.4	2.8	5.1	0.9	2.0	3.2	0.4	0.5	1.0	—	—	0.2
Hallucinogens other than LSD ^m	1.5	2.7	4.5	0.9	1.7	2.7	0.4	0.5	0.9	—	—	0.1
PCP ⁱ	—	—	—	—	—	1.1	—	—	—	—	—	—
Ecstasy (MDMA) ^{b,n}	1.6	2.4	4.1	1.1	1.4	2.2	0.4	0.4	0.5	—	—	*
Salvia ^{c,d}	—	—	—	0.6	0.7	0.9	—	—	—	—	—	—
Cocaine	1.4	2.6	3.9	0.8	1.5	2.3	0.3	0.6	1.1	—	—	0.2
Crack	0.9	1.0	1.5	0.4	0.6	0.9	0.2	0.3	0.5	—	—	0.1
Cocaine other than Crack ^h	1.2	2.4	3.3	0.7	1.4	2.0	0.3	0.5	1.0	—	—	0.1
Heroin ^o	—	—	—	—	—	—	—	—	—	—	—	—
Any Use ^o	0.6	0.4	0.8	0.3	0.2	0.4	0.1	0.1	0.2	—	—	0.1
With a Needle ^{b,o}	0.4	0.2	0.5	0.2	0.1	0.3	0.1	0.1	0.2	—	—	0.1
Without a Needle ^{b,o}	0.3	0.2	0.6	0.3	0.1	0.2	0.1	*	0.1	—	—	*
Narcotics other than Heroin ⁱ	—	—	6.0	—	—	3.4	—	—	1.1	—	—	0.1
OxyContin ^{b,d,i}	—	—	—	0.8	2.2	2.3	—	—	—	—	—	—
Vicodin ^{b,d,i}	—	—	—	0.6	1.1	1.7	—	—	—	—	—	—
Amphetamines ⁱ	5.9	8.6	8.6	3.7	5.7	5.5	1.8	2.4	2.4	—	—	0.4
Ritalin ^{c,d,i}	—	—	—	0.5	0.9	0.9	—	—	—	—	—	—
Adderall ^{c,d,i}	—	—	—	1.8	4.1	4.6	—	—	—	—	—	—
Methamphetamine ^{c,d}	0.7	0.8	0.7	0.4	0.4	0.5	0.1	0.1	0.3	—	—	*
Crystal Methamphetamine (Ice) ^c	—	—	1.1	—	—	0.6	—	—	0.4	—	—	*
Bath salts (Synthetic Stimulants) ^{c,d}	—	—	—	0.9	0.5	0.6	—	—	—	—	—	—
Sedatives (Barbiturates) ⁱ	—	—	4.2	—	—	2.7	—	—	1.2	—	—	0.1
Tranquilizers ⁱ	3.5	6.0	6.6	2.0	3.9	3.9	0.9	1.3	1.3	—	—	0.1
Any Prescription Drug ^j	—	—	15.5	—	—	9.9	—	—	4.2	—	—	—
Over-the-Counter Cough/Cold Medication ^{c,d}	—	—	—	2.8	3.3	3.4	—	—	—	—	—	—
Rohypnol ^{f,k}	0.7	0.5	—	0.3	0.3	0.7	0.3	0.1	—	—	—	—
GHB ^f	—	—	—	—	—	0.3	—	—	—	—	—	—
Ketamine ^c	—	—	—	—	—	0.7	—	—	—	—	—	—
Alcohol	—	—	—	—	—	—	—	—	—	—	—	—
Any Use	23.5	43.0	58.5	18.7	37.8	53.3	8.2	18.6	30.2	0.1	0.5	1.2
Been Drunk ^c	9.2	26.2	42.9	6.5	20.9	33.9	2.1	8.4	17.5	*	0.2	0.7
Flavored Alcoholic Beverages ^{d,f}	18.0	35.9	50.4	12.1	28.8	38.4	4.9	11.8	18.1	—	—	0.9
Alcoholic Beverages containing Caffeine ^{c,d}	—	—	—	6.0	9.8	14.7	—	—	—	—	—	—
5+ Drinks in a Row in Last 2 Weeks	—	—	—	—	—	—	—	—	—	3.7	8.7	13.8

(Table continued on next page.)

TABLE 4-2 (cont.)
Prevalence of Use of Various Drugs
for 8th, 10th, and 12th Graders, 2018

	Lifetime			Annual			30-Day			Daily		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	14,000	14,300	13,300	14,000	14,300	13,300	14,000	14,300	13,300	14,000	14,300	13,300
Cigarettes												
Any Use	9.1	16.0	23.8	—	—	—	2.2	4.2	7.6	0.8	1.8	3.6
1/2 Pack+/Day	—	—	—	—	—	—	—	—	—	0.3	0.7	1.5
Tobacco using a Hookah ^b	—	—	—	—	—	7.8	1.6	2.4	4.4	—	—	—
Small cigars ^f	—	—	—	—	—	9.2	—	—	—	—	—	—
Dissolvable Tobacco Products ^{d,f}	—	—	—	0.6	1.1	1.3	—	—	—	—	—	—
Snus ^{d,f}	—	—	—	1.3	3.1	4.7	—	—	—	—	—	—
Smokeless Tobacco ^{f,g}	6.4	10.0	10.1	—	—	—	2.1	3.9	4.2	0.3	1.0	1.6
Any Vaping ^{c,d}	21.5	36.9	42.5	17.6	32.3	37.3	10.4	21.7	26.7	—	—	—
Vaping Nicotine ^{c,d}	13.5	28.6	34.0	10.9	24.7	29.7	6.1	16.1	20.9	—	—	—
Vaping Marijuana ^{c,d}	5.5	14.2	15.6	4.4	12.4	13.1	2.6	7.0	7.5	—	—	—
Vaping Just Flavoring ^{c,d}	19.4	31.7	34.1	15.1	24.7	25.7	8.1	13.1	13.5	—	—	—
Large Cigars ^{c,i}	—	—	—	—	—	—	1.7	2.8	5.2	—	—	—
Flavored Little Cigars ^{c,i}	—	—	—	—	—	—	2.6	5.3	8.9	—	—	—
Regular Little Cigars ^{c,i}	—	—	—	—	—	—	1.6	3.1	5.8	—	—	—
Any Nicotine Use ^f	—	—	—	—	—	—	—	—	32.5	—	—	—
Any Nicotine Use other than Vaping ^f	—	—	—	—	—	—	—	—	18.5	—	—	—
Steroids ^b	1.1	1.2	1.6	0.6	0.6	1.1	0.3	0.4	0.8	—	—	0.2
Androstenedione ^c	—	—	—	—	—	0.5	—	—	—	—	—	—
Creatine ^{c,d}	—	—	—	1.7	6.2	9.3	—	—	—	—	—	—
Legal Use of Over-the-Counter Stimulants												
Diet Pills ^f	—	—	6.2	—	—	3.5	—	—	1.9	—	—	—
Stay-Awake Pills ^f	—	—	3.6	—	—	2.4	—	—	1.2	—	—	—
Legal Use of Prescription ADHD Drugs												
Stimulant-Type ^{c,p}	7.1	8.2	8.6	—	—	—	3.7	3.9	3.5	—	—	—
Non-Stimulant-Type ^{c,p}	4.4	5.1	6.1	—	—	—	1.2	1.4	2.6	—	—	—
Either Type ^{c,p}	11.0	12.1	12.7	—	—	—	5.2	5.1	5.9	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '*' indicates less than 0.05% but greater than 0%.

^aFor 12th graders only: Use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders only: The use of narcotics other than heroin and sedatives (barbiturates) has been excluded, because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

^bFor 12th graders only: Data based on three of six forms; *N* is three sixths of *N* indicated.

^cFor 12th graders only: Data based on two of six forms; *N* is two sixths of *N* indicated.

^dFor 8th and 10th graders only: Data based on one of four forms; *N* is one third of *N* indicated.

^eUnadjusted for underreporting of PCP. See text for details.

^fFor 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated.

^gFor 8th and 10th graders only: Data based on two of four forms; *N* is one half of *N* indicated.

^hFor 12th graders only: Data based on four of six forms; *N* is four sixths of *N* indicated.

ⁱOnly drug use not under a doctor's orders is included here.

^jThe use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers ... without a doctor telling you to use them.

^kFor 8th and 10th graders only: Data based on one of four forms; *N* is one sixth of *N* indicated due to changes in the questionnaire forms.

^lFor 8th and 10th graders only: Data based on two of four forms; *N* is one third of *N* indicated.

^mFor 12th graders only: Data based on five of six forms; *N* is five sixths of *N* indicated.

ⁿFor 8th and 10th graders only: Data based on three of four forms; *N* is five sixths of *N* indicated.

^oFor 8th and 10th graders only: Data based on three of four forms; *N* is two thirds of *N* indicated.

^pFor the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates for 30-day use indicate youth who reported "Yes, I take them now."

TABLE 4-3
Prevalence of Use of Heroin *with* and *without* a Needle
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages of all respondents.)

	<u>Lifetime</u>	<u>Last 12 Months</u>	<u>Last 30 Days</u>
8th Graders			
Used heroin only <i>with</i> a needle	0.3	0.1	*
Used heroin only <i>without</i> a needle	0.2	0.1	*
Used heroin both ways	0.1	0.1	*
Used heroin at all	0.6	0.3	0.1
<i>Approximate weighted N =</i>	9,100	9,200	9,200
10th Graders			
Used heroin only <i>with</i> a needle	0.1	0.1	*
Used heroin only <i>without</i> a needle	0.1	0.1	*
Used heroin both ways	0.1	0.1	*
Used heroin at all	0.3	0.2	0.1
<i>Approximate weighted N =</i>	9,500	9,500	9,500
12th Graders			
Used heroin only <i>with</i> a needle	0.2	0.1	*
Used heroin only <i>without</i> a needle	0.3	0.1	*
Used heroin both ways	0.2	0.1	0.1
Used heroin at all	0.7	0.3	0.2
<i>Approximate weighted N =</i>	6,700	6,700	6,400

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' * ' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the total who used heroin at all and the sum of those who used with a needle, those who used without a needle, and those who used both ways is due to rounding. For 8th and 10th graders only: Data based on three of four forms. For 12th graders only: Data based on three of six forms. Used heroin at all is also based on three of six forms and is not comparable to the six-form heroin use prevalences used elsewhere in the volume.

TABLE 4-4a
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Marijuana			Synthetic Marijuana ^{a,b}			Inhalants ^{c,k}			Hallucinogens ^{d,j}			LSD ⁱ			Hallucinogens other than LSD ^l			PCP ^e		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	14,000	14,300	13,300	4,700	4,800	4,400	9,300	9,500	6,700	14,000	14,300	11,100	14,000	14,300	11,100	14,000	14,300	11,100	—	—	2,200
Lifetime Frequency																					
No occasions	86.1	67.4	56.4	—	—	—	91.3	93.5	95.6	97.8	96.1	93.4	98.6	97.2	94.9	98.5	97.3	95.5	—	—	—
1–2 occasions	5.9	8.9	9.4	—	—	—	5.4	4.3	2.4	1.2	1.8	2.6	0.8	1.8	3.0	1.1	1.8	2.7	—	—	—
3–5 occasions	2.5	5.1	7.0	—	—	—	1.6	1.0	0.9	0.5	1.2	2.2	0.2	0.5	1.0	0.2	0.4	0.8	—	—	—
6–9 occasions	1.2	3.3	4.4	—	—	—	0.7	0.4	0.3	0.1	0.2	0.5	0.1	0.2	0.5	0.1	0.2	0.4	—	—	—
10–19 occasions	1.3	3.7	5.4	—	—	—	0.5	0.3	0.5	0.2	0.3	0.7	0.1	0.1	0.2	0.1	0.1	0.3	—	—	—
20–39 occasions	0.9	3.0	4.1	—	—	—	0.2	0.2	0.0	*	0.1	0.1	*	0.1	0.1	*	0.1	0.1	—	—	—
40 or more	2.1	8.5	13.3	—	—	—	0.4	0.3	0.3	0.2	0.2	0.4	0.1	0.1	0.2	0.1	0.1	0.2	—	—	—
Annual Frequency																					
No occasions	89.5	72.5	64.1	98.4	97.1	96.5	95.4	97.6	98.4	98.6	97.3	95.7	99.1	98.0	96.8	99.1	98.3	97.3	—	—	98.9
1–2 occasions	4.9	8.8	10.2	0.7	1.6	1.8	2.9	1.4	0.9	0.8	1.3	2.1	0.5	1.4	2.2	0.6	1.2	1.8	—	—	0.4
3–5 occasions	1.6	4.5	6.4	0.4	0.4	0.6	0.9	0.5	0.2	0.3	0.9	1.4	0.2	0.3	0.5	0.1	0.3	0.5	—	—	*
6–9 occasions	1.2	3.4	3.9	0.1	0.3	0.2	0.4	0.2	0.2	0.1	0.2	0.2	*	0.1	0.2	0.1	0.1	0.2	—	—	0.4
10–19 occasions	0.9	3.1	3.9	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.2	*	0.1	0.1	0.1	*	0.1	—	—	0.1
20–39 occasions	0.7	2.4	3.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	*	*	*	*	*	*	*	*	—	—	0.1
40 or more	1.1	5.3	8.4	0.1	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.3	0.1	*	0.2	*	*	0.1	—	—	0.1
30-Day Frequency																					
No occasions	94.4	83.3	77.8	—	—	—	98.2	99.0	99.3	99.4	99.2	98.6	99.6	99.5	99.0	99.6	99.5	99.1	—	—	—
1–2 occasions	2.7	6.3	7.8	—	—	—	1.3	0.6	0.3	0.3	0.5	0.8	0.2	0.4	0.6	0.2	0.3	0.6	—	—	—
3–5 occasions	1.0	3.1	3.5	—	—	—	0.2	0.1	0.1	0.1	0.2	0.3	0.1	0.1	*	*	0.1	0.1	—	—	—
6–9 occasions	0.6	2.1	2.4	—	—	—	0.1	0.1	0.1	*	*	0.1	*	*	0.1	0.1	*	0.1	—	—	—
10–19 occasions	0.6	1.9	2.7	—	—	—	*	0.1	*	0.1	0.1	0.1	*	*	*	*	*	*	—	—	—
20–39 occasions	0.2	1.3	2.1	—	—	—	*	*	*	*	*	*	*	*	*	*	*	0.1	—	—	—
40 or more	0.5	2.1	3.7	—	—	—	*	0.1	0.0	*	*	0.1	*	*	0.1	0.0	0.0	0.0	—	—	—

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Ecstasy (MDMA) ^{c,k}			Salvia ^{a,b}			Cocaine			Crack			Cocaine other than Crack ^g			Heroin ^k			Heroin with a Needle ^{c,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	11,700	11,900	6,700	4,700	4,800	4,400	14,000	14,300	13,300	14,000	14,300	13,300	14,000	14,300	8,900	9,300	9,500	13,300	9,300	9,500	6,700
Lifetime Frequency																					
No occasions	98.4	97.6	95.9	—	—	—	98.6	97.4	96.1	99.1	99.0	98.5	98.8	97.6	96.7	99.4	99.6	99.2	99.6	99.8	99.5
1–2 occasions	1.1	1.6	2.4	—	—	—	0.6	1.2	1.9	0.5	0.5	0.8	0.8	1.5	1.7	0.3	0.1	0.3	0.3	0.1	0.1
3–5 occasions	0.2	0.4	0.9	—	—	—	0.5	0.6	0.8	0.2	0.2	0.2	0.2	0.3	0.5	0.2	0.1	0.2	0.1	*	0.1
6–9 occasions	0.2	0.2	0.3	—	—	—	0.1	0.2	0.3	0.1	0.1	0.2	0.1	0.2	0.3	*	*	0.1	*	*	0.1
10–19 occasions	0.1	0.1	0.1	—	—	—	0.1	0.3	0.3	0.1	*	0.1	0.1	0.2	0.3	*	*	0.1	*	*	*
20–39 occasions	*	*	0.1	—	—	—	*	0.1	0.2	*	0.1	0.1	*	0.1	0.2	*	*	*	0.0	0.1	*
40 or more	0.1	0.1	0.3	—	—	—	0.1	0.2	0.5	0.1	0.1	0.2	0.1	0.1	0.3	*	0.1	0.1	0.0	0.0	0.1
Annual Frequency																					
No occasions	98.9	98.6	97.8	99.4	99.3	99.1	99.2	98.5	97.7	99.6	99.4	99.1	99.3	98.6	98.0	99.7	99.8	99.6	99.8	99.9	99.7
1–2 occasions	0.7	1.0	1.4	0.3	0.3	0.5	0.4	0.7	1.0	0.3	0.4	0.4	0.4	0.8	0.8	0.2	0.1	0.1	0.1	0.1	0.2
3–5 occasions	0.1	0.1	0.4	0.2	0.1	0.1	0.2	0.4	0.5	0.1	0.1	0.1	0.1	0.2	0.4	0.1	*	0.1	*	*	*
6–9 occasions	0.1	0.1	0.2	*	0.1	*	*	0.1	0.2	*	0.1	0.2	*	0.2	0.3	*	*	0.1	*	*	0.1
10–19 occasions	*	*	0.1	0.1	*	*	*	0.2	0.2	*	*	*	*	0.1	0.2	*	*	*	*	0.0	*
20–39 occasions	*	*	0.1	*	0.1	*	*	*	0.1	*	*	0.1	*	*	0.2	*	*	0.1	*	0.0	*
40 or more	*	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.3	*	0.0	0.1	*	0.1	0.2	*	*	0.0	0.0	0.0	0.1
30-Day Frequency																					
No occasions	99.6	99.6	99.5	—	—	—	99.7	99.4	98.9	99.8	99.7	99.5	99.7	99.5	99.0	99.9	99.9	99.8	99.9	99.8	99.8
1–2 occasions	0.3	0.3	0.3	—	—	—	0.1	0.2	0.6	0.1	0.1	0.2	0.1	0.3	0.6	0.1	*	*	*	0.1	*
3–5 occasions	0.1	0.1	*	—	—	—	0.1	0.2	0.2	0.1	0.1	*	*	0.1	0.2	*	*	*	*	0.1	*
6–9 occasions	*	*	*	—	—	—	*	*	0.1	*	*	0.1	*	*	0.1	*	*	0.1	*	*	0.1
10–19 occasions	*	*	0.1	—	—	—	*	*	0.1	*	*	*	*	*	0.1	*	*	*	*	*	*
20–39 occasions	*	0.1	*	—	—	—	*	0.1	0.2	*	*	*	*	*	*	*	*	0.1	0.0	*	0.1
40 or more	0.0	0.0	0.0	—	—	—	0.1	0.0	0.0	*	0.0	0.1	*	0.0	0.1	0.0	*	0.0	0.0	*	0.0

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Heroin without a Needle ^{c,k}			Narcotics other than Heroin ^h			OxyContin ^{a,c,h}			Vicodin ^{a,c,h}			Amphetamines ^{h,i}			Ritalin ^{a,b,h}			Adderall ^{a,b,h}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	9,300	9,500	6,700	—	—	13,300	4,700	4,800	6,700	4,700	4,800	6,700	14,000	14,300	13,300	4,700	4,800	4,400	4,700	4,800	4,400
Lifetime Frequency																					
No occasions	99.7	99.8	99.4	—	—	94.0	—	—	—	—	—	—	94.1	91.4	91.4	—	—	—	—	—	—
1–2 occasions	0.3	0.1	0.3	—	—	2.8	—	—	—	—	—	—	3.3	4.3	3.4	—	—	—	—	—	—
3–5 occasions	*	0.1	0.2	—	—	1.3	—	—	—	—	—	—	1.0	1.5	1.7	—	—	—	—	—	—
6–9 occasions	*	*	0.1	—	—	0.8	—	—	—	—	—	—	0.5	0.8	1.1	—	—	—	—	—	—
10–19 occasions	*	*	*	—	—	0.5	—	—	—	—	—	—	0.4	0.5	0.8	—	—	—	—	—	—
20–39 occasions	*	*	*	—	—	0.3	—	—	—	—	—	—	0.2	0.4	0.5	—	—	—	—	—	—
40 or more	0.0	*	0.0	—	—	0.4	—	—	—	—	—	—	0.5	1.1	1.2	—	—	—	—	—	—
Annual Frequency																					
No occasions	99.8	99.9	99.8	—	—	96.6	99.2	97.8	97.7	99.4	98.9	98.3	96.3	94.3	94.5	99.5	99.1	99.1	98.2	95.9	95.4
1–2 occasions	0.2	0.1	0.1	—	—	1.7	0.4	1.3	1.0	0.2	0.5	0.7	2.3	3.0	2.5	0.3	0.3	0.6	1.3	2.3	2.4
3–5 occasions	*	*	0.1	—	—	0.8	0.1	0.4	0.6	0.1	0.2	0.5	0.7	1.1	1.1	0.1	0.3	0.2	0.3	0.7	0.9
6–9 occasions	*	*	*	—	—	0.4	0.1	0.3	0.4	*	0.2	0.3	0.3	0.5	0.6	0.1	0.1	0.1	0.1	0.6	0.5
10–19 occasions	0.0	*	*	—	—	0.2	*	0.1	0.1	*	0.2	0.1	0.2	0.4	0.6	*	0.1	*	0.1	0.3	0.4
20–39 occasions	0.0	*	0.0	—	—	0.1	*	0.1	0.1	0.1	*	0.1	0.1	0.3	0.2	0.1	*	0.1	0.1	*	0.1
40 or more	0.0	*	0.0	—	—	0.1	0.1	0.1	0.2	*	*	0.1	0.2	0.4	0.4	*	0.1	0.0	0.0	0.2	0.3
30-Day Frequency																					
No occasions	99.9	100.0	99.9	—	—	98.9	—	—	—	—	—	—	98.2	97.6	97.6	—	—	—	—	—	—
1–2 occasions	0.1	*	0.1	—	—	0.6	—	—	—	—	—	—	1.3	1.4	1.3	—	—	—	—	—	—
3–5 occasions	*	*	*	—	—	0.2	—	—	—	—	—	—	0.2	0.4	0.4	—	—	—	—	—	—
6–9 occasions	0.0	*	*	—	—	0.2	—	—	—	—	—	—	0.1	0.2	0.2	—	—	—	—	—	—
10–19 occasions	0.0	*	*	—	—	0.1	—	—	—	—	—	—	0.1	0.1	0.1	—	—	—	—	—	—
20–39 occasions	0.0	*	0.0	—	—	*	—	—	—	—	—	—	0.1	0.2	0.2	—	—	—	—	—	—
40 or more	0.0	0.0	0.0	—	—	*	—	—	—	—	—	—	0.1	0.1	0.2	—	—	—	—	—	—

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

Approximate weighted N =	<u>Methamphetamine</u> ^{a,b}			<u>Crystal Methamphetamine (Ice)</u> ^b			<u>Bath Salts (Synthetic Stimulants)</u> ^{a,b}			<u>Sedatives (Barbiturates)</u> ^h			<u>Tranquilizers</u> ^h			<u>Over-the-Counter Cough/Cold Medicine</u> ^{a,b}			<u>Rohypnol</u> ^{a,e}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
	4,700	4,800	4,400	—	—	4,400	4,700	4,800	4,400	—	—	13,300	14,000	14,300	13,300	4,700	4,800	4,400	2,300	2,400	2,200
Lifetime Frequency																					
No occasions	99.3	99.2	99.3	—	—	98.9	—	—	—	—	—	95.8	2.2	94.0	93.4	—	—	—	0.4	99.5	—
1–2 occasions	0.5	0.4	0.4	—	—	0.5	—	—	—	—	—	2.1	0.6	3.4	3.3	—	—	—	0.1	0.3	—
3–5 occasions	0.1	0.1	*	—	—	0.3	—	—	—	—	—	0.9	0.2	1.1	1.3	—	—	—	*	0.2	—
6–9 occasions	*	*	*	—	—	0.2	—	—	—	—	—	0.4	0.1	0.4	0.7	—	—	—	0.1	*	—
10–19 occasions	*	*	0.1	—	—	0.1	—	—	—	—	—	0.4	0.1	0.4	0.4	—	—	—	0.1	0.0	—
20–39 occasions	0.1	*	0.2	—	—	*	—	—	—	—	—	0.2	0.2	0.3	0.3	—	—	—	0.0	0.0	—
40 or more	0.0	0.2	0.0	—	—	*	—	—	—	—	—	0.3	0.0	0.3	0.4	—	—	—	0.0	0.0	—
Annual Frequency																					
No occasions	99.6	99.6	99.5	—	—	99.4	0.5	99.5	95.8	—	—	97.3	1.3	96.1	96.1	1.5	96.7	96.6	0.1	99.7	99.3
1–2 occasions	0.3	0.2	0.2	—	—	0.2	0.2	0.2	2.1	—	—	1.5	0.4	2.3	2.1	0.5	1.3	1.4	0.1	0.1	0.2
3–5 occasions	*	*	0.1	—	—	0.1	0.1	0.1	0.9	—	—	0.4	0.1	0.6	0.8	0.3	1.1	1.0	*	0.2	0.2
6–9 occasions	*	*	0.1	—	—	0.1	0.1	0.1	0.4	—	—	0.4	0.1	0.4	0.4	0.3	0.4	0.6	0.1	*	0.2
10–19 occasions	0.1	0.1	0.1	—	—	*	*	0.1	0.4	—	—	0.2	*	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.1
20–39 occasions	*	0.1	*	—	—	*	*	*	0.2	—	—	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1
40 or more	0.0	0.0	0.1	—	—	*	0.0	*	0.3	—	—	0.1	0.0	0.2	0.2	0.0	0.1	0.2	0.0	0.0	0.0
30-Day Frequency																					
No occasions	99.9	99.9	99.7	—	—	99.6	—	—	—	—	—	98.8	0.6	98.7	98.7	—	—	—	0.2	99.9	—
1–2 occasions	0.1	*	0.1	—	—	0.2	—	—	—	—	—	0.7	0.1	0.8	0.7	—	—	—	*	0.1	—
3–5 occasions	0.0	*	*	—	—	0.1	—	—	—	—	—	0.2	0.1	0.2	0.3	—	—	—	0.1	*	—
6–9 occasions	0.0	*	0.1	—	—	0.1	—	—	—	—	—	0.1	0.1	0.1	0.2	—	—	—	0.0	0.0	—
10–19 occasions	0.0	0.1	*	—	—	*	—	—	—	—	—	*	*	0.1	0.1	—	—	—	0.0	0.0	—
20–39 occasions	0.0	0.0	*	—	—	0.0	—	—	—	—	—	0.1	*	*	0.1	—	—	—	0.0	0.0	—
40 or more	0.0	0.0	0.0	—	—	0.0	—	—	—	—	—	*	0.0	*	*	—	—	—	0.0	0.0	—

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>GHB^e</u>			<u>Ketamine^b</u>			<u>Alcohol</u>			<u>Been Drunk^b</u>			<u>Flavored Alcoholic Beverages^{a,e}</u>			<u>Alcoholic Beverages containing Caffeine^{a,b}</u>			<u>Tobacco using a Hookah^e</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted N =	—	—	2,200	—	—	4,400	14,000	14,300	13,300	14,000	14,300	4,400	4,700	4,800	2,200	4,700	4,800	4,400	—	—	2,200
Lifetime Frequency																					
No occasions	—	—	—	—	—	—	8.5	57.0	41.5	5.6	73.8	57.1	8.8	64.1	49.6	—	—	—	—	—	—
1–2 occasions	—	—	—	—	—	—	5.9	10.4	9.4	2.0	12.4	14.4	4.4	11.4	15.6	—	—	—	—	—	—
3–5 occasions	—	—	—	—	—	—	3.6	10.6	11.5	0.7	5.7	8.3	1.8	9.3	9.9	—	—	—	—	—	—
6–9 occasions	—	—	—	—	—	—	2.8	6.8	9.4	0.5	2.8	5.0	1.6	4.9	7.8	—	—	—	—	—	—
10–19 occasions	—	—	—	—	—	—	1.3	6.6	10.8	0.2	2.7	6.2	0.7	3.9	7.2	—	—	—	—	—	—
20–39 occasions	—	—	—	—	—	—	1.4	3.7	7.2	0.2	1.4	3.7	0.7	3.2	5.0	—	—	—	—	—	—
40 or more	—	—	—	—	—	—	0.0	4.9	10.3	0.0	1.3	5.4	0.0	3.2	4.9	—	—	—	—	—	—
Annual Frequency																					
No occasions	—	—	99.7	—	—	99.3	10.0	62.2	46.7	4.9	79.1	66.1	7.2	71.2	61.6	3.6	90.2	85.3	—	—	92.2
1–2 occasions	—	—	0.1	—	—	0.2	4.6	15.9	17.6	1.0	12.3	13.7	2.4	12.5	15.8	1.3	5.1	7.0	—	—	4.1
3–5 occasions	—	—	*	—	—	0.2	2.2	9.2	12.3	0.3	4.0	7.4	1.3	7.2	8.5	0.4	2.5	3.6	—	—	1.4
6–9 occasions	—	—	0.1	—	—	0.1	1.1	5.2	8.7	0.2	2.0	4.5	0.7	3.6	5.9	0.2	1.1	1.6	—	—	1.0
10–19 occasions	—	—	0.1	—	—	*	0.5	4.0	7.6	0.1	1.4	4.4	0.3	2.6	4.4	0.1	0.8	1.2	—	—	0.6
20–39 occasions	—	—	0.0	—	—	0.1	0.3	2.0	3.8	0.1	0.7	1.8	0.2	1.3	2.0	0.4	0.1	0.5	—	—	0.2
40 or more	—	—	0.0	—	—	0.1	0.0	1.4	3.3	0.0	0.4	2.1	0.0	1.6	1.8	0.0	0.2	0.8	—	—	0.5
30-Day Frequency																					
No occasions	—	—	—	—	—	—	5.6	81.4	69.8	1.6	91.6	82.5	3.3	88.2	81.9	—	—	—	—	—	—
1–2 occasions	—	—	—	—	—	—	1.5	12.2	17.4	0.3	6.2	10.6	1.0	7.2	10.1	—	—	—	—	—	—
3–5 occasions	—	—	—	—	—	—	0.6	3.5	7.0	0.1	1.2	3.6	0.2	2.6	4.8	—	—	—	—	—	—
6–9 occasions	—	—	—	—	—	—	0.3	1.8	2.9	*	0.5	1.7	0.3	0.7	1.5	—	—	—	—	—	—
10–19 occasions	—	—	—	—	—	—	0.1	0.7	1.6	*	0.2	1.0	0.1	0.7	0.7	—	—	—	—	—	—
20–39 occasions	—	—	—	—	—	—	0.1	0.2	0.4	*	0.1	0.3	0.0	0.1	0.1	—	—	—	—	—	—
40 or more	—	—	—	—	—	—	0.0	0.3	0.8	0.0	0.1	0.4	0.0	0.5	0.7	—	—	—	—	—	—

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Small Cigars ^e			Vaping Nicotine ^{a,b}			Vaping Marijuana ^{a,b}			Vaping Just Flavoring ^{a,b}			Dissolvable Tobacco Products ^{a,e}			Snus ^{a,e}			Steroids ^c		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Approximate weighted. N =	—	—	2,200	4,700	4,800	4,400	4,700	4,800	4,400	4,700	4,800	4,400	4,700	4,800	2,200	4,700	4,800	2,200	14,000	14,300	4,400
Lifetime Frequency																					
No occasions	—	—	—	5.7	71.4	66.0	2.7	85.8	84.4	7.6	68.3	65.9	—	—	—	—	—	—	0.7	98.8	98.4
1–2 occasions	—	—	—	2.1	7.9	8.4	0.8	5.4	5.4	3.7	10.9	10.2	—	—	—	—	—	—	0.2	0.6	0.6
3–5 occasions	—	—	—	1.5	4.8	4.3	0.4	2.6	2.6	2.1	6.1	6.1	—	—	—	—	—	—	0.1	0.2	0.3
6–9 occasions	—	—	—	1.4	2.6	2.6	0.8	1.7	1.9	1.9	3.2	4.5	—	—	—	—	—	—	0.1	0.1	0.2
10–19 occasions	—	—	—	1.0	3.0	3.3	0.3	1.5	1.8	1.7	3.4	3.6	—	—	—	—	—	—	*	0.1	0.2
20–39 occasions	—	—	—	1.8	2.4	2.6	0.6	1.1	1.1	2.4	2.4	2.6	—	—	—	—	—	—	0.1	*	0.3
40 or more	—	—	—	0.0	7.9	12.8	0.0	2.0	2.8	0.0	5.7	7.1	—	—	—	—	—	—	0.0	0.1	0.0
Annual Frequency																					
No occasions	—	—	90.8	4.7	75.3	70.3	2.1	87.6	86.9	5.7	75.3	74.3	0.4	98.9	98.7	0.7	96.9	95.3	0.4	99.4	98.9
1–2 occasions	—	—	4.3	1.6	7.0	7.6	0.9	4.8	4.8	3.3	9.6	8.5	*	0.6	0.4	0.2	1.3	1.9	0.1	0.4	0.4
3–5 occasions	—	—	2.1	1.1	4.3	3.5	0.5	2.5	1.8	2.0	4.5	4.8	0.1	0.1	0.4	0.3	0.6	0.7	*	0.1	0.2
6–9 occasions	—	—	1.0	1.2	2.3	2.6	0.3	1.5	1.7	1.4	2.9	3.5	*	0.1	0.1	*	0.3	0.8	*	*	0.2
10–19 occasions	—	—	0.8	0.9	2.8	3.2	0.2	1.0	1.7	1.1	2.4	2.5	*	0.1	0.2	*	0.2	0.4	*	*	0.1
20–39 occasions	—	—	0.3	1.2	2.2	2.7	0.4	1.0	1.1	1.5	1.8	2.3	0.0	0.1	0.1	*	0.1	0.4	*	*	*
40 or more	—	—	0.6	0.0	6.1	10.2	0.0	1.5	1.9	0.0	3.5	4.2	0.0	0.1	0.2	0.0	0.6	0.6	0.0	0.1	0.2
30-Day Frequency																					
No occasions	—	—	—	2.4	83.9	79.1	1.3	93.0	92.5	3.4	86.9	86.5	—	—	—	—	—	—	0.1	99.6	99.2
1–2 occasions	—	—	—	1.3	4.5	5.7	0.5	3.4	3.0	1.6	5.6	5.3	—	—	—	—	—	—	0.1	0.2	0.2
3–5 occasions	—	—	—	0.8	3.2	2.8	0.3	1.1	1.3	1.2	2.3	2.4	—	—	—	—	—	—	*	*	0.2
6–9 occasions	—	—	—	0.8	1.9	2.4	0.1	0.7	1.1	1.0	1.7	1.8	—	—	—	—	—	—	*	0.1	0.1
10–19 occasions	—	—	—	0.3	1.7	2.0	*	0.7	0.8	0.2	1.2	1.1	—	—	—	—	—	—	*	*	*
20–39 occasions	—	—	—	0.5	1.4	1.6	0.4	0.4	0.3	0.7	0.6	0.6	—	—	—	—	—	—	*	*	0.2
40 or more	—	—	—	0.0	3.3	6.5	0.0	0.8	1.0	0.0	1.7	2.3	—	—	—	—	—	—	0.0	*	0.0

(Table continued on next page.)

TABLE 4-4a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
8th, 10th, and 12th Graders, 2018

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '* ' indicates less than 0.05% but greater than 0%.

^a8th and 10th grades only: Data based on one of four forms.

^b12th grade only: Data based on two of six forms.

^c12th grade only: Data based on three of six forms.

^dUnadjusted for known underreporting of PCP. See text for details.

^e12th grade only: Data based on one of six forms.

^f8th and 10th grades only: Data based on two of four forms.

^g12th grade only: Data based on four of six forms.

^hOnly drug use not under a doctor's orders is included here.

ⁱBased on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription stimulants.

^j12th grade only: Data based on five of six forms.

^k8th and 10th grades only: Data based on three of four forms.

TABLE 4-4b
Frequency of Occasions of Heavy Drinking,
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>8th Grade</u>	<u>10th Grade</u>	<u>12th Grade</u>
<i>Think back over the LAST TWO WEEKS. How many times have you had five or more drinks in a row?</i>			
None	96.3	91.3	86.2
Once	1.8	4.0	6.8
Twice	1.1	2.8	3.7
3 to 5 times	0.5	1.3	2.5
6 to 9 times	0.1	0.2	0.4
10 or more times	0.1	0.3	0.4
<i>Approximate weighted N =</i>	14,000	14,300	13,300
<i>During the last two weeks, how many times (if any) have you had 10 or more drinks in a row?</i>			
None	98.9	96.7	95.4
Once	0.5	1.7	2.4
Twice	0.4	1.1	0.8
3 to 5 times	0.2	0.2	0.9
6 to 9 times	*	0.1	0.3
10 or more times	*	0.2	0.2
<i>Approximate weighted N =</i>	4,700	4,800	2,200
<i>During the last two weeks, how many times (if any) have you had 15 or more drinks in a row?</i>			
None	—	—	97.5
Once	—	—	0.9
Twice	—	—	0.7
3 to 5 times	—	—	0.5
6 to 9 times	—	—	0.2
10 or more times	—	—	0.2
<i>Approximate weighted N =</i>	—	—	2,200

Source. The Monitoring the Future study, the University of Michigan.

TABLE 4-4c
Frequency of Occasions of
Cigarette Smoking, and Smokeless Tobacco Use
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>8th Grade</u>	<u>10th Grade</u>	<u>12th Grade</u>
<i>Have you ever smoked cigarettes?</i>			
Never	6.6	84.0	76.2
Once or twice	1.3	10.0	13.4
Occasionally but not regularly	0.7	3.4	5.5
Regularly in the past	0.5	1.5	2.6
Regularly now	0.0	1.1	2.4
<i>Approximate weighted N =</i>	14,000	14,300	13,300
<i>How frequently have you smoked cigarettes during the past 30 days?</i>			
Not at all (includes "never" category from question above)	1.3	95.8	92.4
Less than one cigarette per day	0.5	2.4	4.0
One to five cigarettes per day	0.1	1.1	2.1
About one-half pack per day	0.1	0.5	0.8
About one pack per day	*	0.1	0.3
About one and one-half packs per day	0.1	*	0.1
Two packs or more per day	0.0	0.1	0.2
<i>Approximate weighted N =</i>	14,000	14,300	13,300
<i>Have you ever taken or used smokeless tobacco (snuff, plug, dipping tobacco, chewing tobacco)?</i>			
Never	4.4	96.1	89.9
Once or twice	1.1	2.0	4.8
Occasionally but not regularly	0.6	0.5	1.9
Regularly in the past	0.2	0.3	1.6
Regularly now	0.0	0.2	1.8
<i>Approximate weighted N =</i>	7,000	7,200	2,200
<i>How frequently have you taken smokeless tobacco during the past 30 days?</i>			
Not at all (includes "never" category from question above)	1.1	96.1	95.8
Once or twice	0.5	2.0	1.7
Once or twice per week	0.2	0.5	0.6
Three to five times per week	0.2	0.3	0.3
About once a day	0.1	0.2	0.4
More than once a day	0.0	0.8	1.2
<i>Approximate weighted N =</i>	7,000	7,200	2,200

Source. The Monitoring the Future study, the University of Michigan.

TABLE 4-4d
Frequency of Days Used in Lifetime and Past 30 Days for Various Tobacco and Other Substances
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Large Cigars</u>			<u>Flavored Little Cigars</u>			<u>Regular Little Cigars</u>			<u>Tobacco Using a Hookah</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Number of days used in past 30 days												
No days	1.0	97.2	94.8	1.6	94.7	91.1	0.9	96.9	94.2	1.0	97.6	95.6
1–2 days	0.2	1.8	3.3	0.5	2.9	4.9	0.4	1.8	2.9	0.3	1.2	2.3
3–5 days	0.2	0.5	0.7	0.3	1.6	1.7	0.1	0.7	1.1	0.2	0.4	0.6
6–9 days	0.1	0.2	0.5	0.2	0.3	0.9	0.1	0.2	0.6	*	0.4	0.7
10–19 days	0.2	0.2	0.3	0.1	0.3	0.4	*	0.2	0.5	*	0.3	0.3
20–30 days	0.0	0.1	0.5	0.0	0.2	0.9	0.0	0.1	0.7	0.0	0.1	0.5

Source. The Monitoring the Future study, the University of Michigan.

TABLE 4-4e
Frequency of Use Per Day for Energy Drinks and Energy Shots
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Energy Drinks</u>			<u>Energy Shots</u>		
	<u>8th</u>	<u>10th</u>	<u>12th</u>	<u>8th</u>	<u>10th</u>	<u>12th</u>
Number of drinks/shots						
per day						
None	77.8	78.7	72.8	92.8	93.1	91.4
Less than 1	12.0	12.1	17.0	3.5	3.1	4.5
One	5.4	4.7	5.1	1.6	1.1	1.3
Two	2.5	2.1	3.0	0.7	1.1	1.3
Three	1.2	1.3	1.2	0.5	0.7	0.7
Four	0.3	0.3	0.2	0.2	0.3	0.2
Five or six	0.4	0.3	0.2	0.4	0.2	0.2
7 or more	0.4	0.3	0.5	0.3	0.3	0.6

Source. The Monitoring the Future study, the University of Michigan.

TABLE 4-5
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<i>Approximate Weighted N^a</i>			<i>Any Illicit Drug^b</i>			<i>Any Illicit Drug other than Marijuana^b</i>			<i>Marijuana</i>			<i>Inhalants^c</i>			<i>Hallucinogens^{d,p}</i>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	14,000	14,300	13,300	18.7	36.3	47.8	9.8	14.2	18.9	13.9	32.6	43.6	8.7	6.5	4.4	2.2	3.9	6.6
Gender																		
Male	6,500	6,800	5,800	18.6	35.7	47.8	9.1	14.0	20.1	14.4	32.4	43.5	6.8	5.7	4.3	2.5	4.6	8.5
Female	6,800	7,000	6,400	18.5	36.7	46.5	10.2	13.9	15.9	13.3	32.5	42.8	10.4	7.1	4.5	1.8	3.1	3.9
College Plans																		
None or under 4 years	1,400	1,800	2,300	34.6	50.7	53.5	19.1	25.8	23.9	26.9	46.8	48.9	13.3	8.4	6.1	6.4	9.0	10.2
Complete 4 years	11,800	12,000	9,700	16.5	34.0	45.7	8.5	12.4	16.6	12.1	30.4	41.8	8.2	6.3	3.7	1.6	3.1	5.2
Region																		
Northeast	2,500	2,600	2,100	12.2	37.4	51.1	5.8	11.0	17.1	9.4	34.1	48.3	7.9	5.5	5.7	0.9	2.9	6.8
Midwest	3,100	3,300	3,000	15.9	33.1	48.2	7.8	13.9	18.0	11.1	29.2	45.0	8.7	6.8	3.3	1.5	4.0	6.6
South	5,100	5,200	5,100	19.4	35.9	43.7	11.4	15.4	18.6	13.5	32.0	38.6	8.3	6.8	4.2	2.3	4.1	5.3
West	3,300	3,100	3,100	25.5	39.5	51.8	12.4	15.2	21.6	20.5	35.8	47.3	9.9	6.5	4.9	3.6	4.4	8.5
Population Density																		
Large MSA	4,500	4,600	4,600	19.2	38.0	48.6	10.7	13.9	16.6	14.0	34.8	44.4	9.4	6.3	3.8	2.7	4.0	5.5
Other MSA	6,700	6,800	6,000	18.7	37.0	47.3	9.7	14.1	20.1	14.0	33.4	42.9	8.1	6.9	4.7	1.9	3.8	7.2
Non-MSA	2,700	2,900	2,600	18.2	32.2	47.8	8.6	14.9	20.3	13.5	27.2	43.8	9.1	6.0	4.7	2.1	4.0	7.0
Parental Education^e																		
1.0–2.0 (Low)	1,400	1,500	1,600	27.5	42.6	48.4	13.6	18.3	19.4	22.4	38.3	42.9	11.9	4.4	3.5	3.9	5.6	6.0
2.5–3.0	2,400	2,500	2,600	24.7	42.6	51.9	12.1	17.2	19.2	20.0	39.2	46.9	9.1	7.2	5.5	3.2	4.6	7.5
3.5–4.0	2,700	3,200	3,200	21.5	38.6	50.4	10.4	14.8	19.2	16.3	34.9	46.3	10.3	7.5	4.4	2.4	3.8	6.4
4.5–5.0	3,400	3,500	3,100	14.1	31.9	45.1	8.3	11.5	17.5	9.0	28.3	42.0	7.4	7.3	4.5	1.3	3.0	5.6
5.5–6.0 (High)	2,100	2,200	1,600	10.9	30.3	42.5	6.6	12.3	17.6	7.1	26.1	38.6	7.7	5.5	3.9	1.1	3.5	6.1
Race/Ethnicity (2-year average)^f																		
White	12,200	13,100	12,500	14.5	32.6	48.1	8.1	14.1	20.2	9.9	28.8	44.2	8.0	6.2	4.4	1.6	4.3	7.3
African American	2,900	3,800	2,800	19.6	35.3	47.1	7.8	8.1	11.9	15.6	32.4	43.7	8.2	5.9	5.5	1.3	1.5	2.6
Hispanic	7,300	5,400	5,700	21.5	39.3	47.9	11.2	16.7	18.0	16.4	35.3	43.7	8.9	6.3	4.5	2.6	4.4	5.8

(Table continued on next page.)

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>LSD^p</u>			<u>Hallucinogens other than LSD^p</u>			<u>Ecstasy (MDMA)^{c,f}</u>			<u>Cocaine</u>			<u>Crack</u>			<u>Cocaine other than Crackⁱ</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	1.4	2.8	5.1	1.5	2.7	4.5	1.6	2.4	4.1	1.4	2.6	3.9	0.9	1.0	1.5	1.2	2.4	3.3
Gender																		
Male	1.4	3.3	6.7	1.9	3.1	6.1	1.8	2.6	5.1	1.4	2.7	4.6	0.8	0.9	2.1	1.2	2.6	3.8
Female	1.3	2.3	2.9	1.1	2.2	2.4	1.4	2.2	2.8	1.3	2.3	2.8	0.9	0.9	1.0	1.0	2.1	2.4
College Plans																		
None or under 4 years	4.0	6.8	8.1	4.5	6.2	7.2	4.9	6.2	6.2	3.7	7.0	6.5	2.3	2.9	2.5	3.1	6.6	5.1
Complete 4 years	1.0	2.2	3.9	1.1	2.1	3.3	1.1	1.9	3.3	1.1	1.9	3.0	0.6	0.6	1.1	0.9	1.8	2.7
Region																		
Northeast	0.5	2.3	5.4	0.7	1.7	4.5	0.9	1.3	3.2	0.9	1.4	3.0	0.6	0.5	1.0	0.7	1.3	2.4
Midwest	0.7	3.0	5.5	1.2	2.5	4.7	1.2	2.5	4.2	0.7	2.1	3.1	0.4	0.9	1.7	0.6	1.8	2.6
South	1.4	2.9	4.1	1.7	2.9	3.4	1.7	2.8	3.4	1.6	3.3	3.3	0.9	1.2	1.5	1.3	3.2	2.6
West	2.7	2.9	6.0	2.1	3.3	6.1	2.5	2.5	5.5	2.3	2.8	6.2	1.5	1.0	1.7	1.9	2.6	5.9
Population Density																		
Large MSA	1.8	2.9	4.2	1.7	2.6	3.7	1.8	2.1	4.1	1.6	2.4	3.8	0.9	0.9	1.4	1.3	2.1	3.3
Other MSA	1.3	2.8	5.8	1.3	2.7	4.5	1.7	2.5	3.8	1.4	3.0	3.8	0.9	1.0	1.7	1.1	2.9	3.1
Non-MSA	1.0	2.7	4.8	1.7	2.9	5.7	1.2	2.6	4.6	1.3	1.8	4.2	0.9	1.0	1.4	1.0	1.7	3.9
Parental Education^e																		
1.0–2.0 (Low)	3.2	3.9	4.9	2.4	3.6	4.5	2.8	3.1	4.1	2.5	4.9	5.7	1.9	2.0	2.8	1.9	4.4	4.2
2.5–3.0	2.1	3.5	5.6	1.8	3.5	5.0	2.2	3.3	4.7	1.7	3.5	5.0	1.0	1.1	1.4	1.4	3.4	4.8
3.5–4.0	1.2	2.8	5.0	2.1	2.5	4.2	1.6	2.3	3.5	1.5	2.3	3.0	1.1	0.7	1.3	1.2	2.2	2.1
4.5–5.0	0.6	2.2	4.4	1.0	2.1	3.4	1.4	2.0	3.3	1.2	1.5	2.9	0.4	0.6	1.1	1.1	1.3	2.5
5.5–6.0 (High)	0.8	2.7	4.8	0.6	2.2	4.6	0.9	1.9	5.1	0.5	1.7	3.1	0.4	1.0	1.2	0.5	1.6	2.9
Race/Ethnicity (2-year average)^f																		
White	1.1	3.0	5.6	1.1	3.0	5.1	1.1	2.3	4.7	0.9	1.9	4.1	0.5	0.7	1.4	0.8	1.8	3.5
African American	0.8	1.1	2.0	0.9	0.8	1.8	1.1	1.2	2.3	0.7	0.9	1.2	0.6	0.4	0.9	0.5	0.8	0.9
Hispanic	1.8	3.4	4.6	1.5	2.9	3.7	2.1	3.7	4.1	2.1	4.0	5.2	1.4	1.7	2.1	1.6	3.8	4.3

(Table continued on next page.)

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Heroin, Any Use ^s			Heroin with a Needle ^{c,s}			Heroin without a Needle ^{c,s}			Narcotics other than Heroin ^j			Amphetamines ^j			Methamphetamine ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.6	0.4	0.8	0.4	0.2	0.5	0.3	0.2	0.6	—	—	6.0	5.9	8.6	8.6	0.7	0.8	0.7
Gender																		
Male	0.7	0.4	0.7	0.5	0.3	0.4	0.4	0.2	0.6	—	—	7.0	5.4	8.2	9.6	0.7	1.0	1.0
Female	0.4	0.3	0.5	0.3	0.2	0.3	0.3	0.3	0.4	—	—	4.8	6.5	8.9	7.3	0.7	0.5	0.4
College Plans																		
None or under 4 years	2.0	1.2	1.6	1.3	0.7	1.0	1.2	0.9	1.4	—	—	8.3	10.7	14.8	11.0	2.4	3.4	0.9
Complete 4 years	0.4	0.2	0.4	0.3	0.2	0.2	0.2	0.1	0.3	—	—	5.3	5.4	7.7	7.7	0.5	0.3	0.6
Region																		
Northeast	0.3	0.5	0.4	0.2	0.2	0.3	0.2	0.4	0.2	—	—	4.5	3.1	7.1	7.3	0.4	0.8	0.3
Midwest	0.2	0.2	1.1	0.2	0.2	0.8	0.1	0.2	0.7	—	—	6.2	5.3	9.5	9.1	0.2	0.7	1.4
South	0.7	0.3	0.8	0.5	0.3	0.5	0.4	0.2	0.6	—	—	5.7	7.0	8.6	8.6	1.2	0.8	0.4
West	1.0	0.4	0.6	0.6	0.2	0.2	0.6	0.3	0.7	—	—	7.5	7.0	8.8	9.2	0.6	1.0	0.7
Population Density																		
Large MSA	0.7	0.5	0.6	0.5	0.2	0.4	0.5	0.3	0.5	—	—	4.8	6.2	8.4	7.4	0.8	0.7	0.4
Other MSA	0.6	0.3	0.8	0.4	0.3	0.5	0.3	0.2	0.5	—	—	6.5	6.1	8.4	9.4	0.6	0.6	0.8
Non-MSA	0.3	0.3	1.1	0.2	0.2	0.5	0.2	0.2	0.9	—	—	7.0	5.1	9.1	9.1	0.8	1.4	1.1
Parental Education^e																		
1.0–2.0 (Low)	0.8	0.6	1.7	0.8	0.3	1.1	0.6	0.5	1.3	—	—	6.0	7.6	9.4	7.9	1.7	1.7	1.2
2.5–3.0	0.7	0.4	0.9	0.6	0.3	0.5	0.4	0.1	0.9	—	—	6.9	7.1	10.2	8.5	1.2	1.1	1.1
3.5–4.0	0.7	0.4	0.7	0.3	0.2	0.5	0.5	0.3	0.3	—	—	6.5	6.5	9.5	9.1	0.7	0.7	0.4
4.5–5.0	0.6	0.2	0.3	0.3	0.1	0.2	0.2	0.1	0.1	—	—	5.7	5.2	7.0	8.0	0.5	0.3	0.7
5.5–6.0 (High)	0.2	0.4	0.5	0.1	0.4	0.2	0.1	0.3	0.3	—	—	5.0	5.0	7.8	10.3	0.3	0.9	0.3
Race/Ethnicity (2-year average)^f																		
White	0.4	0.3	0.5	0.2	0.2	0.3	0.3	0.2	0.3	—	—	7.2	5.4	9.1	10.6	0.5	0.8	1.0
African American	0.4	0.4	0.8	0.4	0.3	0.7	0.2	0.2	0.6	—	—	4.7	4.9	4.9	4.7	0.3	0.3	0.2
Hispanic	1.0	0.4	0.9	0.6	0.3	0.5	0.6	0.3	0.6	—	—	5.1	6.2	8.4	7.0	1.3	1.2	0.9

(Table continued on next page.)

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Crystal Methamphetamine (Ice) ^h			Sedatives (Barbiturates) ⁱ			Tranquilizers ⁱ			Any Prescription Drug ^l			Rohypnol ^m			Alcohol		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	1.1	—	—	4.2	3.5	6.0	6.6	—	—	15.5	0.7	0.5	—	23.5	43.0	58.5
Gender																		
Male	—	—	1.1	—	—	3.6	3.2	5.7	6.9	—	—	16.1	0.8	0.2	—	22.1	40.0	56.5
Female	—	—	0.8	—	—	4.2	3.8	6.3	5.9	—	—	13.6	0.6	0.8	—	25.0	46.5	60.5
College Plans																		
None or under 4 years	—	—	3.5	—	—	5.1	6.7	11.1	8.9	—	—	19.3	2.2	2.2	—	35.7	52.0	58.2
Complete 4 years	—	—	0.4	—	—	3.8	3.1	5.3	5.6	—	—	13.9	0.4	0.3	—	22.0	42.0	58.7
Region																		
Northeast	—	—	0.6	—	—	3.9	2.1	3.6	5.4	—	—	13.4	0.2	0.6	—	21.0	44.7	60.9
Midwest	—	—	1.6	—	—	4.5	2.6	5.4	7.1	—	—	15.2	0.4	0.6	—	23.2	41.8	60.2
South	—	—	1.3	—	—	4.2	4.1	7.2	6.8	—	—	15.5	0.8	0.4	—	23.5	43.7	56.8
West	—	—	0.8	—	—	4.1	4.5	6.6	6.6	—	—	17.4	0.9	0.5	—	25.9	41.7	58.0
Population Density																		
Large MSA	—	—	0.7	—	—	3.5	3.5	5.9	5.5	—	—	13.7	0.7	0.5	—	23.8	43.8	56.3
Other MSA	—	—	1.1	—	—	4.4	3.7	6.0	7.3	—	—	16.7	0.6	0.5	—	22.5	42.4	58.5
Non-MSA	—	—	2.0	—	—	5.0	3.2	6.3	6.9	—	—	16.2	0.7	0.6	—	25.4	43.2	62.6
Parental Education ^e																		
1.0–2.0 (Low)	—	—	3.4	—	—	3.9	5.2	8.4	7.1	—	—	15.5	0.3	1.4	—	30.2	46.3	51.8
2.5–3.0	—	—	1.0	—	—	4.1	4.9	6.4	7.2	—	—	15.7	0.2	0.4	—	30.0	46.7	58.0
3.5–4.0	—	—	1.1	—	—	4.8	3.9	6.9	6.5	—	—	16.2	1.6	0.4	—	28.4	46.3	61.3
4.5–5.0	—	—	0.4	—	—	3.9	2.9	4.9	5.9	—	—	14.6	0.4	0.5	—	19.6	40.8	60.4
5.5–6.0 (High)	—	—	0.4	—	—	4.1	1.9	5.0	6.4	—	—	15.3	0.4	0.2	—	17.3	42.4	61.9
Race/Ethnicity (2-year average) ^f																		
White	—	—	0.9	—	—	4.5	2.9	5.9	7.5	—	—	17.3	0.4	0.7	—	21.4	45.6	65.7
African American	—	—	1.3	—	—	2.1	2.0	2.7	4.3	—	—	10.1	0.4	0.4	—	19.6	31.0	47.9
Hispanic	—	—	2.2	—	—	4.4	4.5	8.2	6.9	—	—	14.1	0.8	0.6	—	26.8	45.0	56.1

(Table continued on next page.)

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Been Drunk</u> ^h			<u>Flavored Alcoholic Beverages</u> ^{k,n}			<u>Cigarettes</u>			<u>Any Vaping</u> ^{h,k}			<u>Vaping Nicotine</u> ^{h,k}			<u>Vaping Marijuana</u> ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	9.2	26.2	42.9	18.0	35.9	50.4	9.1	16.0	23.8	21.5	36.9	42.5	13.5	28.6	34.0	5.5	14.2	15.6
Gender																		
Male	8.8	24.1	41.8	15.8	31.2	46.0	9.2	16.6	24.9	20.1	35.4	44.2	13.6	28.0	36.1	5.0	13.6	17.9
Female	9.6	28.5	42.8	20.0	40.8	54.8	8.7	15.1	21.3	22.6	38.6	41.5	13.4	29.5	32.1	5.9	15.0	13.0
College Plans																		
None or under 4 years	16.6	35.0	43.1	25.3	42.5	49.6	19.7	29.4	36.3	34.7	45.6	42.9	25.1	36.3	36.8	13.6	18.5	17.8
Complete 4 years	8.4	25.1	42.6	17.3	35.2	50.7	7.5	13.8	19.7	20.0	35.8	42.7	12.3	27.8	33.8	4.4	13.6	14.8
Region																		
Northeast	6.8	26.0	47.9	15.2	37.1	50.1	5.9	10.8	19.7	19.1	37.4	49.1	10.5	29.5	39.1	2.7	17.1	22.8
Midwest	8.1	26.2	43.9	17.2	38.2	53.9	10.0	16.2	24.3	22.5	36.8	42.1	15.8	29.0	34.2	3.5	12.2	11.7
South	9.3	27.2	38.3	19.6	37.3	49.7	8.7	19.1	26.4	20.9	37.1	40.5	13.2	28.5	31.9	5.4	12.0	11.8
West	11.9	24.9	46.0	18.5	30.1	48.2	11.1	14.8	21.7	23.2	36.4	42.0	14.0	27.7	33.9	9.9	17.9	21.0
Population Density																		
Large MSA	8.5	27.3	41.7	18.0	33.3	46.1	7.8	13.5	19.1	21.1	38.0	35.5	12.7	30.6	27.7	6.5	17.3	17.2
Other MSA	9.2	25.3	42.3	17.5	36.5	50.2	8.6	15.1	22.7	22.5	36.8	45.8	14.6	27.4	37.2	5.9	14.5	16.0
Non-MSA	10.4	26.9	46.2	19.5	38.4	58.4	12.4	21.8	34.8	19.5	35.5	47.3	11.9	28.4	37.5	3.0	8.9	11.9
Parental Education ^e																		
1.0–2.0 (Low)	13.8	28.0	34.3	23.5	41.1	42.6	12.4	20.5	23.5	25.9	40.9	33.4	14.2	31.7	25.4	8.7	17.2	14.8
2.5–3.0	12.6	29.2	43.2	23.1	40.1	49.0	12.6	20.5	25.0	27.9	41.3	39.4	17.1	31.4	29.8	8.5	16.0	14.5
3.5–4.0	11.6	28.3	43.1	21.0	40.5	56.8	11.3	17.8	24.7	24.6	38.3	47.4	15.7	27.8	37.8	6.0	14.8	15.2
4.5–5.0	7.1	24.5	44.2	16.4	32.8	55.8	6.4	12.5	22.4	17.4	37.1	49.0	11.3	30.4	40.9	3.5	13.8	16.4
5.5–6.0 (High)	5.8	27.0	49.0	12.1	31.0	44.7	4.7	11.0	20.4	15.7	33.7	46.5	10.1	27.4	39.8	2.5	13.1	20.7
Race/Ethnicity (2-year average) ^f																		
White	8.4	29.4	50.0	15.9	38.0	57.1	9.2	18.1	29.8	19.4	36.5	46.2	12.7	29.2	37.9	3.4	11.8	15.4
African American	6.6	13.8	30.9	14.7	23.4	36.2	6.9	7.9	13.7	14.2	21.8	23.7	6.2	10.8	12.6	3.3	6.3	5.4
Hispanic	10.6	26.0	38.9	19.7	38.6	45.5	8.9	16.2	20.2	22.2	35.3	31.8	12.8	24.6	19.9	6.3	14.8	12.8

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following table 4-8.

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Vaping Just Flavoring</u> ^{h,k}			<u>Smokeless Tobacco</u> ^{g,n}			<u>Steroids</u> ^c			<u>Legal Use of Over-the-Counter Stimulants</u>					
	8th	10th	12th	8th	10th	12th	8th	10th	12th	<u>Diet Pills</u> ⁿ			<u>Stay-Awake Pills</u> ⁿ		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	19.4	31.7	34.1	6.4	10.0	10.1	1.1	1.2	1.6	—	—	6.2	—	—	3.6
Gender															
Male	17.8	30.9	34.2	8.9	14.8	17.4	1.0	1.3	2.2	—	—	2.7	—	—	2.7
Female	20.8	32.9	34.1	3.9	5.3	3.5	1.1	0.9	0.8	—	—	8.9	—	—	4.3
College Plans															
None or under 4 years	30.2	40.2	34.0	16.7	22.9	16.9	1.6	1.8	2.4	—	—	7.2	—	—	6.2
Complete 4 years	18.3	30.6	34.4	4.9	8.0	7.6	1.0	1.1	1.2	—	—	5.8	—	—	2.3
Region															
Northeast	17.1	32.1	39.2	4.7	7.9	8.9	0.8	1.1	0.9	—	—	5.8	—	—	1.8
Midwest	20.5	32.0	34.0	5.8	11.2	12.0	1.1	1.2	1.6	—	—	7.5	—	—	4.0
South	18.7	31.7	32.3	6.5	11.9	11.2	1.2	1.4	2.0	—	—	6.6	—	—	3.8
West	21.0	31.3	33.6	7.9	7.2	7.2	1.2	0.8	1.3	—	—	4.5	—	—	3.9
Population Density															
Large MSA	18.9	31.2	27.7	4.5	9.1	5.8	1.2	1.0	1.5	—	—	4.5	—	—	2.1
Other MSA	20.4	32.2	37.2	5.4	9.0	10.1	1.0	1.3	1.4	—	—	6.2	—	—	4.0
Non-MSA	17.7	31.5	37.9	11.4	13.6	17.6	1.1	1.2	2.0	—	—	9.1	—	—	5.0
Parental Education ^e															
1.0–2.0 (Low)	22.9	38.0	29.0	8.5	9.3	4.0	1.3	1.5	1.5	—	—	7.2	—	—	5.3
2.5–3.0	25.2	36.1	32.2	8.6	11.7	13.2	1.5	1.3	1.6	—	—	6.4	—	—	4.3
3.5–4.0	22.2	33.4	40.6	7.1	11.4	10.4	1.0	1.5	1.5	—	—	7.8	—	—	3.6
4.5–5.0	15.3	31.4	36.9	5.5	9.0	11.4	1.1	0.9	1.5	—	—	5.6	—	—	1.9
5.5–6.0 (High)	14.7	26.8	33.6	3.6	9.6	9.6	0.9	0.8	1.4	—	—	5.4	—	—	2.9
Race/Ethnicity (2-year average) ^f															
White	17.8	31.3	37.6	6.8	13.0	16.4	1.0	1.1	1.4	—	—	6.9	—	—	3.6
African American	13.1	19.5	20.5	4.8	4.0	5.6	1.2	1.3	2.9	—	—	5.3	—	—	2.3
Hispanic	20.0	31.9	27.4	5.9	6.6	3.5	1.1	1.0	1.3	—	—	5.5	—	—	2.6

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following table 4-8.

TABLE 4-5 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Legal Use of Prescription ADHD Drugs								
	Stimulant-Type ^h			Non-Stimulant-Type ^h			Either Type ^h		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	7.1	8.2	8.6	4.4	5.1	6.1	11.0	12.1	12.7
Gender									
Male	8.6	9.4	10.3	5.1	6.1	6.4	13.1	14.5	14.6
Female	6.1	6.9	6.2	3.6	4.0	4.7	9.2	9.6	9.7
College Plans									
None or under 4 years	11.1	11.7	10.4	6.3	7.9	6.4	16.5	17.2	14.8
Complete 4 years	6.6	7.5	7.7	4.2	4.5	5.9	10.2	11.1	11.8
Region									
Northeast	8.1	5.7	8.3	5.5	4.1	6.6	12.5	8.9	12.5
Midwest	7.0	11.2	9.0	4.4	5.7	6.5	10.6	15.7	13.3
South	9.3	8.2	9.0	4.4	5.6	6.3	13.1	12.8	12.9
West	3.2	6.6	7.6	3.5	4.6	5.0	6.6	9.4	11.8
Population Density									
Large MSA	6.3	7.1	8.4	3.9	4.2	5.8	9.9	10.4	12.2
Other MSA	8.8	8.4	8.6	4.7	4.9	6.5	12.8	12.3	13.0
Non-MSA	4.7	9.0	8.9	4.4	6.9	5.8	8.7	14.1	12.9
Parental Education^e									
1.0–2.0 (Low)	7.8	7.4	3.2	4.2	4.9	3.8	11.5	10.9	6.3
2.5–3.0	5.9	7.5	7.5	4.1	4.2	4.1	9.3	10.8	10.5
3.5–4.0	6.9	7.8	9.1	5.8	5.8	5.3	11.4	12.0	12.4
4.5–5.0	8.4	9.7	9.2	4.6	4.3	8.1	12.9	13.3	14.7
5.5–6.0 (High)	7.9	8.6	11.9	3.7	6.3	9.8	10.7	13.6	19.0
Race/Ethnicity (2-year average)^f									
White	8.4	9.3	11.2	5.0	5.7	7.4	12.8	13.7	16.1
African American	7.2	4.1	6.9	5.2	3.6	7.8	11.2	7.4	11.3
Hispanic	3.9	5.5	3.9	3.1	4.4	2.1	6.7	8.4	6.1

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following table 4-8.

TABLE 4-6
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Approximate Weighted N^a</u>			<u>Any Illicit Drug^b</u>			<u>Any Illicit Drug other than Marijuana^b</u>			<u>Marijuana</u>			<u>Synthetic Marijuana^{h,k}</u>			<u>Inhalants^c</u>			<u>Hallucinogens^{d,p}</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	14,000	14,300	13,300	13.4	29.9	38.8	6.1	9.6	12.4	10.5	27.5	35.9	1.6	2.9	3.5	4.6	2.4	1.6	1.4	2.7	4.3
Gender																					
Male	6,500	6,800	5,800	13.2	29.5	39.7	5.8	9.8	13.9	10.6	27.2	36.8	1.8	3.4	3.0	3.6	2.0	1.8	1.5	3.2	5.8
Female	6,800	7,000	6,400	13.3	30.2	36.8	6.1	9.2	9.7	10.2	27.6	34.1	1.4	2.4	3.4	5.4	2.7	1.2	1.1	2.1	2.3
College Plans																					
None or under 4 years	1,400	1,800	2,300	25.8	43.2	42.5	11.6	18.2	16.0	21.6	40.3	39.5	2.2	4.7	5.4	8.0	4.1	2.1	3.9	6.0	6.7
Complete 4 years	11,800	12,000	9,700	11.6	28.0	37.2	5.2	8.3	10.8	8.9	25.6	34.5	1.4	2.6	2.9	4.2	2.2	1.4	1.0	2.2	3.4
Region																					
Northeast	2,500	2,600	2,100	8.8	32.3	42.8	3.6	7.4	12.1	7.4	29.8	41.1	1.5	3.3	2.2	3.7	2.0	2.0	0.7	2.1	4.8
Midwest	3,100	3,300	3,000	11.3	27.4	40.1	4.6	9.6	12.2	8.4	25.0	38.2	1.2	2.6	3.8	4.7	2.0	1.1	0.9	2.6	4.5
South	5,100	5,200	5,100	13.2	28.9	34.6	6.8	10.3	12.2	9.7	26.2	30.7	1.6	2.0	4.0	4.3	2.9	1.7	1.3	2.9	3.4
West	3,300	3,100	3,100	19.2	32.2	41.7	8.2	10.0	13.3	16.0	30.2	38.9	2.0	4.6	3.1	5.5	2.2	1.6	2.4	3.0	5.1
Population Density																					
Large MSA	4,500	4,600	4,600	14.0	31.6	39.9	7.1	9.6	11.0	10.8	29.1	37.0	1.3	3.7	3.3	4.6	1.9	1.5	1.8	2.6	3.8
Other MSA	6,700	6,800	6,000	13.5	30.7	38.1	5.8	9.8	12.9	10.7	28.5	35.3	1.8	2.5	3.7	4.4	2.6	1.5	1.2	2.8	4.4
Non-MSA	2,700	2,900	2,600	12.0	25.3	38.7	5.0	9.0	14.0	9.5	22.4	35.5	1.5	2.9	3.4	5.0	2.5	1.8	1.0	2.6	4.8
Parental Education^e																					
1.0–2.0 (Low)	1,400	1,500	1,600	19.0	34.1	36.2	8.3	12.5	11.4	15.9	31.2	33.1	2.9	5.5	7.1	5.8	1.0	0.7	2.0	3.5	4.0
2.5–3.0	2,400	2,500	2,600	18.0	34.1	42.2	7.4	10.9	12.3	15.1	32.0	38.9	1.5	3.0	3.6	4.8	2.4	2.0	1.8	3.0	4.4
3.5–4.0	2,700	3,200	3,200	15.7	31.8	41.2	6.8	9.8	12.4	12.5	29.2	38.6	1.5	2.8	2.6	5.4	2.9	1.9	1.6	2.7	4.3
4.5–5.0	3,400	3,500	3,100	9.9	26.9	37.4	5.2	8.2	12.3	7.0	24.7	34.9	1.6	1.9	3.0	3.9	3.1	1.6	1.0	2.3	3.6
5.5–6.0 (High)	2,100	2,200	1,600	7.5	26.5	35.6	4.0	9.1	12.1	5.2	23.6	32.8	1.0	3.2	2.1	4.1	1.7	1.2	0.8	2.8	4.4
Race/Ethnicity (2-year average)^f																					
White	12,200	13,100	12,500	10.3	27.7	39.5	5.0	9.8	13.9	7.5	25.3	36.9	1.1	2.2	3.0	4.5	2.3	1.5	1.1	3.0	4.8
African American	2,900	3,800	2,800	13.1	26.4	38.8	4.8	5.2	7.5	10.7	24.8	36.3	2.4	2.2	2.8	3.6	2.8	1.6	0.7	0.8	1.8
Hispanic	7,300	5,400	5,700	15.5	31.0	37.2	7.0	11.0	10.8	12.4	28.2	34.2	2.5	4.3	5.0	4.7	1.9	1.5	1.5	3.0	3.4

(Table continued on next page.)

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	LSD ^p			Hallucinogens other than LSD ^p			Ecstasy (MDMA) ^{c,r}			Salvia ^{h,k}			Cocaine			Crack			Cocaine other than Crack ⁱ		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.9	2.0	3.2	0.9	1.7	2.7	1.1	1.4	2.2	0.6	0.7	0.9	0.8	1.5	2.3	0.4	0.6	0.9	0.7	1.4	2.0
Gender																					
Male	1.0	2.4	4.4	1.1	1.9	3.6	1.2	1.5	2.9	1.0	0.8	1.0	0.8	1.8	2.8	0.4	0.5	1.4	0.7	1.7	2.2
Female	0.8	1.5	1.6	0.7	1.4	1.4	0.9	1.3	1.5	0.3	0.6	0.4	0.6	1.3	1.4	0.4	0.6	0.4	0.5	1.2	1.2
College Plans																					
None or under 4 years	2.8	4.4	5.0	2.3	3.6	4.3	3.3	3.4	3.4	2.0	1.4	1.4	2.4	3.8	4.0	1.3	1.3	1.9	2.1	3.6	3.3
Complete 4 years	0.6	1.6	2.5	0.7	1.4	2.0	0.7	1.1	1.8	0.4	0.6	0.5	0.5	1.2	1.8	0.3	0.5	0.6	0.4	1.1	1.4
Region																					
Northeast	0.5	1.7	3.7	0.5	1.1	3.0	0.7	0.8	1.6	0.5	1.0	2.3	0.5	1.0	2.3	0.2	0.3	0.7	0.4	0.9	2.1
Midwest	0.4	1.9	3.5	0.8	1.5	2.9	0.7	1.6	2.2	0.2	0.6	0.4	0.5	1.1	2.0	0.3	0.4	1.2	0.4	1.0	1.8
South	0.8	2.0	2.7	0.9	2.0	1.9	1.2	1.6	1.8	0.9	0.3	1.2	0.7	2.1	1.7	0.4	0.9	0.9	0.5	2.0	1.4
West	1.8	2.1	3.1	1.3	2.1	3.6	1.6	1.4	3.1	0.8	1.4	0.2	1.4	1.4	3.5	0.8	0.4	0.9	1.3	1.3	2.9
Population Density																					
Large MSA	1.3	1.8	2.8	1.1	1.5	2.3	1.2	1.3	2.1	1.0	1.0	1.3	0.8	1.4	2.3	0.5	0.6	0.9	0.7	1.2	2.0
Other MSA	0.9	2.2	3.6	0.8	1.9	2.6	1.1	1.5	2.2	0.5	0.7	0.4	0.7	1.9	2.2	0.4	0.6	1.1	0.7	1.8	1.8
Non-MSA	0.5	1.7	2.9	0.8	1.6	3.6	0.9	1.4	2.2	0.3	0.4	1.3	0.7	1.0	2.5	0.4	0.4	0.7	0.6	0.9	2.3
Parental Education^e																					
1.0–2.0 (Low)	1.9	2.4	3.0	1.3	2.2	2.7	2.0	1.7	1.7	0.9	2.3	1.1	1.7	2.5	3.3	1.1	1.0	1.7	1.2	2.3	2.4
2.5–3.0	1.3	2.1	3.1	0.9	1.9	2.8	1.4	1.6	2.7	0.1	0.4	0.9	0.8	1.8	2.8	0.4	0.5	1.0	0.7	1.8	2.5
3.5–4.0	1.0	2.0	3.1	1.2	1.7	2.5	1.1	1.3	2.0	0.4	0.5	1.5	0.7	1.7	1.7	0.5	0.4	0.8	0.6	1.6	1.3
4.5–5.0	0.5	1.8	2.5	0.8	1.4	2.1	1.0	1.3	2.0	0.9	0.6	0.6	0.7	1.0	2.0	0.2	0.4	0.7	0.6	0.9	1.6
5.5–6.0 (High)	0.5	2.0	3.4	0.5	1.9	2.7	0.5	1.6	2.5	0.3	0.3	0.1	0.4	1.5	1.9	0.2	0.8	0.5	0.4	1.4	1.6
Race/Ethnicity (2-year average)^f																					
White	0.7	2.2	3.6	0.7	1.9	3.0	0.7	1.4	2.6	0.3	0.6	1.4	0.5	1.3	2.7	0.3	0.5	0.9	0.4	1.2	2.3
African American	0.5	0.7	1.5	0.3	0.4	1.2	0.5	1.0	0.9	1.3	0.7	0.9	0.5	0.6	0.8	0.5	0.3	0.7	0.4	0.6	0.4
Hispanic	1.2	2.3	2.6	0.8	1.9	2.1	1.3	2.2	2.1	0.6	1.2	1.4	1.2	2.3	2.9	0.8	1.0	1.2	0.9	2.1	2.4

(Table continued on next page.)

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Heroin, Any Use ^s			Heroin with a Needle ^{c,s}			Heroin without a Needle ^{c,s}			Narcotics other than Heroin ^j			OxyContin ^{c,j,k}			Vicodin ^{c,j,k}			Amphetamines ^j		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.3	0.2	0.4	0.2	0.1	0.1	0.2	0.1	0.2	—	—	3.4	0.8	2.2	2.3	0.6	1.1	1.7	3.7	5.7	5.5
Gender																					
Male	0.4	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.2	—	—	4.4	0.8	2.5	2.4	0.8	1.4	1.6	3.6	5.4	6.3
Female	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	—	—	2.2	0.7	1.7	1.7	0.3	0.7	1.3	3.9	5.9	4.2
College Plans																					
None or under 4 years	0.9	0.5	0.8	0.5	0.3	0.3	0.8	0.4	0.6	—	—	4.6	2.5	3.7	3.8	1.9	3.0	3.2	7.0	10.2	6.7
Complete 4 years	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	—	—	3.0	0.5	1.9	1.7	0.4	0.8	1.2	3.3	5.0	4.9
Region																					
Northeast	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	—	—	2.8	0.6	1.6	1.3	0.5	0.8	1.1	2.1	4.6	5.4
Midwest	0.1	0.1	0.6	0.1	0.1	0.1	0.1	*	0.4	—	—	3.5	0.2	1.9	2.0	0.0	1.6	2.2	3.2	6.6	6.0
South	0.4	0.2	0.4	0.2	0.1	0.1	0.3	0.2	0.2	—	—	3.2	0.9	2.1	2.8	0.8	0.7	1.8	4.3	5.6	5.5
West	0.5	0.2	0.1	0.4	0.1	0.1	0.4	0.1	0.1	—	—	4.0	1.2	3.1	2.5	0.8	1.6	1.6	4.5	5.8	5.0
Population Density																					
Large MSA	0.6	0.2	0.3	0.3	0.1	0.1	0.4	0.1	0.3	—	—	2.8	0.8	2.3	2.5	0.6	0.9	2.1	4.0	5.8	4.5
Other MSA	0.2	0.2	0.4	0.2	0.1	0.1	0.2	0.1	0.1	—	—	3.6	0.9	2.1	2.0	0.6	1.1	1.3	3.7	5.7	5.8
Non-MSA	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.4	—	—	4.0	0.4	2.2	2.6	0.5	1.5	2.0	3.3	5.4	6.6
Parental Education^e																					
1.0–2.0 (Low)	0.6	0.2	1.1	0.5	0.1	0.1	0.6	0.1	0.3	—	—	3.2	0.8	5.5	2.6	0.6	3.0	2.0	4.8	6.5	4.1
2.5–3.0	0.6	0.1	0.3	0.4	0.1	0.1	0.4	*	0.4	—	—	3.9	0.7	3.7	3.0	0.1	1.6	2.1	4.2	6.7	5.1
3.5–4.0	0.4	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.1	—	—	3.7	0.6	1.4	2.2	0.6	0.8	1.8	4.5	5.4	6.0
4.5–5.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	*	0.1	—	—	3.1	1.1	1.2	1.6	0.5	0.4	0.8	3.2	5.0	5.5
5.5–6.0 (High)	0.1	0.3	0.2	0.1	0.2	0.2	0.1	0.2	0.2	—	—	3.1	0.3	0.8	1.3	0.5	0.9	1.6	3.0	5.9	6.2
Race/Ethnicity (2-year average)^f																					
White	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	—	—	4.2	0.6	1.7	2.5	0.4	1.2	1.9	3.3	6.2	6.8
African American	0.2	0.2	0.6	0.2	0.2	0.2	0.1	0.1	0.4	—	—	2.8	1.4	1.6	1.7	1.5	0.9	1.1	3.3	3.3	3.1
Hispanic	0.6	0.3	0.4	0.3	0.2	0.2	0.5	0.2	0.2	—	—	2.9	0.7	4.0	2.1	0.5	1.8	1.7	4.0	5.4	3.9

(Table continued on next page.)

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Ritalin</u> ^{h,j,k}			<u>Adderall</u> ^{h,j,k}			<u>Methamphetamine</u> ^{h,k}			<u>Crystal Methamphetamine (Ice)</u> ^h			<u>Bath Salts (Synthetic Stimulants)</u> ^{h,k}			<u>Sedatives (Barbiturates)</u> ^j			<u>Tranquilizers</u> ^j		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.5	0.9	0.9	1.8	4.1	4.6	0.4	0.4	0.5	—	—	0.6	0.9	0.5	0.6	—	—	2.7	2.0	3.9	3.9
Gender																					
Male	0.7	1.5	1.4	1.5	4.8	4.9	0.3	0.4	0.7	—	—	0.6	1.4	0.7	0.4	—	—	2.4	2.0	3.9	4.2
Female	0.3	0.4	0.4	1.9	3.2	3.9	0.5	0.4	0.2	—	—	0.2	0.4	0.3	0.5	—	—	2.5	2.1	3.7	3.1
College Plans																					
None or under 4 years	2.1	1.9	1.3	2.9	7.6	7.0	1.8	1.5	1.0	—	—	1.4	3.3	1.6	1.4	—	—	3.5	4.0	7.4	5.4
Complete 4 years	0.4	0.7	0.7	1.6	3.5	4.0	0.2	0.2	0.4	—	—	0.2	0.6	0.4	0.3	—	—	2.4	1.8	3.4	3.2
Region																					
Northeast	0.5	0.8	1.8	1.1	1.9	5.6	0.4	0.3	0.1	—	—	0.5	0.6	0.7	0.3	—	—	2.5	0.9	2.1	3.4
Midwest	0.4	1.3	0.9	1.5	5.7	4.8	0.1	0.3	1.3	—	—	0.6	0.2	0.4	0.5	—	—	2.9	1.3	3.9	4.3
South	0.5	0.8	0.7	2.2	4.2	4.6	0.6	0.6	0.5	—	—	0.7	1.6	0.6	0.8	—	—	2.5	2.5	4.6	4.0
West	0.7	0.7	0.7	2.0	3.6	3.7	0.5	0.4	0.2	—	—	0.4	0.7	0.6	0.5	—	—	2.7	2.9	4.0	3.5
Population Density																					
Large MSA	0.5	1.0	0.9	1.8	6.0	4.2	0.5	0.4	0.4	—	—	0.6	1.1	0.6	0.7	—	—	2.3	2.2	3.8	3.1
Other MSA	0.7	0.8	0.7	2.1	2.6	4.8	0.5	0.3	0.6	—	—	0.2	0.8	0.5	0.2	—	—	2.6	2.2	3.9	4.2
Non-MSA	0.2	1.0	1.3	1.2	4.4	4.8	0.1	0.7	0.6	—	—	1.2	0.8	0.5	1.2	—	—	3.2	1.5	3.8	4.5
Parental Education ^e																					
1.0–2.0 (Low)	0.6	1.8	0.4	1.3	5.9	3.0	1.4	0.7	0.9	—	—	0.9	1.1	1.2	1.2	—	—	2.8	3.2	5.3	3.2
2.5–3.0	0.6	1.4	1.1	1.9	4.5	4.6	0.7	0.3	0.4	—	—	0.4	0.3	0.5	1.0	—	—	2.5	2.6	3.7	4.4
3.5–4.0	0.5	0.5	0.8	1.9	4.2	4.8	0.6	0.7	0.4	—	—	0.7	1.1	0.5	0.1	—	—	2.9	2.4	4.7	4.2
4.5–5.0	0.5	0.7	1.0	1.9	2.9	4.4	0.1	0.1	0.6	—	—	0.4	0.8	0.4	0.4	—	—	2.8	1.9	3.2	3.3
5.5–6.0 (High)	0.3	0.8	0.9	1.0	4.8	6.0	0.0	0.7	0.3	—	—	0.3	0.9	0.2	0.3	—	—	2.1	1.1	3.4	3.6
Race/Ethnicity (2-year average) ^f																					
White	0.3	0.7	1.1	1.3	4.1	6.6	0.2	0.3	0.7	—	—	0.4	0.4	0.3	0.4	—	—	2.8	1.6	4.0	4.7
African American	0.9	0.8	0.9	1.5	2.9	1.6	0.3	0.4	0.2	—	—	0.8	1.9	0.5	1.0	—	—	1.5	1.0	1.5	2.7
Hispanic	0.6	1.0	1.0	1.2	4.5	3.6	1.0	0.4	0.5	—	—	0.9	0.9	0.9	0.7	—	—	2.9	2.6	5.3	3.7

(Table continued on next page.)

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Any Prescription Drug ⁱ			Over-the-Counter Cough/Cold Medicines ^{h,k}			Rohypnol ^{m,n}			GHB ⁿ			Ketamine ^h			Alcohol			Been Drunk ^h		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	9.9	2.8	3.3	3.4	0.3	0.3	0.7	—	—	0.3	—	—	0.7	18.7	37.8	53.3	6.5	20.9	33.9
Gender																					
Male	—	—	10.7	2.6	3.7	4.0	0.4	0.1	0.5	—	—	0.1	—	—	0.7	16.6	34.9	51.8	6.0	19.4	33.4
Female	—	—	8.1	2.9	3.0	2.6	0.3	0.5	0.4	—	—	0.1	—	—	0.2	20.6	41.0	54.8	7.0	22.5	33.7
College Plans																					
None or under 4 years	—	—	12.0	4.2	4.8	5.9	1.3	0.9	1.5	—	—	0.8	—	—	2.1	27.5	45.0	52.3	11.9	26.2	33.0
Complete 4 years	—	—	8.8	2.6	3.1	2.8	0.1	0.2	0.3	—	—	0.1	—	—	0.3	17.6	37.1	53.7	5.9	20.2	34.3
Region																					
Northeast	—	—	9.1	1.4	2.6	3.4	0.0	0.1	0.3	—	—	0.2	—	—	0.5	16.5	39.6	57.1	5.2	21.5	39.5
Midwest	—	—	9.9	2.4	3.3	3.7	0.4	0.3	0.6	—	—	*	—	—	0.9	18.1	36.4	55.3	5.7	20.8	36.1
South	—	—	10.0	3.2	3.4	3.1	0.4	0.3	1.3	—	—	0.7	—	—	1.0	18.3	38.4	51.1	6.6	21.4	28.9
West	—	—	10.2	3.7	3.9	3.6	0.3	0.5	0.1	—	—	0.1	—	—	0.3	21.5	36.8	52.5	8.1	19.6	36.4
Population Density																					
Large MSA	—	—	8.5	2.3	3.7	2.6	0.2	0.2	0.7	—	—	0.6	—	—	1.2	19.2	39.1	51.7	6.3	21.9	33.2
Other MSA	—	—	10.5	2.9	3.2	3.4	0.3	0.3	0.6	—	—	0.2	—	—	0.5	18.2	37.0	53.0	6.4	20.2	33.1
Non-MSA	—	—	10.9	3.5	3.1	4.7	0.6	0.6	1.0	—	—	0.1	—	—	0.5	18.8	37.6	57.1	6.9	20.7	36.8
Parental Education^e																					
1.0–2.0 (Low)	—	—	8.6	4.3	6.7	3.6	0.3	0.4	1.0	—	—	1.0	—	—	1.5	23.6	41.1	46.3	8.9	21.5	22.8
2.5–3.0	—	—	9.8	2.8	4.2	4.0	0.2	0.0	1.2	—	—	0.0	—	—	0.8	23.8	40.4	50.8	8.9	22.5	31.7
3.5–4.0	—	—	10.0	3.0	2.4	3.3	0.6	0.4	0.6	—	—	0.1	—	—	0.5	23.0	40.2	56.6	8.1	21.8	34.7
4.5–5.0	—	—	10.1	3.5	2.4	2.5	0.4	0.4	0.3	—	—	0.3	—	—	0.0	15.4	36.2	55.8	5.1	20.1	36.7
5.5–6.0 (High)	—	—	10.1	1.4	3.0	3.8	0.2	0.2	0.3	—	—	0.1	—	—	0.4	14.5	38.7	58.5	4.4	23.3	43.8
Race/Ethnicity (2-year average)^f																					
White	—	—	11.4	2.4	3.4	3.2	0.3	0.4	0.7	—	—	0.2	—	—	0.8	17.3	41.7	61.1	6.2	24.9	41.3
African American	—	—	6.4	2.4	2.6	2.2	0.4	0.1	0.3	—	—	0.1	—	—	0.7	14.3	24.2	42.1	4.0	9.1	21.0
Hispanic	—	—	8.5	2.4	4.2	3.3	0.4	0.4	0.8	—	—	0.8	—	—	1.0	21.3	39.3	49.6	7.2	19.4	28.1

(Table continued on next page.)

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Flavored Alcoholic Beverages ^{k,n}			Alcoholic Beverages containing Caffeine ^{h,k}			Tobacco using a Hookah ⁿ			Small Cigars ⁿ			Any Vaping ^{h,k}			Vaping Nicotine ^{h,k}			Vaping Marijuana ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	12.1	28.8	38.4	6.0	9.8	14.7	—	—	7.8	—	—	9.2	17.6	32.3	37.3	10.9	24.7	29.7	4.4	12.4	13.1
Gender																					
Male	9.0	24.4	34.9	5.4	11.0	15.9	—	—	7.0	—	—	12.3	16.6	31.6	39.8	11.3	24.7	32.5	4.2	12.4	15.4
Female	15.2	33.7	41.9	6.7	8.3	12.9	—	—	7.7	—	—	6.5	18.7	33.1	35.1	10.4	24.6	27.2	4.5	12.3	10.4
College Plans																					
None or under 4 years	16.1	32.6	35.7	11.9	17.9	17.7	—	—	11.5	—	—	14.4	30.2	37.8	38.8	22.0	29.5	31.9	11.8	17.3	14.2
Complete 4 years	11.8	28.5	39.3	5.3	8.5	13.8	—	—	7.1	—	—	7.8	16.2	31.6	37.3	9.6	24.2	29.5	3.4	11.6	12.6
Region																					
Northeast	10.9	30.0	40.1	5.5	8.8	14.5	—	—	11.9	—	—	12.6	15.3	33.5	44.8	8.6	27.2	35.0	2.3	14.8	20.6
Midwest	11.7	29.7	41.9	5.1	9.6	15.2	—	—	8.7	—	—	8.1	20.0	33.2	38.3	14.0	26.7	31.0	3.0	11.0	9.4
South	12.9	30.2	37.3	5.6	9.0	14.4	—	—	5.8	—	—	9.2	17.0	32.1	33.9	10.4	24.0	27.1	4.4	10.2	9.2
West	12.0	24.3	35.7	8.2	12.2	14.9	—	—	7.5	—	—	7.9	18.1	30.7	36.7	10.5	21.5	29.2	7.3	15.3	18.0
Population Density																					
Large MSA	11.4	27.0	34.9	7.0	10.9	13.3	—	—	8.3	—	—	4.6	17.2	33.7	30.8	10.1	26.9	24.3	5.3	15.2	15.6
Other MSA	12.3	29.4	37.8	5.9	9.6	14.9	—	—	8.5	—	—	11.1	18.3	31.7	40.9	12.0	23.5	32.8	4.5	12.3	13.0
Non-MSA	12.7	30.1	45.8	4.7	8.7	16.8	—	—	5.4	—	—	12.5	16.6	31.5	40.1	9.3	23.9	32.1	2.6	7.9	9.1
Parental Education^e																					
1.0–2.0 (Low)	13.9	31.6	27.2	8.7	13.5	12.0	—	—	8.3	—	—	6.5	19.2	33.0	26.4	10.7	25.4	19.9	7.4	14.3	12.5
2.5–3.0	16.8	29.3	40.1	8.2	12.2	15.9	—	—	7.8	—	—	9.8	22.6	35.1	34.3	14.2	25.8	25.2	6.5	13.7	12.7
3.5–4.0	12.9	33.8	43.3	6.6	10.7	15.3	—	—	10.5	—	—	10.3	19.9	34.6	41.6	12.3	24.6	32.9	5.0	12.7	12.6
4.5–5.0	11.9	26.6	43.5	4.8	7.1	15.4	—	—	6.3	—	—	9.3	15.1	32.3	44.6	9.2	26.0	37.9	2.9	12.2	13.8
5.5–6.0 (High)	8.6	26.5	34.5	4.2	8.5	13.0	—	—	5.9	—	—	9.1	14.4	32.0	41.6	8.1	26.5	34.6	2.1	11.8	16.8
Race/Ethnicity (2-year average)^f																					
White	10.9	32.3	46.1	4.8	11.0	19.1	—	—	9.4	—	—	15.1	16.0	32.4	40.2	10.4	25.6	32.8	2.8	10.4	12.7
African American	8.7	16.3	26.3	4.2	5.2	8.0	—	—	7.3	—	—	4.3	8.5	13.8	16.4	3.7	6.4	9.4	1.8	4.7	4.5
Hispanic	13.0	29.3	31.6	7.1	10.8	12.5	—	—	8.8	—	—	5.9	16.0	27.1	23.1	9.1	16.9	13.3	4.9	12.1	10.4

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-8.

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018
(Entries are percentages.)

	<u>Vaping Just Flavoring</u> ^{h,k}			<u>Dissolvable Tobacco Products</u> ^{k,n}			<u>Snus</u> ^{k,n}			<u>Steroids</u> ^c			<u>Androstenedione</u> ^h			<u>Creatine</u> ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	15.1	24.7	25.7	0.6	1.1	1.3	1.3	3.1	4.7	0.6	0.6	1.1	—	—	0.5	1.7	6.2	9.3
Gender																		
Male	13.9	24.3	26.6	0.9	1.6	1.0	2.1	5.6	7.6	0.6	0.6	1.5	—	—	0.7	2.9	11.4	17.4
Female	16.3	25.2	25.0	0.3	0.5	0.7	0.7	0.7	1.1	0.7	0.6	0.4	—	—	0.5	0.5	1.0	1.9
College Plans																		
None or under 4 years	24.2	28.0	25.5	2.1	1.9	3.4	3.7	7.8	8.0	1.0	0.9	2.2	—	—	1.1	3.5	6.3	8.8
Complete 4 years	14.2	24.2	25.9	0.4	0.9	0.4	1.0	2.4	3.5	0.5	0.6	0.7	—	—	0.3	1.5	6.1	9.3
Region																		
Northeast	13.6	25.4	30.9	0.6	1.2	0.6	0.7	2.4	2.3	0.5	0.7	0.6	—	—	0.4	1.6	6.2	8.5
Midwest	17.5	25.6	27.6	0.1	1.2	2.3	0.7	3.4	8.1	0.6	0.7	1.4	—	—	0.4	1.6	7.8	10.2
South	14.5	24.9	23.7	1.0	0.8	1.5	2.1	4.1	5.0	0.7	0.7	1.4	—	—	0.5	1.9	7.2	9.0
West	14.8	22.7	23.8	0.3	1.1	0.5	1.1	1.7	2.6	0.7	0.4	0.7	—	—	0.8	1.7	2.9	9.5
Population Density																		
Large MSA	14.3	24.5	20.2	0.8	1.2	2.1	0.9	2.2	3.6	0.6	0.7	1.4	—	—	0.7	2.0	4.6	6.8
Other MSA	15.7	24.2	28.8	0.4	0.9	0.9	0.9	2.8	4.5	0.7	0.6	1.0	—	—	0.1	1.5	6.3	10.2
Non-MSA	14.8	26.1	28.4	0.4	1.2	0.8	2.9	5.1	7.5	0.7	0.7	0.9	—	—	1.2	1.8	8.5	11.7
Parental Education ^e																		
1.0–2.0 (Low)	14.4	27.0	19.6	0.6	1.5	1.9	0.7	2.8	2.9	0.6	0.4	1.6	—	—	1.2	0.6	2.8	6.4
2.5–3.0	19.0	26.6	24.2	0.3	1.9	0.8	0.8	3.3	4.2	1.0	0.5	1.3	—	—	0.9	2.0	6.0	9.7
3.5–4.0	17.1	26.8	31.5	0.2	0.7	0.8	1.5	4.3	4.8	0.7	0.9	0.7	—	—	0.0	1.3	7.3	9.3
4.5–5.0	13.0	24.8	29.0	0.5	0.8	0.3	2.2	3.0	4.9	0.5	0.5	1.3	—	—	0.3	1.9	7.2	10.6
5.5–6.0 (High)	13.5	23.0	24.9	0.8	0.8	1.4	1.1	2.2	4.4	0.4	0.6	0.7	—	—	0.5	1.8	6.5	9.9
Race/Ethnicity (2-year average) ^f																		
White	14.3	25.6	27.9	0.3	0.9	0.8	1.4	4.4	6.2	0.6	0.7	0.8	—	—	0.3	1.7	8.6	10.5
African American	7.6	10.3	12.5	1.4	0.5	1.7	1.4	0.6	1.1	0.6	0.6	2.4	—	—	0.7	1.9	4.4	3.7
Hispanic	13.5	20.6	17.3	0.8	1.2	1.1	0.9	1.3	1.8	0.7	0.6	1.1	—	—	0.9	1.6	3.9	5.9

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-8.

TABLE 4-6 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018
(Entries are percentages.)

	Legal Use of Over-the-Counter Stimulants					
	Diet Pills ⁿ			Stay-Awake Pills ⁿ		
	8th	10th	12th	8th	10th	12th
Total	—	—	3.5	—	—	2.4
Gender						
Male	—	—	2.0	—	—	1.9
Female	—	—	4.5	—	—	2.7
College Plans						
None or under 4 years	—	—	3.8	—	—	5.0
Complete 4 years	—	—	3.6	—	—	1.4
Region						
Northeast	—	—	3.8	—	—	1.8
Midwest	—	—	3.9	—	—	2.9
South	—	—	3.7	—	—	1.9
West	—	—	2.8	—	—	3.2
Population Density						
Large MSA	—	—	2.8	—	—	1.5
Other MSA	—	—	3.5	—	—	2.3
Non-MSA	—	—	4.9	—	—	4.2
Parental Education ^e						
1.0–2.0 (Low)	—	—	2.1	—	—	1.9
2.5–3.0	—	—	3.6	—	—	3.0
3.5–4.0	—	—	4.8	—	—	3.5
4.5–5.0	—	—	3.7	—	—	0.9
5.5–6.0 (High)	—	—	4.0	—	—	1.9
Race/Ethnicity (2-year average) ^f						
White	—	—	4.4	—	—	2.2
African American	—	—	3.0	—	—	1.1
Hispanic	—	—	1.9	—	—	1.8

TABLE 4-7
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Approximate Weighted N^a</u>			<u>Any Illicit Drug^b</u>			<u>Any Illicit Drug other than Marijuana^b</u>			<u>Marijuana</u>			<u>Inhalants^c</u>			<u>Hallucinogens^{d,p}</u>			<u>LSD^p</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	14,000	14,300	13,300	7.3	18.3	24.0	3.0	4.2	6.0	5.6	16.7	22.2	1.8	1.0	0.7	0.6	0.8	1.4	0.4	0.5	1.0
Gender																					
Male	6,500	6,800	5,800	7.3	18.7	25.9	2.9	4.2	6.2	5.6	17.3	24.0	1.1	0.8	0.8	0.6	1.1	2.0	0.4	0.7	1.3
Female	6,800	7,000	6,400	6.9	17.5	20.9	2.8	4.0	4.6	5.3	15.8	19.2	2.3	1.1	0.5	0.4	0.5	0.6	0.3	0.3	0.5
College Plans																					
None or under 4 years	1,400	1,800	2,300	17.1	30.2	28.7	6.3	7.9	8.4	14.2	28.4	26.6	2.9	2.3	1.1	1.6	1.8	2.1	1.5	1.0	1.5
Complete 4 years	11,800	12,000	9,700	5.8	16.4	21.9	2.4	3.6	4.7	4.3	14.8	20.2	1.6	0.7	0.5	0.4	0.7	1.0	0.2	0.4	0.7
Region																					
Northeast	2,500	2,600	2,100	4.9	22.1	28.7	1.9	3.5	5.6	4.0	20.4	27.4	1.1	1.0	0.9	0.4	0.8	1.8	0.4	0.6	1.2
Midwest	3,100	3,300	3,000	5.7	16.6	24.2	2.0	3.9	6.1	4.5	14.9	23.2	1.6	0.9	0.3	0.3	0.7	1.6	0.1	0.5	0.9
South	5,100	5,200	5,100	7.5	17.3	20.7	3.6	5.0	6.0	5.3	15.4	17.9	1.7	1.1	0.7	0.5	0.8	1.2	0.4	0.5	1.0
West	3,300	3,100	3,100	10.2	18.7	25.9	3.8	4.0	6.2	8.4	17.5	24.7	2.5	0.7	0.8	1.0	1.0	1.4	0.8	0.6	1.0
Population Density																					
Large MSA	4,500	4,600	4,600	7.5	19.9	25.9	3.4	4.1	5.6	5.8	18.1	24.0	1.9	0.7	0.6	0.8	0.7	1.3	0.6	0.4	1.0
Other MSA	6,700	6,800	6,000	7.3	19.0	22.7	2.9	4.5	5.7	5.6	17.6	21.2	1.6	1.1	0.6	0.4	1.1	1.5	0.4	0.8	1.0
Non-MSA	2,700	2,900	2,600	6.9	14.0	23.5	2.7	3.8	7.3	5.3	12.4	21.3	1.8	0.9	0.9	0.5	0.3	1.6	0.3	0.2	1.0
Parental Education^e																					
1.0–2.0 (Low)	1,400	1,500	1,600	10.7	21.2	22.9	4.4	5.5	6.0	8.6	19.8	19.8	2.8	0.4	0.5	0.9	1.2	1.7	0.8	0.6	1.2
2.5–3.0	2,400	2,500	2,600	10.5	21.7	25.6	3.7	5.5	5.9	8.5	19.6	23.8	1.5	1.0	1.0	0.5	0.8	1.4	0.5	0.5	0.9
3.5–4.0	2,700	3,200	3,200	7.8	19.7	24.6	3.4	4.0	5.4	6.3	18.2	23.5	2.2	1.0	0.9	0.8	0.6	1.1	0.6	0.4	0.8
4.5–5.0	3,400	3,500	3,100	5.0	15.7	23.0	2.2	3.4	5.6	3.5	14.4	20.8	1.1	1.2	0.6	0.3	0.7	0.9	0.1	0.5	0.6
5.5–6.0 (High)	2,100	2,200	1,600	3.6	14.6	22.3	1.7	3.8	5.8	2.4	13.0	20.8	2.0	0.6	0.0	0.2	1.1	1.5	0.2	0.6	0.9
Race/Ethnicity (2-year average)^f																					
White	12,200	13,100	12,500	5.5	16.9	24.2	2.4	4.4	6.2	4.0	15.3	22.3	1.8	1.0	0.6	0.4	1.0	1.4	0.2	0.7	1.0
African American	2,900	3,800	2,800	6.9	17.5	25.6	2.6	2.6	4.6	5.5	16.1	24.0	1.7	1.6	1.0	0.3	0.6	1.2	0.3	0.5	1.0
Hispanic	7,300	5,400	5,700	8.5	18.7	22.2	3.3	5.0	5.1	6.8	16.9	20.5	2.1	0.6	0.9	0.6	1.0	1.2	0.5	0.6	0.8

(Table continued on next page.)

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Hallucinogens other than LSD ^p			Ecstasy (MDMA) ^{c,r}			Cocaine			Crack			Cocaine other than Crack ⁱ			Heroin, Any Use ^s			Heroin with a Needle ^{c,s}			
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	
Total	0.4	0.5	0.9	0.4	0.4	0.5	0.3	0.6	1.1	0.2	0.3	0.5	1.0	0.1	0.1	0.2	0.1	0.1	0.2			
Gender																						
Male	0.4	0.6	1.3	0.5	0.5	0.8	0.4	0.8	1.3	0.2	0.2	0.8	0.4	0.8	1.1	0.1	0.1	0.2	*	0.1	0.2	
Female	0.3	0.3	0.4	0.4	0.3	0.2	0.1	0.4	0.6	0.1	0.2	0.2	0.1	0.3	0.6	0.1	*	0.1	0.1	0.1	*	*
College Plans																						
None or under 4 years	0.7	1.1	1.5	1.2	1.3	0.6	0.8	1.7	2.3	0.6	0.6	1.2	0.6	1.6	1.9	0.5	0.4	0.4	0.2	0.2	0.4	
Complete 4 years	0.3	0.4	0.6	0.3	0.3	0.4	0.2	0.4	0.7	0.1	0.2	0.3	0.2	0.4	0.7	*	*	0.1	*	*	0.1	
Region																						
Northeast	0.2	0.5	1.1	0.5	0.3	0.3	0.1	0.4	1.3	0.1	0.2	0.3	0.1	0.4	1.1	0.1	0.1	0.1	0.1	0.1	0.1	
Midwest	0.3	0.4	1.2	0.2	0.4	0.6	0.2	0.4	1.1	0.1	0.1	0.7	0.2	0.3	1.1	*	0.1	0.2	*	0.1	0.3	
South	0.4	0.5	0.7	0.5	0.4	0.4	0.3	0.9	0.7	0.2	0.5	0.4	0.3	0.8	0.7	0.1	*	0.3	*	*	0.2	
West	0.5	0.5	0.9	0.5	0.5	0.8	0.5	0.4	1.7	0.4	0.2	0.6	0.4	0.4	1.3	0.2	0.1	0.1	0.2	*	0.1	
Population Density																						
Large MSA	0.5	0.4	0.8	0.5	0.3	0.5	0.3	0.6	1.1	0.2	0.3	0.4	0.3	0.4	1.0	0.2	0.1	0.2	0.2	0.1	0.3	
Other MSA	0.2	0.6	1.0	0.4	0.6	0.6	0.3	0.8	1.2	0.3	0.3	0.7	0.2	0.8	0.9	0.1	0.1	0.2	*	0.1	0.1	
Non-MSA	0.4	0.3	1.1	0.4	0.2	0.5	0.3	0.1	1.1	0.2	0.1	0.4	0.3	0.1	1.2	*	0.0	0.2	*	0.0	0.2	
Parental Education^e																						
1.0–2.0 (Low)	0.4	0.6	1.3	0.7	1.0	0.7	0.5	1.3	1.9	0.3	0.4	0.9	0.4	1.2	1.3	0.2	0.1	0.6	0.2	0.0	0.7	
2.5–3.0	0.2	0.6	1.0	0.5	0.6	0.5	0.2	0.7	1.2	0.2	0.4	0.4	0.2	0.7	1.1	0.2	0.1	0.2	0.1	0.1	0.2	
3.5–4.0	0.6	0.4	0.7	0.3	0.2	0.7	0.4	0.5	1.0	0.2	0.1	0.7	0.5	0.5	0.9	0.1	0.1	0.1	0.1	*	0.1	
4.5–5.0	0.3	0.4	0.6	0.5	0.2	0.3	0.2	0.5	0.8	0.1	0.2	0.4	0.1	0.4	0.8	0.1	0.1	0.1	0.0	0.1	0.1	
5.5–6.0 (High)	0.2	0.5	0.9	0.2	0.4	0.5	0.1	0.4	0.8	0.2	0.3	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.0	0.1	0.1	
Race/Ethnicity (2-year average)^f																						
White	0.3	0.5	0.9	0.3	0.3	0.7	0.2	0.4	1.1	0.1	0.2	0.5	0.2	0.3	1.1	0.1	0.1	0.1	*	0.1	0.1	
African American	0.2	0.2	0.8	0.4	0.4	0.6	0.4	0.2	0.6	0.3	0.2	0.6	0.3	0.2	0.3	0.2	0.1	0.5	0.2	0.1	0.5	
Hispanic	0.3	0.5	0.8	0.4	0.7	0.8	0.5	0.9	1.3	0.3	0.4	0.5	0.3	0.9	1.3	0.2	0.1	0.2	0.1	*	0.2	

(Table continued on next page.)

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Heroin without a Needle ^{c,s}			Narcotics other than Heroin ^j			Amphetamines ⁱ			Methamphetamine ^{h,k}			Crystal Methamphetamine (Ice) ^h			Sedatives (Barbiturates) ^j			Tranquilizers ^j		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.1	*	0.1	—	—	1.1	1.8	2.4	2.4	0.1	0.1	0.3	—	—	0.4	—	—	1.2	0.9	1.3	1.3
Gender																					
Male	0.1	0.1	0.2	—	—	1.4	1.8	2.2	2.7	0.1	0.2	0.5	—	—	0.4	—	—	0.9	0.8	1.1	1.3
Female	*	*	*	—	—	0.7	1.9	2.5	1.8	0.1	*	0.0	—	—	0.1	—	—	1.1	0.9	1.5	1.1
College Plans																					
None or under 4 years	0.3	0.3	0.3	—	—	1.5	3.6	4.0	3.2	0.9	0.5	0.2	—	—	0.9	—	—	1.6	2.2	2.2	2.2
Complete 4 years	*	*	0.1	—	—	0.9	1.6	2.1	2.0	*	0.1	0.2	—	—	0.1	—	—	1.0	0.7	1.2	0.9
Region																					
Northeast	0.0	0.1	0.1	—	—	0.5	1.0	2.1	2.5	*	0.2	0.1	—	—	0.3	—	—	1.1	0.4	0.8	1.0
Midwest	*	*	0.2	—	—	1.3	1.3	2.6	2.6	*	0.3	1.0	—	—	0.2	—	—	1.2	0.6	1.3	1.9
South	0.1	*	0.1	—	—	1.0	2.2	2.7	2.5	0.2	0.1	0.1	—	—	0.5	—	—	1.4	1.1	1.6	1.4
West	0.1	0.1	0.1	—	—	1.3	2.3	2.1	2.1	0.1	0.1	0.1	—	—	0.4	—	—	0.9	1.1	1.3	0.8
Population Density																					
Large MSA	0.1	0.1	0.2	—	—	1.0	2.0	2.6	2.1	*	0.1	0.2	—	—	0.5	—	—	1.0	0.9	1.4	1.0
Other MSA	0.1	*	0.1	—	—	1.0	1.7	2.2	2.5	0.2	0.1	0.5	—	—	0.2	—	—	1.1	0.9	1.3	1.3
Non-MSA	*	0.0	0.2	—	—	1.3	1.9	2.6	2.9	0.1	0.3	*	—	—	0.5	—	—	1.6	0.6	1.4	1.9
Parental Education^e																					
1.0–2.0 (Low)	0.2	0.1	0.4	—	—	1.1	2.7	2.3	1.7	0.4	0.4	0.6	—	—	0.8	—	—	1.8	1.2	1.6	1.3
2.5–3.0	0.1	*	0.2	—	—	1.3	2.2	3.3	2.4	0.2	0.1	0.2	—	—	0.3	—	—	0.9	1.3	1.6	1.4
3.5–4.0	*	0.1	*	—	—	1.3	2.1	2.2	2.5	0.1	0.2	0.2	—	—	0.3	—	—	1.2	1.1	1.4	1.3
4.5–5.0	0.1	0.0	0.1	—	—	0.9	1.5	2.1	2.5	0.1	0.0	0.1	—	—	0.2	—	—	1.0	0.7	1.1	1.2
5.5–6.0 (High)	0.1	*	0.0	—	—	0.8	1.3	2.1	2.5	0.0	0.1	0.3	—	—	0.3	—	—	0.9	0.3	1.3	1.0
Race/Ethnicity (2-year average)^f																					
White	0.1	*	0.1	—	—	1.4	1.6	2.7	2.7	*	*	0.3	—	—	0.2	—	—	1.2	0.6	1.5	1.7
African American	*	*	0.4	—	—	1.5	1.7	1.4	1.9	0.1	0.0	0.2	—	—	0.6	—	—	0.9	0.6	0.6	1.3
Hispanic	0.2	0.1	0.1	—	—	0.8	2.0	2.3	1.7	0.3	0.2	0.3	—	—	0.6	—	—	1.3	0.9	1.8	1.4

(Table continued on next page.)

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Any Prescription Drug</u> ⁱ			<u>Rohypnol</u> ^m			<u>Alcohol</u>			<u>Been Drunk</u> ^h			<u>Flavored Alcoholic Beverages</u> ^{k,n}			<u>Cigarettes</u>			<u>Any Vaping</u> ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	4.2	0.3	0.1	—	8.2	18.6	30.2	2.1	8.4	17.5	4.9	11.8	18.1	2.2	4.2	7.6	10.4	21.7	26.7
Gender																					
Male	—	—	4.4	0.4	0.1	—	7.4	18.2	30.4	1.8	8.2	19.0	3.9	11.2	18.2	2.1	4.4	8.4	10.5	21.2	30.0
Female	—	—	3.6	0.1	0.1	—	9.1	19.1	30.1	2.3	8.6	16.2	6.1	12.5	18.1	2.0	3.7	5.9	10.1	21.8	23.8
College Plans																					
None or under 4 years	—	—	5.5	0.7	0.5	—	15.7	25.3	30.9	4.5	11.8	17.1	6.0	14.5	20.3	6.1	10.2	14.6	19.2	25.8	29.2
Complete 4 years	—	—	3.6	0.1	*	—	7.3	17.7	30.0	1.8	7.9	17.6	4.9	11.6	17.9	1.5	3.2	5.2	9.3	21.0	26.4
Region																					
Northeast	—	—	3.6	0.0	0.1	—	6.8	20.4	32.6	1.5	9.1	20.7	4.8	13.4	20.1	1.6	2.9	6.4	7.3	24.0	32.9
Midwest	—	—	4.6	0.4	0.0	—	7.6	16.6	30.4	2.0	8.2	18.0	4.7	10.6	17.7	2.4	4.2	7.3	12.5	23.4	25.6
South	—	—	4.4	0.3	0.1	—	8.0	19.5	30.0	2.0	8.7	15.4	5.1	13.5	18.3	2.0	5.5	9.2	9.9	20.8	24.7
West	—	—	4.0	0.1	0.1	—	9.9	17.8	28.5	2.8	7.6	18.3	5.0	9.1	16.8	2.5	3.4	6.1	11.6	19.4	26.9
Population Density																					
Large MSA	—	—	3.8	0.2	0.1	—	8.7	19.6	30.0	2.0	9.4	18.4	4.0	11.2	16.7	1.3	3.0	5.3	9.5	22.3	22.2
Other MSA	—	—	4.1	0.2	0.1	—	7.9	18.8	28.3	2.1	8.1	16.4	5.6	12.5	17.7	2.0	3.7	6.8	11.0	21.7	29.5
Non-MSA	—	—	5.3	0.5	0.0	—	7.9	16.8	34.9	2.3	7.7	18.6	4.9	11.2	21.3	3.8	7.6	13.9	10.2	20.7	28.1
Parental Education ^e																					
1.0–2.0 (Low)	—	—	4.1	0.3	0.4	—	10.8	20.3	23.7	2.2	8.5	9.5	6.0	14.8	13.0	3.0	5.5	6.9	12.7	20.3	17.9
2.5–3.0	—	—	4.3	0.0	0.0	—	10.9	19.0	27.1	2.5	8.1	16.0	6.4	11.2	18.9	2.1	5.5	8.0	11.3	22.2	25.7
3.5–4.0	—	—	4.1	0.6	0.0	—	9.5	18.8	32.4	2.3	8.4	16.8	5.6	12.6	18.0	2.8	4.7	8.1	12.2	22.9	29.1
4.5–5.0	—	—	4.4	0.3	0.0	—	6.3	17.3	32.0	1.7	7.8	19.1	4.5	11.4	22.6	1.5	3.0	6.6	9.7	23.1	32.3
5.5–6.0 (High)	—	—	4.0	0.2	0.0	—	6.4	22.0	35.5	1.9	10.9	27.5	4.5	10.3	18.3	1.1	3.0	5.9	7.5	21.4	31.0
Race/Ethnicity (2-year average) ^f																					
White	—	—	4.8	0.3	*	—	7.3	21.9	38.0	2.1	11.0	23.1	4.2	14.1	23.4	1.9	5.8	11.0	8.7	21.5	28.0
African American	—	—	3.6	0.3	0.1	—	6.0	10.2	21.2	1.6	3.1	10.9	3.2	6.5	13.5	1.4	1.8	4.1	3.3	7.0	8.3
Hispanic	—	—	3.6	0.1	0.2	—	9.8	20.0	26.4	2.2	7.7	13.1	5.6	12.5	13.9	1.8	3.7	5.2	9.3	14.1	15.2

(Table continued on next page.)

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Vaping Nicotine ^{h,k}			Vaping Marijuana ^{h,k}			Vaping Just Flavoring ^{h,k}			Large Cigars ^{h,q}			Flavored Little Cigars ^{h,q}			Regular Little Cigars ^{h,q}			Tobacco Using a Hookah ^{h,k}		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	6.1	16.1	20.9	2.6	7.0	7.5	8.1	13.1	13.5	1.7	2.8	5.2	2.6	5.3	8.9	1.6	3.1	5.8	1.6	2.4	4.4
Gender																					
Male	6.8	16.2	24.1	2.9	6.9	9.5	8.1	12.9	15.0	2.0	4.1	8.3	2.6	6.1	12.0	1.9	3.5	7.9	1.6	2.4	4.4
Female	5.3	15.9	18.4	2.3	6.9	5.5	8.0	13.1	11.8	1.2	1.3	1.9	2.3	4.4	5.2	1.2	2.5	3.1	1.6	2.2	3.8
College Plans																					
None or under 4 years	12.8	20.4	22.9	8.7	9.3	8.3	13.2	16.2	15.3	5.2	6.1	8.3	7.1	13.1	14.4	5.5	8.3	11.1	4.9	6.1	6.3
Complete 4 years	5.3	15.6	20.7	1.8	6.6	7.1	7.4	12.6	13.0	1.3	2.3	4.3	1.9	4.4	7.3	1.1	2.4	4.3	1.2	1.9	3.9
Region																					
Northeast	4.4	18.1	25.3	1.2	9.5	13.9	5.6	13.4	15.2	1.6	1.9	4.9	1.8	3.3	6.0	1.3	2.4	4.0	1.5	2.7	5.3
Midwest	9.2	18.3	20.9	1.1	6.1	3.8	10.3	15.2	13.7	1.7	3.2	5.3	2.7	4.9	9.3	1.8	3.1	5.9	1.5	1.3	4.6
South	5.2	15.7	19.2	2.7	4.8	5.0	7.5	12.8	13.6	1.4	3.7	6.5	2.6	7.5	10.0	1.5	4.4	7.1	1.5	2.9	4.5
West	6.1	12.9	20.8	5.2	9.7	10.7	8.7	11.3	11.9	2.3	1.5	3.3	3.2	3.8	8.4	1.7	1.4	4.9	2.1	2.3	3.5
Population Density																					
Large MSA	6.0	17.9	17.2	2.7	8.8	9.2	7.2	11.9	9.7	0.8	2.0	3.8	2.2	3.3	6.8	1.3	2.1	5.4	1.8	3.0	4.8
Other MSA	6.7	14.8	23.1	3.1	6.8	7.4	8.6	13.7	15.6	1.9	2.9	5.7	2.3	6.3	8.7	1.5	3.4	5.5	1.6	2.2	4.9
Non-MSA	5.0	16.4	22.3	1.3	4.6	4.5	8.3	13.7	15.2	2.5	3.8	6.7	4.0	6.0	12.8	2.1	3.7	7.1	1.4	1.8	2.6
Parental Education^e																					
1.0–2.0 (Low)	5.7	16.4	11.4	5.3	8.8	7.7	8.5	14.9	11.4	3.8	3.0	3.6	5.0	2.9	8.5	3.4	3.3	6.3	3.5	3.0	5.3
2.5–3.0	5.8	16.4	17.9	3.9	7.8	7.9	8.1	14.5	13.9	1.7	3.1	4.6	2.8	7.6	9.0	1.8	3.8	5.6	2.0	3.2	4.5
3.5–4.0	8.1	14.7	21.5	3.2	7.7	7.4	9.9	14.5	16.9	2.0	3.9	5.7	3.7	6.7	9.1	2.0	4.3	6.3	2.5	2.3	5.0
4.5–5.0	5.8	17.9	28.2	1.4	6.3	7.5	7.8	12.4	14.5	1.0	1.4	5.0	1.5	4.0	9.2	0.8	1.4	5.6	0.7	1.9	3.0
5.5–6.0 (High)	4.8	18.1	27.1	0.6	6.5	8.5	6.9	11.7	11.3	0.6	2.9	5.9	1.0	4.7	7.5	0.8	3.2	4.1	0.8	1.9	5.0
Race/Ethnicity (2-year average)^f																					
White	5.5	16.36	22.88	1.5	6.1	6.7	7.2	13.1	13.5	0.9	3.1	6.7	2.0	4.6	11.6	1.1	2.9	6.8	1.0	2.0	4.6
African American	1.55	2.65	4.58	1.2	2.6	2.5	2.4	4.8	5.6	1.5	1.8	2.5	3.5	3.6	5.6	2.7	3.2	4.9	2.6	2.3	4.4
Hispanic	4.74	8.51	7.74	3.1	5.7	6.8	7.2	9.4	9.6	2.1	2.2	3.2	3.1	5.1	5.8	2.0	3.0	4.1	3.2	3.9	5.1

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-8.

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018
(Entries are percentages.)

	Any Nicotine Use ⁿ			Any Nicotine Use other than Vaping ⁿ			Smokeless Tobacco ^{g,n}			Steroids ^c			Legal Use of Over-the-Counter Stimulants					
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	Diet Pills ⁿ			Stay-Awake Pills ⁿ		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	32.5	—	—	18.5	2.1	3.9	4.2	0.3	0.4	0.8	—	—	1.9	—	—	1.2
Gender																		
Male	—	—	36.5	—	—	23.9	3.0	6.2	7.6	0.3	0.4	1.2	—	—	1.4	—	—	0.8
Female	—	—	28.0	—	—	12.9	1.1	1.4	1.0	0.2	0.3	0.3	—	—	2.3	—	—	1.4
College Plans																		
None or under 4 years	—	—	42.7	—	—	29.7	6.7	10.2	8.3	0.6	0.5	1.7	—	—	2.7	—	—	2.3
Complete 4 years	—	—	28.5	—	—	14.4	1.4	2.9	3.0	0.2	0.3	0.5	—	—	1.8	—	—	0.4
Region																		
Northeast	—	—	37.9	—	—	14.9	2.0	3.4	3.0	0.1	0.6	0.6	—	—	1.2	—	—	1.1
Midwest	—	—	30.9	—	—	17.1	2.0	4.2	6.3	0.3	0.5	1.1	—	—	2.5	—	—	1.3
South	—	—	35.1	—	—	23.1	1.5	5.1	4.9	0.3	0.4	0.9	—	—	1.8	—	—	0.8
West	—	—	26.1	—	—	14.5	3.1	2.0	1.5	0.3	0.2	0.5	—	—	2.0	—	—	1.6
Population Density																		
Large MSA	—	—	25.4	—	—	13.5	1.2	3.3	1.7	0.4	0.5	1.0	—	—	1.8	—	—	1.0
Other MSA	—	—	35.3	—	—	19.2	2.0	3.4	4.3	0.2	0.3	0.8	—	—	2.0	—	—	1.2
Non-MSA	—	—	38.0	—	—	24.9	3.5	5.9	8.4	0.4	0.3	0.6	—	—	2.0	—	—	1.4
Parental Education ^e																		
1.0–2.0 (Low)	—	—	23.6	—	—	14.2	1.8	3.0	0.6	0.3	0.1	0.9	—	—	1.2	—	—	1.5
2.5–3.0	—	—	32.6	—	—	21.9	3.1	4.6	5.0	0.4	0.5	1.0	—	—	2.1	—	—	0.9
3.5–4.0	—	—	32.9	—	—	21.4	2.9	3.8	5.2	0.3	0.4	0.5	—	—	3.0	—	—	2.0
4.5–5.0	—	—	36.0	—	—	16.2	1.5	4.2	4.9	0.2	0.3	0.9	—	—	1.2	—	—	0.1
5.5–6.0 (High)	—	—	32.5	—	—	13.2	0.9	4.0	4.5	0.1	0.4	0.6	—	—	2.8	—	—	0.5
Race/Ethnicity (2-year average) ^f																		
White	—	—	36.1	—	—	23.4	1.9	5.5	7.7	0.3	0.3	0.5	—	—	1.9	—	—	0.9
African American	—	—	13.4	—	—	10.1	1.8	1.4	1.7	0.3	0.3	1.8	—	—	2.1	—	—	0.6
Hispanic	—	—	17.9	—	—	13.2	2.0	2.4	1.2	0.2	0.4	0.8	—	—	1.0	—	—	1.3

Source. The Monitoring the Future study, the University of Michigan.
See footnotes following Table 4-8.

TABLE 4-7 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Current, Legal Use of Prescription ADHD Drugs ¹								
	Stimulant-Type ^h			Non-Stimulant-Type ^h			Either Type ^h		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	3.7	3.9	3.5	1.2	1.4	2.6	5.2	5.1	5.9
Gender									
Male	4.7	4.7	3.9	1.6	1.3	2.3	6.8	6.2	6.1
Female	2.9	3.1	3.1	0.9	1.4	2.1	4.0	4.2	5.1
College Plans									
None or under 4 years	5.9	4.8	3.3	3.5	1.7	3.3	9.8	5.6	6.5
Complete 4 years	3.4	3.7	3.3	0.9	1.2	2.4	4.6	4.9	5.4
Region									
Northeast	4.1	2.6	3.2	1.4	1.2	2.6	5.9	3.5	5.4
Midwest	3.9	5.2	3.8	1.0	1.5	2.8	5.1	6.5	6.3
South	4.8	4.5	3.8	1.6	1.6	2.5	6.9	5.8	6.2
West	1.2	2.4	2.7	0.6	1.3	2.6	2.0	3.6	5.3
Population Density									
Large MSA	3.3	3.8	3.3	1.0	1.3	3.0	4.6	4.9	6.2
Other MSA	4.6	4.1	3.4	1.3	1.4	2.2	6.5	5.2	5.4
Non-MSA	2.1	3.5	3.9	1.3	1.8	2.7	3.4	5.1	6.4
Parental Education ^e									
1.0–2.0 (Low)	4.1	2.3	1.0	0.4	1.2	1.6	4.9	3.3	2.6
2.5–3.0	1.5	2.7	2.6	0.7	1.1	1.3	2.3	3.4	4.1
3.5–4.0	2.6	3.1	3.4	1.6	1.2	2.5	4.5	4.2	5.6
4.5–5.0	5.5	5.3	3.9	2.1	1.4	3.3	8.2	6.8	6.8
5.5–6.0 (High)	4.3	5.5	6.9	0.5	2.1	3.9	5.4	7.2	10.4
Race/Ethnicity (2-year average) ^f									
White	5.2	4.7	4.8	1.5	1.4	3.3	7.0	6.0	7.7
African American	2.0	1.5	2.0	1.7	0.7	3.2	3.9	2.2	4.9
Hispanic	0.9	2.1	1.2	0.5	0.7	0.4	1.6	2.6	1.8

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-8.

TABLE 4-8
Thirty-Day Prevalence of Daily Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	<u>Approximate Weighted N</u> ^a			<u>Marijuana</u>						<u>Alcohol</u>									
				<u>Used Daily in Past 30 Days</u>			<u>Ever Used Daily for Month or More in Lifetime</u> ^r			<u>Daily</u>			<u>5+ Drinks</u> ^o			<u>Been Drunk</u> ^h			
				8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	
Total	14,000	14,300	13,300	0.7	3.4	5.8	—	—	12.3	0.1	0.5	1.2	3.7	8.7	13.8	*	0.2	0.7	
Gender																			
Male	6,500	6,800	5,800	0.8	4.2	7.2	—	—	12.3	0.1	0.6	1.6	3.3	9.1	15.9	0.1	0.2	0.9	
Female	6,800	7,000	6,400	0.5	2.5	3.4	—	—	9.3	0.1	0.3	0.5	3.9	8.3	11.9	*	0.1	0.3	
College Plans																			
None or under 4 years	1,400	1,800	2,300	2.2	8.9	9.2	—	—	18.5	0.3	0.9	2.4	8.9	14.0	16.5	0.1	0.4	1.2	
Complete 4 years	11,800	12,000	9,700	0.4	2.5	4.1	—	—	8.1	0.1	0.4	0.7	2.9	7.9	12.9	*	0.2	0.5	
Region																			
Northeast	2,500	2,600	2,100	0.5	4.1	6.5	—	—	9.7	0.1	0.8	1.2	2.9	9.0	15.2	0.1	0.2	1.0	
Midwest	3,100	3,300	3,000	0.5	2.5	6.4	—	—	14.6	*	0.3	0.8	2.9	7.6	13.5	*	0.1	0.4	
South	5,100	5,200	5,100	0.6	3.6	4.2	—	—	11.0	0.2	0.6	1.5	3.6	9.6	14.0	0.0	0.3	1.0	
West	3,300	3,100	3,100	1.3	3.5	7.2	—	—	14.0	0.2	0.4	0.9	5.1	8.1	12.7	0.1	0.1	0.3	
Population Density																			
Large MSA	4,500	4,600	4,600	0.6	3.2	6.4	—	—	12.2	0.1	0.4	1.0	3.7	9.4	13.7	*	0.3	0.6	
Other MSA	6,700	6,800	6,000	0.6	3.8	5.1	—	—	11.5	0.2	0.5	1.2	3.7	8.1	12.4	*	0.2	0.6	
Non-MSA	2,700	2,900	2,600	1.0	2.9	6.1	—	—	14.3	0.1	0.7	1.6	3.4	8.7	17.1	0.1	0.2	1.0	
Parental Education ^e																			
1.0–2.0 (Low)	1,400	1,500	1,600	1.4	4.9	4.8	—	—	10.9	0.1	0.3	1.0	5.9	11.2	10.8	0.1	0.3	0.8	
2.5–3.0	2,400	2,500	2,600	0.7	5.0	6.7	—	—	10.3	0.2	0.6	1.0	4.7	9.5	12.7	*	0.1	0.3	
3.5–4.0	2,700	3,200	3,200	0.6	3.3	6.0	—	—	11.7	*	0.2	1.2	3.7	8.5	13.8	0.0	0.1	1.0	
4.5–5.0	3,400	3,500	3,100	0.4	2.3	4.1	—	—	9.8	0.1	0.6	1.1	2.6	7.2	15.0	0.0	0.3	0.6	
5.5–6.0 (High)	2,100	2,200	1,600	0.3	2.3	4.4	—	—	8.4	0.2	0.9	1.4	2.5	9.4	17.2	0.1	0.3	0.9	
Race/Ethnicity (2-year average) ^f																			
White	12,200	13,100	12,500	0.4	2.8	5.8	—	—	12.8	0.1	0.6	1.7	2.9	10.5	19.4	*	0.2	1.0	
African American	2,900	3,800	2,800	1.1	3.8	5.9	—	—	11.6	0.2	0.2	0.9	2.6	3.9	7.4	0.1	0.1	0.4	
Hispanic	7,300	5,400	5,700	0.9	2.9	4.3	—	—	12.2	0.2	0.4	0.8	5.2	10.8	11.7	0.1	0.2	0.8	

(Table continued on next page.)

TABLE 4-8 (cont.)
Thirty-Day Prevalence of Daily Use of Various Drugs by Subgroups
for 8th, 10th, and 12th Graders, 2018

(Entries are percentages.)

	Cigarettes						Smokeless Tobacco ^{g,n}		
	One or <u>More Daily</u>			Half Pack <u>or More Daily</u>			<u>Daily</u>		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.8	1.8	3.6	0.3	0.7	1.5	0.3	1.0	1.6
Gender									
Male	0.9	1.9	3.8	0.3	0.8	1.6	0.5	1.8	3.2
Female	0.6	1.5	2.6	0.2	0.4	0.9	0.1	0.2	0.3
College Plans									
None or under 4 years	3.3	5.1	8.6	1.1	2.1	3.1	1.4	3.6	3.6
Complete 4 years	0.4	1.2	1.9	0.1	0.4	0.8	0.1	0.7	1.1
Region									
Northeast	0.5	1.0	2.3	0.3	0.3	0.8	0.2	1.1	1.1
Midwest	1.0	1.8	3.5	0.6	0.8	1.6	0.2	0.9	2.8
South	0.8	2.6	4.9	0.2	0.9	2.1	0.4	1.5	1.6
West	1.0	1.1	2.5	0.4	0.5	0.7	0.5	0.4	0.6
Population Density									
Large MSA	0.5	1.1	2.1	0.2	0.5	1.0	0.1	0.8	0.5
Other MSA	0.9	1.4	3.3	0.3	0.6	1.2	0.3	0.9	1.6
Non-MSA	1.4	3.8	7.1	0.5	1.3	3.1	0.7	1.7	3.6
Parental Education ^e									
1.0–2.0 (Low)	1.0	3.2	3.7	0.3	1.3	1.5	0.0	0.5	0.0
2.5–3.0	0.8	2.8	4.6	0.2	1.1	1.4	0.3	1.3	2.3
3.5–4.0	1.1	1.9	3.9	0.4	0.7	1.7	0.6	1.0	2.8
4.5–5.0	0.5	1.0	2.3	0.2	0.3	0.8	*	1.0	1.6
5.5–6.0 (High)	0.5	0.8	1.4	0.1	0.3	0.6	0.2	1.1	0.9
Race/Ethnicity (2-year average) ^f									
White	0.6	2.4	5.0	0.3	0.8	2.1	0.5	1.3	3.4
African American	0.5	1.0	2.0	0.3	0.4	0.9	0.4	0.3	0.8
Hispanic	0.4	1.6	1.8	0.1	0.5	0.6	0.3	0.2	0.2

Source. The Monitoring the Future study, the University of Michigan.

See footnotes on the following page.

Footnotes for Tables 4-5 through 4-8

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

^aSubgroup *N*s may vary depending on the number of forms in which the use of each drug was asked about.

^bUse of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders, the use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

^c12th grade only: Data based on three of six forms; *N* is three sixths of *N* indicated.

^dUnadjusted for known underreporting of certain drugs. See text for details.

^eParental education is an average score of mother's education and father's education reported on the following scale: (1) Completed grade school or less, (2) Some high school, (3) Completed high school, (4) Some college, (5) Completed college, (6) Graduate or professional school after college. Missing data were allowed on one of the two variables.

^fTo derive percentages for each racial subgroup, data for the specified year and the previous year have been combined to increase subgroup sample sizes and thus provide more stable estimates. See appendix B for details on how race/ethnicity is defined.

^g8th and 10th grades only: Data based on two of four forms; *N* is one half of *N* indicated.

^h12th grade only: Data based on two of six forms; *N* is two sixths of *N* indicated.

ⁱ12th grade only: Data based on four of six forms; *N* is four sixths of *N* indicated.

^jOnly drug use not under a doctor's orders is included here.

^k8th and 10th grades only: Data based on one of four forms; *N* is one third of *N* indicated.

^lThe use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers ...without a doctor telling you to use them.

^m8th and 10th grades only: Data based on one of four forms; *N* is one sixth of *N* indicated.

ⁿ12th grade only: Data based on one of six forms; *N* is one sixth of *N* indicated.

^oThis measure refers to having five or more drinks in a row in the last two weeks.

^p12th grade only: Data based on five of six forms; *N* is five sixths of *N* indicated.

^q8th and 10th grades only: Data based on two of four forms; *N* is one third of *N* indicated.

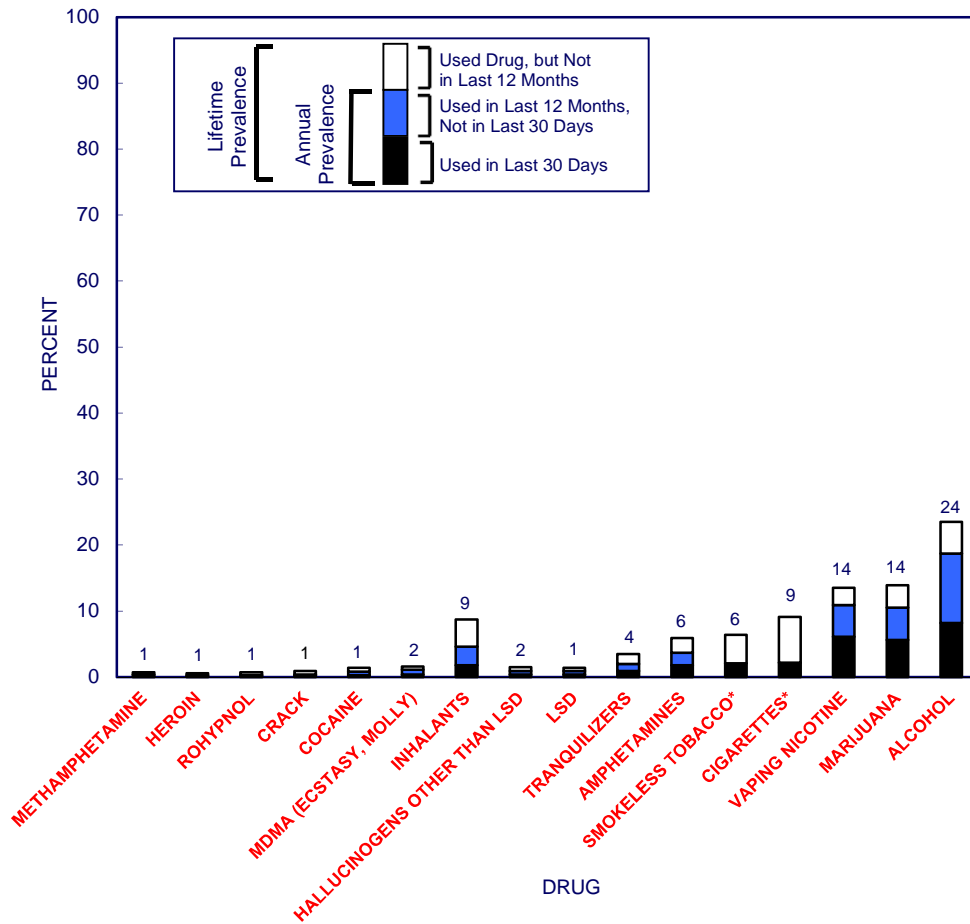
^r8th and 10th grades only: Data based on three of four forms; *N* is five sixths of *N* indicated.

^s8th and 10th grades only: Data based on three of four forms; *N* is four sixths of *N* indicated.

^tFor the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

FIGURE 4-1
Prevalence and Recency of Use of
Various Types of Drugs in Grades 8, 10, and 12
2018

8th Graders



Source. The Monitoring the Future study, the University of Michigan.

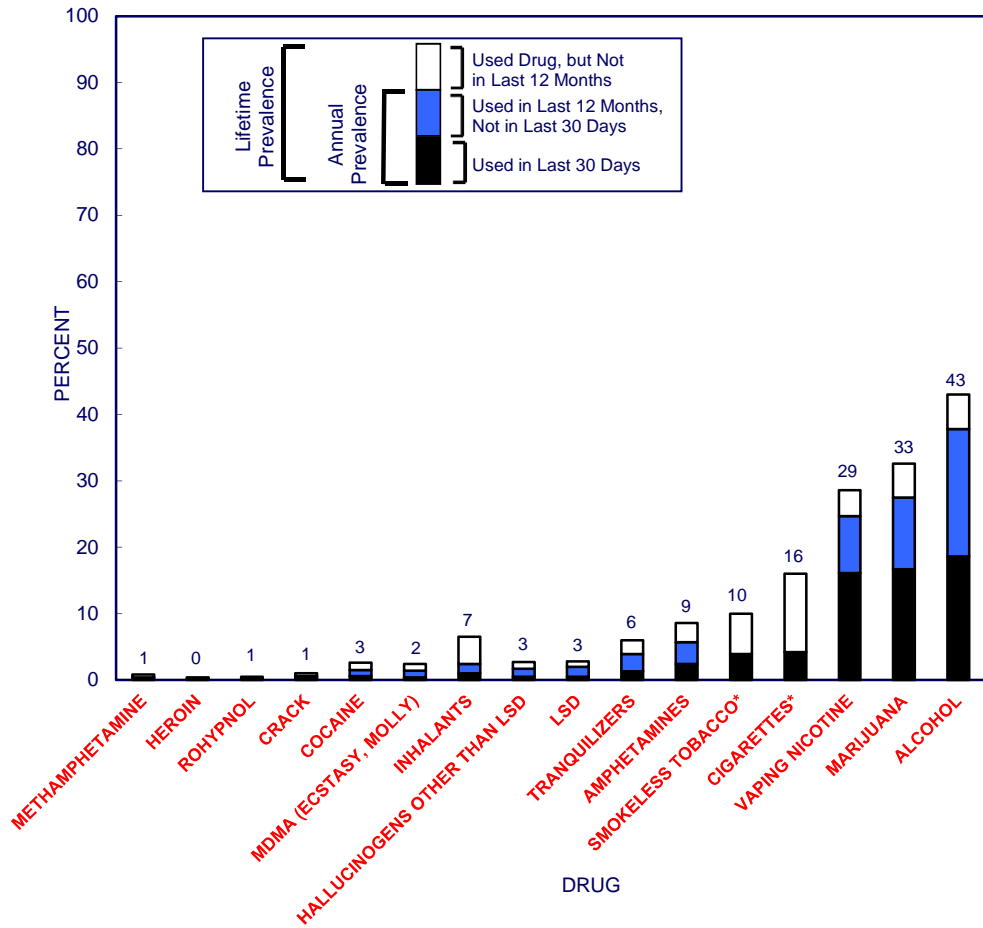
Note. Drugs are rank ordered according to their lifetime prevalence in 12th grade.

*Annual use not measured for cigarettes and smokeless tobacco.

(Figure continued on next page.)

FIGURE 4-1 (cont.)
Prevalence and Recency of Use of
Various Types of Drugs in Grades 8, 10, and 12
2018

10th Graders



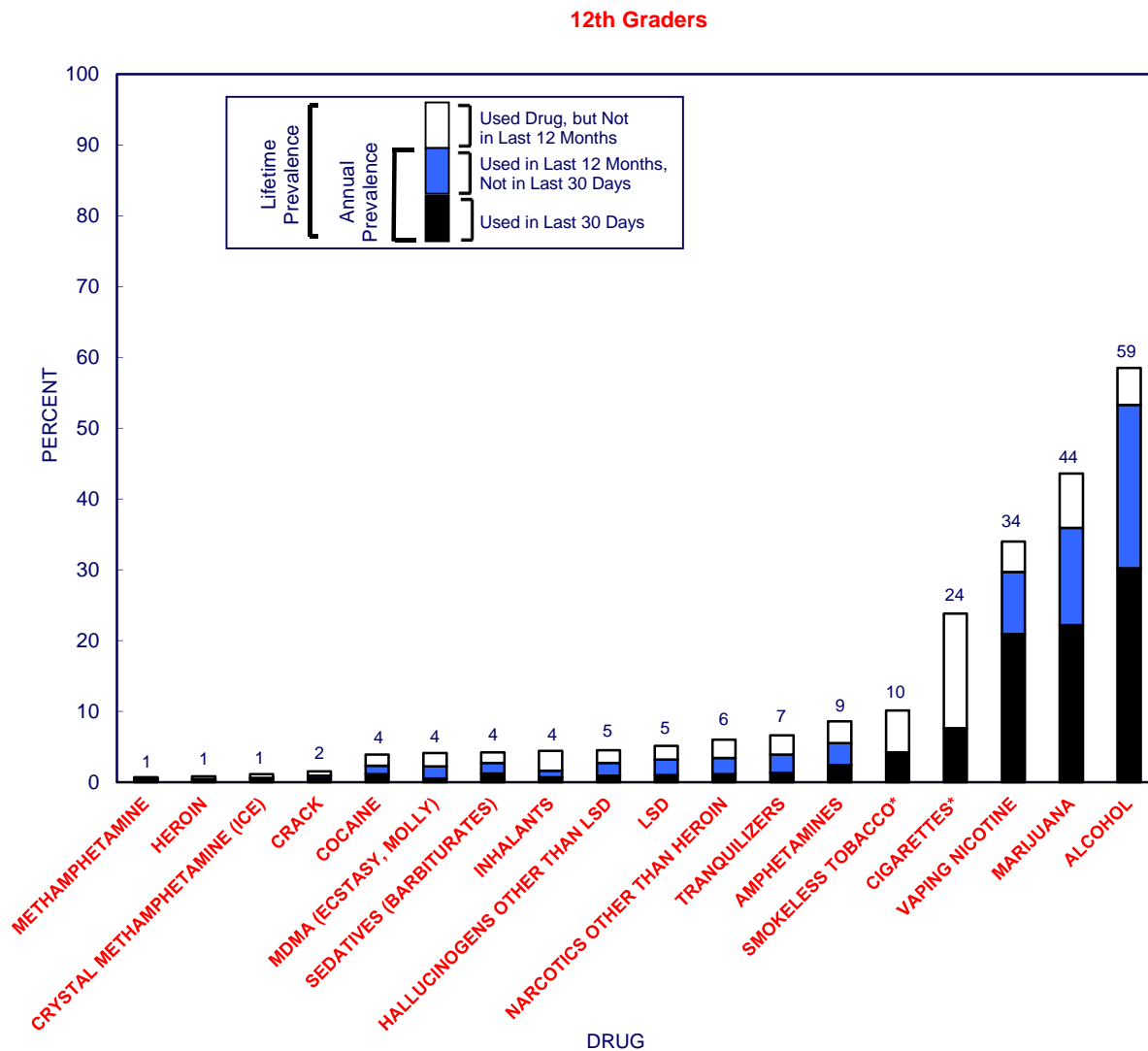
Source. The Monitoring the Future study, the University of Michigan.

Note. Drugs are rank ordered according to their lifetime prevalence in 12th grade.

*Annual use not measured for cigarettes and smokeless tobacco.

(Figure continued on next page.)

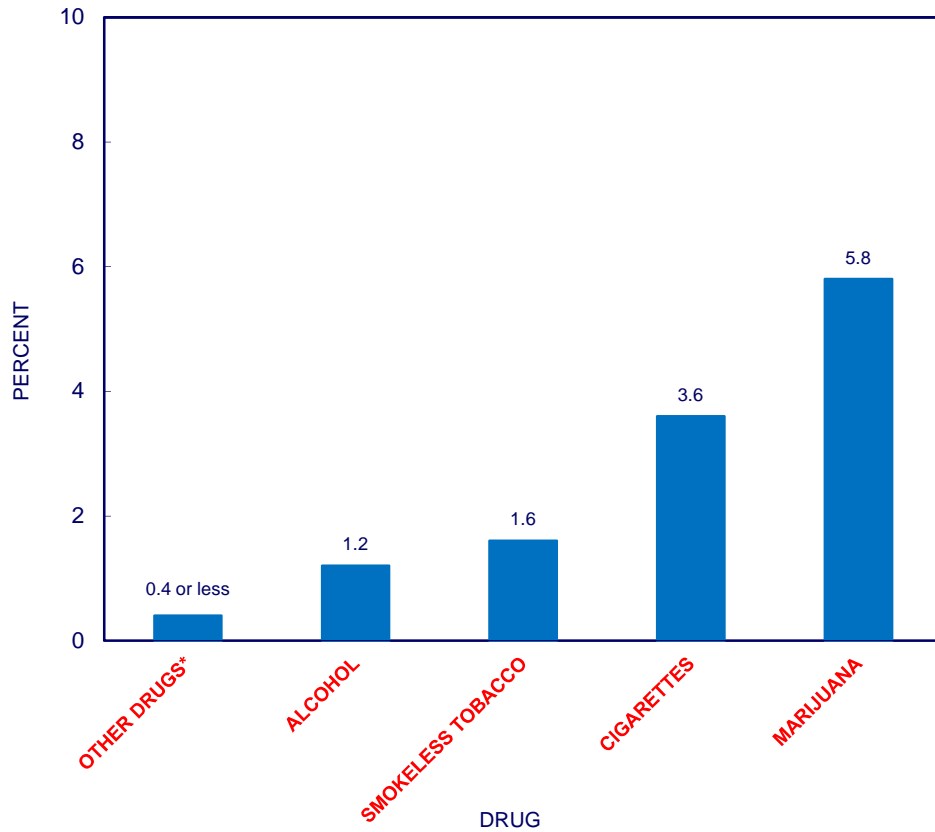
FIGURE 4-1 (cont.)
Prevalence and Recency of Use of
Various Types of Drugs in Grades 8, 10, and 12
2018



Source. The Monitoring the Future study, the University of Michigan.

*Annual use not measured for cigarettes and smokeless tobacco.

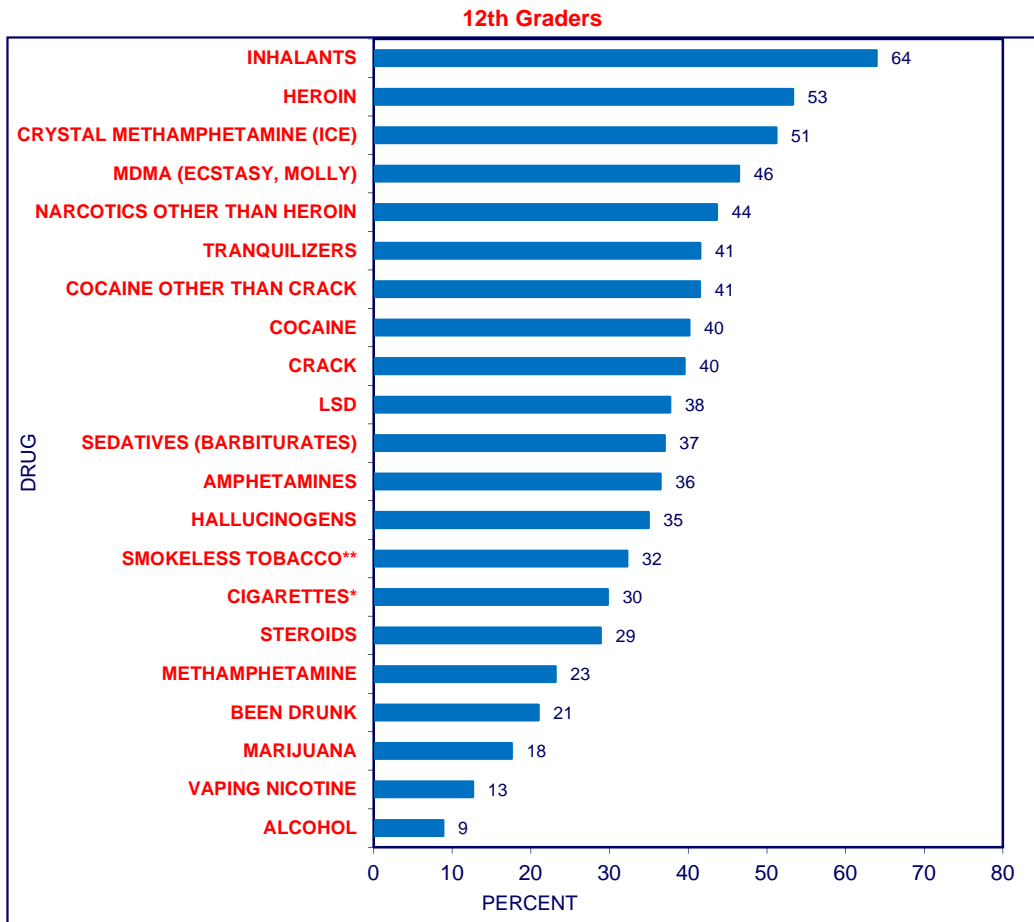
FIGURE 4-2
Thirty-Day Prevalence of Daily Use of
Various Types of Drugs in Grade 12
2018



Source. *The Monitoring the Future study, the University of Michigan.*

Each of the following drugs was 0.4% or less in 2018: inhalants, LSD, hallucinogens other than LSD, Ecstasy (MDMA, Molly), cocaine, crack, heroin, narcotics other than heroin, amphetamines, methamphetamine, crystal methamphetamine (ice), sedatives (barbiturates), tranquilizers, and steroids.

FIGURE 4-3
Noncontinuation Rates: Percentage of Lifetime Users
Who Did Not Use in Last 12 Months
in Grades 8, 10, and 12
2018



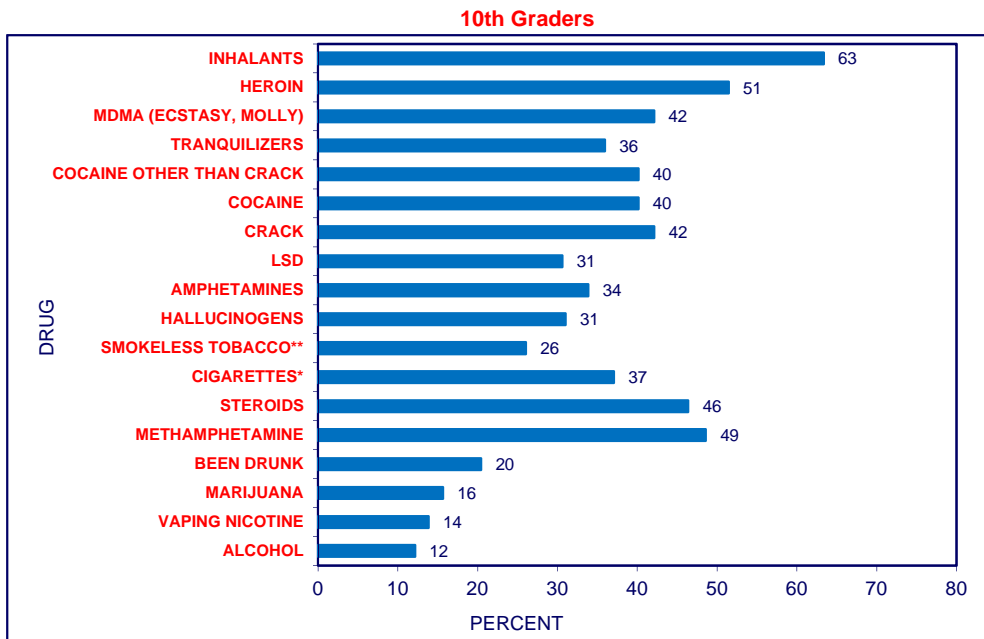
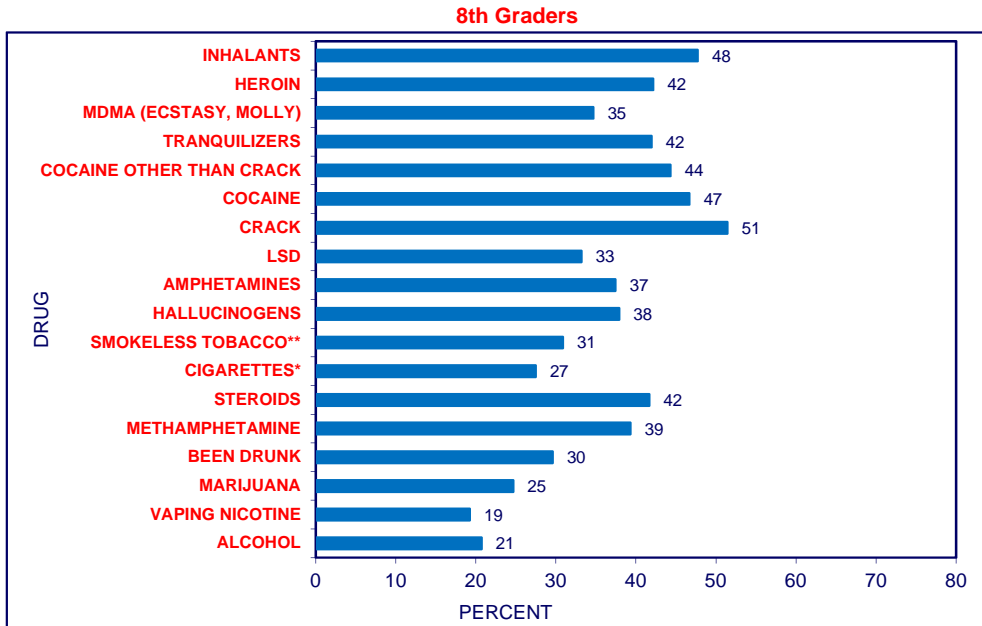
Source. The Monitoring the Future study, the University of Michigan.

*Percent of regular smokers (ever) who did not smoke at all in the last 30 days.

**Percent of regular smokeless tobacco users (ever) who did not use smokeless tobacco in the last 30 days.

(Figure continued on next page.)

FIGURE 4-3 (cont.)
Noncontinuation Rates: Percentage of Lifetime Users
Who Did Not Use in Last 12 Months
in Grades 8, 10, and 12
2018

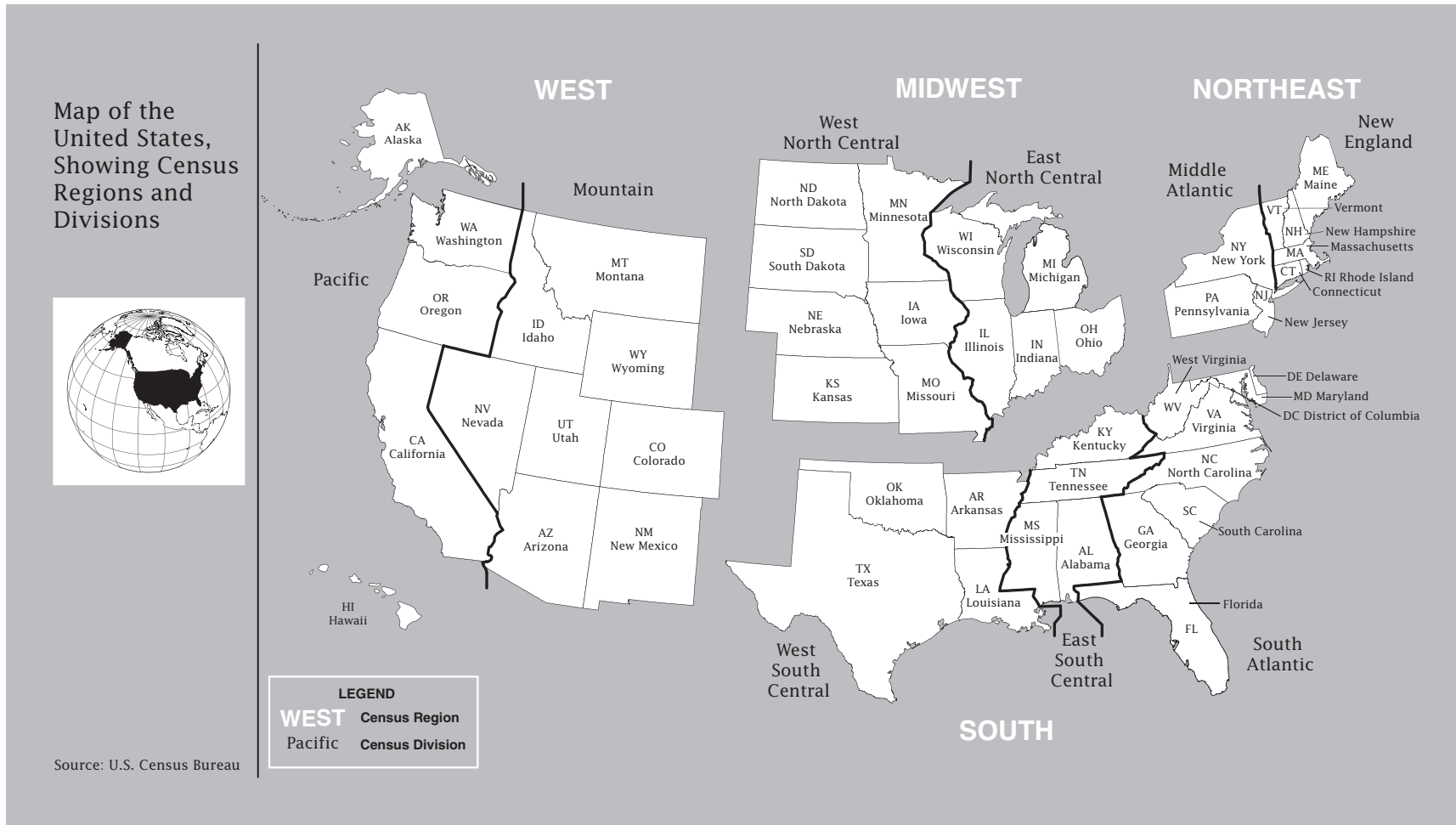


Source. The Monitoring the Future study, the University of Michigan.

*Percent of regular smokers (ever) who did not smoke at all in the last 30 days.

**Percent of regular smokeless tobacco users (ever) who did not use smokeless tobacco in the last 30 days.

FIGURE 4-4
States included in the 4 Regions of the Country



Chapter 5

TRENDS IN DRUG USE

The measurement of historical and developmental change over the past four decades has been one of the most important contributions of Monitoring the Future to the fields of substance use research, policy, and prevention. This includes measurements of change in the levels of drug use, in the types of drugs being used, in the methods of using them, in the ages and characteristics of people using them, in related attitudes and beliefs about drug use, and in conditions surrounding use. Such information has significant implications for public policy – for needs assessment, agenda setting, policy formulation, and policy evaluation. More generally, it has implications for the current and future health of the nation. In this chapter, we review the many changes that have taken place over the past 44 years in the use of drugs, both licit and illicit, and we distinguish trends for various sectors of the population.

Historical trend data are presented and discussed in this chapter for students in 8th, 10th, and 12th grades. Data for 12th graders come from 44 national surveys conducted between 1975 and 2018, while data for the 8th and 10th graders come from 28 national surveys conducted between 1991 and 2018. For a variety of substances, the use measures discussed include lifetime use, use during the past 12 months, use during the past 30 days, and use on 20 or more occasions during the past 30 days (which we refer to as daily to near-daily use). Trends in noncontinuation rates among 12th graders are also examined in this chapter, with findings that have important implications for prevention strategy. Finally, we discuss the extent to which trends in use have differed among key demographic subgroups defined on the dimensions of gender, college plans, region of the country, population density, socioeconomic status (as indicated by parental education), and race/ethnicity. A separate occasional paper¹ available on the MTF website provides greater detail on subgroup trends and illustrates them graphically.

TWO THEMES IN DRUG TRENDS FROM 1975–2018

Two general themes are apparent in trends over nearly a half century in use of a majority of drugs, and we elaborate on these themes in what follows. The first theme is what we term the “1990s drug relapse,” which is a rapid increase in prevalence for many drugs that started in the early 1990s. Previous to this period, prevalence levels of many drugs had reached a historical nadir after years of decline. The prevalence levels for many drugs today lie between the nadirs observed at the start of the 1990s and the peak of 1990s drug relapse. Drugs that do not follow this overall pattern, such as some forms of alcohol use and tobacco use, are important exceptions that we note and discuss below.

The second theme is cohort effects. We use the term cohort here to refer to youth born at roughly the same time who are grouped by grade level and experience history together as they age. A cohort effect is a drug trend that follows a cohort as it grows older. For example, if an upsurge in

¹ Johnston, L. D., Miech, R.A., O’Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). *Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975–2018* (Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research.

cigarette smoking occurs in a cohort that is in 8th grade, it is likely to be observed two years later when that cohort is in 10th grade, and then again two years later when that cohort is in 12th grade.

A cohort-specific pattern of drug use can stem from factors such as cohort-specific attitudes towards perceived risk of drug use, changing peer norms about the acceptability of drug use, changes in legal status of a drug, and the addictiveness of the drugs that youth use. We have found that cohort effects are often present, and trends among the lower grades can foretell future changes in the higher grades. This has been the case especially during the onset of the drug relapse in the early 1990s.

TRENDS IN PREVALENCE OF USE, 1975–2018

For 12th grade students *long-term* trends in lifetime, 12-month, 30-day, and current daily prevalence rates of use for all drugs are shown in Tables 5-1 through 5-4 from 1975 to 2018. Surveys of 8th and 10th grade students commenced in 1991, and long-term trends for these grades appear in Tables 5-5a through 5-5d. To facilitate comparison, trends in 12th grade are repeated for this shorter interval in the tables and figures for 8th and 10th grade students. Figures 5-1 through 5-4t provide graphic depictions of selected trends for 8th, 10th, and 12th grade students.

Trends in Indices of Overall Illicit Drug Use

- ***Any illicit drug use*** is a measure of the percentage of youth who have engaged in at least one type of illicit drug use in their life. Table 5-5a and Figure 5-1 show that in 2018 the percentages of youth who had ever used any illicit drugs in their life were 48% for 12th graders, 36% for 10th graders, and 19% for 8th graders. In 12th grade the prevalence has hovered around 50% since 2010. In 10th and 8th grade a slight increase is apparent in the last two years. These increases in the lower grades from 2016 contrast with a steady decline in use of any illicit drug that began in 2013, and bear watching in the years to come to see if they mark the beginning of a turnaround in the prevalence of illicit drug use.

There have been gradual but bumpy declines for all grades since the peak of the 1990s drug relapse, beginning in 1996 for 8th graders, 1997 for 10th graders, and 1999 for 12th graders. These declines also ended in a staggered fashion in 2007, 2008, and 2009, respectively. The declines were followed by increases between 2007 and 2010 among 8th graders, between 2008 and 2011 among 10th graders, and between 2009 and 2011 for 12th graders. This overall pattern suggests some cohort effects were in play. In 2013 the trend lines shifted up slightly as new examples of drugs in the amphetamine class were added to the questionnaires.

This pattern of younger teens being the first to exhibit many of the turnarounds in use suggests that they may be the most sensitive to new social forces. Because they are considerably less likely to have established usage patterns or related attitudes, their behavior and attitudes may simply be more malleable. They then carry those changes in their use, attitudes, and beliefs into later grades as they age; in this volume we discuss a number of such cohort effects, not only in behaviors but in attitudes as well.

Prior to the 1990s, when Monitoring the Future surveys were limited to 12th grade students, the prevalence of lifetime use of any illicit drug peaked at 66% in 1981, the highest level ever recorded by the survey. From that year on, lifetime use declined steadily to a prevalence of 41% by 1992, the lowest level these surveys ever recorded.

- *Any illicit drug use in the past 12 months* and *any illicit drug use in the past 30 days* increased slightly in 2018 in 8th and 10th grade, although the increases were not statistically significant (Figures 5-2 and 5-3). In 12th grade prevalence for both outcomes hovered at about the same level it has been since 2010. The percentages of youth who used any illicit drug in the past 12 months in 8th, 10th, and 12th grades were 13%, 30%, and 39%, respectively, in 2018. The parallel percentages for drug use in the past 30 days were 7%, 18%, and 24%. As with the lifetime measure, both of these measures reached historic highs around 1980 and historic lows at the start of the 1990s among 12th graders. The declines in the 1980s were dramatic, and the increases that followed during the 1990s were nearly as dramatic (see Figures 5-1 through 5-3).

In sum, historical trends in *any illicit drug use* show that the overall level of illicit drug use today is at neither a floor nor a ceiling. It is possible for levels of illicit drug use in every grade to be lower than they are today, as evidenced by the lower levels observed at the start of the 1990s. At the same time, the historical record also provides examples of how the proportions of youth who use illicit drugs can rise much higher than current levels if the factors that promote illicit drug use are left unchecked.

- Trends in use of *any illicit drug other than marijuana* in the past year are provided in Table 5-5b; in 2018 levels of use were at a record low in 12th grade and near record lows in 10th and 8th grades. Levels of use for any illicit drug other than marijuana have been in an overall, long-term decline since the peak of the 1990s relapse, and the prevalence levels for students in 8th, 10th, and 12th grade are now 6%, 10%, and 12%, respectively. In 2001 these levels were at or near peak levels, and stood at 11%, 18%, and 22% respectively, so the proportion of these age groups using illicit drugs other than marijuana has declined by nearly half since then.

Most of the earlier rise in 12th graders' reported use of *any illicit drug other than marijuana* resulted from the increasing popularity of cocaine between 1976 and 1979 and, then, to the increasing use of amphetamines between 1979 and 1981. As stated elsewhere in this volume, we believe that the upward shift in amphetamine use at that time was exaggerated because some respondents included use of over-the-counter stimulants in their reports of amphetamine use.

- Although the overall proportion of 12th graders using illicit drugs other than marijuana has changed gradually and steadily over the years, much greater fluctuations have occurred for specific drugs within this general class. (See Tables 5-1 through 5-3 for the long-term trends in 12th graders' lifetime, annual, and 30-day prevalence for each class of drugs. Figures 5-4a through 5-4s graph these trends since 1991, along with the trends for 8th and 10th graders.) These fluctuations for some drugs within overall use trends are important to recognize because they show that, while the proportion willing to try any illicit drug may

put outer limits on the amplitude of fluctuations for any single drug, the various subclasses of drugs must have important determinants specific to them. In particular, they include variables such as perceived risk, disapproval, peer behaviors and normative attitudes, assumed benefits, and availability, as well as novelty. (Many of these variables are discussed in chapters 8 and 9.) Next we describe the trends in these specific classes of drugs.

Trends in Use of Specific Drugs

- Figure 5-4a and Table 5-5b provide the trends in [marijuana](#) use. In 12th grade, the 36% prevalence of annual marijuana use today is only slightly lower than it was two decades ago, at the end of the 1990s drug relapse phase, when it reached 39% in 1997. Declines have been larger in the 10th and 8th grade over the past two decades. In 10th grade, 2018 prevalence was 28%, which is substantially lower than the high point of 35% recorded in 1997. In 8th grade, annual marijuana use in 2018 stood at 11%, which is close to half the high point of 18% recorded in 1996.

It is important to note that 8th grade students were the first to show the two major shifts in marijuana prevalence – an increase at the start of the 1990s and a decrease by the end of the 1990s. As mentioned above, this suggests that 8th graders may be the most immediately responsive to changing influences in the larger social environment. The lag in the decline in the later grades likely reflects some cohort effects (i.e., lingering effects of changes in use that occurred when the students were in lower grades).

Levels of annual marijuana use today are considerably lower than the historic highs observed in the late 1970s, when more than half of U.S. 12th graders had used marijuana in the past year. This high point marked the pinnacle of a rise in marijuana use from relatively negligible levels before the 1960s.²

Important changes in young people’s attitudes and beliefs about marijuana use have occurred over the study period, and these changes can account for much of the long-term decline in use, as well as the increase in use during the 1990s drug relapse. Chapter 8 addresses this issue at some length.

- Figure 5-4a and Table 5-5d provide trends in [daily marijuana](#) use. Among 12th grade students the 2018 level of 5.8% is near the high levels recorded during the 1990s relapse period (in 1999-2000). About one in every 17 twelfth grade students in 2018 was a daily or near-daily marijuana user. (That is, they reported using marijuana on 20 or more occasions in the prior 30 days.) In 8th and 10th grade the 2018 levels of 0.7% and 3.4%, respectively, are down by about half and one-third, respectively, from the peaks seen at the end of the 1990s.

Still, the percentage of youth using marijuana on a daily basis today is substantially lower than its peak in the late 1970s, when it reached a high of 10.7% among 12th grade students.

² National Commission on Marijuana and Drug Abuse. (1973). *Drug use in America: Problem in perspective*. Washington DC: U.S. Government Printing Office. See also Johnston, L. D. (1973). *Drugs and American youth*. Ann Arbor, MI: Institute for Social Research.

As discussed in Chapter 8, we think much of the decline from this peak is attributable to a very substantial increase in teens' concerns about possible adverse effects from regular use and to a growing perception that peers disapproved of marijuana use, particularly regular use.

- Table 5-4 presents trend data on [*lifetime daily marijuana use for a month or more*](#) (this question asked only of 12th grade students and on only one form). Prevalence in 2018 (12%) is between the high of 21% (set in 1982, when first measured by the survey) and the low of 8% (set in 1992, just before the 1990s drug relapse). Before 2011, prevalence hovered at around 16% since 1996, then rose in 2011 and 2012 along with current daily use, before declining some and then remaining stable in recent years. In a pattern seen with many other drugs, prevalence increased considerably during the 1990s relapse (from 1992 to 1997) having decreased considerably prior to the relapse.
- **Medical marijuana** prescriptions for adolescents have been surveyed since 2017 and are rare. In all grades and in all years, fewer than 1.5% of adolescents reported that they had ever used marijuana because a doctor told them to do so.
- **Synthetic marijuana** past-year prevalence has decreased dramatically since it was first tracked by Monitoring the Future in 2011 for 12th graders and 2012 for 8th and 10th graders (Table 5-5b and Figure 5-4b). For 8th and 10th graders, annual prevalence of synthetic marijuana declined from 4.4% and 8.8% in 2011 to 1.6% and 2.9% in 2018, respectively. For 12th graders, annual prevalence declined from 11.4% in 2011 to 3.5% in 2018, a drop of more than two-thirds. In 2018, annual prevalence continued long-term declines in 12th and 8th grade and increased slightly in 10th grade (changes from 2017 to 2018 were not statistically significant).

Very likely part of the reason for current low levels of use is that the Drug Enforcement Agency (DEA) scheduled various forms of synthetic marijuana in March 2011, thereby substantially reducing their availability by making over-the-counter sales illegal.

- In 2018, past-year [*inhalant*](#) use was at or near record lows in all three grades (see Figure 5-4c, Table 5-2, and Table 5-5b). In all grades its prevalence follows the typical pattern of an increase at the start of the 1990s, a peak in the late 1990s, and a subsequent decline that has continued to historic or near-historic lows in recent years. In 8th grade the 4.6% prevalence in 2018 ties with 2015 for the lowest level recorded, and is almost three times lower than the high of 12.8% recorded in 1995. In 10th and 12th grade the prevalence levels of 2.4% and 1.6%, respectively, are at least four times lower than recorded highs (of 9.6% in 10th grade and 8.0% in 12th grade, both in 1995).

The increase in prevalence of inhalants at the start of the 1990s was a continuation of a trend that was observable far earlier among 12th grade students, when only they were being surveyed (Figure 5-4c). The same was likely true among 8th and 10th graders, although our data on them cover only 1991 forward. The anti-inhalant campaign launched by the Partnership for a Drug-Free America in 1995 (partly in response to MTF results showing increasing use) may have played an important role in reversing this troublesome, long-term

trend. (The perceived risk of inhalant use increased sharply between the 1995 and 1996 MTF surveys, as discussed in Chapter 8.) The declines in inhalant use continued into 2002 in all grades. However, in 2002, 8th graders' perceived risk of trying inhalants decreased significantly, which was followed by a significant increase in their use the next year; 10th graders' perceived risk of regular use also decreased significantly. Since then, perceived risk of inhalants has declined overall, raising the fear of generational forgetting of the dangers of inhalant use.

Inhalants are unusual because their prevalence is higher in the lower grades, a pattern not observed for any other drug. The use of inhalants at an early age may reflect the fact that many inhalants are cheap, readily available (often in the home), and legal to buy and possess. The decline in use with age likely reflects their coming to be seen as “kids' drugs,” in addition to the fact that a number of other, more desirable drugs become more accessible to older adolescents, who also are more able to afford them.³

Prior to 2000, trends in inhalants were confounded by the use of [amyl and butyl nitrites](#), and past versions of this volume presented an additional 12th grade inhalant trend for measures without nitrites (e.g., see the [version of this report published in 2014](#) for a detailed description). Since that time youth's use of nitrites has fallen to very low levels and is no longer tracked by Monitoring the Future.

- In 2018 past-year [hallucinogen](#) use was at or near the lowest level ever recorded by the survey in each grade (see Figure 5-4d and Table 5-5b). The percentages reporting use in the past year among 8th, 10th, and 12th grade students were 1.4%, 2.7% and 4.3%, respectively. This outcome follows the typical pattern of an increase during the 1990s relapse, followed by a gradual but bumpy decline in the following years. Annual hallucinogen use peaked in 1996, which is a few years earlier than the peak for most other drugs. Current levels of annual hallucinogen use are less than half their peak in the 1990s. The two components of the hallucinogens class, LSD and hallucinogens other than LSD, generally followed the same pattern until a sharp decline in LSD use emerged after 1999, discussed next.
- Past-year use of [LSD](#), one of the major drugs in the hallucinogen class, has been hovering for about a decade at nearly the lowest levels recorded by the study (Figure 5-4e). In 2018, the levels of use for students in 8th, 10th, and 12th grade were 0.9%, 2.0%, and 3.2%, respectively. Consistent with most other drugs, use increased during the 1990s relapse and peaked in the mid-1990s. It then subsequently declined to its lowest levels ever in the early 2000s, where it has since plateaued.

³ It is important to note that *lifetime* inhalant use is lower at the higher grades, which is not logically consistent. The seemingly anomalous finding could be due to various factors. There might be lower lifetime prevalence at older ages because the eventual school dropout segment is included only in the lower grades. If those who will become dropouts are unusually likely to use inhalants, lifetime use rates could decline with grade level. That would lead to a relatively stable difference between the grades in lifetime use (because dropout rates have been fairly stable in recent years); however, the degree of difference has changed some over time (see Table 5-5a), with larger differences emerging in the mid-1990s. Another possible factor is changing validity of reporting with age; but in order to account for the trend data, one would have to hypothesize that this tendency became stronger in the 1990s, and we have no reason to believe that it did. Cohort differences may be a factor, but cannot completely explain the large changes in lifetime prevalence. It seems likely that all of these factors contribute to the differences observed in the retrospective reporting by different ages, and possibly some additional factors as well.

LSD was one of the first drugs to decline at the start of the 1980s, almost surely due to increased information about its potential dangers. The subsequent increase in its use during the mid-1980s may reflect the effects of “generational forgetting” – that is, replacement cohorts knowing less than their predecessors about the potential dangers of LSD because they have had less exposure to the negative consequences of using the drug.⁴

We believe that the decline prior to 2002 might have resulted in part from a displacement of LSD by sharply rising use of MDMA (ecstasy, Molly). After 2001, when MDMA use itself began to decline, the sharp further decline in LSD use likely resulted from a sudden drop in the availability of LSD, because attitudes generally have not moved in a way that could explain the fall in use, while perceived availability has.

- Past-year use of [hallucinogens other than LSD](#), of which psilocybin or “shrooms” have been a major component, changed little in 2018 and were 0.9%, 1.7% and 2.7% in 8th, 10th, and 12th grade, respectively. Use of these substances has gradually declined since the early 2000s (see Figure 5-4e).
- **Psilocybin**, derived from mushrooms, had a past-year prevalence of 2.2% in 2018 for 12th grade students. It is clear from the 2001 modification of the psilocybin question stem to include the popular term “shrooms” that many users no longer know the drug by the name “psilocybin.” Self-reports of use more than tripled between 2000 and 2001, jumping from 1.4% to 4.9%, even though use levels were stable immediately before and after the wording change. We believe that all of this increase was an artifact of the revision of the question, which clarified the meaning of psilocybin and led users to answer more accurately (for both the psilocybin question and the question about their use of hallucinogens other than LSD). Use reached a peak of 5.7% in 2004, then declined some and was at about 4% for five years before declining to its current low level. Psilocybin has been the most widely reported drug in the general class of hallucinogens other than LSD after the question on use of the class was revised in 2001, and by a considerable margin.
- The prevalence of past-year [PCP](#) is reported only for 12th grade students and, in 2018 it was 1.1%, where it has hovered for about a decade (see Figure 5-4d). It was first included in the survey in 1979, and its prevalence dropped rapidly thereafter, suggesting that it achieved a deserved reputation as a dangerous drug very quickly. Its use increased during the 1990s drug relapse, but its annual prevalence increased to a high of only 2.6%. Since 2002, its use has remained low.
- In 2018 past-year use of [MDMA](#) (ecstasy and more recently Molly) declined to historic lows in 12th and 10th grade (see Figure 5-4f). In 8th grade its prevalence is near a record low. Prevalence levels among 8th, 10th, and 12th grade students in 2018 were 1.1%, 1.4%, and 2.2%, respectively. The historical trend for MDMA follows a somewhat different pattern than most of the other drugs in that the increase did not occur until the late 1990s and it peaked later than many drugs – in 2001. Obviously there were some special forces

⁴ See Johnston, L. D. (1991). [Toward a theory of drug epidemics](#). In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–132). Hillsdale, NJ: Lawrence Erlbaum Associates.

at work on the use of this drug, including its popularity at raves followed by public concern about the dangers of its use. Since that time its prevalence has gradually declined, although a short-lived upsurge took place in all grades around 2009–2010.

In 2014 some questionnaire forms in the survey included “Molly” as an example of MDMA, along with ecstasy, and the inclusion of this example appeared to make relatively little difference in the overall prevalence of MDMA. In 2015 the remaining forms were changed to also include “Molly” as an example in the questions about MDMA.

Chapter 8 shows that 12th graders’ perceived risk for MDMA jumped substantially in 2001 (from 38% in 2000 to 46% in 2001), likely helping to explain the decelerating rise in use that year. However, we know from other analyses that MDMA was still diffusing to more communities in 2001, partially explaining the continued rise in use despite the increase in perceived risk. (As [Volume II](#)⁵ shows, this dramatic increase in use through 2001 was not confined to teenagers.) The 2001 increases in perceived risk led us to predict the downturn in use that did in fact begin to occur in 2002 – once again demonstrating the importance of these beliefs, both in restraining drug use and in allowing us to predict forthcoming changes in drug use. Perceived risk increased sharply again in 2002 and 2003 as use plummeted; but after 2003 the increase in risk was more gradual, reaching 60% by 2005 among 12th graders, compared to 34% when it was first measured in 1997. Perceived risk has declined since then (to 48% by 2018 among 12th grade students). The reported availability of MDMA, which had risen substantially in the 1990s, probably played a role in its sudden resurgence. Perceived availability dropped modestly from 2001 to 2003, then took a large drop of almost 10 percentage points in 2004, another large eight-percentage-point drop in 2005, and a seven-percentage-point drop in 2009 (see Chapter 9). In 2016 it dropped again by 4.7 percentage points (a significant drop), so that only 33% of 12th grade students reported that it would be “fairly easy” or “very easy” to get MDMA (ecstasy, Molly). Part of this decline in availability is probably due to there being so many fewer users from whom to get the drug. Availability did not begin to drop until use did, and it dropped more gradually than use. Because MDMA was particularly popular at raves and dance clubs during its ascent in popularity, it is considered one of the “club drugs.” Based on mass media reports, it appears that the rave phenomenon diminished and/or changed considerably after 2001.

Trends in MDMA use are unique because the upswing in use in 1999 occurred first in the older grades. The 8th graders did not show this resurgence until a year later, in 2000. A different dynamic seemed to be at work for MDMA than for most other drugs during this historical period, because it appears that the increase in use rippled down the age scale rather than the reverse; this may be because raves (which older teens would be more likely to attend) played an important role in its dispersion.

- Table C-1 in Appendix C shows trends for a number of *specific hallucinogenic drugs* among 12th grade students. In the early years of MTF, *mescaline*, *concentrated THC*,

⁵ Schulenberg, J. E., Johnston, L. D., O’Malley, P. M., Bachman, J. G., Miech, R. A., and Patrick, M. E. (2018). [Monitoring the Future national survey results on drug use, 1975-2017: Volume II, college students and adults ages 19-55](#). Ann Arbor: Institute for Social Research, The University of Michigan.

peyote, and [PCP](#) were used far more widely than they are today. As is explained in Appendix C, prevalence when estimated using a branching question tends to be lower than when the question is stand-alone. However, we believe that the trending results accurately reflect the nature of changes taking place. Of the several hallucinogenic drugs discussed next, only salvia use has been assessed using a stand-alone question.

- **Concentrated THC** past-year prevalence stood at 1.1% in 2018 for 12th grade students. It was at a peak annual prevalence of 5.7% in 1977, but fell to about 1% by 1984; it has varied relatively little since then, although there was a slight upward surge in the mid-1990s.
- Annual prevalence of **mescaline** was 0.3% in 2018 for 12th grade students. It was at a 5% peak from 1976 through 1978 (and possibly earlier), but its prevalence fell below 1% by 1988 and has varied rather little since.
- **Peyote** use in the past year was 0.4% in 2018 for 12th grade students. It had a 1.8% annual prevalence at the first measurement in 1976 and by 1982 had fallen to 0.6%. Its use increased during the 1990s drug relapse but has since fallen to today's low level.
- [Salvia](#) use in the past year currently stands at less than 1% in all grades. Use of this drug has been declining since it was first measured in 2009, when prevalence among 12th grade students was 5.7%.
- In 2018 past-year use of [cocaine](#) was near the lowest levels ever recorded by Monitoring the Future (Figure 5-4g). The percentages of students reporting use in the past year in 8th, 10th, and 12th grade in 2018 were 0.8%, 1.5%, 2.3%, respectively. Cocaine grew in popularity among 12th graders in the late 1970s, then plateaued at a high level of around 12% annual prevalence in the first half of the 1980s, when most drugs were falling, before plunging by about three quarters – reaching its nadir in 1991. This drug then followed the common pattern of an increase in use during the 1990s relapse, before showing a period of decline since 2006. The increase had leveled out about three years earlier for 8th graders (in 1996) than for 12th graders (in 1999), evidence of a cohort effect.

The reduction of adolescent cocaine use to today's low levels is a success story given its considerable popularity in the 1980s, when past-year prevalence among 12th graders reached 13.1% (in 1985). Reasons for this steep decline in cocaine use – in particular the role of perceived risk – are discussed in Chapter 8.

- In 2018 past-year use of [crack cocaine](#) was at or near historic lows (see Figure 5-4g). Prevalence levels among 8th, 10th, and 12th grade students were all less than 1% at 0.4%, 0.6%, and 0.9%, respectively. Like cocaine, crack use dropped sharply from 1986, when its use was first measured, through 1991. Consistent with other illicit drugs, its prevalence then increased during the 1990s drug relapse, peaked in the late 1990s, and has since declined to today's low levels of use.

Questions on [crack cocaine](#) were first introduced into the survey in 1986, when information gathered routinely in MTF showed some indirect evidence of the rapid spread

of crack cocaine. For example, we found that the proportion of all 12th graders reporting that they had ever smoked cocaine (as well as used it in the past year) more than doubled between 1983 and 1986, from 2.4% to 5.7%. In the same period, the proportion of those who said that they had both used cocaine during the prior year, and at some time had been unable to stop using it when they tried doubled (from 0.4% to 0.8%). In addition, between 1984 and 1986, the proportion of 12th graders reporting active *daily* use of cocaine also doubled (from 0.2% to 0.4%). We think it likely that the rapid advent of crack use during this period was reflected in all of these changes, though we did not yet have a direct measure of its use.

Use of crack cocaine was first measured in 1986 by a single question contained in one questionnaire form, and it was asked only of respondents who had reported any use of cocaine in the past 12 months. It simply asked if crack was one of the forms of cocaine they had used. It was thus an estimate of the annual prevalence of crack use. In 1987, stand-alone questions about crack use were introduced into two questionnaire forms, using our standard set of three questions that ask separately about frequency of use in lifetime, past 12 months, and past 30 days. These were subsequently added to all questionnaire forms beginning in 1990.

- Past-year use of [heroin](#) has always been relatively low, with annual prevalence never higher than 2% at any time in the survey for any grade (Figure 5-4h). In 2018 the level of annual use was 0.4% or less in each grade. Prevalence levels of heroin are now at or near all-time lows, after a long decline from a peak established at the end of the 1990s drug relapse period. One unusual pattern specific to heroin is that the late 1990s mark the highest levels of use ever recorded in the study, whereas for most other drugs the all-time highs were set near the beginning of the 1980s. This trend was due in part to the advent of heroin use without a needle, discussed next.
- [Heroin use without a needle](#) played a significant role in raising heroin prevalence to its all-time peak in the mid-1990s. Since then its use has declined to record lows, and in 2018 its annual prevalence was 0.3% or less in all three grades. The advent of new, very pure, non-injectable heroin that can be sniffed or smoked is documented in Tables 5-6a through 5-6c, which show for each grade the proportion of students (based on several prevalence periods) who used heroin either [with](#) or [without a needle](#), or both. For the period from 1995 to 1999, among 12th graders, about one fourth of the users had used heroin both ways, but of the remainder, in general about two to five times as many have used heroin without a needle. Among 10th graders over the same time interval, somewhat more used heroin without than with a needle, and among 8th graders the tables show a rough equivalence between the two methods of administration. But in 2001 all three grade levels showed significant declines in the proportion of students using heroin without a needle. Annual prevalence of heroin use without a needle has declined in all three grades since 2000, with levels of use in 2018 less than half their 2000 levels.
- The increase in heroin use that occurred around 1995 was recognized fairly quickly and gave rise to some ameliorative actions, including an anti-heroin campaign by the Partnership for a Drug-Free America. An increasing number of deaths due to heroin use,

including in the entertainment and fashion communities, also received widespread publicity. These factors may well explain the subsequent leveling in use after the near doubling of heroin prevalence that took place in 1995 (Figure 5-4h).

- Nonmedical use of *any prescription drug* by 12th graders decreased in 2018 for lifetime, annual, and 30-day use, and all three measures are now at the lowest levels recorded by the survey (Tables 5-5a, 5-5b, and 5-5c; reported for 12th grade students only). These record lows come despite the fact that updates to the questions increased prevalence levels in 2013. In 2018 prevalence was 15.5%, 9.9%, and 4.2% for lifetime, annual, and 30-day use, respectively, indicating that a substantial portion of adolescents still use prescription drugs nonmedically. The declines in recent years have been modest but a welcome development, as levels of nonmedical prescription use had remained stubbornly high in previous years.
- Past-year use of *narcotics other than heroin* is reported only for 12th grade students; in 2018 it continued a decline that began in 2010 (Figure 5-4i). In 2018 past-year prevalence significantly declined to 3.4%, down nearly two-thirds from a high of 9.5% in 2003. Two patterns make trends in use of these drugs unique. First, peak use came during the 1990s relapse – and not during the 1980s as it did for so many other drugs – suggesting that its rise during the 1990s was more than just a return to drug use patterns of the past and instead represented the emergence of new, unique patterns of use for adolescents. Second, the peak established after the 1990s drug relapse stayed at stubbornly high level for much longer than most illicit drugs. High levels of use during the 2000s raised concern that use of these types of prescription drugs had become endemic. The recent decline in prevalence since 2010 provides some encouragement that efforts to reduce use are taking effect among adolescents.

Because the question text on half of the questionnaire forms was updated in 2002 with the inclusion of additional examples of narcotics other than heroin (i.e., OxyContin, Vicodin, and Percocet), we obtained a higher reported rate of use of the other narcotics with the new version of the question that year (9.4%) than with the previous version of the question (7.0%). (When we make a significant change in the wording of a question, we often use this type of spliced design in which a random half of the respondents to the forms containing the drug get the new version and others get the old version in the same year so that we can assess the impact of the wording change.) All questionnaire forms contained the new version of the question in 2003 and thereafter.

- Table C-4 in Appendix C shows the trends for many of the *specific narcotic drugs* that make up the class of “narcotics other than heroin” among 12th grade students. The only significant change in annual prevalence in 2018 was a decline in Morphine use to 0.2%, which does not leave much room for it to fall further.

This table shows some of the drugs responsible for the considerable rise in the overall class during the 1990s: *codeine*, the annual prevalence of which rose from a low point of 1.0% in 1995 to 4.6% by 2004; *opium*, which rose from a low of 0.4% in 1993 to 2.4% in 2003; and *morphine*, which rose from a low of 0.2% in 1993 to 2.1% in 2004. The use of

methadone and *Demerol* also rose during the 1990s, though their annual prevalence levels generally remained lower than the other three drugs.

Some additional drugs were added to this list in the 2002 questionnaire, including OxyContin, Vicodin, Percocet, Percodan, and Dilaudid. In the 2002 questionnaire form that asks about the larger set of specific narcotics as part of a branching question, [Vicodin](#) had a prevalence level (4.1%) similar to codeine (4.4%), while the levels of the other new drugs on the list were lower – [OxyContin](#), 1.6%; *Percocet*, 1.9%; *Percodan*, 0.6%; and *Dilaudid*, 0.1%. Since then, Vicodin use rose slightly and was at 4.3% in 2012, prior to declining to 0.5% by 2018. OxyContin use rose more and was at 3.0% in 2012 before falling significantly and is now at a level of 0.8% in 2018; Percocet rose to 2.7% in 2012, but is now at a level of 0.7% in 2018. Percodan use was at near-zero prevalence in 2018; and Dilaudid use remained at negligible levels and, therefore, it was dropped from the questionnaires in 2007 (Table C-4).

Although the statistics in Table C-4 may be useful in terms of tracking trends and telling us something about the relative popularity of these various drugs, our experiences with several drugs have taught us that absolute prevalence levels are likely to be higher if the question is not embedded in a branching question structure (as these questions have been). Because two of these drugs were also included as separate “tripwire” questions (i.e., asking directly about the frequency of annual use), we can use responses to these questions to make a better estimate of the absolute prevalence levels. In 2018, [OxyContin](#) use based on the tripwire question was higher (at 2.3% annual prevalence) than it was for the embedded question (0.8%), though the trend line has been somewhat erratic. [Vicodin](#) showed little evidence of change in the free-standing question after 2002 (9.6% annual prevalence in 2002 and 9.7% in 2009) until 2010, when we observed a significant decline to 8.0%. It was at 8.1% in 2011 and fell to 1.7% by 2018 while the prevalence level from the embedded question was 0.5% in 2018.

- Questions on [bath salts](#) (synthetic cathinones) were added to the survey in 2012 out of concern that these particularly toxic drugs would gain popularity among adolescents (Table 5-5b). Annual prevalence has been low and never higher than 1.3% in any grade. In 2018, prevalence was 0.9% or less in all grades.
- Levels of past-year [sedative \(barbiturate\)](#) use (Figure 5-4l) declined after the highs of the 1990s drug relapse but for some years remained substantially higher than they were before the relapse began. Sedative (barbiturate) use trends are reported only for 12th grade students and by 2018 annual prevalence was at a historic low of 2.7%. As with many other substances prevalence increased during the 1990s drug relapse, but a long-term decline did not start until 2005, which is nearly a decade later than the decline seen for most other drugs. This pattern of sustained, high levels past the 1990s is found for abuse of many prescription drugs, and was seen for the class “narcotics other than heroin.” Trends over the past ten years, however, indicate that a long-term decline has been taking place.
- Past-year use of [tranquilizers](#) continued an overall decline that began after 2001, when the question was modified to include Xanax as an example of a tranquilizer (Figure 5-4m). In

2018 it declined in all grades, significantly so in 12th grade, and the percentages reporting use in the past year were 2.0%, 3.9% and 3.9% in 8th, 10th, and 12th grade, respectively. Among 12th grade students, tranquilizer use increased during the 1990s; the increase was sustained well into the 2000s, which is a trend typical for the general category of prescription medication misuse. The halt of the 1990s relapse appeared first in the lower grades and then later in the higher grades, suggesting a cohort effect.

- Table C-3 in Appendix C gives trends for many of the *specific tranquilizers*. These more detailed questions about specific drugs within a class are asked only of 12th grade students. They are contained in a single questionnaire form and are asked in a branching format, wherein a respondent must first indicate that he or she used the general class of drugs (e.g., tranquilizers) in the prior 12 months before being branched to the more detailed questions about which specific drugs were used. As discussed above, the prevalence levels resulting for drugs in the branching format questions tend to be lower than levels obtained from questions asked directly about their use. Still, they should give good indications of trends in use and relative use in comparison to the other drugs in the same class. What follows is based on data obtained using the branching format.

In recent years *xanax* has been the tranquilizer most commonly used by 12th grade students. Since 2016 its prevalence has been higher than the prevalence of all other tranquilizers combined and in 2018 was at 2.2%. Xanax displaced *valium* as the most common tranquilizer used by 12th graders in 2006. Within this branching question valium had the highest level of use ever recorded at 6.9% in 1977 but has since dropped to 0.3% in 2018. Use levels of other tranquilizers have been less than 1%, with the exceptions of Soma which reached a level of 1.4% in 2008 and 2010 and Klonopin which reached a level of 1.7% in 2010.

- [*Rohypnol*](#), a “club drug,” was added to MTF in 1996, in part because of the extensive publicity it received as a “date rape” drug (Figure 5-4n). Past-year levels of use have never exceeded 2% in any grade, and in 2018 were at or less than 0.7% in all grades.

As a questionnaire space economy measure, in 2002 the standard triplet question (asking about lifetime, past-year, and past-month use of Rohypnol) was replaced with a tripwire question asking only about use in the past year. (This change was made at 12th grade only.) As a result of this change in the structure and location of the question, trend data since 2002 are not directly comparable to data prior to 2002. Figure 5-4n shows the impact of that change for 12th graders.

- In 2018, prevalence of past-year [*Ketamine*](#) and [*GHB*](#) use among 12th grade students was low and stood at 0.7% and 0.3%, respectively (Table 5-5b). These “club drugs” were added to the survey in 2000. Both showed little change in their relatively low usage levels through 2003. Since then use has declined in all grades. Because of the very low levels of use of these drugs by 2011, questions about their use were dropped from the questionnaires administered to 8th and 10th graders.

- Past-year ***alcohol*** use in 2018 remained at or near the lowest levels ever recorded by Monitoring the Future in all grades (Figure 5-4o). Unlike most other drugs, alcohol use showed only a modest increase during the 1990s relapse, exhibiting more of a pause in its long-term decline. This decline then resumed at the close of the 1990s, and in 2018 the percentages reporting any use in the past year among 8th, 10th, and 12th grade students were 19%, 38%, and 53%, respectively. The corresponding levels of use for past month prevalence stood at 8%, 19%, and 30% in 2018, which are historic lows in 10th and 12th grade.
- ***Daily drinking*** (drinking alcoholic beverages on 20 or more occasions in the past 30 days) in 2018 was at or tied record lows over the life of the study. In 2018 levels of use were 0.1% among 8th grade students, 0.5% among 10th grade students, and 1.2% among 12th grade students.
- In 2018 levels of having ***been drunk*** were near the lowest ever recorded since the survey began tracking this behavior in 1991 (Tables 5-5a-d and Figure 5-4o). In 2018 the percentages reporting being drunk in the past year were 6.5%, 21%, and 34% in 8th, 10th, and 12th grade, respectively, representing a decline to historic lows in 12th grade. The percentage who reported being drunk in the past 30 days was also near record-low levels in 2018, at 2.1% in 8th grade, 8% in 10th grade, and 18% in 12th grade. While the long-term decline is a positive development, it remains troubling that substantial numbers of adolescents still engage in this behavior. Further, it looks like the declines in many of the measures of alcohol use came to a halt in 2017 in the younger grades, which could indicate an end to the very important long-term decline in use.
- ***Binge drinking*** (having five or more drinks in a row one or more times in the prior two weeks) followed a trend similar to the other alcohol measures, including some increase in the 1990s coincident with the relapse in illicit drug use (Figure 5-4p and Table 5-5d). Since then prevalence of this behavior has dropped considerably, with levels in 2018 half of or less than the levels recorded during the late 1990s. Prevalence in 2018 in 8th grade was 3.7%, which is the second lowest level recorded by the survey and compares to 13% in 1999. In 10th grade prevalence was at a historic low of 8.7%, which compares with a level of 24% in 1999. In 12th grade prevalence significantly declined to a historic low of 13.8%, which is less than half the level of 31% in 1999. Obviously some important and substantial reductions in teenage binge drinking occurred in the 1980s along with further declines after 1999. We discuss some of the likely reasons for these important changes in Chapter 8.
- ***Extreme binge drinking***⁶ is defined here at two levels, having 10 or more drinks in a row as well as 15 or more drinks in a row one or more times in the prior two weeks. Both of these measures, which were first included on the 12th grade surveys in 2005, have since followed trends similar to those of the other alcohol measures and have been declining in recent years (Table 5-5e). In 2018 past two-week levels for having both 10+ and 15+ drinks in 12th grade continued long-term declines and were at or near the lowest levels recorded

⁶ This behavior is also referred to as “high-intensity drinking” or “heavy drinking” in the alcohol literature. For an expert discussion of terminology for this behavior see [here](#).

by the survey. Despite the overall decline, an alarmingly high percentage of 12th graders report drinking episodes at such high levels. In 2018, 4.6% of all 12th graders indicated having 10 or more drinks in a row at least once in the past two weeks, while 2.5% indicated having 15 or more drinks in a row at least once in that interval. As may be seen in the table, the trends overall appear to be gradually shifting down.

In 10th and 8th grade the prevalence of 10 or more drinks in a row has held steady since first measured in 2016, at about 3% and 1%, respectively. Questions about 15 or more drinks are asked only in 12th grade.

- Use of *alcoholic beverages containing caffeine* has been in steady decline and has decreased about 50% overall since first introduced into the survey in 2011. In 2018 annual prevalence levels were 6%, 10%, and 15% in 8th, 10th, and 12th grade. Caffeine can mask the signs of alcohol impairment and consequently increase risks of motor vehicle and other types of injury. In 2010 the Food and Drug Administration issued a [press release](#) directed to four major manufacturers of premixed alcoholic beverages containing caffeine, stating that the caffeine added to these beverages was “unsafe;” this effectively eliminated the sale of these products. Levels of use for these beverages remains substantial, despite declines since 2011.
- Past-year use of *flavored alcoholic beverages* has been in decline in recent years, although use levels remain high. These beverages are also known as “alcopops” or “malternatives” (because their alcohol content often derives from malt). The percentages reporting use in the past year in 2018 are at the lowest levels recorded by the survey in 10th and 12th grade, and near the lowest level recorded in 8th grade (for which the lowest level was in 2017). Among 8th, 10th, and 12th graders past-year prevalence levels were 12%, 29%, and 38%, respectively. Despite the decline, use levels remain high and this class of alcoholic beverage made substantial inroads into the youth market.

A single tripwire question, asking about the frequency of flavored alcoholic beverage use in the past 12 months, was introduced in 2003 to determine how widespread the use of these beverages was. (The question text was: “During the last 12 months, on how many occasions [if any] have you drunk flavored alcoholic beverages, sometimes called ‘alcopops’ [like Mike’s Hard Lemonade, Skyy Blue, Smirnoff Ice, Zima]? Do not include regular liquor, beer, wine, or wine coolers.”) In 2003, the annual prevalence was 55% among 12th graders. Because of this high level of use, we introduced more extensive measurement of use (i.e., the standard questions about use in lifetime, past 12 months and past 30 days) of these beverages into the 2004 questionnaires. (The question text was revised: “On how many occasions, if any, have you had flavored alcoholic beverages like Mike’s Hard Lemonade, Skyy Blue, Smirnoff Ice, Zima, Bacardi Silver, wine coolers, etc. to drink – more than just a few sips. Do not include regular liquor, beer, or wine.”) The annual prevalence was about the same in 2004 (56%) and it rose slightly in 2005 (58%), after which it declined to 53% by 2009 and then to 38% by 2018 (Table 5-5b). Thirty-day prevalence among 12th grade students had fallen to 18% by 2018, while lifetime prevalence was 50%. It should be noted that females are somewhat more likely than males to drink these beverages, though significant numbers of both genders drink them.

- Use levels of the various other specific classes of alcoholic beverages – [beer](#), [wine](#), [wine coolers](#), and [liquor](#) – are reported in [Occasional Paper 92](#)⁷ (Tables 107 through 120). In both 8th and 10th grade prevalence of drinking beer in the last 30 days has increased for the past two years, after reaching a historic low in 2016 (Tables 107 and 108). In 12th grade a long-term decline in beer drinking continued in 2018 to a historic low (Table 109). Prevalence levels among 8th, 10th, and 12th grade students stood at 6.8%, 14%, and 22%, respectively, which is about half of the levels recorded in the late 1990s. [Binge drinking beer](#) (having five or more cans or bottles of beer in a row at least once in the prior two weeks, Tables 110–112 in [Occasional Paper 92](#)) followed the same pattern seen for beer consumption, with slight increases in 8th and 10th grade, and a decline in 12th grade to a historic low. In 2018, these levels were 3%, 7%, and 11% for 8th, 10th, and 12th grade students, respectively.
- Consumption of [hard liquor](#) (reported only for 12th grade students, Table 113 in [Occasional Paper 92](#)) significantly declined in 2018 by an absolute 4.9% and reached a historic low. In 2018 thirty-day prevalence was 22%, which is a decline of more than half from the peak of 48% in 1980 and is lower than the previous nadir of 28% that was recorded in 1992, before the start of the 1990s drug relapse. The proportion reporting [binge drinking liquor](#) (five or more drinks in a row in the prior two weeks, Table 114 in [Occasional Paper 92](#)) declined markedly in 2018 by an absolute 6 percentage points to a historic low of 13%. While seniors in the 1970s and 1980s were much more likely to report binge drinking beer than binge drinking liquor, seniors in the class of 2018 reported slightly higher levels of binge drinking liquor (13%) than binge drinking beer (11%).
- The trend results for [wine](#) (Table 115 in [Occasional Paper 92](#)) are less clear because in 1988 a new question about wine coolers was introduced, which had the effect of sharply reducing self-reported wine use. (No doubt, up to that point many users of wine coolers reported such use under wine.) Since 1988, prevalence of wine use had been on an overall decline, although use rose during the 1990s drug relapse. In 2018, 30-day prevalence among 12th grade students decreased slightly to 10% where it has hovered for the past ten years. This is about half the peak level of 18.3% in 1996. Lower proportions of 12th graders engage in [binge drinking wine](#) (five or more drinks in a row in the prior two weeks, Table 116 in [Occasional Paper 92](#)) than binge drinking beer or liquor. In 2018 the prevalence of binge drinking wine was 3.6%, which is a slight decrease from the previous year. Overall, prevalence has hovered at around 4% over the past decade.
- [Wine coolers](#) have lost much of their appeal among the adolescent population since the survey began tracking their use in the 1980s (Table 117 in [Occasional Paper 92](#)). Prevalence in 2018 was a record low 9.7%. As with wine, occasions of [binge drinking wine coolers](#) in the past two weeks were not as common as binge drinking beer or liquor (Table 120 in [Occasional Paper 92](#)). In 2018 prevalence was 5.0%, which compares to the high of 14% observed in 1988, and a low of 4.3% observed in 2016.

⁷ Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman J. G., Schulenberg, J. E., & Patrick, M.E. (2019). [Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975–2018](#) (Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research.

- ***Powdered alcohol***, as the name suggests, can be added to water to form an alcoholic drink. MTF has monitored this substance since 2016, and annual prevalence has been below 2% in all grades in all years. This product is not yet commercially available, although the U.S. Alcohol and Tobacco Tax and Trade Bureau approved labels for its sale with the brand name Palcohol in 2014. Questions on powdered alcohol were added to the survey in 2016 to assess baseline levels of use before the product becomes commercially available, if it ever does.
- ***Alcohol*** and ***marijuana*** are the two most commonly used substances by teenagers to get high, and a question that is often asked is to what extent does change in one lead to a change in the other. If the substances co-vary negatively (an increase in one is accompanied by a decrease in the other) they are said to be substitutes; if they co-vary positively, they are said to be complements.

Interestingly, the answer may differ by historical era. Before 2007 patterns of use for the two substances suggested they acted as complements. When marijuana use increased in the late 1970s, so too did alcohol use. Between 1979 and 1992 marijuana use declined and a parallel decline took place in annual, monthly, and daily alcohol use, as well as in binge drinking among 12th graders. As marijuana use increased again in the 1990s, alcohol use again increased with it, although not as sharply. In sum, before 2007 there was little evidence from MTF to support what we have termed “the displacement hypothesis,” which asserts that an increase in marijuana use will lead to a decline in alcohol use, or vice versa.⁸

However, since 2007 a new trend has emerged that would be consistent with the “displacement” hypothesis. From 2007 through 2018 alcohol use declined markedly, reaching historic lows in the life of the study. Meanwhile, for most of this time period marijuana use has stayed steady or increased for all age groups. For the first time trends in alcohol and marijuana use are substantially diverging, suggesting that the historical relationship between these two drugs may have changed.

- ***Nicotine*** used in the form of ***cigarettes*** is currently at or near historic lows (Figure 5-4q). In 2018, thirty-day prevalence levels of cigarette use by 8th, 10th, and 12th graders were 2.2%, 4.2%, and 7.6%, respectively. In 12th grade use significantly declined to a historic low. Prevalence has declined steadily since 1997, when it reached a peak during the 1990s relapse. A parallel trend is apparent for ***daily cigarette*** use (also in Figure 5-4q; annual prevalence of cigarette use is not asked).

In 8th grade 30-day cigarette use increased slightly in 2018 to 2.2% from 1.9% the previous year, which is the first increase observed since 2010. While the increase is not large and not statistically significant it is nevertheless concerning because changes in drug trends can begin in the youngest grades. This increase warrants close monitoring in future years; hopefully it will be short lived and does not mark a turning point in the decades-long decline in adolescent cigarette smoking.

⁸ DiNardo, J. & Lemieux, T. (2001). Alcohol, marijuana, and American youth: The unintended consequences of government regulation. *Journal of Health Economics*, 20, 991–1010.

The intense public debate in the late 1990s over cigarette policies likely played an important role in bringing about the very significant downturn in adolescent smoking over the past two decades. MTF helped to give rise to that debate as it publicly reported in the first half of the 1990s that the level of smoking among U.S. adolescents was rising sharply – results that were widely covered in the national media. Other subsequent developments likely have contributed, including (a) increases in cigarette prices, brought about in part by the tobacco industry settlement with the states and also by state-level taxing decisions; (b) substantially increased prevention activities, including antismoking ad campaigns in a number of states; (c) the removal of certain types of advertising (including billboards) as well as the Joe Camel campaign nationwide; (d) the initiation of a national antismoking ad campaign by the American Legacy Foundation, which was created under the conditions of the tobacco Master Settlement Agreement of 1998; and (e) efforts by the Food and Drug Administration (FDA) and states to reduce youth access to cigarettes.

An important milestone occurred in 2009, with passage of the Family Smoking Prevention and Tobacco Control Act, which gave the U.S. Food and Drug Administration the authority to regulate the manufacturing, marketing and sale of tobacco products. New efforts by the FDA have undoubtedly contributed to the continuing decline in use of cigarettes, and reported availability by 8th and 10th graders.

In earlier years, efforts to reduce adolescent smoking did not meet with as much success. Between 1984 and 1992 smoking prevalence was little changed among 12th grade students despite increasingly restrictive legislation with regard to smoking debated and enacted at state and local levels, as well as prevention efforts made in many school systems. (The Joe Camel ad campaign may have been successful at increasing smoking, especially among males.) These results suggest that the successful reduction of adolescent smoking, as we have seen in recent decades, requires a concerted, national, multi-pronged effort.

- During the 1990s trends in [cigarette](#) smoking generally moved in concert across 8th, 10th, and 12th grade, and not in the usual, staggered pattern indicative of a cohort effect. The prevalence of current smoking began to rise among 8th and 10th graders after 1991 and among 12th graders after 1992, and until 1996 moved steadily upward in all three grades. In 1996, current smoking peaked in grades 8 and 10, and then peaked a year later among 12th graders.

Because of this general parallel movement, which is more characteristic of a secular trend, we are inclined to look for some contemporaneous historical correlates to explain the changes in this period. One possible explanation is that use rose because cigarette prices dropped on average due to increased price competition among brands. Another is that cigarette advertising and promotion had grown and/or become more effective at reaching youth. Still a third possibility is that the portrayal of smoking had increased appreciably in the entertainment media, particularly in movies. Some evidence points to all three of these changes in the social environment as possible influences; but whatever the specific causes, they seemed to have reached young people across the age spectrum. Therefore, we infer that the changes observed in cigarette use during this time were part of a secular trend. It is interesting that cigarettes, which normally reflect cohort differences, began to exhibit a

secular trend in the same historical period that illicit drugs, which normally exhibit secular trends, began to show cohort effects.

- **Vaping** increased dramatically in 2018 across all substances vaped, as discussed immediately below. Vaping involves the use of a battery-powered device to heat a liquid or plant material that releases chemicals in an inhalable aerosol. Examples of vaping devices include e-cigarettes such as the popular brand JUUL and “mods.” The aerosol may contain any of the following: nicotine, the active ingredients of marijuana, flavored propylene glycol, and/or flavored vegetable glycerin. Liquids that are vaporized come in hundreds of flavors, many of which are likely to be attractive to teens (e.g., bubble gum and milk chocolate cream).
- Increases in past 12-month **nicotine vaping** (Figure 5-4u and Tables 5-5a to 5-5c) were the largest ever recorded for any substance in the years that MTF has tracked adolescent drug use in 10th and 12th grades. Prevalence increased by 3.4, 8.9, and 10.9 percentage points in 8th, 10th, and 12th grades. As a result nicotine vaping prevalence levels in 2018 were 11%, 25%, and 30%, respectively. Levels of nicotine vaping in the past 30 days were 6%, 16%, and 21%, which are far higher than levels of cigarette use.

Low perceived risk of nicotine vaping no doubt plays a role in its popularity among adolescents. MTF asks separately about regular use of “e-cigarettes” and also regular vaping of nicotine. Levels of perceived risk for these behaviors rank near the lowest of all substances, with little change in recent years (see Chapter 8).

- **Marijuana vaping** (Figure 5-4v and Table 5-5a to 5-5c) also increased substantially in 2018 as this new way of using marijuana becomes more mainstream. In 2018 prevalence of use in the last 12 months increased 1.3, 4.2, and 3.6 percentage points in 8th, 10th, and 12th grades to levels of 4.4%, 12.4%, and 13.1%, respectively. Overall marijuana prevalence changed little in 2018, suggesting that youth who were vaping marijuana may have already been using it in other forms as well.
- Vaping **just flavoring** (Tables 5-5a to 5-5c) also substantially increased in 2018 to past-year prevalence levels of 15%, 25%, and 26% in 8th, 10th, and 12th grades. Only a small portion of youth report vaping just flavoring and no use of any other tobacco products (3.8% in 12th grade in 2017), suggesting that in this age group flavoring vaping is primarily a supplement to and not a substitute for nicotine vaping.⁹
- **Any nicotine use** in the past 30 days increased substantially among 12th grade students in 2018, rising by 6.9 percentage points to 33%. This increase was driven by vaping, as indicated by a decline of 2.1 percentage points in **any nicotine use other than vaping**. While vaping may be diverting nicotine-curious youth to a new form of nicotine use that is less dangerous than cigarette smoking, at the same time these results suggest vaping is also recruiting to nicotine use adolescents who would not otherwise have used nicotine.

⁹ Miech, Richard A., Lloyd D. Johnston, Patrick M. O’Malley, and Yvonne M. Terry-McElrath. 2019. The national prevalence of adolescent nicotine use in 2017: Estimates taking into account student reports of substances vaped. *Addictive Behaviors Reports*, doi: [10.1016/j.abrep.2019.100159](https://doi.org/10.1016/j.abrep.2019.100159)

Longer-term these new recruits to nicotine may take up cigarette smoking to feed their nicotine addiction.

The index of any nicotine use was made possible as a result of changes made to the MTF survey in 2017. While the survey has in previous years asked questions about each of the individual measures that make up the index, these questions were not all asked on the same form, precluding their combination for individual respondents. In 2017 two forms of the 12th grade survey included all the constituent measures, which are use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, and vaping nicotine.

- Levels of smokeless tobacco use in the past 30 days (Figure 5-4r and Table 5-5c) declined in 12th grade to a historic low level of 4.2%. In 8th and 10th grade prevalence was near record lows, although both increased slightly in 2018 to 2.1% and 3.9%, respectively.

Trends in smokeless tobacco stand out as very different from trends for adolescent use of other drugs. Unlike almost all other substances, use of smokeless tobacco did not increase during the 1990s relapse but actually declined for nearly 10 years, beginning around 1994. Further, smokeless tobacco is one of few substances for which prevalence increased after 2007, although this increase among 10th and 12th grade students was not lasting. Finally, the trends show little in the way of cohort effects, given that trends have moved in parallel, and not in staggered fashion, for all three grades over the past 10 years. These results suggest that the factors leading to use of smokeless tobacco are much different from the drivers of use of other drugs.

Questions about the use of smokeless tobacco were first introduced in 1986, omitted in 1990 and 1991, and then reintroduced in 1992. Through 2010, the examples of smokeless tobacco provided were snuff, plug, dipping tobacco, and chewing tobacco; because of new forms of smokeless tobacco entering the market, snus and dissolvable tobacco were added to the examples in 2011. The introduction and promotion of new smokeless products, including snus, may well have contributed to the increase in use seen in all grades that peaked around that time.

- Past-year use of steroids, specifically anabolic steroids, has always been below 3% since it was first monitored by the survey, and has been in a general decline since peaks established in the early 2000s (Figure 5-4s). In 2018, levels of use in the last 12 months for 8th, 10th, and 12th grade students were at or near historic lows of 0.6%, 0.6%, and 1.1%, respectively. A surge in use among 12th graders in 2001 was preceded by an earlier surge in use among 10th grade students, likely representing a cohort effect. As described in the later section in this chapter, “Trend Differences by Gender,” this increase occurred almost entirely among boys, for whom prevalence levels were higher.

Until 2009, the question on steroid use was preceded by an introduction that stated, “Steroids, or anabolic steroids, are sometimes prescribed by doctors to promote healing from certain types of injuries. Some athletes, and others, have used them to try to increase muscle development.” Since 2009, the slightly revised introduction has been, “Anabolic

steroids are prescription drugs sometimes prescribed by doctors to treat certain conditions. Some athletes, and others, have used them to try to increase muscle development.” The question then asks, “On how many occasions have you taken steroids on your own – that is, without a doctor telling you to take them?” Because the earlier version did not explicitly state that they must be prescription-controlled substances, we believe it likely that some respondents included what had been over-the-counter compounds like androstenedione in their answers prior to 2009.

- **Creatine** is not a hormone or a drug, but a nutrient found in the skeletal muscle of most animals. It is used to reduce the recovery time of muscles, to increase muscle mass, and to thereby enhance performance for high-intensity, short-duration exercises. It is readily available over the counter and not prohibited by the NCAA, which undoubtedly helps to explain the high levels of use we have found among teens. Annual prevalence has not fluctuated much since the survey first started tracking this substance in 2011; it has varied between 1% and 3% in 8th grade, 5% and 8% in 10th grade, and 8% and 12% in 12th grade.
- **Androstenedione** is a performance-enhancing substance that was scheduled by the Drug Enforcement Administration early 2005, making its sale and possession no longer legal. Since that time use has declined markedly. In 2018 prevalence in the past 12 months among 12th grade students was 0.5%, the lowest ever recorded by the survey. The survey stopped tracking this drug among 8th and 10th graders after 2014, when prevalence levels were less than 1% in these grades.
- Past-year **amphetamine** use has declined since highs recorded in earlier decades (in the 1980s for 12th grade students and the 1990s for 10th and 8th grade students). In 2018 12th grade prevalence was 5.5%, which is the lowest level recorded by the survey and continues a decline that commenced in 2014 (Figure 5-4j). In 10th grade prevalence was 5.7%, near the record low of 5.6% set in 2017 that resulted from a decline that dates back to 2014. In 8th grade prevalence was 3.7%, where it has hovered since 2014. Despite a slight prevalence increase in 2013 that resulted from an expansion of the amphetamine examples given in the question, 2017 past-year prevalence levels in all three grades are lower than they were in 1991, at the start of the 1990s drug relapse.

We believe past prevalence reports among 12th grade students in the early 1980s were somewhat exaggerated because some respondents included non-amphetamine over-the-counter diet and stay-awake pills, as well as “look-alike” and “sound-alike” stimulants, in their answers. In 1982, we added new versions of the amphetamine use questions that were more explicit in instructing respondents not to include such nonprescription pills.¹⁰ Between 1981 and 1982, prevalence level reports dropped as a result of this methodological change. In all tables and figures, data for 1975 through 1981 are based on the unchanged questions; data since 1982 are based on the revised questions, providing our best assessments of current prevalence and more recent trends in true amphetamine use.¹¹

¹⁰ These were added to only three of the five forms of the questionnaire being used at the time; the amphetamine questions were left unchanged in the other two forms until 1984.

¹¹ The unadjusted estimates for the earliest years of MTF were probably little affected by the improper inclusion of nonprescription amphetamines, since sales of the latter did not burgeon until after the 1979 data collection.

In 1982 and 1983, the two years for which both adjusted and unadjusted statistics are available, the unadjusted data showed a modest amount of over-reporting (see Figure 5-4j). Both statistics suggest that a downturn in 12th graders' use of amphetamines began in 1982 and continued for a decade. For example, between 1982 and 1992 the annual prevalence for amphetamines (revised) fell by nearly two thirds, from 20% to 7%, while 30-day use and current daily use both fell by more than two thirds. As with a number of other drugs, the trend lines veered upwards after 1992.

- Nonmedical use of the amphetamine [Adderall](#) is high with annual prevalence at 1.8%, 4.1%, and 4.6% in grades 8, 10, and 12 (Table 5-5b). In all grades prevalence has hovered within a small window since 2009 when it was first measured. In 2018, for 8th grade this window is 1% to 2%, for 10th grade 4% to 6%, and for 12th grade 5% to 8%.
- Table C-2 in Appendix C gives trends for many of the *specific amphetamines*. These more detailed questions about specific drugs within a class are asked only of 12th grade students. They are contained in a single questionnaire form and are asked in a branching format, wherein a respondent must first indicate that he or she used the general class of drugs (e.g., amphetamines) in the prior 12 months before being branched to the more detailed questions about which specific drugs were used. As discussed above, the prevalence levels resulting for drugs in the branching format questions tend to be lower than levels obtained from questions asked directly about their use. Still, they should give good indications of trends in use and relative use in comparison to the other drugs in the same class. What follows is based on data obtained using the branching format.

In recent years [Ritalin](#), [Adderall](#), and *Vyvanse* have been the amphetamines or amphetamine-like stimulant drugs most widely used nonmedically by 12th graders. On the basis of the single form with detailed questions on specific amphetamines, Adderall has been the most commonly used stimulant in all years surveyed, and had an annual prevalence of 2.8% in 2018. Ritalin has dropped in prevalence, and its 2018 prevalence of 0.8% was about a third of its 2.3% level when first surveyed in 2006. The prevalence of Vyvanse has been between 1% and 2% in every year since the project first surveyed its use in 2013.

These drugs have replaced *Benzedrine*, *Methedrine*, and *Dexedrine*, which had the highest annual prevalence at the beginning of the study in 1976. The use of these three drugs dropped to much lower levels by 1987 and to negligible levels by 1991, with relatively little change since then. In fact, Benzedrine and Methedrine were at such low levels of use that they were dropped from the MTF questionnaires in 2011. It has always been the case that a significant portion of the respondents reporting amphetamine use indicate that they do not know the names of the ones that they used, or responded that they used an amphetamine “other” than the ones listed on the survey.

- Past-year use of [methamphetamine](#) (as opposed to crystal methamphetamine) has been declining steadily since it was first added to the survey in 1999 (Figure 5-4k). Its use among adolescents was at or near historic low levels and among 8th, 10th, and 12th grade students

the proportion reporting use in the past year was 0.4%, 0.4%, and 0.5%, respectively. Since its peak prevalence in 1999, its annual prevalence has declined more than 80% in all grades – quite an important development.

- Past-year use of [*crystal methamphetamine \(ice\)*](#) – which can be smoked, much like crack – was 0.6% in 2018, near the lowest level recorded by the survey (Figure 5-4k). Questions specifically on this drug are asked only of 12th grade students. The survey began monitoring crystal methamphetamine in 1990 because of growing concern about the development of an epidemic in its use (Tables 5-1 through 5-4). Despite this concern, crystal methamphetamine did not make much of an inroad into the national population of 12th graders, quite possibly because the dangerous reputation of crack, with which it has so many similarities, "rubbed off" on it. Annual prevalence of use held at about 1.3% from 1990, the first measurement point, through 1992, and then use began to rise gradually during the incline phase in illicit drug use generally, reaching 2.8% by 1996. This more than twofold increase gave crystal methamphetamine a slightly higher prevalence level than crack had that year (2.1%). From 1996 through 2002, crystal methamphetamine use changed rather little and stood at 3.0% in 2002. After 2003, however, a significant, long-lasting decline took place. So, by including this drug in the MTF study starting in 1990, we have been able to show that the great sense of alarm has not been justified, at least not for secondary school students.

Legal Stimulants

- In 2018 both classes of *over-the-counter stimulants* – [*diet pills*](#) and [*stay-awake pills*](#) – were at the lowest ever levels recorded by the study among 12th graders (Table 5-5b).
- The proportion of 12th grade students who use nonprescription [*diet pills*](#) in the past year was 3.5% in 2018, the lowest level ever recorded by the survey (Table 5-5b). Today's levels are more than five times lower than their peaks of 21% in 1982, when diet pills were first included on the survey. After 1982, prevalence fell quickly over the next ten years to 8% in 1993; this was a particularly positive development because nearly all of these diet pills contained phenylpropanolamine, which the Food and Drug Administration has determined have health risks for the user, and in 2005 removed from over-the-counter sale. Nearly all the decline occurred among those who had used illicit drugs other than marijuana. Use stabilized through the mid-1990s at around 9.4%, rose after 1998 to reach 15.1% in 2002, and then declined to today's nadir of 3.5%.
- Annual prevalence of [*stay-awake pills*](#) was at a historical low among 12th grade students in 2018 and stood at 2.4% (Table 5-5b). This is more than ten times lower than the peak level of 26% in 1988. Since then prevalence of stay-awake pills has gradually declined with no periods of sustained increases. This long-standing decrease in prevalence, as well as the increase that took place before 1998, was observed most strongly among illicit drug users.
- Levels of daily use of *energy drinks* have converged across the three grades. In 2018 between 9% and 10% of students in 8th, 10th, and 12th grade reported using one or more energy drinks per day. When first assessed in 2010, prevalence of daily use was substantially higher for 8th grade students at 19% as compared to 14% and 12% in 10th and

12th grades, respectively. Since then more rapid declines in prevalence among 8th grade students have equalized levels of use. (The MTF survey asks about daily use of energy drinks and not about less frequent levels of use.)

- Four percent of students in all three grades reported daily use of one or more *energy shots*, which typically come in containers that are just two or three ounces. In 10th and 12th grade this level of use in 2018 was the same as it was in 2010, when the survey first included questions on energy shots. In 8th grade the 4% level was down from 6% in 2010.

Legal Use of Drugs for the Treatment of ADHD Taken Under Medical Supervision

- Lifetime prevalence levels for taking either a *stimulant* or *non-stimulant* drug for the treatment of ADHD (Attention Deficit Hyperactivity Disorder) do not show strong trends over time (Tables 5-5a and 5-5c). In all three grades lifetime use has varied between the narrow range of 11% and 14% since 2005. Trends for *current* (past 30-day) prevalence also show little variation, and range between 4% and 6% in all three grades since prevalence was first tracked in 2005.
- Trends in lifetime prevalence for *stimulant* ADHD drugs vary by grade. This class of drugs includes Ritalin and more recently Adderall and Concerta. Eighth grade use has declined somewhat from a high of 9.3% in 2006 to 7.1% in 2018, which is the second lowest level recorded by the survey. In 10th grade lifetime prevalence in 2018 was 8.2%, and prevalence has varied within the narrow window of 7% and 9% since first measured in 2005. In 12th grade lifetime prevalence in 2018 was at 8.6%, and prevalence has stayed within the narrow range of 8% to 10% since first measured in 2005. *Current* use has changed rather little, varying between 2% and 4% in all grades since first tracked in 2005.
- Lifetime and current prevalence of taking *non-stimulant* ADHD drugs declined overall between 2005 and 2018 in 8th and 10th grades, and in 2018 are at or near the lowest levels recorded by the survey at 5.1% and 6.1%, respectively, versus about 8% in 2006. In 12th grade lifetime and current prevalence have held fairly steady at between 5% and 7%. These types of drugs are sometimes prescribed when stimulants have proven ineffective or not well tolerated. One of these is Strattera, which was approved by the FDA in 2003.

DRUGS NO LONGER TRACKED ANNUALLY

The drugs listed below did not appear on the 2018 MTF surveys. In most cases prevalence levels fell so low that survey questions on the drug were removed to make room for questions on other drugs, as well as to reduce respondent burden. In some cases, as with “electronic vaporizers,” questions were removed to make place for updated terminology and measures.

- The study tracked use of *look-alikes* from 1982 to 2017. The prevalence of these over-the-counter stimulants had been hovering at historical low levels among 12th graders since 2010, and in 2017 it was at 1.5% (Table 5-5b). In subsequent years it was no longer included in the survey in order to make room for questions on other drugs. From 1982 onward the trend in look-alikes resembles the trend for illicit drug use during the same period. Annual prevalence declined from 10.8% in 1982 to 5.2% in 1991, followed by a

period of some increase during the 1990s drug relapse (to 6.8% in 1995), stabilization, and some decline again after 2001, to a historical low of 1.4% in 2014. Most of the initial decline in use occurred among those who had used illicit drugs other than marijuana – the group primarily involved in the use of look-alikes.

- ***Amyl and butyl nitrites***, one class of inhalants, became somewhat popular in the late 1970s, but their use has been almost eliminated in the years since. The annual prevalence level among 12th grade students was 6.5% in 1979 but only 0.9% in 2009. Because of this decrease in use, and to allow for the addition of other questions, the questions on nitrite use have not been included in the study since 2010.

When nitrites were included in the definition of inhalants, they masked the increase that was occurring in the use of other inhalants, because their use was declining at the same time that the use of the other inhalants was increasing.

- ***Methaqualone*** use (brand name Quaalude) had an annual prevalence among 12th graders of 0.4% in 2012, after which it was no longer included on the survey in order to make room for questions on other drugs. Previously, use of this drug rose sharply from 1978 until 1981. Starting in 1982 use began to decline, helping to account for the overall adjusted sedative index resuming its decline that year. Annual prevalence for methaqualone plummeted from 7.6% in 1981 to 0.2% by 1993; it then inched up a bit during a relapse phase in the 1990s to 1.1% in 1996, where it remained in 1999. By 2012 it was 0.4%, a tiny fraction of its peak level.
- Questions on use of ***Provigil*** (a prescription stay-awake drug used for narcolepsy, shift work, etc.) were added to the 12th grade questionnaires in 2009. In 2011 past-year prevalence was 1.5%, suggesting that this drug had not made serious inroads among youth in terms of nonmedically supervised use. Given the low use, questions on Provigil were no longer included on the survey starting in 2012.
- A question about ***bidis***, a type of flavored cigarette imported from India, was included in the MTF questionnaires for the first time in 2000, with a single tripwire question asking about the frequency of use in the past year. Some observers had been concerned that bidis might become popular among U.S. youth, but that does not seem to have been the case. The 2010 proportion of 12th graders using bidis during the past year was only 1.4%. Thirty-day and daily use would be appreciably lower. Given the low prevalence levels, the question on bidis was dropped from 8th and 10th grade questionnaires in 2006, and from 12th grade questionnaires in 2011.
- A question about ***kreteks***, a type of clove cigarette that was usually imported from Indonesia, was added in 2001 to the list of tripwire questions that ask about past-year use. Because the prevalence levels turned out to be low, this question also was dropped in 2006 from the 8th and 10th grade questionnaires to make room for other questions. In 2014, only 1.6% of 12th graders reported any use of kreteks in the prior 12 months and the question has not been included on the survey since then.

- A question on use of ‘*electronic vaporizers*’ was added to the survey in 2015. While this term is technically accurate it may have not been familiar to many adolescents. In 2017 MTF revamped its vaping questions, which now use the term ‘vape.’

SUMMARY OF TRENDS

As these varied patterns of use show, the overall proportion of U.S. adolescents using any substance in their lifetime has changed over the years, and the mix of drugs they use has changed even more. A number of drug classes showed dramatic declines (particularly in the 1980s), some showed substantial increases (particularly in the late 1970s and again in the 1990s), and some remained fairly stable. Further, the periods in which they either increased or decreased varied considerably, although between 1992 and 1996 the use of many drugs increased and by 1997 the use of most had stabilized. Since then, most have declined in use to some degree, sometimes very sharply, as was seen with LSD and MDMA; however, this was not true of all illicitly used drugs – in particular the prescription type drugs such as narcotics other than heroin, sedatives, and tranquilizers continued to increase well into the 2000s before they began their current declines, making them an important part of the nation’s drug problems. In recent years vaping of nicotine and marijuana has made a sudden and dramatic entrance on to the scene, demonstrating once again the ever changing nature of adolescent substance use and, consequently, the need to continually monitor and address emerging trends.

TRENDS IN NONCONTINUATION RATES: 12th GRADERS

Table 5-7a shows how the noncontinuation rates observed for the various classes of drugs have changed over time among 12th graders. “Noncontinuation” refers to not using a drug in the prior 12 months after having used it at some earlier time in one’s life. In other words, the noncontinuation rate is the percent of lifetime users who did not report using the drug in the past 12 months (or in the case of cigarettes, in the past 30 days). These rates and the changes in them over the years are shown in Table 5-7a for lifetime users; in Table 5-7b the noncontinuation rates are based on 12th graders who are “experienced users” (i.e., used the drug 10 or more times in their lifetime). An important caution is that these estimates are based on students who have ever used specific drugs, and the estimates can vary substantially from year to year for drugs with lower prevalence and thus small numbers of cases.

- ***Marijuana*** has the lowest rate of noncontinuation of any of the illicit drugs (Table 5-7a). In 2018, the noncontinuation rate was only 18%, the lowest level recorded in the last 23 years. Previously the noncontinuation rate had been higher, at about 20% since 2011 and 25% in the ten years before 2011. Today’s lower noncontinuation rate indicates more long-term marijuana use, and less experimental use, which is also seen in higher daily marijuana use for the same period (reported above).

During the 1990s marijuana noncontinuation rates fell by half, from a high of 35% in 1992 to a low of 17% in 1995, indicating that the substantial increase in prevalence during this period represented not only an increase in youth adopting marijuana use, but also sharply lower levels of users desisting from it. Previous to 1992, noncontinuation had gradually increased since the early 1980s, and with these higher rates of noncontinuation came a decrease in marijuana prevalence during those same years.

- In 2018 among the 3.9% of 12th graders who had ever used ***cocaine***, about two out of five (40%) did not use (i.e., were noncontinuers) in the past 12 months. This noncontinuation rate has showed an uneven decline since 2010 when it was 46%. Overall cocaine prevalence declined during this time, consistent with the substantial reduction in the number of youth ever initiating cocaine use.

Noncontinuation has played a substantial role in the changing prevalence of cocaine use over the life of the survey. The noncontinuation rate decreased from 38% in 1976 to 22% in 1979, corresponding to, as well as contributing to, a period of increase in the annual prevalence of its use. It then remained fairly stable through 1986, corresponding to a period of stability in prevalence of use. After 1986, the noncontinuation rate rose very substantially – from 25% in 1986 to 55% in 1991 – as the annual prevalence of use fell dramatically. This pattern strongly suggests that the sharp increase in perceived risk, which began in 1986, influenced both the initiation rate and the noncontinuation rate. After 1991, during the relapse phase in the epidemic, the noncontinuation rate began declining fairly rapidly once again, reaching 31% by 1996. (The prevalence of cocaine use overall was increasing during that period.) After 1996, the noncontinuation rate rose again – corresponding to a period of leveling in overall use – reaching 42% by 2000. In sum, the prevalence of cocaine use over three decades demonstrates that both noncontinuation and initiation play an important role in driving prevalence trends in drug use.

- The noncontinuation rate for [crack cocaine](#) has fluctuated between 38% and 45% for the past decade; in 2018 it was at 40%. Noncontinuation played a substantial role for crack cocaine use both before and during the 1990s relapse. Noncontinuation rose dramatically from 28% in 1987 to 52% in 1991, before the relapse began and as prevalence of use declined among 12th graders. The noncontinuation rate fell back to 30% by 1995 as usage rates rose. Noncontinuation then began to increase once again, reaching 43% by 1998, when overall use leveled.
- Noncontinuation of past-year [amphetamine](#) use outside of medical supervision has ranged between 29% and 39% for the past two decades; in 2018 it was 37%. Previous to 1995, it showed considerably more variation and had greater influence on amphetamine prevalence. It rose between 1982 (27%) and 1992 (49%) as use declined. Between 1992 and 1996, when overall use was rising, noncontinuation fell from 49% to 38%, then remained fairly level, corresponding to a period of leveling in use.
- Noncontinuation of [sedative \(barbiturate\)](#) use outside of medical supervision was 37% in 2018, where it has hovered for the past decade, even as annual prevalence has been falling.

Prior to 1995 noncontinuation showed more variation and exerted a substantial influence on sedative prevalence. Much of the decline in sedative use during the 1980s was accounted for by increasing rates of noncontinuation for the specific substances in this class. For example, in the case of [barbiturates](#), the noncontinuation rate rose from 36% in 1979 to 52% in 1988. It then declined in the 1990s – as use rose – to 37% by 1995, after which it leveled for several years and then declined further to 30% in 2002. The noncontinuation rate for methaqualone was 29% in 1979, rising dramatically to 61% by 1988 and falling off thereafter. Since 1990, use levels have been very low among 12th graders. Because of the very low numbers of cases upon which to base such estimates, methaqualone has been omitted from the tables and figures showing noncontinuation rates; and in 2013 that drug was dropped from the questionnaire.

- Noncontinuation of [tranquilizer](#) use outside of medical supervision has fluctuated between 29% and 42% for the past two decades and is currently at the high end of the range at 42%. Prior to 1995 it showed more variation and exerted a substantial influence on tranquilizer prevalence. As overall use of tranquilizers declined during the 1970s and through the 1980s, 12th grade lifetime users also showed a steady, gradual increase in their noncontinuation rates between 1975 and 1982, from 38% to 50%. This rate changed little for a decade until, in the period of the 1990s drug relapse, noncontinuation of tranquilizers declined from 53% in 1992 to 36% in 1996 and prevalence increased. The rate has remained fairly level since then, reflecting a period of relatively high, but gradually declining use.
- Noncontinuation rates for [steroid](#) users are quite volatile due to a combination of low prevalence and being assessed on only two (and later three) questionnaire forms. For the past decade these rates have varied between 24% and 37%; in 2018 it was 29%.

- [Alcohol](#) has always had an extremely low rate of noncontinuation and it has stayed between 8% and 9% since 1995. In previous years it increased gradually from about 1988 (when it was 7%) to 1993 (when it was 12%), perhaps reflecting the changed norms regarding its use (see Chapter 8). These norms, in turn, may have reflected both the influence of a number of states changing the legal drinking age and a greater emphasis being placed on the dangers of drunk driving.

Table 5-7b provides noncontinuation rates for 12th graders who were “experienced users,” here defined as those who reported having used a drug on 10 or more occasions during their lifetime. It shows that noncontinuation is far less likely among more experienced users than among less experienced users of a given drug, often three times lower or more. Further, while the direction of the trends in noncontinuation rates among all users have been similar to trends observed in the same drugs for experienced users, the degree of fluctuation in noncontinuation has tended to be considerably smaller among more experienced users.

The numbers of cases upon which each percentage in Table 5-7b is based are considerably smaller than in most other tables, particularly when overall use is low to start with; therefore, the trend data are somewhat uneven. The following are some important trends we have seen for noncontinuation rates of experienced users:

- The noncontinuation rate for experienced [marijuana](#) users has been very low throughout the past 44 years, ranging from a low of 4% in 1975 to a high of only 12% in 1990. In 2018 it returned to the historic low level of 4%.
- Noncontinuation rates for use of [cigarettes](#) in 2018 were at the highest level ever recorded by the study. Almost one in three (30%) 12th graders who had smoked regularly in the past had not smoked a cigarette in the last 30 days. This high level of noncontinuation contributes to the lowest prevalence levels of 12th grade cigarette use in 2018 ever recorded by the study.

This level of noncontinuation is almost double the nadir of 13% that was reached in 1997, at the height of the drug relapse. The increasing level of noncontinuation suggests that it is possible for many youth who have smoked regularly to stop before they develop a lifelong dependence on cigarettes and the associated health consequences. Nevertheless, even today the vast majority of youth who develop a smoking habit early do not stop by 12th grade, highlighting cigarettes as a particularly addictive drug.

- The noncontinuation rate for more experienced users of [inhalants](#) was at an unusually high level of 42% in 2018, the highest recorded since 1977. Caution should be taken when interpreting this increase because the estimate is based on a small number of users, and in fact we did not report it in 2016 or 2017 because fewer than 50 twelfth graders reported having used inhalants 10 or more times, a cell size too small for a reliable estimate. It is worth noting that the noncontinuation rate can change sharply if just a small number of lifetime inhalant users join or leave the 2% of 12th grade students who used inhalants in the past year. For this reason we look mainly for longer-term noncontinuation trends in inhalant use and are careful not to overemphasize short-term fluctuations. Before 2018

noncontinuation of inhalants had hovered at around 25%, and the coming years will tell if this year's estimate was anomalous or, instead, noncontinuation may persist at a new, higher level.

IMPLICATIONS OF NONCONTINUATION FOR PREVENTION

Whenever prevention programs are designed – whether for schools, families, communities, or the media – questions arise as to what *should* be prevented and what *can* be prevented. While it is axiomatic that the initiation of use should and can be prevented, there has been considerably less consensus as to whether the discontinuation of use is a realistic goal for prevention efforts. We believe the results just presented here help to inform that debate.

The findings show that whatever social forces brought about the large declines in drug use during the 1980s and the substantial increases during the 1990s operated through effects on *both* initiation and noncontinuation rates. Put another way, the decreases and subsequent increases in annual and 30-day prevalence-of-use were considerably larger than could be explained by fluctuations in initiation rates alone. These findings show that noncontinuation *can* and *does* change appreciably and, therefore, that any comprehensive prevention strategy should include increasing cessation – that is, preventing continuation and escalation among users – as one of its objectives, particularly cessation from early-stage use.

The findings show the importance of distinguishing among users at different levels of involvement. A comparison of the noncontinuation rates in Table 5-7a, based on all previous users, and Table 5-7b, based on only experienced users (those who reported having used a given drug 10 or more times) is highly instructive. Clearly, 12th graders in the early stages of use were appreciably more likely to discontinue their use than their counterparts who had greater involvement with the drug. This makes early intervention in terms of turning initial experimental use into non-use not only a viable goal for prevention, but also a particularly important one.

TREND COMPARISONS AMONG SUBGROUPS

This section provides trend comparisons for 12th grade students among key population subgroups defined on the following six dimensions: gender, college plans, region of the country, population density, socioeconomic status as indicated by parental education, and race/ethnicity. Earlier versions of Appendix D contained tables providing trends for these various subgroups for all three grades and on nearly all drugs; but Appendix D now refers the reader to an occasional paper ([Occasional Paper 92](#)¹⁰) that contains the same, detailed tables. The tables are organized by drug and, within drug, separately by the three grade levels. Of particular importance, a matching set of figures is also provided showing, for all three grade levels, each drug's usage trends by subgroup. We recommend use of the graphic versions to anyone who plans to spend much time examining subgroup differences. The table of contents in that document contains live links to each of the figures to facilitate look-up.

¹⁰ Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E., and Patrick, M. E. (2019). [Demographic subgroup trends among adolescents in the use of various licit and illicit drugs 1975-2018](#) (Monitoring the Future Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research, University of Michigan.

Trend Differences by Gender

As illustrated in the rest of this section and discussed in the previous chapter, for a number of licit and illicit substances, the differences between males and females in their levels of use tend to grow by 12th grade. In 8th grade there is often little or no gender difference in levels of use.

- While males have traditionally had higher levels than females of using [*any illicit drug*](#) in the past 12 months, this difference has reversed in recent years (Figure 5-7; see also Tables 1-3 and Figure 1 in [*Occasional Paper 92*](#)). This trend follows a classic cohort pattern. Among 8th graders, females first ranked higher than males in 2014 and have been slightly higher ever since. Among 10th graders females first ranked higher than males two years later in 2016, and their levels remain higher in 2017 and 2018. Among 12th graders, males still have higher levels of use than females but this could change in future years as the younger cohorts age.
- Gender differences in use of [*any illicit drug other than marijuana*](#) in the past 12 months vary by grade level (Figure 7 and Tables 4 through 6 in [*Occasional Paper 92*](#)). Among 12th grade students, males consistently have had slightly higher levels of use than females since the early 1980s, and in 2018 prevalence of use was 14% for males and 10% for females. In 10th grade, there has been little consistent difference in use levels by gender since 2002, and in 2018 the levels were the essentially the same for males and females, at 9.8% and 9.2%, respectively; prior to 2002 females consistently had higher levels than males. In 8th grade, the positions are reversed and females have consistently had higher levels of use than males, although the difference is small.

Most of the gender differences in prevalence mentioned in Chapter 4 for individual classes of drugs have remained relatively unchanged throughout the study – that is, any trends in overall use have been fairly parallel for males and females. There are, however, some exceptions as noted below.

- The historically higher levels of [*marijuana*](#) use for males as compared to females have narrowed in recent years (Tables 10-12 and Figure 19 in [*Occasional Paper 92*](#)). In 8th grade, past-year prevalence has been essentially the same for the two groups since 2016, varying between 9% and 11%. This is a departure from past trends in which males had higher prevalence levels than females by about two to three percentage points since this grade was first tracked in 1991. In 10th grade, prevalence has been slightly higher for females as compared to males since 2016, a reversal of gender rankings in all previous years.

In 12th grade males retained a slightly higher level of past-year marijuana use than females, at 37% and 34%, respectively. Males have had higher levels of use than females in every year of survey, for 44 years. The narrowing difference in recent years suggests a continuation of marijuana use patterns formed earlier, as the younger cohorts, among whom gender differences have disappeared, have aged into 12th grade.

- There are larger gender differences in current [*daily marijuana use*](#) (Figure 5-5a; see also Tables 16–18 and Figure 31 in [*Occasional Paper 92*](#)), with considerably higher prevalence for males; these differences exist at all three grade levels. The absolute differences are greatest when overall prevalence is higher, although the *proportional* differences are fairly

similar with male prevalence generally twice that of females in 12th grade. It is worth noting that between 2006 and 2011 daily marijuana use among 12th grade males rose sharply, while among females there was rather little increase; and a similar phenomenon was observed among 10th graders with slightly different timing.

- The proportions of 12th graders who report [*daily use of marijuana for a month or more*](#) at some point in their lives have been higher for males than for females in every year (Table 160 and Figure 403 in [Occasional Paper 92](#)). On average, the prevalence for males has run about 5 points higher than for females.
- As the annual prevalence of [*synthetic marijuana*](#) has declined in recent years, so too have gender differences (Tables 19-21 and Figure 37 in [Occasional Paper 92](#)). In 2018 gender differences in prevalence for 12th graders were small, at 3.0% for males and 3.4% for females. These levels represent a substantial decline from a difference of 6.8% difference in 2011 (14.7% for males and 7.9% for females), when the drug was first included in the survey. This drug follows the common pattern of declining gender differences as overall prevalence declines, although in this instance there is also a sharp decline in *proportional* difference. In the lower grades, the differences have consistently been small.
- Past-year [*inhalant*](#) use has typically been higher for females in 8th grade, varied little by sex in 10th grade, and been higher for males in 12th grade (Tables 22-24 and Figure 43 in [Occasional Paper 92](#)). In 12th grade the peak gender differences were in the mid 1990s, when prevalence also peaked. Since then the gender difference has attenuated to near zero in 12th grade as prevalence has declined. In 8th grade the slightly higher levels of use by females have persisted.
- Males consistently have had higher levels of past-year [*cocaine*](#) use than females in 12th grade (Tables 40–42 and Figure 79 in [Occasional Paper 92](#)) in every year of the survey, with the difference greatest in the peak years of use (1979 through 1986). After 1992, the gender difference widened a bit as use increased more among males; this difference remains in recent years. In 10th grade the slightly higher level of use among males as compared to females widened somewhat after 2007; this difference has since narrowed and in 2018 is small (a difference of 0.5% points). In 8th grade no gender differences have been discernible.
- The gender differences in past-year [*crack*](#) use (Tables 43–45 and Figure 85 in [Occasional Paper 92](#)) are very similar to those for cocaine use overall among 12th graders, with consistently higher levels of use among males since 1986, when crack use data were first collected in this study. Use grew a bit more among 12th grade males after 1992, during the relapse phase of the drug epidemic; it then declined more among males than females since the turnaround after 1998. Little gender difference has been observed among 8th and 10th graders in either levels or trends. All three grades have shown substantial declines for both genders since the late 1990s.
- In 2018, no large gender differences are apparent in past-year use of [*amphetamines*](#) outside of medical supervision (Tables 65–67 and Figure 133 in [Occasional Paper 92](#)). In 12th

grade, the trends in amphetamine use for both genders have tracked on top of each other throughout the life of the survey until 2008, after which use among males has been slightly and consistently higher. In 10th grade, females were slightly more likely than males to use amphetamines from the time use was first tracked (in 1991) to 2006, after which the gender differences have been small and inconsistent. In 8th grade, females have consistently had higher levels of use than males, although this gap narrowed considerably in 2018 after a significant increase of 1.1% among males and a slight decline among females.

- Use of over-the-counter [diet pills](#) by 12th graders (the only grade asked this question) started out much higher among females as compared to males, and has remained higher throughout the life of the study (Table 161 and Figure 409 in [Occasional Paper 92](#)). As overall use has declined this gap has narrowed since first measured in 1982, from an absolute difference of 19% in 1982 to 3% in 2018.
- At 12th grade, past-year use of [Ritalin](#) without medical direction (Tables 68–70 and Figure 139 in [Occasional Paper 92](#)) has generally been slightly higher among males for the years on which we have data (i.e., since 2001). A sharp decline in reported use among males from 2005 to 2007 temporarily eliminated most of that difference, which then re-emerged as use by females declined. As of 2018, past-year use in 12th grade was only slightly higher among males (1.4% for males and 0.4% for females). In 10th grade levels of use for males and females were about the same as they were in 12th grade, at 1.5% for males and 0.4% for females. In 8th grade prevalence levels were below 1% for both females and males, and no consistent gender difference has been observed at this grade. The overall change since 2001 has been one of decline for both genders in all three grades.
- Questions about use of [Adderall](#) were added in 2008 (Tables 71-73 and Figure 145 in [Occasional Paper 92](#)). In 12th and 10th grades use has been slightly higher among males. Gender differences have not shown consistent trends in 8th grade, but use has been low and fairly comparable across males and females.
- Past-year use of [crystal methamphetamine](#) or *ice* (data available only for 12th graders) has been very low, but in most years a bit lower among females than males. Prior to 2005 males had considerably higher levels of use, but the genders have been much closer since then. In the last four years differences across males and females have not shown a consistent pattern, in part because overall prevalence has been less than 1% and estimates are based on very small numbers (Table 78 and Figure 163 in [Occasional Paper 92](#)).
- [Methamphetamine](#) use has generally been very slightly higher for males at 12th grade but very slightly lower at 8th grade, with no consistent gender differences at 10th grade. The sharp declines in use since this drug was first measured in 1999 have been observable in both genders in all three grades and the small gender differences have narrowed to near-zero by 2018 (Tables 75-77 and Figure 157 in [Occasional Paper 92](#)).
- Among 10th and 12th graders, [heroin](#) use ([with](#) and [without](#) a needle), although quite rare, has been consistently higher among males, particularly in 12th grade. Gender differences

among 8th graders have been very small and not consistent across time (Tables 49-51 and Figure 97 in [Occasional Paper 92](#)).

- Annual use of [narcotics other than heroin](#) outside of medical supervision (reported only for 12th graders) has been consistently higher for males than for females (Table 58 and Figure 115 in [Occasional Paper 92](#)). This gender difference narrowed to almost zero by 1992, during the decline phase in use, but then reemerged during the 1990s drug relapse and has persisted since. From 2006 to 2011 the difference narrowed as use among males decreased while use among females held steady. Since about 2010 the two genders have declined in parallel, with males continuing to have higher use.
- Use of the specific narcotic drugs [Vicodin](#) and [OxyContin](#) has always been higher among males at 12th grade, although the differences have been narrowing in recent years as overall use has declined (Tables 59-64 and Figures 127 and 121 in [Occasional Paper 92](#)). There have not been large or consistent gender difference at the lower grades. The narrowing of the gender difference in 12th grade is consistent with the general pattern that subgroup differences narrow as use declines.
- In 2018 past-year [tranquilizer](#) use outside medical supervision for 12th graders was slightly higher for males than females, at 4.2% and 3.1%, respectively (Tables 83-85 and Figure 181 in [Occasional Paper 92](#)). Among 12th grade students, males and females have traded places as the users with highest prevalence many times throughout the survey; they have shown very similar trends across time with the exception that use among males increased more during the interval 1992-1999 (i.e. during the relapse phase) before declining more than among females. Among 8th graders, tranquilizer use has been consistently higher for females since the first survey in 1991; among 10th graders, it has tended to be about the same or higher for females.
- Past-year use of [sedatives \(barbiturates\)](#) outside of medical supervision (reported only for 12th grade) has not consistently differed by gender since 2004 (Table 82 and Figure 175 in [Occasional Paper 92](#)). Prior to 2004 use was slightly higher for males, a difference that temporarily narrowed in the early 1990s when use was at the lowest levels ever recorded by the survey; but use by males came to exceed that by females during the relapse phase in the 1990s through 2004. There was virtually no gender difference thereafter.
- Use of [rohypnol](#) has been slightly higher among males in 12th grade, although the difference has narrowed and in 2018 prevalence was essentially the same for both genders, at 0.5% for males and 0.4% for females. There has been no consistent gender difference in the lower grades (Tables 90-92 and Figure 199 in [Occasional Paper 92](#)).
- Among 12th graders, [alcohol](#) use in the past 30 days has shown fairly parallel declines since about 1980, with males consistently somewhat higher than females until this difference substantially narrowed after 2013 (Tables 93-95 and Figure 205 in [Occasional Paper 92](#)). Absolute differences across gender have undergone a long and fairly steady decline since the beginning of the survey in 1975 (proportional differences have been largely steady until recent years). In 2018 the difference was 0.3% (30.4% for males and 30.1% for females).

This absolute difference was 7 percentage points in 1987 and 13 percentage points in 1975. In 8th grade, the genders have had very similar levels of use throughout. At 10th grade, a previous difference in which males had slightly higher levels of use diminished considerably after 2000 and is no longer present; in fact, females have had slightly higher prevalence since 2014. Substantial long-term declines in alcohol use have been observed for both genders in all three grades.

- Males as compared to females have had higher levels of [*daily alcohol*](#) use and especially [*binge drinking*](#) (see Figures 5-5b and 5-6a in this volume, and Tables 96-98 and 102-104 plus Figures 211 and 223 in [Occasional Paper 92](#)). By 1993 these differences narrowed during the long period of overall alcohol decline. For example, between 1975 and 1993 the proportion of 12th grade males who reported having had five or more drinks in a row in the prior two weeks showed a net decrease of 14 percentage points (49% to 35%), whereas such use among females decreased by only 5 percentage points, from 26% to 21%. By 1998, prevalence for both genders had risen some, to 39% and 24%, respectively, opening the gap a little. Since 1998, the gender differences have narrowed further as overall use has declined. The trends among 10th graders look quite similar, though at lower prevalence levels. In the 8th grade, males had shown a slightly greater decline in binge drinking since first tracked in 1991, and in 2018 levels of use for males and females were similar at 3% and 4%, respectively.
- Among 12th graders, gender differences in *extreme binge drinking* (also known as high intensity drinking) are similar to those for binge drinking discussed above (Tables 105 and 106, and Figures 229 and 235 in [Occasional Paper 92](#)), with lower prevalence. In 2018 males as compared to females were more likely to have had in the past two weeks (a) 10 or more drinks in row and (b) 15 or more drinks in a row. However, these differences have narrowed dramatically as overall prevalence has declined, a decline that has been substantially steeper for males.

Questions on use of 10+ drinks in a row were asked of 8th and 10th graders starting in 2016. The disparity across gender observed in 12th grade is substantially smaller in 10th grade, with a prevalence of 3.5% for males and 2.9% for females in 2018, and is not present in 8th grade. These newly added questions suggest that the disparity in extreme binge drinking emerges in the high school years.

- Self-reports of [*being drunk*](#) in the past 30 days show similar patterns by gender as observed for binge drinking (Tables 99-101 and Figure 217 in [Occasional Paper 92](#)). Among 12th graders, 30-day prevalence of being drunk has been substantially higher among males than females. The difference has decreased substantially as overall prevalence of being drunk has declined, and in 2018 the percentages drunk in the past 30 days for males and females were 19% and 16%, respectively. Among 10th graders, males generally have had slightly higher prevalence of being drunk, but the difference narrowed starting in 2000 and by 2014 the difference was gone; since 2016 females have had slightly higher prevalence levels. Among 8th graders the prevalence of being drunk in the past 30 days has historically been very low and similar for males and females since it was first measured in 1991.

- In sum, while the various measures of alcohol use in general have all shown considerable long-term declines, the declines have been substantially larger among males, in many cases eliminating long-standing gender differences in the upper grades.
- With regard to specific types of alcohol use, one of the six questionnaire forms administered to 12th graders asks separately about the use of [beer](#), [wine](#), [hard liquor](#), and [wine coolers](#) (Tables 107-120 and Figures 241, 247, 253, 259, 265, 271, 277 and 283 in [Occasional Paper 92](#)). The answers to these questions reveal that differences in [beer](#) consumption account for much of the large gender difference in occasions of binge drinking: 14% of 2018 twelfth grade males (vs. 8% of females) reported having had five or more beers in a row during the prior two weeks (although this gender difference has narrowed over the years as beer consumption has declined sharply – particularly in the lower grades).

Males had consistently been slightly more likely than females to report having had five or more drinks of [hard liquor](#) until 2018. The gap has been narrowing since 2013 and a significant decline of 7.1 percentage points in 2018 brought levels of this outcome lower for males (12%) as compared to females (14%) for the first time in the survey, even though both genders have been showing declines in liquor binge drinking since the early 2000s.

In the past, binge drinking of [wine](#) (Figure 271 in [Occasional Paper 92](#)) was equally distributed by gender; however, females have been somewhat more likely to engage in this behavior in the past three years, with levels of use 14% for females and 6% for males in 2018.

- In 1988, questions on [wine coolers](#) were added, and past 30-day prevalence in 2018 was higher in 12th grade among females at 13.0% for females vs. 6.0% for males. In 2003, a single question on annual use of [flavored alcoholic beverages](#) (“alcopops”) was added, and then in 2004 the full set of three questions (lifetime, annual, and 30-day) was added (Tables 121-123 and Figure 289 in [Occasional Paper 92](#)). Here, too, females had slightly higher levels of use than males, a difference that has narrowed over time and in 2018 had disappeared with 30-day prevalence of 18% for both female and male 12th graders. Their rates were very close in the lower grades, as well, but with females remaining slightly higher as overall use continues to decline.
- After about 2001, 12th grade males have been slightly more likely than females to smoke [cigarettes](#) in the past 30 days (Figure 5-5c; Tables 127-135 and Figures 301, 307, and 313 in [Occasional Paper 92](#)). This gender gap grew wider as smoking level fell more among females than among males through about 2012, and has since narrowed somewhat as the decline in cigarette prevalence has accelerated among males. In the decade previous to 2001, 12th grade males were consistently slightly more likely than females to be 30-day smokers. Going back another decade, from 1981 to 1991, it was female 12th graders who consistently had a higher prevalence of smoking than males. This gap diminished during the Joe Camel advertising campaign from 1987 through 1997, which targeted boys and may have contributed to a greater increase in cigarette prevalence among males as compared to females. In 10th grade a slight gender gap in cigarette smoking opened up

around 2006 as prevalence increased for males but held steady and later decreased for females. In recent years the prevalence of cigarette smoking has diminished more for males than females, erasing the gender gap by 2018. In 8th grade there has been no consistent gender difference in smoking prevalence, and both genders have shown a sharp decrease in smoking since about 1996.

- Extremely large gender differences in the use of [smokeless tobacco](#) during the past 30 days have been observed consistently at all grade levels, with much higher prevalence among males (Tables 145-150 and Figure 373 in [Occasional Paper 92](#)). Over the course of the survey these gender differences have become much smaller as prevalence has declined among males in all grades, but they remain substantial, particularly at 12th grade. After 1994 there was a large decline in overall use of smokeless tobacco among 8th grade males (their 30-day prevalence dropped from 12.8% in 1994 to 4.7% by 2007), a considerable drop among 10th grade males (from 19% in 1994 to 9% in 2004), and, since 1995, a similar decline for males in 12th grade (from 24% in 1995 to 11% in 2006). In 2008, there was a further significant decline in smokeless tobacco use for 10th graders, though not in 8th or 12th grades. These declines had the effect of greatly narrowing the gender differences, because use by females changed very little, remaining at fairly negligible levels. However, use among males in all three grades began rising after 2007, suggesting that the decline in smokeless tobacco use may have been over; but in 2011 a decline was observed for males in all three grades – quite possibly as a result of the increase in the federal tobacco tax in 2009. Because smokeless tobacco use by females is so low and fluctuates so little, the gender differences rise and fall with the changes in the use by males. The changes since 2007 certainly appear to be secular trends, in which all three grades are simultaneously responding to environmental changes, two of which could well be the introduction and promotion of new forms of smokeless tobacco and the change in the federal tobacco tax. The death in 2014 of the famous baseball player Tony Gwynn, who publicly and adamantly ascribed his cancer to his use of smokeless tobacco, may have served as an “unfortunate role model” and contributed to the decline in smokeless tobacco prevalence among students in all grades.
- Similar to smokeless tobacco, smoking of [small cigars](#) in the past 12 months is higher among males (Table 137 and Figure 325 in [Occasional Paper 92](#)). Data on 12th graders’ small cigar use have been collected since 2010. In 2018 the annual prevalence of use was 12% for males vs. 7% for females. A long-term decline in use has occurred among both genders, although a relatively faster decline for males has narrowed the gender gap.
- In both 2017 and 2018 smoking tobacco using a [hookah](#) (water pipe) in the past 12 months was slightly more popular for female than male 12th graders, which is a reversal from all previous years since use was first tracked in 2011. The reversal resulted from a large and significant decline in use by males of 5.8 percentage points in 2017, which continued with a further decline to 7.0% in 2018 (not significant). For females, prevalence also declined over the past two years, although by much less – from 10.7% in 2016 to 7.7% in 2018 (Table 136 and Figure 319 in [Occasional Paper 92](#)).

- Like smokeless tobacco, past-year use of [dissolvable tobacco](#) and [snus](#) is more common among males than females (Tables 151-156 and Figures 385 and 391 in [Occasional Paper 92](#)). Dissolvable tobacco had an annual prevalence of 1.0% vs. 0.7% among 12th grade males and females, respectively, in 2018. [Snus](#) showed annual 12th grade prevalence levels of 7.5% for males vs. 1.1% for females. These substances have only been tracked since 2011, and no long-term time trends are yet apparent for dissolvable tobacco; but for snus, the prevalence among males has dropped fairly sharply at 10th and 12th grades, greatly reducing the gender difference because use among females has stayed at very low levels (less than 2.1% in all grades in all years).
- In 2014 the survey began tracking use of [large cigars](#), [flavored little cigars](#), and [regular little cigars](#) (Tables 138-140 and Figures 331, 337, and 343 in [Occasional Paper 92](#)). For all of these substances past-year use is higher for males than females, the gender differences are larger at the higher grades, and use tends to be trending down.
- [Steroid](#) use in the past 12 months has been higher for males than females in grades 10 and 12 (Tables 157-159 and Figure 397 in [Occasional Paper 92](#)). In grade 8 steroid use had generally been nearly twice as high for males as compared to females until recent years; however, in the last two years levels of use for both genders have converged, and in 2018 were 0.6% for males and 0.7% for females. Prevalence levels for females were 0.6% and 0.4% in grades 10 and 12, respectively, whereas for males they were 0.6%, and 1.5%. Males showed a sharp spike in use in 1999 to 2001 in grades 8, 10, and 12, but there has been a considerable fall-off in use since then. Use by females reached a peak a few years later but has since shown a considerable fall-off.
- [Vaping](#) involves the use of a battery-powered device to heat a liquid or plant material that releases chemicals in an inhalable aerosol. Examples of vaping devices include e-cigarettes such as the popular brand JUUL and “mods.” The aerosol may contain any of the following: nicotine, the active ingredients of marijuana, flavored propylene glycol, and/or flavored vegetable glycerin. Liquids that are vaporized come in hundreds of flavors, many of which are likely to be attractive to teens (e.g., bubble gum and milk chocolate cream).

Beginning in 2017 MTF included separate questions on vaping nicotine, vaping marijuana, vaping ‘just flavoring,’ and a combination index indicating vaping of any of these three substances. These questions are not directly comparable to previous questions on e-cigarettes that were included on the survey in 2015 and 2016. MTF revamped the vaping questions in 2017 in light of evidence from our surveys that youth vape substances other than nicotine, and at considerable levels.¹¹ The new questions ask about 30-day, 12-month, and ever vaping of each substance.

- In 12th grade more males than females engaged in [nicotine vaping](#), [marijuana vaping](#), and [‘just flavoring’ vaping](#) during the past 30 days and this difference persisted after a large overall increase in vaping for all substances in 2018 (Tables 142-144 and Figures 355, 361, and 367 in [Occasional Paper 92](#)). In 8th and 10th grades, the differences are much smaller.

¹¹ Miech, Richard A., Megan E. Patrick, Patrick M. O’Malley, and Lloyd D. Johnston. [What are kids vaping? Results from a national survey of U.S. adolescents](#). 2016 *Tobacco Control*, 26(4), 386-391. PMID: 5326604. doi: 10.1136/tobaccocontrol-2016-053014

- *Any nicotine use* and *any nicotine use other than vaping* in the last 30 days among 12th graders were higher for males than for females, with substantial gender differences present since these measures were included in the survey in 2017 (Tables 181 and 182 and Figures 457 and 463 in [Occasional Paper 92](#)). “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

Trend Differences by College Plans

In this section we compare college-bound students (those who say they “definitely will” or “probably will” graduate from a *four-year college*) with those we term noncollege-bound students (i.e., all others). It is important to realize that the proportions of young people expecting to graduate from a 4-year college have risen dramatically over the more than four decades covered by MTF.¹² In the mid-1970s, only about half of 12th graders expected to complete college, compared to 80% of 2018 seniors. This means that the two groups compared here (using the convenient, if not entirely precise, terms college-bound and noncollege-bound) are changing proportions of the total population and, therefore, do not represent exactly comparable segments of the population across time.

Rather little such upward drift in college plans was seen during the 1990s at lower grade levels, but generally 78–90% of each class expected to graduate from a 4-year college. In 2018, 87% of 10th graders and 89% of 8th graders expected they would graduate from a 4-year college. These expectations are not realistic for all, but as we show below they are real in their correlations with drug using behaviors. The reader is reminded that at the lower grades, those aspiring to complete a four-year college program constitute a much larger proportion of the whole class than those who do not (with far smaller sample sizes for the noncollege-bound); thus the trend lines for the noncollege-bound are much less smooth (i.e., are subject to much more in the way of random sample fluctuation). Graphic presentation of all subgroup trends for all forms of substance use may be found in [Occasional Paper 92](#).

- College-bound and noncollege-bound students have shown fairly parallel trends in past-year use of *any illicit drug* (Figure 5-8; also Tables 1-3 and Figure 2 in [Occasional Paper 92](#)), with the noncollege-bound consistently having much higher levels of use than the college-bound in the lower grades and somewhat higher levels of use in grade 12. The differences between the two groups have narrowed in 12th grade since 2016.

Changes in use of other drugs, and in the index of *any illicit drug other than marijuana*, have also been fairly parallel for the two groups since 1976, with large differences in the lower grades and smaller ones in grade 12 ([Occasional Paper 92](#), Figure 8).

- Changes in *marijuana* use have been fairly parallel for the two groups at all three grade levels, maintaining fairly large differences between them, particularly in the lower grades

¹² For a description of earlier changes in the demographic makeup of the MTF samples and a discussion of their implications for substance use, see Johnston, L. D. (2001). [Changing demographic patterns of adolescent smoking over the past 23 years: National trends from the Monitoring the Future study](#). In *Changing adolescent smoking prevalence: Where it is and why* (Smoking and Tobacco Control Monograph No. 14, NIH Pub. No. 02-5086, pp. 9–33). Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute.

(Tables 7-15 and Figures 14, 20, and 26 in [Occasional Paper 92](#)). The noncollege-bound have consistently had higher levels of use.

- There is a very large difference between the college-bound and the noncollege-bound in their level of [daily marijuana](#) use, with the latter having the higher prevalence (Tables 16-18 and Figure 32 in [Occasional Paper 92](#)). During the relapse in the drug epidemic in the 1990s, daily use rose much more sharply among the noncollege-bound, opening a wide gap in all three grades, which remains today although we have seen some decline among the noncollege-bound at 8th grade. The 2018 comparisons for the college-bound versus the noncollege-bound were 0.4% vs. 2.2% in 8th grade, 2.5% vs. 8.9% in 10th grade, and 4.1% vs. 9.2% in 12th grade, respectively. Of interest, Figure 32 shows that daily marijuana use levels among the college-bound are higher among the 12th graders than the 10th graders, whereas among the noncollege-bound the two grades are quite similar (although it should be kept in mind that the 10th grade noncollege-bound samples include most of those who will drop out of high school, and their substance use levels are well above average).
- [Daily use of marijuana for a month or more](#) has been about twice as common for the noncollege-bound as compared to the college-bound (question asked only of 12th graders, Table 160 and Figure 404 in [Occasional Paper 92](#)). The difference between these two groups was at its smallest in the early 1990s, when prevalence was at its lowest, and has since grown, albeit unevenly, to today's level which is near the largest recorded by the study.
- Prevalence of past-year [synthetic marijuana](#) use has changed substantially across the two groups for 12th grade students since 2011 (Tables 19-21 and Figure 38 in [Occasional Paper 92](#)). Among noncollege-bound students prevalence dropped by nearly three-fourths from 2011 to 2018 and thereby substantially reduced what had been their much higher level of use compared to college-bound students. In 2018 the noncollege-bound still had higher levels of use, although this difference was no longer large.
- Past-year use of [inhalants](#) was substantially higher among the noncollege-bound, especially in 8th grade (where use is highest); differences are smaller in 10th grade, and smaller still in 12th grade (Tables 22-24 and Figure 44 in [Occasional Paper 93](#)). These differences have remained as overall prevalence has declined in all grades over the past decade.
- [Cocaine](#) use in the past 12 months has been considerably higher among the noncollege-bound throughout the period studied – particularly so in the two lower grades (Tables 40-42 and Figure 80 in [Occasional Paper 92](#)). The difference tends to enlarge in periods of increasing use and diminish in periods of decreasing use, as is true for a number of drugs. Because cocaine use has been declining for some time, the gap between these two groups has been narrowing (particularly in the lower grades). For [crack cocaine](#) (Tables 43-45 and Figure 86 in [Occasional Paper 92](#)), the differences have been less pronounced in absolute percentages but still show three or more times higher levels among the noncollege-bound. The already-large differences in crack use grew considerably during the drug

relapse of the early to mid-1990s, when cocaine use among the noncollege-bound rose very sharply, and then diminished considerably during the decline phase since 1998.

- As the overall prevalence of many drugs fell through 1992 among 12th graders, there was some convergence of prevalence between the college-bound and noncollege-bound due to a greater drop in use among the noncollege-bound. This has just been illustrated for cocaine and crack, and it was also true for [tranquilizers](#), [sedatives \(barbiturates\)](#), [methaqualone](#), [amphetamines](#), [nitrite inhalants](#), [LSD](#), [hallucinogens other than LSD](#), and [narcotics other than heroin](#) (see Tables and Figures in [Occasional Paper 92](#)). But, as the use of several of these drugs increased after 1992, the differences grew larger for many of them at all grade levels (e.g., LSD, hallucinogens other than LSD, amphetamines, and tranquilizers). The increases were sharper, and in some cases started earlier, among the noncollege-bound. In more recent years, use of a number of these drugs has declined, and with that decline has come a narrowing of the differences once again. This has been particularly true for [sedatives \(barbiturates\)](#), for example.
- For many years, at 12th grade there was only a modest absolute difference in the low annual [heroin](#) prevalence observed between the college- and noncollege-bound students (with the college-bound lower; see Tables 49-51 and Figure 98 in [Occasional Paper 92](#)). In the 1990s, however, among 12th graders the noncollege-bound grew to having about twice as high a prevalence of past-year heroin use, and this ratio has remained that high or higher in the years since then, even as use has been declining in both groups since the early 2000s.

At the lower grade levels there have been much larger proportional and absolute differences in heroin use between these two groups, and in both grades the noncollege-bound showed sharper rises in heroin use in the 1990s. That increase was particularly sharp among the noncollege-bound 8th graders (who comprised only about 11% of the 8th grade sample in 2018). In general, the noncollege-bound in all grades have had higher prevalence of heroin use, including use with and without a needle (see Tables 52-57 and Figures 104 and 110 in [Occasional Paper 92](#)).

- Use of [narcotics other than heroin](#), taken as a class, is reported only for 12th grade. The noncollege-bound have consistently had higher annual prevalence than the college-bound, but the size of the difference has varied considerably (Table 58 and Figure 116 in [Occasional Paper 92](#)). The difference diminished during the 1980s into 1992 as overall use declined, and then increased during the relapse phase of the 1990s. But, with the revision of the question in 2002 to include Vicodin, OxyContin, and Percocet the difference widened dramatically; prevalence rose for both groups, but by much more among the noncollege-bound. Since about 2008, use has dropped sharply for both groups, once again narrowing the difference between them.
- Past-year use of the narcotic drugs [Vicodin](#) and [OxyContin](#) outside of medical supervision have both shown large differences in prevalence between the college- and noncollege-bound, with the latter having considerably higher levels of use (see Tables 59-64 and Figures 122 and 128 in [Occasional Paper 92](#)). Over the past five years these differences have narrowed somewhat as prevalence has declined considerably more among the

noncollege-bound. For Vicodin, 2018 past-year prevalence among noncollege- and college-bound students in 12th grade was, respectively, 3.2% and 1.2%, and for OxyContin, relative prevalence was 3.8% and 1.7%. These two drugs have moved pretty much in parallel since they were first measured in 2002, but Vicodin use has declined more sharply in recent years among both the college-bound and the noncollege-bound, narrowing the difference between them.

- Past-year use of [*MDMA*](#) (ecstasy, and more recently Molly) among 12th graders was higher for the college-bound in 2018 in all grades, as it has been for most years that it has been measured since 1996 (Tables 34-36 and Figure 68 in [Occasional Paper 92](#)). In 8th and 10th grade the gap between the college- and noncollege-bound has remained steady as overall prevalence has declined over the past decade. In 12th grade the gap between the two groups has reemerged in 2018 after almost closing in 2016, with 2018 levels at 3.4% for the noncollege-bound and 1.8% for the college-bound. Estimates for MDMA are based on relatively low case counts – particularly in recent years as use has declined – making one-year subgroup differences quite variable from year to year.
- Past-year use of [*Ritalin*](#) outside of medical supervision has been much higher among noncollege-bound 8th and 10th graders, and to a smaller degree among noncollege-bound 12th graders. (Use was first measured in 2001; see Tables 68-70 and Figure 140 in [Occasional Paper 92](#)). Annual prevalence has been trending down in all grades among both groups since about 2003, and the differences have narrowed overall. Again, the small numbers of cases have led to considerable variability in the estimates for the noncollege-bound.
- Past-year use of [*Adderall*](#) outside of medical supervision has been measured only since 2009 (Tables 71-73 and Figure 146 in [Occasional Paper 92](#)). It shows large differences in the lower grades (particularly in 10th grade) linked to college plans, with the noncollege-bound having higher use. The differences have been small at 12th grade, however, quite possibly as a result of an increase in use among college-bound students seeking to improve their academic performance. Among 12th grade students the noncollege-bound have had levels of use 1.5 to 3 percentage points higher than the college-bound over the past three years.
- Past-year use of [*methamphetamine*](#) also has been much higher among the noncollege-bound in all grades since use was first measured in 1999, with the declining usage trends for the two groups initially tending to move in parallel (Tables 75-77 and Figure 158 in [Occasional Paper 92](#)). However, most overall percentage differences (but not all proportions) have narrowed as the decline continued.
- [*Crystal methamphetamine*](#) use in the last 12 months showed quite parallel trends for the two groups, with the noncollege 12th graders consistently higher (Table 78 and Figure 164 in [Occasional Paper 92](#)). Question on this specific drug are not included in the 8th and 10th grade surveys.

- Past-year use of [sedatives](#) (including [barbiturates](#)), reported only for 12th graders, and [tranquilizers](#) outside of medical supervision have both been higher among the noncollege-bound, with the absolute differences generally expanding during periods of rising use and shrinking during periods of declining use (Table 82-85 and Figures 176 and 182 in [Occasional Paper 92](#)). For sedatives (barbiturates) the difference in prevalence between the college- and noncollege-bound has almost vanished as overall prevalence has declined in recent years; and the differences for tranquilizers have diminished somewhat, though there remains a substantial difference in use in the lower grades and a moderate difference in grade 12.
- For 30-day [alcohol](#) prevalence, the noncollege-bound have been consistently higher than the college-bound, though the differences have generally been much smaller at 12th grade than in the lower grades (Tables 93-95 and Figure 206 in [Occasional Paper 92](#)). In general, both groups have moved in parallel, though after 1996, the gap in 12th grade widened a bit due to a greater drop in drinking among the college-bound. The proportional differential in all of the alcohol measures is greatest at 8th grade, smaller but still substantial at 10th grade, and smallest at 12th grade. From 2009 to 2018 the gap between the two groups in 12th grade narrowed as the percent of youth who used alcohol in the past 30 days significantly dropped to 31% from 51% among the noncollege-bound, while it changed less among the college-bound, to 30% from 42% over the same period. As a result at 12th grade the long-standing difference has been eliminated.
- [Binge drinking](#) prevalence in the past two weeks has been higher for the noncollege-bound as compared to the college-bound (Tables 102-104 and Figure 224 in [Occasional Paper 92](#)). In recent years, the two groups have been converging and the differences diminishing, though differences remain in all grades. In both 8th and 10th grades, there were very large and growing differences in binge drinking prevalence between the college-bound and the noncollege-bound during much of the 1990s, because the noncollege-bound exhibited a larger increase in binge drinking; but after that they exhibited a sharper decrease in binge drinking. Binge drinking has been declining in both groups in all three grades for some years.
- ***Extreme binge drinking*** among 12th graders follows the same pattern as binge drinking, although at lower prevalence levels (Tables 105 and 106, and Figures 230 and 236 in [Occasional Paper 92](#)). The noncollege-bound are more likely than the college-bound to have had (a) 10 or more drinks in a row and (b) 15 or more drinks in a row during the past two weeks. Steeper declines in prevalence for the noncollege-bound have diminished the difference between the two groups over the course of the survey.

Questions on use of 10+ drinks in a row were added to the 8th and 10th grade surveys in 2016. Substantially higher prevalence levels of this behavior for noncollege-bound compared to college-bound youth are present in all grades, indicating that the factors driving this difference are at work even before high school.

- At all three grade levels there have been very large differences in the current prevalence of [cigarette](#) smoking between the noncollege-bound (who have much higher levels of use)

and the college-bound (Tables 127-135 and Figures 302, 308, 314 in [Occasional Paper 92](#)). By 2018 these differences (in terms of absolute percentages) had narrowed as overall use declined in all grades for the outcomes of [past 30-day smoking](#), [daily smoking](#), and use of a [half pack a day or more](#). In general, the broad contours of change have been fairly similar for the two groups at all three grade levels, except for the fact that the noncollege-bound groups showed larger percentage declines because they started (in the late 1990s) at much higher levels. From 1991 to 2018, smoking a half-pack or more per day averaged 5 to 10 times higher among noncollege-bound than college-bound 8th and 10th graders.

- Past-year [hookah](#) smoking significantly decreased among the college-bound in 2018 and increased slightly among the noncollege-bound, opening up the first difference between these groups since the behavior was first measured in 2010 (Table 136 and Figure 320 in [Occasional Paper 92](#), question asked only of 12th grade students).
- The use of [smokeless tobacco](#) has been consistently two to six times higher among the noncollege-bound at all grade levels, though it has been declining in both groups in all grades in recent years (see Tables 145-150 and Figures 374 and 380 in [Occasional Paper 92](#)).
- Use of [dissolvable tobacco](#) (first measured in 2012), and particularly [snus](#), are higher among the noncollege-bound. For dissolvable tobacco this difference has been decreasing in recent years in the lower two grades as levels of use among the noncollege-bound have declined. For snus the same pattern is apparent, but for all three grades (Tables 151-156 and Figures 386 and 392 in [Occasional Paper 92](#)).
- The survey began tracking use of [small cigars](#) by 12th grade students in 2010 (Table 137 and Figure 326 in [Occasional Paper 92](#)). Past-year prevalence has been somewhat higher among the noncollege-bound in every year. Prevalence has declined overall since tracking started, a decline of about equal size for both groups, as they move in parallel.
- In 2014, the survey began tracking use of [large cigars](#), [flavored little cigars](#), and [regular little cigars](#) (Tables 137-140 and Figures 332, 338, and 344). For all of these substances, past-year use has been higher for noncollege- as compared to college-bound students. For flavored little cigars, use has overall trended down for both groups in the past few years. The use of regular little cigars and large cigars also seem to have trended down modestly, though the estimates are rather uneven.
- Large and fairly consistent differences in the prevalence of past-year [anabolic steroid](#) use have been seen for the two groups at all three grade levels, with the noncollege-bound typically about twice as likely to use steroids (Tables 157-159 and Figure 398 in [Occasional Paper 92](#)). As with other demographic variables, between-group differences in absolute percentages have tended to enlarge during periods of rising use (e.g., during the late 1990s for steroid use) and diminish during period of declining use (e.g. during the early 2000s), whereas the ratios between the percentages have changed much less. Some convergence is occurring, particularly in the lower grades.

- In the two years it has been measured, [vaping](#) is more common among noncollege-bound youth. This difference appears in all grades, with differences larger in the younger grades for the four vaping behaviors of [nicotine vaping](#), [marijuana vaping](#), [‘just flavoring’ vaping](#), and the combination measure of [any vaping](#) (Tables 141-144 and Figures 350, 356 362, and 368 in [Occasional Paper 92](#)).
- The substantial increase in past 30-day [any nicotine use](#) in 2018 was equally distributed for college-bound and noncollege-bound 12th graders (Table 181 and Figure 458 in [Occasional Paper 92](#)). Noncollege-bound youth had levels of use about one-third higher than college-bound youth in 2018, at 37% and 28%, respectively. “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

In sum, students who do not expect to complete four years of college have consistently been a high-risk group for involvement with substances including the licit drugs (alcohol and tobacco), vaping of all substances, nearly all of the illicit drugs, and even steroids. As with other demographic variables, the between-group percentage differences generally have tended to enlarge during periods of rising use and diminish during periods of declining use.

Trend Differences by Region of the Country

Data on subgroup trends for the four regions of the country may be found in tabular and graphic forms in [Occasional Paper 92](#) on the [MTF website](#).

- In 2018 the proportions of 12th graders using [any illicit drug](#) during the prior 12 months were slightly higher in the West and Northeast (42-43%) than in the Midwest and South (35-40%) (Figure 5-10a; also Tables 1-3 and Figure 3 in [Occasional Paper 92](#)). In general, regional differences have been more pronounced when use levels are high and smaller when use levels are low. In the late 1970s and early 1980s, among 12th graders the Northeast region was consistently highest; the South, the lowest; and the Midwest and West, in between. Through the 1980s and continuing through 1992, use declined overall as did regional differences. During the “relapse phase” in the drug epidemic, from 1992 to 1997, the annual use of any illicit drug increased in all four regions by roughly equivalent amounts, with use in the South remaining lowest, but not by a great deal. Since then use levels have generally been higher in the Northeast and lower in the South, although these differences have not been entirely consistent. Among 8th and 10th graders, the regional differences in annual prevalence of any illicit drug have generally been fairly minor.
- The long-term [marijuana](#) use trends among 12th graders have generally been similar in all four regions since 1975, with the Northeast usually having the highest level and the South having the lowest level (Tables 7-15 and Figures 15, 21, and 27 in [Occasional Paper 92](#)). Past-year marijuana use rose substantially in all four regions after 1991 for 8th graders and after 1992 for 10th and 12th graders. Peak levels of use were highest in the Northeast in the 12th grade and highest in the West in the lower grades. Between 1996 and 2005, all regions showed a leveling or turnaround at all grade levels. From 1999 to 2005, marijuana use was lowest in the South among 12th graders, but not among 8th or 10th graders. (In fact, among 8th graders the Northeast has generally ranked lowest.) After the late 1990s, the Northeast

stood out because it did not show as sharp a decline in marijuana use in 12th grade as did the other three regions, leaving it with a considerably higher level of use by 2010. After 2009 use in the Northeast leveled among 12th graders. In 2018, 12th graders in the South had the lowest annual prevalence level at 31%, and the other three regions were similar and ranged between 38% and 41%.

- With regard to [daily marijuana use](#), the four regions have generally moved synchronously, with the Northeast generally showing the greatest increase in the initial rise in use from 1975-1979 among 12th graders and for many years holding the position as the region with the highest prevalence for 12th grade students. In 2018 the South had the lowest levels of use, with little difference among the other three regions (Tables 16-18 and Figure 33 in [Occasional Paper 92](#)). In the lower grades there have been few consistent differences among the regions in daily use.
- There are few discernible differences across regions in past-year use of [hallucinogens](#) since 2001 (Tables 25-27 and Figure 51 in [Occasional Paper 92](#)). In previous years, the Northeast had the highest levels of use for 12th grade students and the South clearly had the lowest, particularly in mid-1980s and the mid-1990s; however, the regions have since converged as hallucinogen use has fallen in all three grades. Much the same is true for the specific hallucinogen [LSD](#) (Tables 28-30 and Figure 57 in [Occasional Paper 92](#)), except that all grades in all regions showed an unusually sharp decline in use after 2000.
- Past-year [cocaine](#) use in 2018 among 12th graders has been essentially the same across regions and varied between 1.7% and 2.3%, with the exception that the West has stood out in the past couple years and in 2018 prevalence was 3.5% (Figure 5-10b; also Tables 40-42 and Figure 81 in [Occasional Paper 92](#)). In past years, regional variation in cocaine use was the largest observed for any of the drugs. Large regional differences in cocaine use emerged when the nation's epidemic grew in the late 1970s and early 1980s. By 1981, annual use had roughly tripled in the West and Northeast and nearly doubled in the Midwest, while it increased only by about one quarter in the South. This pattern of large regional differences held for about six years, until much sharper declines in the Northeast and West reduced the differences substantially. In recent years, use has been in a fairly steady decline in all regions in all grades through 2018, with the exception that levels of use for 12th graders in the West have not been declining and in 2018 were at about the same level as in 2012. For most of the years of the study, the West had the highest level of cocaine use at all three grade levels, and it was joined by the Northeast among 12th graders prior to 1991; in recent years use levels in the West have again surpassed those in other regions.
- In all three grades, past-year [crack](#) use has almost always been highest in the West, although with a long-term decline in use this difference has vanished (Tables 43-45 and Figure 87 in [Occasional Paper 92](#)). When crack use was first measured among 12th graders in 1986, there were large regional differences, with the West and Northeast again having far higher prevalence than the Midwest and South. Crack use dropped appreciably in all four regions over the next several years (though prevalence did not peak in the Midwest until 1987 or in the South until 1989, perhaps due to continued diffusion of the drug to

areas that previously did not have access). Because the declines were large and very sharp in the West and Northeast, little regional difference remained by 1991, although the West still had the highest level of use. After 1991 or 1992, during the relapse phase of the drug epidemic, there were increases in all regions, but particularly in the West. Again, the West showed the largest increases and the highest levels of use at all three grades, while the other three regions were fairly similar in their annual prevalence of use. In general, all regions showed evidence of a leveling or decline in crack use at all three grade levels in recent years, along with an elimination of regional differences.

- Past-year [amphetamine](#) use outside of medical supervision has varied little by region of the country; in 2018 it was between 5% and 6% among all regions in 12th grade (Tables 65-67 and Figure 135 in [Occasional Paper 92](#)). In earlier years (1975-1986) the South consistently had the lowest levels of amphetamine use among 12th grade students, but that difference diminished as overall use declined from a peak established in 1981. In essence, the South was least affected by both the rise and the fall in reported amphetamine use in the 1970s and 1980s. In the lower grades, however, the South had among the highest levels of use, while the Northeast tended to have the lowest.
- There has been little consistent difference among the regions in past-year use of [Ritalin](#) outside of medical supervision, as use has declined substantially in all three grades (Tables 68-70 and Figure 141 in [Occasional Paper 92](#)).
- Past-year use of [Adderall](#) outside of medical supervision has shown more regional variation, with a general trend of highest or second-highest use in the Midwest in all three grades (Tables 71-73 and Figure 147 in [Occasional Paper 92](#)). In 2018 this difference diminished and in 12th grade all four regions varied within the small window of 4% to 6%.
- Past-year use of [crystal methamphetamine \(ice\)](#), measured in 12th grade only, has varied little by region in recent years. (Table 78 and Figure 165 in [Occasional Paper 92](#)). The West had the highest or second-highest level of use from 1991 (when it was first tracked) until the past few years. Usage levels in all regions have been very low, so none of the differences are large. All regions have shown a considerable decline in use since around 2002.
- Past-year use of [methamphetamine](#), which was added in 1999 for all grades, also has shown little difference by region in recent years (Tables 75-77 and Figure 159 in [Occasional Paper 92](#)). The Northeast generally had the lowest prevalence of use for this drug in earlier years, perhaps because use tends to be higher in rural areas, as is discussed in the next section.
- Some classes of drugs have shown little systematic difference by region over the years in which their use has been measured. This is especially true among substances with low prevalence (e.g. 3% or lower). These include [inhalants](#), [heroin](#), [heroin with a needle](#), [heroin without a needle](#), and [bath salts](#).

- Past-year use of [*MDMA*](#) (ecstasy and more recently Molly) has varied little by region in recent years, and among 12th grade students in 2018 annual prevalence varied from 2% to 3% (Tables 34-36 and Figure 69 in [Occasional Paper 92](#)). However, there was more variation in the peak years of use, 2000 and 2001, with use the highest in the West among 12th graders (14.4%) in 2000 and in the Northeast among 10th graders (8.2%) in 2001. The West showed a later spike in use, which reached its height in 2011, and the fact that it appeared in all three grades (which are sampled separately) makes it more plausible. This regional difference receded by 2013.
- Past-year use of [*narcotics other than heroin*](#) (reported only for grade 12) shows few consistent differences by region over time, although in recent years the Northeast has stood out with the lowest levels of use (Table 58 and Figure 117 in [Occasional Paper 92](#)). In the early years of the study (1975-1991) the South also stood out as having the lowest prevalence of use, a difference that vanished during the drug epidemic of the 1990s when it caught up with the other regions.
- Past-year use of [*Vicodin*](#) outside of medical supervision has tended to be highest in the West and Midwest in all three grades, with the differences diminishing as use has fallen substantially in all grades and regions in recent years (Tables 62-64 and Figure 129 in [Occasional Paper 92](#)). Past-year use of [*OxyContin*](#) outside of medical supervision does not appear to have differed much by region and shows no systematic trends in regional differences over time (Tables 59-61 and Figure 123 in [Occasional Paper 92](#)).
- Past-year use of [*sedatives \(barbiturates\)*](#) outside of medical supervision is reported only for 12th graders (Table 82 and Figure 177 in [Occasional Paper 92](#)). In general, regional differences have been small with no consistent ranking of regions. The one exception is that during the relapse phase in the drug epidemic of the 1990s, use in the South increased somewhat more than in the other regions. As a result, the South had above-average prevalence from 1994 through 2007. The South reclaimed the highest levels of use in 2013 and 2014, but today there is virtually no difference among the regions.
- Past-year [*tranquilizer*](#) use outside of medical supervision followed a quite similar path over time among the regions, with the South serving as an exception because it had the highest use among 12th graders from 1994 through 2007 (Tables 83-85 and Figure 183 in [Occasional Paper 92](#)). Since then there has been little consistent difference across the regions among 12th graders. In the lower grades use was consistently highest in the South, though a decline in use in recent years has narrowed the differences.
- The [*30-day prevalence of alcohol*](#) among 12th grade students has typically been higher in the Northeast and the Midwest and lower in the South and the West – particularly in the earlier years of the study – but the regions have been converging as use declines (Table 95 and Figure 207 in [Occasional Paper 92](#)). In general, differences by region were small in 2018. At 8th and 10th grades, there have been few regional differences in prevalence since 1991, when these data were first collected, and trends have generally been quite similar across regions (Tables 93-94 and Figure 207 in [Occasional Paper 92](#)).

- **Binge drinking** in the past two weeks among 12th grade students has typically been higher in the Northeast and the Midwest and lower in the South and the West (Table 104 and Figure 225 in [Occasional Paper 92](#)). These regional differences were particularly acute from 1975 to 1985 but have diminished considerably since then as overall prevalence has declined. In 8th and 10th grade few regional differences in binge drinking have been apparent.
- Levels of self-reported **drunkenness** in the prior 30 days show a very similar profile, not surprisingly. They have typically been highest in the Northeast and the Midwest, although these regional differences have diminished to near-zero as overall prevalence has fallen in recent years (Tables 99-101 and Figure 219 in [Occasional Paper 92](#)). At the lower grades, there have been no consistent regional differences in levels or trends on this measure.
- In 2018 among 12th grade students there was little variation in past 30-day **cigarette** smoking by region, with a high of 9% in the South and a low of 6% in the West (Figure 5-10c; also Tables 127-129 and Figure 303 in [Occasional Paper 92](#)). Regional differences have diminished as use of cigarettes has declined to the lowest levels ever recorded by the survey. When levels of cigarette use were higher, such as from 1975-1985 and during the 1990s drug relapse, there were greater regional differences and use was typically lowest in the West in all grades. The lack of a substantial increase in the West during the 1990s may well be due to the fact that California conducted a major antismoking campaign in those years. Thirty-day prevalence of **half-pack a day or more** smoking (Tables 133-135 and Figure 315 in [Occasional Paper 92](#)) has shown larger and more consistent regional differences, with levels for the West generally about half to two thirds of those in other regions in 12th grade. Again, regional differences have diminished as smoking has declined.
- **Hookah** smoking of tobacco in the past 12 months was first measured in 2010 among 12th graders only (Table 136 and Figure 321 in [Occasional Paper 92](#)). Prevalence started out highest in the West and has usually been lowest in the South, as was the case in 2018.
- Use of **small cigars** in the past year was also first measured in 2010 (Table 137 and Figure 327 in [Occasional Paper 92](#)). Past-year use had always been highest in the Midwest until 2015, when use declined to 17.6%. Since then there have been few consistent differences by region, all of which are showing a rapid decline in use.
- The use of **smokeless tobacco** in the past 30 days had generally been highest in the South for 8th and 10th graders, but regional differences were negligible in 2018 as overall use has declined. Among 12th graders, however, the South has often traded places with the Midwest as the region with the highest prevalence, although in recent years little systematic difference by region has been discernable (Tables 145-147 and Figure 375 in [Occasional Paper 92](#)). During the late 1990s, use of smokeless tobacco fell in all regions in all three grades. The decline was particularly steep in the South and the Midwest in the lower grades and in the Midwest in grade 12. The regional estimates are somewhat unstable for this drug due to the limited numbers of cases.

- The use of [*dissolvable tobacco*](#) in the past year by 12th graders was very low in 2018 at 2.3% or less in all four regions (Tables 151-153 and Figure 387 in [Occasional Paper 92](#)). There is limited trend information because the measure was added only in 2012. To date use levels have differed little by region.
- In 2014 the survey began tracking use of [*large cigars*](#), [*flavored little cigars*](#), and [*regular little cigars*](#) (Tables 138-140 and Figures 345, 333, and 339 in [Occasional Paper 92](#)). In the five years of data for these substances no region stands out as having particularly high or low prevalence relative to the other regions.
- In general, the regions have shown fairly parallel movement in past-year [*anabolic steroid*](#) use at all three grade levels (Tables 157-159 and Figure 399 in [Occasional Paper 92](#)). In particular, the sharp increase in steroid use that occurred at grades 8 and 10 between 1998 and 1999 was observed in all regions, suggesting that a culture-wide influence was at work – quite possibly the well-publicized use of a steroid precursor by Mark McGwire, a highly visible professional athlete who set a new home run record in 1998. (Note that the steroid trend curves for 12th grade are more uneven than for the other grades because the steroid questions are asked of a smaller sample in 12th grade.)
- No strong differences by region of country are yet apparent for [*nicotine vaping*](#) in the past 30 days (Table 142 and Figure 357 in [Occasional Paper 92](#)). In 12th grade prevalence doubled or nearly doubled in all four regions in 2018. This increase was most pronounced in the Northeast, which rose to the top prevalence level in 2018 at 25%. In 10th grade use also doubled or nearly doubled in all four regions in 2018, with the Northeast and Midwest ending up with the highest prevalence levels (at 18.3% and 18.1%, respectively). In 8th grade the largest increase was in the Midwest, which increased by 5 percentage points to 9.2% and in 2018 had the highest level of use in this grade.
- [*Marijuana vaping*](#) varies substantially by region of the country, with levels of use in the highest regions two to three times more than the lowest (Table 143 and Figure 363 in [Occasional Paper 92](#)). In 12th grade a large prevalence increase of 7.2 percentage points in 2018 in the Northeast lifted this region to the highest level of use relative to the other regions at 14%. This compares to prevalence of 4.0% in the Midwest. In the 10th grade the largest increase was 4.3 percentage points in the West, which lifted this region to the top spot at 9.7%. This compares to prevalence of 4.8% in the South. In 8th grade the West was again the region with the largest increase (2.7 percentage points) and the highest prevalence at 5.2%. This compares with prevalence of 1.1% in the Midwest in this grade.
- The large increase in past 30-day *any nicotine use* in 2018 among 12th graders did not change the ranking of regions in their prevalence of use, and the West continues to rank lowest while the Northeast ranks highest (Table 181 and Figure 459 in [Occasional Paper 92](#)).

Trend Differences by Population Density

[Occasional Paper 92](#) contains tabular trend data on all drugs for the three levels of population density distinguished here: (a) large MSAs, which contain most of the largest Metropolitan

Statistical Areas from the most recent Census data; (b) other MSAs, which are the remaining Metropolitan Statistical Areas; and (c) non-MSAs (see Appendix B for more detailed definitions). A complete set of figures, which are far easier to read than tables, also may be found in [Occasional Paper 92](#).

- In 2018 [any illicit drug](#) use in the past year differed little by population density (Figure 5-11a; also Tables 1-3 and Figure 4 in [Occasional Paper 92](#)). Non-MSAs had the lowest levels of use in 12th grade for most years, but by 2018 prevalence in these areas had caught up with the others. In 2018 annual prevalence in the non-MSA areas was 39%, between the 40% in large MSAs and 38% in other MSAs. Differences by population density were smallest and virtually zero at the start of the 1990s, when overall prevalence of illicit drug use was at its lowest level recorded by the survey. Differences were largest in the decade from 1975 to 1985, when use levels were highest, and were particularly high in large MSAs.

In the lower grades there has not been much difference among the three strata, which have moved in parallel for the most part. The one exception was that, during the period of ascending use in the first half of the 1990s, use rose most quickly in the other MSA stratum; but the two other strata caught up by 1996 at 8th grade and by 1999 at 10th grade. No such divergence occurred in 12th grade during that period.

- The overall proportion of 12th grade students involved in the past-year use of [any illicit drug other than marijuana](#) has been similar across areas of different population density strata, at least in recent decades (Figure 5-11a; see also Tables 4-6 and Figure 10 in [Occasional Paper 92](#)). Since the mid-1980s the difference between the MSA with the highest versus lowest prevalence has been 6 percentage points or less. In 2018 the difference was 3.0 points. Prior to the mid-1980s use of any illicit drug other than marijuana was consistently highest in the large MSAs and lowest in the non-MSAs.

In the lower grades the large MSAs have historically had the lowest prevalence in almost every year of the survey, although differences by population density are not large. In 2018 levels of use in the large, other, and non-MSAs for 8th grade students were 7%, 6%, and 5%, respectively. In 10th grade the corresponding percentages were 10%, 10%, and 9%, respectively.

- During the relapse years in which the use of many drugs generally increased, significant differences emerged across the three community types in the use of several specific classes of drugs. Figures 5-11b and 5-11c show the trends for the annual prevalence of use of [alcohol](#), [marijuana](#), and [cocaine](#) in 12th grade. The differences among the three population density strata were greatest (with large cities at the top) in the peak years of use for each drug, but the three strata have converged.
- In general, the percentages of 12th grade students using [marijuana](#) have tended to be higher with greater population density (Figure 5-11b; see also Tables 7-15 and Figures 16, 22, and 28 in [Occasional Paper 92](#)). When overall prevalence of marijuana is high, these differences are most pronounced, and when prevalence is low, as it was in the early 1990s,

these differences diminish and almost disappear. This trend is apparent for the outcomes of lifetime use, annual use, and use in the past 30 days. Since 2008, a rise in marijuana use occurred primarily in large and “other” MSAs, widening their difference from non-MSAs. By 2018 this difference had largely diminished.

At the lower grades, the differences among strata have been small and have tended to trend in parallel.

- Trends for [daily marijuana](#) use are similar to the patterns for annual use, described above (Tables 16-18 and Figure 34 in [Occasional Paper 92](#)). In 2018 there was little difference in this outcome by population density. The two MSA strata had stood out with higher levels of daily use in 2008-2013, but this disparity was short lived. Prior to that, in the late 1970s and early 1980s, levels of daily use were much higher among 12th graders, and the differences between the non-MSAs and the two more urban strata were larger.
- In 2018 the percentage of adolescents in all grades who have used [cocaine](#) in the past year varied little by population density (Figure 5-11c; see also Tables 40-42 and Figure 82 in [Occasional Paper 92](#)); the absolute difference between the MSA group with the highest as compared to the lowest prevalence was 0.9% or less in all grades. In past years cocaine use showed some of the largest differences in population density of all drugs among 12th grade students and was consistently twice as high in large as compared to non-MSAs during the height of the cocaine epidemic between 1979 and 1989. Since that time differences by population density have diminished as overall prevalence has fallen.

The community-size differences in cocaine use at the 8th and 10th grade levels have been very small since 1991, when data for them were first available.

- By 2018 use of [crack cocaine](#) in the past year was at low levels, with little variation by population density (Tables 43-45 and Figure 88 in [Occasional Paper 92](#)). Use levels were at 1.1% or lower for all MSA groups in all grades in 2018, leaving little room for variation by population density. Differences by type of MSA have not shown a consistent pattern, as each of the three types of MSAs has had the highest level of crack use at least once in the past 12 years among 12th grade students. When the drug was first tracked by the survey from 1986-88 the large MSAs had by far the highest levels of use among 12th grade students. In 1997, the non-MSAs showed a sharp rise in crack use in all three grades and showed the highest levels of use for several years. Since that time, differences by population density have diminished as overall use declined appreciably.
- In general, [heroin](#) use in the past 12 months has been fairly equivalent across the three sizes of community – a fact that may surprise many – and has exhibited quite parallel time trends across all three grades (Tables 49-51 and Figure 100 in [Occasional Paper 92](#)). Similarly, there have not been any appreciable differences linked to population density in the two subcategories of heroin use – [with](#) and [without using a needle](#) (Tables 52-57 and Figures 106 and 112 in [Occasional Paper 92](#)).

- In 2018 past-year use of [*narcotics other than heroin*](#) without medical supervision among 12th graders was lowest among large MSAs (use of this class of drugs is reported only for 12th grade students; see Table 58 and Figure 118 in [Occasional Paper 92](#)). In 2018 levels of use stood at 2.8% in large MSAs, 3.6% in "other" MSAs, and 4.0% in non-MSAs. The rise in prevalence in all three strata from 1992 through 2002 is noteworthy. The large MSAs stand out because they showed the greatest increase in use during this period, followed by the greatest amount of decline since then. From 2005 through 2008 the non-MSAs had the highest levels of use, but since that time these levels have fallen and non-MSAs no longer stand out.
- Past-year use of [*OxyContin*](#) outside of medical supervision was first included in MTF in 2002. In recent years differences by population density have diminished and in 2018 showed no consistent pattern (Tables 59-61 and Figure 124 in [Occasional Paper 92](#)). In past years at all three grades the highest levels of use had been in the non-MSAs and the lowest in the large MSAs. Because of the low numbers of cases the trend lines are uneven.
- [*Vicodin*](#) use in the past year outside of medical supervision, which was also first included in 2002, has shown little difference by population density and highly parallel trends, with sharp declines in use for all three grades in all three strata since about 2009 (Tables 62-64 and Figure 130 in [Occasional Paper 92](#)).
- Past-year use of [*hallucinogens*](#) has for most years been lowest in non-MSA areas for 12th graders, but by 2018 use varied little by population density (Tables 25-27 and Figure 52 in [Occasional Paper 92](#)). In 8th and 10th grade there was no consistent difference in use by population density. The same pattern for all three grades in hallucinogen use also holds for [*LSD*](#) (Tables 28-30 and Figure 58 in [Occasional Paper 92](#)).
- For [*MDMA*](#) (ecstasy, Molly), past-year prevalence among 12th grade students was lowest among non-MSA in years past; but this difference has dissipated and in 2018 all three population density areas had similar levels of use, which varied only between 2.1% and 2.2% (Tables 34-36 and Figure 70 in [Occasional Paper 92](#)). The difference was most pronounced in 2000-2001 when use spiked up for a few years. Variation in [*MDMA*](#) prevalence by population density was minimal in 8th and 10th grade except for the periods when use spiked.
- Past-year use of [*amphetamines*](#) without medical supervision differs little by population density in 2018 (Table 65-67 and Figure 136 in [Occasional Paper 92](#)). Large MSAs have had the lowest prevalence in all three grades since 1991 (and since 1985 for 12th graders for whom earlier data are available), but the differences across population density areas have always been modest and in recent years only a small difference remains in 12th grade as overall use has declined. In 2018 prevalence across the population density groups varied only between 4.5% and 6.6% in 12th grade.
- The differences for past-year use of [*Ritalin*](#) outside of medical supervision have been small and inconsistent across the population density strata in all three grades (Tables 68-70 and Figure 142 in [Occasional Paper 92](#)). The differences for past-year [*Adderall*](#) use outside

medical supervision also have been minor and inconsistent over time (Tables 71-73 and Figure 148 in [Occasional Paper 92](#)).

- [Methamphetamine](#) use in the last 12 months has tended to be lowest in the large MSAs at all three grade levels since the question was introduced in 1999. Use levels have declined substantially in all three strata in all three grades, and now there remain no meaningful differences (Tables 75-77 and Figure 160 in [Occasional Paper 92](#)).
- Past-year use of [crystal methamphetamine \(ice\)](#) currently varies little by population density, although in recent years prevalence has been slightly higher in non-MSA areas (reported only for 12th grade; see Table 78 and Figure 166 in [Occasional Paper 92](#)). Questions on the drug were added to the survey for 12th graders in 1990, and during the 1990s drug relapse, use rose most in the large cities, leading large MSAs to have the highest prevalence in 1996. Thereafter, however, use in the large cities declined rapidly, and since 1998 there has been little difference in use of crystal methamphetamine across the three strata as use has continued to decline.
- Past-year [sedative \(barbiturate\)](#) use outside of medical supervision is reported only for 12th graders (Table 82 and Figure 178 in [Occasional Paper 92](#)). In 2018, it varied little by population density, with the highest prevalence of 3.2% in the non-MSA category and the lowest prevalence of 2.3% in the large MSAs. Since the mid-1980s, large MSAs have tended to have the lowest use.
- Past-year [tranquilizer](#) use outside of medical supervision also was generally lowest in the large MSAs in all grades since 1991, but this difference has attenuated and in 2018 all three strata had similar prevalence levels (Tables 83-85 and Figure 184 in [Occasional Paper 92](#)).
- Differences in use of [alcohol](#) in the past 30 days have not shown a consistent pattern by population density and differences have been slight over the course of the survey in all three grades (Table 95 and Figure 208 in [Occasional Paper 92](#)). Larger differences were seen among 12th graders from 1975 through 1982 (with large MSAs highest and non-MSAs lowest in use), but they virtually disappeared after that.
- No strong differences have emerged across the three strata for [binge drinking](#) – having five or more drinks in a row at least once in the two weeks prior to the survey – except that the non-MSAs tended to have the highest prevalence of this behavior in the 1990s at all grade levels, and particularly in the lower grades (Tables 102-104 and Figure 226 in [Occasional Paper 92](#)). This higher prevalence emerged at 8th grade due to a greater increase in binge drinking in the non-MSAs versus the other strata during the 1990s. It already existed in 10th grade at the time of the first measurement in 1991. No such pattern is clear at 12th grade, although the prevalence of binge drinking has tended to be slightly lower in large MSAs than in the other two strata until about 2005. Since 2005, the differences among strata have become small at all three grades as overall prevalence rates have declined appreciably.

- In 2018 levels of [cigarette](#) smoking in the past 30 days were highest in the non-MSAs, as they have been since at least the mid-1990s in all grades (Tables 127-129 and Figure 304 in [Occasional Paper 92](#)). The emergence of non-MSAs as the leaders in cigarette prevalence emerged during the 1990s relapse in the drug epidemic and has persisted since. When smoking levels began to drop toward the end of the 1990s, in the lower grades the two more urban strata started dropping two to three years before the non-MSA stratum. While levels of cigarette use in non-MSAs today are only one third of what they were in the late 1990s, levels of cigarette use have shown equal declines in the two MSA strata, leaving non-MSAs with the highest relative prevalence in all three grades. Prior to the increase in smoking during the 1990s, the three population density strata had roughly equivalent levels of smoking in all grades.

Similar patterns are also observable for [daily](#) and [half-pack-a-day smoking](#) (Tables 130-135 and Figures 310 and 316 in [Occasional Paper 92](#)).

- Smoking tobacco using a [hookah](#) in the past year has in most years been lowest in the non-MSA group, as it was in 2018 (reported for 12th grade students only starting in 2010; Table 136 and Figure 322 in [Occasional Paper 92](#)). Differences in by population density have diminished as overall prevalence has declined dramatically in recent years.
- Use of [small cigars](#) in the past year has been asked of 12th graders since 2010 (Table 137 and Figure 328 in [Occasional Paper 92](#)). Since 2014, levels of use have been relatively lowest in the large MSAs, and this difference increased in 2018 as prevalence for this group dropped significantly by 6.8 points to 4.6%. This compares to prevalence levels of 11% and 12% in the other MSA and non-MSA groups, respectively.
- [Smokeless tobacco](#) use is strongly related to population density at all three grade levels, with by far the highest levels of use in non-MSAs and generally the lowest levels in the large cities (Tables 145-150 and Figure 376 and 382 in [Occasional Paper 92](#)). The trends in 30-day use have been fairly parallel across communities of different sizes, with all strata showing a long-term decline in use through about 2002, an increase in the ensuing years, and then a resumption of the overall decline that has continued through 2018. The overall levels of daily use in non-MSAs are generally two to three times higher than those for the other two MSA groups.
- Use of [dissolvable tobacco](#) in the past 30 days was added to the study in 2011. The prevalence has been very low and never higher than 2.1% in any strata in any grade, about the same across the community-size strata, and it shows little signs of trending (Tables 151-153 and Figure 388 in [Occasional Paper 92](#)). In the earlier years of tracking, the non-MSAs had higher prevalence, but their use declined to match the other two strata.
- Use of [Snus](#) in the past year was also added to the 12th grade survey in 2011 and to the surveys of the lower grades in 2012 (Tables 154-156 and Figure 394 in [Occasional Paper 92](#)). In every year and in every grade level, use has been highest in the non-MSAs – consistent with the findings for smokeless tobacco generally – and lowest in the large cities.

All three population density strata have shown an overall decline in use in all grades since 2011.

- For the past four years the survey has tracked use of [large cigars](#), [flavored little cigars](#), and [regular little cigars](#) (Tables 138-140 and Figures 346, 334, and 340, respectively, in [Occasional Paper 92](#)). Prevalence of all these substances is generally highest in the non-MSA areas in 10th and 12th grade, and differs little by population density in 8th grade. No strong trends are yet apparent with the four years of data available, though most trend lines appear to be pointing down.
- Past-year use of [steroids](#) shows little difference in prevalence as a function of population density nor any systematic variation in trends related to population density, though the large MSAs have tended to be very slightly lower in most years in all grades (Tables 157-159 and Figure 400 in [Occasional Paper 92](#)).
- The distribution of [nicotine vaping](#) by population density changed in 2018 as it underwent one of the largest increases in the history of the MTF study (Table 142 and Figure 358 in [Occasional Paper 92](#)). In 2017 prevalence of use in the last 30 days was highest in the non-MSA areas in all grades, consistent with patterns for other tobacco products. In 2018 non-MSA areas in 8th grade had the *lowest* levels of nicotine vaping, and they ranked behind large MSAs in 10th grade and behind other MSAs in 12th grade. These results suggest that the rapid rise of vaping is attracting youth outside of the usual profile of nicotine users in the recent past.
- [Marijuana vaping](#) in the past 30 days is most common in large MSAs in 10th and 12th grades followed by Other MSAs (Table 143 and Figure 364 in [Occasional Paper 92](#)), consistent with the distribution of combustible marijuana in these grades (Figure 28 in [Occasional Paper 92](#)). In 8th grade prevalence of marijuana vaping in large MSAs is similar to the levels in Other MSAs (at 2.7% and 3.1%, respectively), which are more than two times higher than the levels in non-MSAs (1.3%).
- The substantial rise in past 30-day *any nicotine use* in 2018 among 12th grade students was concentrated most in the Other MSA areas (Table 181 and Figure 460 in [Occasional Paper 92](#)). The relative ranking of the three population density areas in terms of levels of use did not change in 2018, but the Other MSA areas are now close to the non-MSA areas, which has the highest relative level. Last year the Other MSA areas had been close to the large MSA areas, which has the lowest relative level. “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

Trend Differences by Socioeconomic Status

The measure of socioeconomic status (SES) used in MTF – namely, the average educational attainment level of the respondent’s parents – is described in the previous chapter and in Appendix B (note that when respondents report educational level of only one parent, that level is used). Five different strata are distinguished. It should be noted that, because the average educational level of parents has risen considerably since MTF began, the five strata contain changing proportions of

the sample. Figures 5-12a through 5-12f show trends for six selected measures of drug use by average level of parents' education. Trend data by subgroup for all drugs may be found in tabular form and graphic form in [Occasional Paper 92](#) on the [MTF website](#).

In general, there has been little change over time in the relationship between family SES, as measured by parents' education, and prevalence of use for most of the drugs.

Among 8th graders, all drugs that have an association with SES show an inverse association. That is, the highest prevalence of drug use is found among 8th graders with the lowest family SES. This is true even among drugs that in the same time period have a positive association with SES at older ages. This pattern suggests that among younger adolescents at high SES levels a norm against all illegal drug use is stronger and/or more effective compared to those at lower family SES levels. Another possible explanation is that the lower-SES 8th graders are more likely both to use drugs and to later drop out of school.

- Among 12th graders, past year prevalence of [any illicit drug use](#) has shown rather little association with SES as far back as 1975. Until 2005 the lowest SES stratum generally has shown slightly lower levels of use than the other four strata, but this difference has since dissipated. At 8th and 10th grades, however, there have been fairly consistent differences among the different SES strata, with use being inversely related to SES (Tables 1-3 and Figure 5 in [Occasional Paper 92](#)). In other words, at these lower grades (before much dropping out has occurred) the lowest SES stratum has shown the highest levels of use and the differences have been considerable.
- Likewise, using [any illicit drug other than marijuana](#) has shown little consistent difference in usage levels among 12th graders since 1975, though use generally had been lowest in the lowest economic stratum in the early years of the study (Tables 4-6 and Figure 11 in [Occasional Paper 92](#)). Among 8th and 10th graders, however, there has generally been an inverse relationship with SES.
- [Marijuana](#) use in 12th grade inversely varies by SES, a pattern that has emerged in the past decade. This association is present for both lifetime and annual marijuana use (Tables 9 and 12 and Figures 17 and 23 in [Occasional Paper 92](#)). In 2018, the percentages of 12th grade students who had ever tried marijuana in their lifetime was lowest in the highest socioeconomic stratum at 39%, as compared to 43% and 47% in the lowest and second-lowest strata. For annual marijuana use the difference is smaller, although the highest stratum still has the lowest prevalence levels. A 12th grade pattern in which the lower SES groups generally have the highest levels of marijuana use and the higher SES groups generally have lowest levels began to emerge at the end of the 1990s, after the 1990s drug relapse. Since that time, the differences have persisted.

At the 8th and 10th grade levels, there has been a rather strong and consistent ordinal, negative correlation between marijuana use and parental education level – with use highest in the lowest SES stratum (Tables 7-8 and 10-11, as well as Figures 17 and 23 in [Occasional Paper 92](#)). It developed largely during the relapse phase in the drug epidemic and the differences among the SES strata grew much larger after 1996. Put another way, in the two

lower grade levels, the decline occurring from 1996 through about 2006 was steeper (and began earlier) among students from more highly educated families.

- The story for [daily marijuana](#) use is much the same with regard to its association with SES in the lower grades (Tables 16-18 and Figure 35 in [Occasional Paper 92](#)). There has been a fairly consistent negative association with SES since the relapse in the drug epidemic in the early 1990s in the 8th and 10th grades. In the 12th grade this trend has not been present until recent years, when in 2013 prevalence in the three lowest SES levels increased while prevalence in the two highest SES levels remained level. The resulting gap has persisted since.
- [Synthetic marijuana](#) use in the past year has not shown a consistent association with SES but does show some negative association in all grades in the last two years, with use lowest in the higher social strata and highest in the lower social strata (Tables 19-21 and Figure 41 in [Occasional Paper 92](#)). In general, all strata in all grades have shown steep declines in use, and differences by SES have attenuated as overall prevalence has diminished.
- [Inhalant](#) use in the past 12 months has not varied greatly by SES among 12th graders (Tables 22-24 and Figure 47 in [Occasional Paper 92](#)). Throughout most of the study, the association has been weakly positive, particularly during the early-to-mid-1990s when inhalant use was increasing. In both lower grades, there has been some negative association, particularly since about 1995, as the strata diverged in their use patterns with highest use in the lowest SES stratum. This trend has weakened in recent years, and in 10th grade variation in inhalant use by 2018 was negligible. Recall that inhalant use is highest at 8th grade and tends to decline with age; and in the 8th grade there has been the clearest negative association with SES, particularly since 1995, though the differences have been diminishing in recent years as overall use has fallen considerably.
- [Hallucinogen](#) use in the past 12 months has tended to be negatively related to SES in the lower two grades, and the association became clearer in the years after 2000 in the 10th grade (Tables 25-27 and Figure 53 in [Occasional Paper 92](#)). In 12th grade the reverse has been true – the annual prevalence of hallucinogen use has been positively related to SES – until recently; since about 2014, little association between hallucinogen use and SES has been apparent in the three grades as use has continued to decline.
- [LSD](#) use in the past 12 months and SES have not shown any consistent association among 12th grade students since the mid-1990s (Tables 28-30 and Figure 59 in [Occasional Paper 92](#)). During the 1990s drug relapse, a positive association emerged, but this association disappeared when LSD use plunged at the end of the 1990s decade. However, among 8th graders, those in the lowest SES stratum consistently have exhibited the *highest* levels of use (although the overall prevalence, and thus differences by SES, are very small), with hardly any differences among the other strata. Among 10th graders, the differences have been negligible.
- At 12th grade there is not a clear association between [MDMA](#) (ecstasy, Molly) use and SES (Tables 34 through 36 and Figure 71 in [Occasional Paper 92](#)). However, at 8th and 10th

grades, a bit of a negative association emerged until about 2013, when the association at 10th grade became blurred as use declined.

- In 2018 [cocaine](#) use in the past 12 months showed little variation by SES among 12th grade students (Figure 5-12b; see also Tables 40-42 and Figure 83 in [Occasional Paper 92](#)). But in past years cocaine use has shown the largest and most interesting change in its association with SES of any of the drugs. After the 1990s drug relapse cocaine use showed a strong inverse association with SES with prevalence at 9% in the lowest SES stratum and 5% in the highest stratum in 1999. This 1999 inverse association is noteworthy because it reversed the positive association two decades earlier, with prevalence at 9% in the lowest SES stratum and 16% in the highest stratum in 1980. This change in the SES distribution of cocaine use likely reflects changes in its cultural reputation, which shifted from a glamorous drug of the wealthy at the start of the 1980s to a dangerous drug of the disadvantaged by the 1990s. The change in reputation was brought about in large part by the well-publicized, cocaine-related death of basketball star Len Bias as well as the increasingly publicized dangers of cocaine use. In recent years cocaine has shown little association with SES as use has dropped to the lowest levels in more than forty years.

In 8th and 10th grades cocaine has an inverse association with SES that has been robust and substantial in all years surveyed since 1991, with the lowest stratum showing considerably higher annual prevalence than any of the other strata. The differences by SES have shrunk in recent years as overall prevalence has declined.

- Since 1991, when 8th and 10th grades were first surveyed, SES trends in their use of both [crack](#) and [cocaine other than crack](#) in the past 12 months have been similar (Tables 43-48 and Figures 89 and 95 in [Occasional Paper 92](#)). Notably, use in the lowest SES stratum was considerably higher for both forms of cocaine use than use in any of the other strata until recent years when the difference narrowed as overall prevalence declined. At 12th grade this same pattern holds for crack, but there is little difference by SES for cocaine other than crack. Crack use has been exceptionally high among those coming from the lowest socioeconomic stratum – often more than double the prevalence for the other strata in the lower two grades.
- Overall, among 12th graders, little difference has existed among the SES groups in their trends in past-year [amphetamine](#) use without medical supervision (see Figure 5-12d; Tables 65-67 and Figure 137 in [Occasional Paper 92](#)). In 8th and 10th grades, amphetamine use has generally been slightly negatively correlated with SES; while the increases in use through 1995 or 1996 occurred in all groups, they were sharpest in the lower two SES strata. More recently, 8th and 10th graders in most strata showed a decline in use, but modest differences among them remain.
- Since it was first included in the study in 1999, [methamphetamine](#) use in the last 12 months has tended to be highest in the lowest SES stratum at all three grades and lowest in the two top SES strata (Tables 75-77 and Figure 161 in [Occasional Paper 92](#)). This pattern has weakened over time, as use declined substantially, and is only nominally present in 8th and 10th grades, where prevalence has dropped to 1.4% or less in all SES groups. In recent

years, past-year use of [crystal methamphetamine \(ice\)](#) by 12th graders (8th and 10th graders are not asked about its use) has followed the same pattern with those in the lowest SES stratum considerably more likely to use than those in the other strata (Table 78 and Figure 167 in [Occasional Paper 92](#)).

- Since 1991, when the surveys of the lower grades began, [heroin](#) use, including use with and without a needle, generally has been considerably higher in the lowest SES group for 8th and 10th graders, a difference that largely disappeared in recent years as heroin use declined (Tables 49-51 and Figure 101 in [Occasional Paper 92](#)). A similar pattern emerged for heroin use among 12th graders – though not until after 1994. The differences are similar for [heroin use with a needle](#) and [heroin use without a needle](#) in the past year (Tables 52-57 and Figures 107 and 113 in [Occasional Paper 92](#)). All of these differences are very small and need to be interpreted with caution, given that virtually all percentages are lower than 3% and most are lower than 2%; nevertheless the lowest SES stratum having the highest level of heroin use is a robust pattern.
- By way of contrast, the use of [narcotics other than heroin](#) among 12th graders (the only grade for which this behavior is reported) has generally been lowest in the lowest SES stratum, with relatively little difference among the other strata; since 2005 all of these other strata have shown some decline, as has the lowest SES stratum since 2011, which has had the effect of greatly reducing the differences between them and the lowest SES stratum (Table 58 and Figure 119 in [Occasional Paper 92](#)).
- The use of [OxyContin](#) in the past 12 months outside of medical supervision differs little by SES in recent years, as a very slight negative association with SES in all three grades since 2002 has diminished (Tables 59-61 and Figure 125 in [Occasional Paper 92](#)). The same was largely true for [Vicodin](#) with a negative association in the lower grades that has largely dissipated with declining use. At 12th grade the association started out slightly negative but then it also dissipated as use declined sharply (Tables 62-64 and Figure 131 in [Occasional Paper 92](#)).
- [Tranquilizer](#) use in the past 12 months without medical supervision at 12th grade has shown little systematic association with SES; use by all strata has been falling in recent years after increasing during the relapse in drug use in the 1990s (Tables 83-85 and Figure 185 in [Occasional Paper 92](#)). In 8th grade, the lowest SES stratum has tended to have the highest prevalence while the two top SES strata have had the lowest prevalence; these differences widened after 2003 as use in the lowest SES stratum rose considerably through 2010. In 10th grade the differences between the lower and upper SES strata increased after the question was revised to include Xanax in the examples; use by the two upper strata has been consistently below the others since then, similar to the 8th grade.
- In almost every year since the start of the survey [alcohol](#) use in the past 30 days among 12th graders has been lowest in the lowest SES level with little difference among the other SES strata (Tables 93-95 and Figure 209 in [Occasional Paper 92](#)).

At the lower grade levels, however, the story is quite different. Alcohol use has generally been inversely correlated with SES, and the association has been strongest in 8th grade. Trends for the various strata have generally been parallel, nonetheless, in all grades, with all strata showing a long-term decline in use.

- In 2018 [binge drinking](#) in the past two weeks among 12th grade students increased steadily from the lowest to the highest SES stratum, from 11% to 17%, but the lowest stratum was most separated from the rest until the past few years as the strata merged (Figure 5-12e; also Tables 102-104 and Figure 227 in [Occasional Paper 92](#)). In almost every year in the 44 years of the survey, the lowest SES stratum among 12th graders had the lowest level of binge drinking.

At the lower grade levels there have been systematic differences among strata, with an inverse relationship between binge drinking and SES, though these differences have been narrowing while all strata have been showing ongoing declines for some years.

- Past 30-day use of [cigarettes](#) among 12th graders is lowest among those in the highest strata, with the exception of the mid-1990s (Tables 127-129 and Figure 305 in [Occasional Paper 92](#)). In an unusual pattern, this inverse association diminished at the height of the 1990s drug relapse – unusual because typically associations of drug use with sociodemographic characteristics became stronger with increasing drug prevalence. From 1975 through the 1980s, previous to the 1990s drug relapse, cigarette smoking was inversely related to SES, particularly in the late 1970s and early 1980s, when smoking levels were substantially higher than they are today.

It is possible that the introduction of the Joe Camel advertising campaign in 1988 helped account for the closing of the socioeconomic gap that started in the late 1980s, and that the termination of that campaign in 1997 helped account for the re-emergence of that gap. We know that between 1986 and 1997, the rise in smoking was sharper among 12th grade boys than 12th grade girls, and the Camel brand was particularly popular among boys and those whose parents had higher than average education.¹³ The Joe Camel ad campaign appears to have been particularly effective with boys who had more educated parents, raising the smoking levels of their SES strata and nearly eliminating the relationship between SES and smoking that existed before and after the years of the campaign for that brand.

In 8th and 10th grade, 30-day smoking prevalence has shown a substantial, inverse association with SES in all years since it was first measured for these grades in 1991. This association has weakened in recent years as overall smoking prevalence has declined substantially.

- [Daily smoking](#) follows a pattern similar to 30-day prevalence (Figure 5-12f; see also Tables 130-132 and Figure 311 in [Occasional Paper 92](#)). Among 12th grade students a substantial, inverse association with SES is present in all years except during the 1990s drug relapse (also the period of the Joe Camel campaign). Among 8th and 10th grade students, an inverse

¹³ Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (1999). [Cigarette brand preferences among adolescents](#) (Monitoring the Future Occasional Paper No. 45). Ann Arbor, MI: Institute for Social Research.

association of daily smoking is present in all years since first measured in 1991, even as prevalence has fallen. Differences in daily smoking appear to be diminishing among 8th grade students as prevalence is dropping to extremely low levels and is now less than 1.2% in all SES levels in 2018.

- Smoking [*small cigars*](#) in the past 12 months has been slightly, positively correlated with SES in 12th grade (the only grade from which data were gathered; Table 137 and Figure 329 in [Occasional Paper 92](#)).
- Use of [*smokeless tobacco*](#) in the past 30 days is negatively correlated with SES at 8th grade but not in the two higher grades (Tables 145-147 and Figure 377 in [Occasional Paper 92](#)). The 12th grade correlations were slightly positive from 2007 to 2012 when the lowest SES stratum had the lowest levels of use, a pattern that has begun to re-emerge in recent years.
- For the past three years the survey has tracked use of [*large cigars*](#), [*flavored little cigars*](#), and [*regular little cigars*](#) (Tables 138-140 and Figures 347, 335, and 341 in [Occasional Paper 92](#)). Prevalence of all these substances is typically highest among the lowest two SES strata in 8th grade, indicating that the general, inverse association of SES with smoking extends to these combustible tobacco products. In 10th and 12th grade the association with SES is less consistent or not present. Percentage differences across SES are becoming smaller as overall prevalence declines.
- [*Nicotine vaping*](#) during the last 30 days in 12th grade is concentrated in the higher social strata, and this concentration grew stronger in 2018 (Table 142 and Figure 359 in [Occasional Paper 92](#)). The difference in levels of use between the highest and lowest strata was 16 percentage points in 2018 (at 27% and 11%, respectively), as compared to only 3 percentage points in 2017 (11% and 8%). In 10th and 8th grade nicotine vaping does not differ systematically by SES.
- [*Marijuana vaping*](#) in the past 30 days differed little by SES in 12th and 10th grades in 2018 (Table 143 and Figure 365 in [Occasional Paper 92](#)). Among 12th graders prevalence varies between only 8% and 9% and among 10th graders it varies between only 4% and 6%. In 8th grade marijuana vaping is more common in the lower socioeconomic strata, with prevalences of 3% in the two lowest strata and 1% in the three highest.
- Increases in past 30-day *any nicotine use* for 12th grade students in 2018 were more pronounced in the upper social strata, with increases of 8 percentage points in the three highest strata and 4 percentage points in the two lowest (Table 181 and Figure 461 in [Occasional Paper 92](#)). These increases in the upper social strata resulted primarily from nicotine vaping, as indicated by *decreases* in the top two social strata for any nicotine use other than vaping (Table 182 and Figure 467 in [Occasional Paper 92](#)). “Any nicotine use” indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

Racial/Ethnic Differences in Trends

While the three major racial/ethnic groups examined here – Whites, African Americans, and Hispanics – have tended to be quite different in their level of drug use, they have usually exhibited parallel trends.¹⁴ (Cigarette and marijuana use are exceptions, as discussed later in this section.) Data have been examined here for these three groups using two-year moving averages of prevalence to provide smoother and more reliable trend lines.¹⁵ Even with the two-year averages, the trend lines tend to be a bit irregular for Hispanics, who are the most clustered by school, and, therefore, for whom we have the most variability in estimates. See [Occasional Paper 92](#) for the racial/ethnic trend data on all classes of drugs.

A summary of the findings for race/ethnicity follows:

- African American students have the lowest levels of use of many of the licit and illicit drugs at all three grade levels being examined here, and they have consistently shown exceptionally low levels of use for *any illicit drug use other than marijuana*, and for [hallucinogens](#) taken as a class, [LSD](#), [other hallucinogens](#), [MDMA \(ecstasy\)](#), [cocaine other than crack](#), [narcotics other than heroin](#), [amphetamines](#), [Adderall](#), [methamphetamine](#), [sedatives \(barbituates\)](#), [any prescription drug](#) and [tranquilizers](#). Further, for the past decade, their [cigarette](#) smoking and most tobacco products, [drinking](#), and [binge drinking](#) also have been lower than the use levels among Whites and Hispanics. African Americans also have lowest levels of use of the vaping devices that have recently arrived on the scene, and rank lowest for nicotine vaping, marijuana vaping, and ‘just flavoring’ vaping. While for some years they also had the lowest levels of *marijuana* use in the three grades, they lost that relative position in 1998 among 8th graders, 2010 among 10th graders, and 2007 among 12th graders due to increases in their use.
- In 8th grade, Hispanic students have tended to have the highest levels of use of a number of drugs, including *any illicit drug*, [cocaine](#), [crack](#), [cocaine other than crack](#), [methamphetamine](#), and [binge drinking](#). The elevated use for Hispanics has diminished in recent years as overall use of all these substances has declined. By 12th grade, the differences between Hispanic and White students narrow considerably or are reversed. In 2018, however, Hispanic 12th graders still tended to have the highest level of use for [synthetic marijuana](#), [cocaine](#), [crack](#), [cocaine other than crack](#), and [crystal methamphetamines \(ice\)](#). As we have said earlier, we believe that Hispanics’ considerably higher level of school dropout may do much to explain why White high school students assume the highest levels of use for some drugs, listed immediately below.

¹⁴ We have published articles examining a wider array of ethnic groups, using groupings of respondents from adjacent five year intervals in order to obtain more reliable estimates of trends. See Bachman, J. G., Wallace, J. M., Jr., O’Malley, P. M., Johnston, L. D., Kurth, C. L., & Neighbors, H. W. (1991). [Racial/ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976–1989](#). *American Journal of Public Health*, 81, 372–377. See also Wallace, J. M., Jr., Bachman, J. G., O’Malley, P. M., Johnston, L. D., Schulenberg, J. E., & Cooper, S. M. (2002). [Tobacco, alcohol and illicit drug use: Racial and ethnic differences among U.S. high school seniors, 1976–2000](#). *Public Health Reports*, 117(Supplement 1), S67–S75; Delva, J., Wallace, J. M., Jr., O’Malley, P. M., Bachman, J. G., Johnston, L. D., & Schulenberg, J. E. (2005). [The epidemiology of alcohol, marijuana, and cocaine use among Mexican American, Puerto Rican, Cuban American, and other Latin American eighth-grade students in the United States: 1991–2002](#). *American Journal of Public Health*, 95, 696–702; and Bachman, J. G., O’Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2010). [Impacts of parental education on substance use: Differences among White, African-American, and Hispanic students in 8th, 10th, and 12th grades \(1999–2008\)](#) (Monitoring the Future Occasional Paper No. 70). Ann Arbor, MI: Institute for Social Research.

¹⁵ A given year’s value in a two-year moving average is based on the mean of the observed values for that year and the previous year.

- By 12th grade, White students have tended to have the highest level of use of [hallucinogens](#), [hallucinogens other than LSD](#), [narcotics other than heroin](#), [amphetamines](#), [Adderall](#), [tranquilizers](#), [any prescription drug](#), [30-day alcohol use](#), [drunkenness](#), [binge drinking](#), [30-day liquor use](#), [binge drinking of liquor](#), [wine](#), [flavored alcoholic beverages](#), [alcoholic beverages containing caffeine](#), [cigarette smoking](#) (by a large margin), [smokeless tobacco](#) (by an even larger margin), [vaporizers](#), [small cigars](#), [large cigars](#), [flavored little cigars](#), [snus](#), [nicotine vaping](#), [marijuana vaping](#), [‘just flavoring’ vaping](#), [nonprescription diet pills](#), and [stimulant ADHD drugs](#).

Below is a detailed discussion of these trends by race/ethnicity for specific substances:

- In 2018, [marijuana](#) use in the last 12 months did not differ much by race/ethnicity among 12th grade students, with prevalence ranging only from 34% to 37% for the three racial/ethnic categories (Figure 5-13a; also Tables 10-12 and Figure 24 in [Occasional Paper 92](#)). Racial/ethnic differences have narrowed to near zero in recent years, which marks a substantial change from the previous four decades when Whites had the highest prevalence, African Americans the lowest, and Hispanics fell in between. This ordering stayed consistent as the overall prevalence of annual marijuana use rose and fell over the years. In recent years (through 2013), marijuana prevalence among White 12th graders held steady while increases occurred among African Americans and Hispanics, and levels of use have remained fairly consistent since then.

This narrowing disparity in marijuana use stems in part from changes in cigarette use, which is a strong predictor of marijuana use. Adolescents who have ever smoked a cigarette are five times more likely to use marijuana than those who have not. Over the past two decades the relatively higher level of cigarette smoking for white as compared to black adolescents has declined as overall prevalence of cigarette smoking has diminished (see Figure 306 in [Occasional Paper 92](#)), thus reducing a major driver of the black-white disparity in marijuana use.¹⁶

In the 8th grade Hispanics have generally ranked highest for annual marijuana use, as they did in 2018. Their levels were similar to those of African American students, at 12% and 11%, respectively, as a result of a long-term decline in use among Hispanics as compared to African-Americans. In the 10th grade, prevalence has been highest among Hispanic students in almost all years and lowest among African American students until 2011, when they overtook White students. By 2018 all three groups were very close to each other in both 10th and 12th grades.

- In 2018 [daily marijuana](#) use differed little by race/ethnicity (Tables 16-18 and Figure 36 in [Occasional Paper 92](#)). While White students in 12th grade had higher levels of daily marijuana use in almost all years of the survey, African Americans have replaced Whites as the group with the highest level of daily use since 2015. Among 10th grade students, African Americans had the lowest prevalence of daily marijuana use until about 2003, then crossed over Hispanics and later Whites to achieve very slightly higher prevalence by 2011

¹⁶ Miech, Richard A., Yvonne M. Terry-McElrath, Patrick M. O'Malley, and Lloyd D. Johnston. [Increasing marijuana use for black adolescents in the United States: A test of competing explanations](#). *Addictive Behaviors*, 93, 59-64. doi: 10.1016/j.addbeh.2019.01.016

and through 2014. In 2018, there was very little difference among the three groups, although African Americans again emerged with the highest levels of use. At 8th grade, all three groups have shown almost identical trend lines, with very little difference among the groups in 2018.

- ***Synthetic marijuana*** use in the last 12 months has been tracked only since 2012 (Tables 19-21 and Figure 42 in [Occasional Paper 92](#)). In 12th grade the level of use had decreased fastest among White students, who had the highest prevalence of 13% in 2012 but by 2018 fell to 3%, similar to African American (3%) and Hispanic (5%) students, both of whom also had shown considerable declines in use. In 8th and 10th grades, Whites had the lowest levels of use in 2018, although differences among the groups were small. In both grades Hispanic students started out highest in 2012 but declined substantially in use by 2018.
- Racial/ethnic differences in the use of ***inhalants*** in the past 12 months have steadily and gradually been diminishing in the last two decades and in 2018 these differences approached zero (Tables 22-24 and Figure 48 in [Occasional Paper 92](#)). In all grades, levels of use among White and Hispanic adolescents have been the highest for most of the life of the study (and substantially above African Americans) but have fallen considerably and have reached the low levels of use that were consistently found among African Americans. White and Hispanic adolescents have often traded places over the years as the group with the highest prevalence of inhalant use. The differences across race/ethnicity are negligible at present, but they were quite large in the past, primarily due to the fact that use among African Americans has consistently been low.
- Levels of use of over-the-counter ***diet pills*** have been highest for Whites in most years, including 2018 (Table 161 and Figure 414 in [Occasional Paper 92](#)). In most years African Americans had the lowest levels of use and Hispanics were in the middle, although in 2018 levels of use for African Americans slightly surpassed those for Hispanics. In 2018, levels of past-year use were about two times as high for Whites as compared to Hispanics, at 4.4% and 1.9% respectively, with levels for African Americans at 3.0%. These racial/ethnic differences have diminished in recent years as overall prevalence has declined.
- Use of over-the-counter ***stay-awake pills*** in the past year differed little by racial and ethnic groups in 2018 and varied within the narrow range between 1% and 2% (Table 162 and Figure 420 in [Occasional Paper 92](#)). Differences in these groups were much larger in past years when overall prevalence was higher, with levels of use much higher for Whites than Hispanics, who in turn had higher levels of use than African Americans. Use of these drugs has declined sharply in all three groups since about 1989.
- Differences across racial and ethnic groups in use of ***hallucinogens*** in the last 12 months have steadily diminished since the late 1990s for all grades (Tables 25-27 and Figure 54 in [Occasional Paper 92](#)). In 2018 these differences still remained among 12th grade students, albeit diminished, with levels of use lowest among African Americans (1.8%) and substantially higher among Hispanics and Whites (3.4% and 4.8%, respectively). In 10th grade the pattern was similar with prevalence among African Americans (1.0%) one third the levels among Hispanics and Whites (3.0% in both groups). In 8th grade overall

prevalence was less than 2%, which leaves little room for substantial differences by race/ethnicity. In the past two decades levels of use have declined among White and Hispanic 8th graders, and these levels are now reaching the low prevalence among African Americans that has been found in all survey years. Clearly, hallucinogenic drugs never caught on among African American youth, much as was the case for inhalants.

- African Americans have shown rather little change over time in their very low levels of past-year [LSD](#) use in all three grades, and disparities by race/ethnicity have waxed and waned as a result of changing prevalence among Whites and Hispanics (Tables 28-30 and Figure 60 in [Occasional Paper 92](#)). In 2018 levels of use among 12th grade students were highest for Whites (3.6%), followed by Hispanics (2.6%) and then African Americans (1.5%).

In 8th grade Whites and Hispanics again had higher levels of use than African Americans throughout the 1990s, but this difference has since diminished to near zero as overall use declined. A similar pattern is found among 10th grade students, although slight differences by race/ethnicity remained in 2018, with prevalence at 0.7% for African Americans and at 2.3% and 2.2% for Hispanics and Whites, respectively.

- Past-year use of [MDMA](#) (ecstasy, Molly), another drug used for its hallucinogenic effects, has also remained relatively unpopular among African American students at all grade levels, though it has shown some small fluctuations over time among them (Tables 34-36 and Figure 72 in [Occasional Paper 92](#)). In 2018 use levels for African Americans (0.9%) in 12th grade were lower than the levels for Hispanics and Whites (2.1% and 2.6%, respectively). This ranking of groups is apparent in all years of the survey, and was particularly large at the start of the 1990s. In 10th grade, Hispanics and Whites have traded positions multiple times as the group with the highest prevalence, although both groups have consistently stayed higher than African Americans. Use in general has been very low at 8th grade, and the groups differed little from one another by 2018, although there were considerable differences among them in earlier years.
- Past-year use of [cocaine](#) has almost always been lowest for African Americans in all grades and all years (Figure 5-13a; also Tables 40-42 and Figure 84 in [Occasional Paper 92](#)). In 12th grade, Whites and Hispanics have taken turns as the group with highest prevalence, but their trend lines are quite parallel. The gap between the racial/ethnic groups has narrowed in recent years and current prevalence is 2.9% among Hispanics, 2.7% among Whites, and 0.8% among African Americans. In 10th grade, Hispanics have always had the highest prevalence, and over the last two decades use among Whites declined to the point where it is now similar to the low levels observed among African Americans. These trends among 10th grade students are paralleled among 8th grade students, although differences among groups have approached zero as overall prevalence has declined. During the peak years of cocaine use in the first half of the 1980s – for which we have data only from 12th graders – African American use did spike, but not as much as it did among Whites and Hispanics, and their use declined considerably by 1992 along with use by Whites and Hispanics and then remained low, rather than increasing during the 1990s as occurred with Whites and Hispanics.

- Hispanic students have had the highest prevalence of [crack](#) use in all three grades since being tracked by the survey (Tables 43-45 and Figure 90 in [Occasional Paper 92](#)). African American students have had historically the lowest prevalence until recent years when slight increases have led them to pass Whites in all grades and converge with Hispanics. Differences among these three groups have narrowed considerably to near zero in all three grades as use has declined long-term among both Whites and Hispanics while growing some among African Americans.
- In 2018 past-year use of [heroin](#) was 0.4% or less across all grades, and varied little by race/ethnicity (Tables 49-51 and Figure 102 in [Occasional Paper 92](#)). In the past, African Americans ranked lowest in heroin use through 2009 in the lower two grades, with very little change in their use until then. At 12th grade, both Whites and African American students had similarly low and unchanging prevalence from 1977 through 1992, when use among Whites and Hispanics began very slight increases and continued to rise through 2000. After 2009 (2010 in the case of 10th graders), use among African Americans increased some, bringing their level of heroin use close to that of Whites, who had shown a considerable decline in use by then (since 1997 among 8th graders, 2000 among 10th graders, and 2001 among 12th graders, suggesting a cohort effect). While use has been declining since 2009 among 12th grade Whites and Hispanics, it has risen among African Americans, and since 2012 they have had the highest prevalence of heroin use. The trends have been similar for both use of heroin with a needle and more labile for use without using a needle, with differences across groups falling to near zero as overall prevalence has declined. (Tables 52-57 and Figures 108 and 114 in [Occasional Paper 92](#)). It appears that much of the change in heroin use has been attributable to changes in use without a needle, given that this outcome shows more change over time than heroin use with a needle.
- Use of [narcotics other than heroin](#) among 12th graders (the only grade for which data are reported) has fairly consistently been much higher among White students, considerably lower among Hispanic students, and lowest among African American students (Table 58 and Figure 120 in [Occasional Paper 92](#)). In the past three years, levels of use among Hispanics and African Americans have converged to essentially the same level. In 2015 a sharp drop in prevalence among Hispanics brought their levels lower than African Americans for the first time in the survey, although this difference did not persist in 2016. Previously, the differences across the three groups enlarged due to a much greater-than-average increase in use among White students after 1993, which peaked in 2008 before beginning a substantial decline. Among African Americans and Hispanics, use rose much less sharply and peaked considerably later (around 2014). In 2018 the prevalence across the three groups was much more similar than it has been in the past as levels of use have declined appreciably among Whites (since 2008) and some among Hispanics (since 2010), while they have increased overall among African Americans over the past two decades until 2014.
- Past-year use of [OxyContin](#) without medical supervision among 12th graders varied little by racial/ethnic groups in 2018 (Tables 59-61 and Figure 126 in [Occasional Paper 92](#)). When use was first measured in the early 2000s prevalence among Whites (at about 5%) was about double that among Hispanics and African Americans. This difference persisted

until 2011, after which the gap narrowed to near zero as use among Whites fell. These differences have also become small among 8th grade students. In 10th grade, Whites maintained the highest level of OxyContin use in comparison to the other racial/ethnic groups, until recent years have shown a near zero difference between White and Hispanics, and lower levels among African Americans. In general, the differences between Hispanics and Whites have been inconsistent, most likely due to the greater variability in the Hispanic estimates.

- Past-year use of [Vicodin](#), another synthetic narcotic drug, has consistently had the lowest levels of use among African Americans as compared to the other racial/ethnic groups for 12th and 10th grade students in most years (Tables 62-64 and Figure 132 in [Occasional Paper 92](#)). Among 12th grade students, differences across racial/ethnic groups have diminished to near zero as overall prevalence has declined, particularly among Whites. Among 10th grade students, the differences between the racial/ethnic groups were near zero in 2018, again with steep declines among Whites, in addition to a decline among Hispanics. Among 8th grade students, African Americans have shown the highest level of use in the past few years, but the difference relative to the other racial and ethnic groups is only one percentage point in 2018. Whites and Hispanics have shown a decline in use in 8th grade as well.
- Past-year use of [amphetamines](#) outside of medical supervision has shown highest levels of use among Whites, followed by Hispanics, and then African Americans in every year of the study for 12th and 10th grade students (Tables 65-67 and Figure 138 in [Occasional Paper 92](#)). In the past decade, the difference between the groups has decreased and then rebounded slightly among 12th grade students since 2010, while among 10th graders it has steadily diminished. In 8th grade, little difference was apparent across racial/ethnic groups in 2018, as prevalence among Whites and Hispanics has gradually fallen over the past two decades and has approached the prevalence found among African Americans, which has been low throughout the study.
- In 2018 past-year use of [Ritalin](#) outside of medical supervision differed little by racial/ethnic groups (Tables 68-70 and Figure 144 in [Occasional Paper 92](#)). When the survey first began tracking the drug in 2001, levels of use were substantially higher for Whites compared to African Americans with Hispanics in the middle in all three grades. In the following years these differences have attenuated as overall prevalence has decreased steadily among Whites and Hispanics.
- The use of [Adderall](#), another stimulant drug used in the treatment of ADHD, is very low at 8th grade with little consistent differences among the three racial/ethnic groups (Tables 71-73 and Figure 150 in [Occasional Paper 92](#)). In 10th and 12th grades, African Americans have had lower levels of use than Whites in all years measured. Levels of use among Hispanics have ranked mostly in the middle, although throughout the study period they have sometimes ranked the highest and sometimes the lowest.
- In 2018 overall levels of past-year use for [methamphetamine](#) were less than 0.6% in all grades, leaving little room for variation by race/ethnicity (Tables 75-77 and Figures 162 in

[Occasional Paper 92](#)). When first tracked in 1999-2000 overall prevalence of methamphetamine was near 3% among 12th graders and African Americans stood out as having extremely low levels of use (1.1% or less in every year). Hispanics have generally had the highest rate of use in 8th and 10th grades with Whites in the middle. In the intervening years, levels of use for Whites and Hispanics have declined in all three grades to those of African Americans.

- [Crystal methamphetamine \(ice\)](#) is reported only for 12th graders (Table 78 and Figure 168 in [Occasional Paper 92](#)). The differences have narrowed and are now very small, as use of this drug has declined considerably among Whites and to a lesser extent among Hispanics, who have generally had the highest levels of use. In fact, in 2010 through 2018 the prevalence of crystal methamphetamine use among 12th grade Whites fell slightly (albeit not significantly) below those for African Americans, who until then consistently had shown the lowest level of use of any of the three groups.
- Past-year use of [sedatives \(barbiturates\)](#) and [tranquilizers](#) outside of medical supervision among 12th grade students is lowest among African Americans – a difference that has been observed in every year of the study (Tables 82-85 and Figures 180 and 186 in [Occasional Paper 92](#)). Sedatives (barbiturates) are reportedly only for 12th grade; but tranquilizers are reported for all three grades and showed similar changes in 10th grade to those found in 12th grade. The relatively lower levels of use among African Americans have narrowed in the past decade as use among Whites, in particular, has declined. In general, the differences have been greatest when overall prevalence was high, and smaller when overall prevalence was low (as it was in the early 1990s, as the start of the 1990s drug relapse). Among 8th grade students, Hispanics have, in every year, had the highest prevalence of tranquilizer use, followed closely by Whites, and then by African Americans. These differences were small to begin with and have diminished substantially in recent years as levels of use among Hispanics and Whites have decreased and approached the levels seen among African Americans, which has been low throughout the survey.
- The 30-day prevalence of [alcohol](#) use has shown relatively consistent racial/ethnic differences over time at each grade level (Tables 93-95 and Figure 210 in [Occasional Paper 92](#)). Among 12th graders, Whites have had the highest levels of use and African Americans have had considerably lower levels. Hispanics have fallen in between with levels of use closer to Whites than African Americans until 2018, when a large decline in prevalence among Hispanics of 4.5 percentage points brought them closer to the levels of African Americans. At 10th grade, Whites and Hispanics have had quite similar prevalence and trends, nearly tracking on each other. African Americans have had levels of use that were substantially lower but moved mostly in parallel with the other two groups in grade 10, with use among all three groups declining. At 8th grade, Hispanics have consistently had somewhat higher drinking prevalence than Whites – opposite the positions shown by 12th graders while African Americans have had considerably lower and more stable prevalence. All three groups have been showing long-term declines in use with the differences in 8th grade narrowing considerably to near negligible by 2018 and levels of use ranging only from 6% (for African Americans) to 10% (for Hispanics). There is less convergence in the upper grades.

- The trends for *binge drinking* (having five or more drinks on at least one occasion in the prior two weeks) have been very similar to those just discussed for current drinking, though prevalence is lower, of course (Figure 5-13b; also Tables 102-104 and Figure 228 in [Occasional Paper 92](#)). African Americans have consistently had appreciably lower prevalence than the other two groups at all three grade levels, though at 8th grade, levels of use among Whites and African Americans have recently converged as a result of relatively faster declines among Whites. In 8th grade, differences across race/ethnicity have narrowed as overall prevalence has declined, and differences in 2018 ranged only from 3% (for Whites and African Americans) to 5% (for Hispanics, who have consistently had the highest levels of use). In 10th grade, Whites and Hispanics have had considerably higher levels of occasions of binge drinking than African American students, and were generally about the same as each other. (All three groups are declining in 10th grade.) In 12th grade, the levels of binge drinking were much higher and the three groups were more spread out, with Whites the highest, African Americans quite low, and Hispanics in the middle but coming closer to the low levels of African Americans in recent years. All three groups have shown a pattern of long-term decline, each dropping by about one half over the course of the study.
- Among 12th graders, differences in *extreme binge drinking* (also known as high intensity drinking) across race/ethnicity are similar to those for binge drinking discussed above, with lower prevalence (Tables 105 and 106, and Figures 229 and 235 in [Occasional Paper 92](#)). In all years measured Whites have had the highest prevalence levels. African American and Hispanic levels of use have converged to near equal in 2018, as relatively higher levels of among Hispanics have declined to those of African Americans.

Questions on use of 10+ drinks in a row were asked of 8th and 10th graders starting in 2016. Whites rank highest in terms of prevalence in 10th grade but there is little difference across the three racial/ethnic groups in 8th grade. These newly added questions suggest that the differences across race/ethnicity emerge during the high school years.

- At both 10th and 12th grades the prevalence of *cigarette* smoking in the past 30 days has been highest among Whites, followed by Hispanics, and then African Americans (Figure 5-13b; also Tables 127-129 and Figure 306 in [Occasional Paper 92](#)). Whites and Hispanics have tracked closely to each other in 8th grade. In 2018, these differences were largest in 12th grade, smaller in 10th grade, and almost negligible in 8th grade. For the past two decades, these differences have been diminishing in each grade as overall prevalence has declined to record-low levels.
- Similar trends are apparent for *daily smoking*. The longer-term trends observable among 12th graders paint a particularly interesting picture for both daily smoking and smoking in the past 30 days. In 1975, when the study began, the three groups all had about the same 30-day prevalence levels among 12th graders. After that all three groups showed declines in smoking, but among African American students the decline lasted much longer, bringing them to an appreciably lower level of smoking, one that has remained in the years since. When smoking went up during the relapse phase of substance use in the 1990s, it rose more among Whites than the other two groups, further opening the difference from African

Americans. As smoking has declined sharply among Whites and Hispanics since the late 1990s, their levels are beginning to converge and approach the low levels observed for some time among African American 12th graders, following a long period of the three groups having dramatically different levels of smoking (Tables 130-132 and Figure 312 in [Occasional Paper 92](#)). Whites have consistently had the highest levels of smoking in 8th and 10th grade, as well, but long-term declines in smoking have just about eliminated any differences.

- A newer form of tobacco consumption for Americans, smoking with a [hookah](#) water pipe, is measured only at 12th grade and only since 2010 (Table 136 and Figure 324 in [Occasional Paper 92](#)). African Americans have much lower levels of past-year use than Whites and Hispanics. For the past four years prevalence has declined for Whites and Hispanics (with a significant decline for Whites in 2018), bringing their use levels closer to African Americans.
- Smoking [small cigars](#) in the past year, which has been tracked since 2010 among 12th grade students, shows large differences among the three groups: Whites have had the highest levels of use, African Americans lowest, and Hispanics in the middle (Table 137 and Figure 330 in [Occasional Paper 92](#)). Levels of use for Hispanics and African Americans have converged in recent years as levels of use for Hispanics have declined faster than they have for African Americans. Use among Whites has also been in decline, but their use is still considerably higher than in the other two groups.
- Whites have had the highest levels of use of [smokeless tobacco](#) in all years that it has been measured in 12th and 10th grade (Table 145-147 and Figure 378 in [Occasional Paper 92](#)). In 12th grade 8% of Whites had used smokeless tobacco in the past 30 days in 2018, compared to less than 2% among Hispanic and African Americans. In past years, 12th grade Hispanics had higher levels of use than African Americans, but these two groups have converged in their levels of use as it has declined to very low levels. In 10th grade the overall pattern and levels of use are similar to 12th grade. In 8th grade all three groups have converged to a low level of use of 2%; in earlier years Whites had higher levels of use than Hispanics, who in turn had higher levels of use than African Americans.
- Use of [dissolvable tobacco](#) products in the past 12 months was at very low levels in 2018 and showed no important differences in use among the three racial/ethnic groups in any grade (Tables 151-153 and Figure 390 in [Occasional Paper 92](#)). In the last four years a small disparity has emerged in 12th grade, with levels of use among African Americans outpacing the other two racial and ethnic groups; however, in 2018 this difference closed.
- The use of [snus](#) in the last 12 months has consistently been highest for Whites in all three grades (Tables 154-156 and Figure 396 in [Occasional Paper 92](#)). The difference in the upper grades is substantial, despite a steady decline in their use, with 2018 prevalence among Whites more than three times higher than among the other two groups. In 8th grade the 2018 difference between the three groups was negligible, and all were at levels of 1.5% or less.

- For the past five years the survey has tracked use of [*large cigars*](#), [*flavored little cigars*](#), and [*regular little cigars*](#) (Tables 138-140 and Figures 348, 336, and 342 in [Occasional Paper 92](#)). For all these cigars Whites have had and in 2018 continued to have higher levels of use than Hispanics and African Americans in 12th grade, particularly for large cigars. In 10th and 8th grade use differed little across the three racial and ethnic groups.
- Past-year use of [*anabolic steroids*](#) did not vary appreciably across the three racial/ethnic groups in 2018 in 8th or 10th grade (Tables 157-159 and Figure 402 in [Occasional Paper 92](#)). In all grades during the early 2000s, African Americans had lower levels of use than Whites and Hispanics. Since then use among Whites and Hispanics has declined and use among African Americans has increased some, eliminating differences across the three groups in 8th and 10th grade by 2006. In 12th grade, use among African Americans continued to rise after 2006 and they have had the highest levels of use in nearly all years since then.

TABLE 5-1
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

Percentage who ever used

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Any Illicit Drug ^{a,b}	55.2	58.3	61.6	64.1	65.1	65.4	65.6	64.4	62.9	61.6	60.6	57.6	56.6	53.9	50.9	47.9
Any Illicit Drug other than Marijuana ^{a,b,c}	36.2	35.4	35.8	36.5	37.4	38.7	42.8	41.1	40.4	40.3	39.7	37.7	35.8	32.5	31.4	29.4
Marijuana/Hashish	47.3	52.8	56.4	59.2	60.4	60.3	59.5	58.7	57.0	54.9	54.2	50.9	50.2	47.2	43.7	40.7
Inhalants ^d	—	10.3	11.1	12.0	12.7	11.9	12.3	12.8	13.6	14.4	15.4	15.9	17.0	16.7	17.6	18.0
Inhalants, Adjusted ^{d,e}	—	—	—	—	18.2	17.3	17.2	17.7	18.2	18.0	18.1	20.1	18.6	17.5	18.6	18.5
Amyl/Butyl Nitrites ^{f,g}	—	—	—	—	11.1	11.1	10.1	9.8	8.4	8.1	7.9	8.6	4.7	3.2	3.3	2.1
Hallucinogens ^c	16.3	15.1	13.9	14.3	14.1	13.3	13.3	12.5	11.9	10.7	10.3	9.7	10.3	8.9	9.4	9.4
Hallucinogens, Adjusted ^{c,h}	—	—	—	—	17.7	15.6	15.3	14.3	13.6	12.3	12.1	11.9	10.6	9.2	9.9	9.7
LSD ^c	11.3	11.0	9.8	9.7	9.5	9.3	9.8	9.6	8.9	8.0	7.5	7.2	8.4	7.7	8.3	8.7
Hallucinogens other than LSD ^c	14.1	12.1	11.2	11.6	10.7	9.8	9.1	8.0	7.3	6.6	6.5	5.7	5.4	4.1	4.3	4.1
PCP ^{f,g}	—	—	—	—	12.8	9.6	7.8	6.0	5.6	5.0	4.9	4.8	3.0	2.9	3.9	2.8
Ecstasy (MDMA), original ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	9.0	9.7	10.8	12.9	15.4	15.7	16.5	16.0	16.2	16.1	17.3	16.9	15.2	12.1	10.3	9.4
Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	5.4	4.8	4.7	3.5
Cocaine other than Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	14.0	12.1	8.5	8.6
Heroin ^k	2.2	1.8	1.8	1.6	1.1	1.1	1.1	1.2	1.2	1.3	1.2	1.1	1.2	1.1	1.3	1.3
With a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Without a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Narcotics other than Heroin ^{m,n}	9.0	9.6	10.3	9.9	10.1	9.8	10.1	9.6	9.4	9.7	10.2	9.0	9.2	8.6	8.3	8.3
Amphetamines ^{b,m}	22.3	22.6	23.0	22.9	24.2	26.4	32.2†	27.9	26.9	27.9	26.2	23.4	21.6	19.8	19.1	17.5
Methamphetamine ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.7

Table continued on next page.

TABLE 5-1 (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

	Percentage who ever used															
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Sedatives (Barbiturates) ^{m,p}	16.9	16.2	15.6	13.7	11.8	11.0	11.3	10.3	9.9	9.9	9.2	8.4	7.4	6.7	6.5	6.8
Sedatives, Adjusted ^{m,q}	18.2	17.7	17.4	16.0	14.6	14.9	16.0	15.2	14.4	13.3	11.8	10.4	8.7	7.8	7.4	7.5
Methaqualone ^{m,r}	8.1	7.8	8.5	7.9	8.3	9.5	10.6	10.7	10.1	8.3	6.7	5.2	4.0	3.3	2.7	2.3
Tranquilizers ^{c,m}	17.0	16.8	18.0	17.0	16.3	15.2	14.7	14.0	13.3	12.4	11.9	10.9	10.9	9.4	7.6	7.2
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s	90.4	91.9	92.5	93.1	93.0	93.2	92.6	92.8	92.6	92.6	92.2	91.3	92.2	92.0	90.7	89.5
Been Drunk ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cigarettes	73.6	75.4	75.7	75.3	74.0	71.0	71.0	70.1	70.6	69.7	68.8	67.6	67.2	66.4	65.7	64.4
Smokeless Tobacco ^{f,t}	—	—	—	—	—	—	—	—	—	—	—	31.4	32.2	30.4	29.2	—
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids ^{m,u}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0	2.9
Legal Use of Over-the-Counter Stimulants																
Diet Pills ^f	—	—	—	—	—	—	—	29.6	31.4	29.7	28.7	26.6	25.5	21.5	19.9	17.7
Stay-Awake Pills ^f	—	—	—	—	—	—	—	19.1	20.4	22.7	26.3	31.5	37.4	37.4	36.3	37.0
Look-Alikes ^f	—	—	—	—	—	—	—	15.1	14.8	15.3	14.2	12.7	11.9	11.7	10.5	10.7
Legal Use of Prescription ADHD Drugs																
Stimulant-Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Non-Stimulant-Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Either Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

TABLE 5-1 (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

Percentage who ever used

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Any Illicit Drug ^{a,b}	44.1	40.7	42.9	45.6	48.4	50.8	54.3	54.1	54.7	54.0	53.9	53.0	51.1	51.1	50.4
Any Illicit Drug other than Marijuana ^{a,b,c}	26.9	25.1	26.7	27.6	28.1	28.5	30.0	29.4	29.4	29.0†	30.7	29.5	27.7	28.7	27.4
Marijuana/Hashish	36.7	32.6	35.3	38.2	41.7	44.9	49.6	49.1	49.7	48.8	49.0	47.8	46.1	45.7	44.8
Inhalants ^d	17.6	16.6	17.4	17.7	17.4	16.6	16.1	15.2	15.4	14.2	13.0	11.7	11.2	10.9	11.4
Inhalants, Adjusted ^{d,e}	18.0	17.0	17.7	18.3	17.8	17.5	16.9	16.5	16.0	14.6	13.8	12.4	12.2	11.4	11.9
Amyl/Butyl Nitrites ^{f,g}	1.6	1.5	1.4	1.7	1.5	1.8	2.0	2.7	1.7	0.8	1.9	1.5	1.6	1.3	1.1
Hallucinogens ^c	9.6	9.2	10.9	11.4	12.7	14.0	15.1	14.1	13.7	13.0‡	14.7	12.0	10.6	9.7	8.8
Hallucinogens, Adjusted ^{c,h}	10.0	9.4	11.3	11.7	13.1	14.5	15.4	14.4	14.2	13.6‡	15.3	12.8	10.9	9.9	9.3
LSD ^c	8.8	8.6	10.3	10.5	11.7	12.6	13.6	12.6	12.2	11.1	10.9	8.4	5.9	4.6	3.5
Hallucinogens other than LSD ^c	3.7	3.3	3.9	4.9	5.4	6.8	7.5	7.1	6.7	6.9‡	10.4	9.2	9.0	8.7	8.1
PCP ^{f,g}	2.9	2.4	2.9	2.8	2.7	4.0	3.9	3.9	3.4	3.4	3.5	3.1	2.5	1.6	2.4
Ecstasy (MDMA), original ^f	—	—	—	—	—	6.1	6.9	5.8	8.0	11.0	11.7	10.5	8.3	7.5	5.4
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	7.8	6.1	6.1	5.9	6.0	7.1	8.7	9.3	9.8	8.6	8.2	7.8	7.7	8.1	8.0
Crack ⁱ	3.1	2.6	2.6	3.0	3.0	3.3	3.9	4.4	4.6	3.9	3.7	3.8	3.6	3.9	3.5
Cocaine other than Crack ⁱ	7.0	5.3	5.4	5.2	5.1	6.4	8.2	8.4	8.8	7.7	7.4	7.0	6.7	7.3	7.1
Heroin ^k	0.9	1.2	1.1	1.2	1.6	1.8	2.1	2.0	2.0	2.4	1.8	1.7	1.5	1.5	1.5
With a needle ^l	—	—	—	—	0.7	0.8	0.9	0.8	0.9	0.8	0.7	0.8	0.7	0.7	0.9
Without a needle ^l	—	—	—	—	1.4	1.7	2.1	1.6	1.8	2.4	1.5	1.6	1.8	1.4	1.3
Narcotics other than Heroin ^{m,n}	6.6	6.1	6.4	6.6	7.2	8.2	9.7	9.8	10.2	10.6	9.9‡	13.5	13.2	13.5	12.8
Amphetamines ^{b,m}	15.4	13.9	15.1	15.7	15.3	15.3	16.5	16.4	16.3	15.6	16.2	16.8	14.4	15.0	13.1
Methamphetamine ^o	—	—	—	—	—	—	—	—	8.2	7.9	6.9	6.7	6.2	6.2	4.5
Crystal Methamphetamine (Ice) ^o	3.3	2.9	3.1	3.4	3.9	4.4	4.4	5.3	4.8	4.0	4.1	4.7	3.9	4.0	4.0

Table continued on next page.

TABLE 5-1 (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

Percentage who ever used

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Sedatives (Barbiturates) ^{m,p}	6.2	5.5	6.3	7.0	7.4	7.6	8.1	8.7	8.9	9.2	8.7	9.5	8.8	9.9	10.5
Sedatives, Adjusted ^{m,q}	6.7	6.1	6.4	7.3	7.6	8.2	8.7	9.2	9.5	9.3	8.9	10.2	9.1	10.1	11.0
Methaqualone ^{m,r}	1.3	1.6	0.8	1.4	1.2	2.0	1.7	1.6	1.8	0.8	1.1	1.5	1.0	1.3	1.3
Tranquilizers ^{c,m}	7.2	6.0	6.4	6.6	7.1	7.2	7.8	8.5	9.3	8.9†	10.3	11.4	10.2	10.6	9.9
Rohypnol ^f	—	—	—	—	—	1.2	1.8	3.0	2.0	1.5	1.7	—	—	—	—
Alcohol ^s	88.0	87.5‡	80.0	80.4	80.7	79.2	81.7	81.4	80.0	80.3	79.7	78.4	76.6	76.8	75.1
Been Drunk ^o	65.4	63.4	62.5	62.9	63.2	61.8	64.2	62.4	62.3	62.3	63.9	61.6	58.1	60.3	57.5
Cigarettes	63.1	61.8	61.9	62.0	64.2	63.5	65.4	65.3	64.6	62.5	61.0	57.2	53.7	52.8	50.0
Smokeless Tobacco ^{f,t}	—	32.4	31.0	30.7	30.9	29.8	25.3	26.2	23.4	23.1	19.7	18.3	17.0	16.7	17.5
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids ^{m,u}	2.1	2.1	2.0	2.4	2.3	1.9	2.4	2.7	2.9	2.5	3.7	4.0	3.5	3.4	2.6
Legal Use of Over-the-Counter Stimulants															
Diet Pills ^f	17.2	15.0	14.8	14.9	15.6	16.0	16.6	15.7	17.1	16.6	17.1	21.0	17.9	15.6	13.7
Stay-Awake Pills ^f	37.0	35.6	30.5	31.3	31.2	30.5	31.0	29.6	25.5	23.0	25.6	22.5	19.8	18.4	15.8
Look-Alikes ^f	8.9	10.1	10.5	10.3	11.6	10.7	10.8	9.4	9.2	10.0	9.8	9.6	8.6	8.1	7.4
Legal Use of Prescription ADHD Drugs															
Stimulant-Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.5
Non-Stimulant-Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.2
Either Type ^{aa}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.4

Table continued on next page.

TABLE 5-1 (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

Percentage who ever used

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
<i>Approximate weighted N =</i>														
	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Any Illicit Drug ^{a,b}	48.2	46.8	47.4	46.7	48.2	49.9	49.1	49.8	49.1	48.9	48.3	48.9	47.8	-1.1
Any Illicit Drug other than Marijuana ^{a,b,c}	26.9	25.5	24.9	24.0	24.7	24.9	24.1	24.8	22.6	21.1	20.7	19.5	18.9	-0.6
Marijuana/Hashish	42.3	41.8	42.6	42.0	43.8	45.5	45.2	45.5	44.4	44.7	44.5	45.0	43.6	-1.4
Inhalants ^d	11.1	10.5	9.9	9.5	9.0	8.1	7.9	6.9	6.5	5.7	5.0	4.9	4.4	-0.5
Inhalants, Adjusted ^{d,e}	11.5	11.0	10.1	10.2	—	—	—	—	—	—	—	—	—	—
Amyl/Butyl Nitrites ^{f,g}	1.2	1.2	0.6	1.1	—	—	—	—	—	—	—	—	—	—
Hallucinogens ^c	8.3	8.4	8.7	7.4	8.6	8.3	7.5	7.6	6.3	6.4	6.7	6.7	6.6	-0.1
Hallucinogens, Adjusted ^{c,h}	8.8	8.9	9.0	8.0	9.1	8.8	7.9	8.1	—	—	—	—	—	—
LSD ^c	3.3	3.4	4.0	3.1	4.0	4.0	3.8	3.9	3.7	4.3	4.9	5.0	5.1	+0.1
Hallucinogens other than LSD ^c	7.8	7.7	7.8	6.8	7.7	7.3	6.6	6.4	5.1	4.8	4.7	4.8	4.5	-0.3
PCP ^{f,g}	2.2	2.1	1.8	1.7	1.8	2.3	1.6	1.3	—	—	—	—	—	—
Ecstasy (MDMA), original wording ^f	6.5	6.5	6.2	6.5	7.3	8.0	7.2	7.1	5.6	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	7.9	5.9	4.9	4.9	4.1	-0.9
Cocaine	8.5	7.8	7.2	6.0	5.5	5.2	4.9	4.5	4.6	4.0	3.7	4.2	3.9	-0.3
Crack ⁱ	3.5	3.2	2.8	2.4	2.4	1.9	2.1	1.8	1.8	1.7	1.4	1.7	1.5	-0.1
Cocaine other than Crack ^j	7.9	6.8	6.5	5.3	5.1	4.9	4.4	4.2	4.1	3.4	3.3	3.5	3.3	-0.2
Heroin ^k	1.4	1.5	1.3	1.2	1.6	1.4	1.1	1.0	1.0	0.8	0.7	0.7	0.8	+0.1
With a needle ^l	0.8	0.7	0.7	0.6	1.1	0.9	0.7	0.7	0.8	0.6	0.5	0.4	0.5	0.0
Without a needle ^l	1.1	1.4	1.1	0.9	1.4	1.3	0.8	0.9	0.7	0.7	0.6	0.4	0.6	+0.1
Narcotics other than Heroin ^{m,n}	13.4	13.1	13.2	13.2	13.0	13.0	12.2	11.1	9.5	8.4	7.8	6.8	6.0	-0.8
Amphetamines ^{b,m}	12.4	11.4	10.5	9.9	11.1	12.2	12.0	13.8	12.1	10.8	10.0	9.2	8.6	-0.6
Methamphetamine ^o	4.4	3.0	2.8	2.4	2.3	2.1	1.7	1.5	1.9	1.0	1.2	1.1	0.7	-0.4
Crystal Methamphetamine (Ice) ^o	3.4	3.4	2.8	2.1	1.8	2.1	1.7	2.0	1.3	1.2	1.4	1.5	1.1	-0.3

Table continued on next page.

TABLE 5-1 (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs in Grade 12

Percentage who ever used

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change
<i>Approximate weighted N =</i>	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Sedatives (Barbiturates) ^{m,p}	10.2	9.3	8.5	8.2	7.5	7.0	6.9	7.5	6.8	5.9	5.2	4.5	4.2	-0.3
Sedatives, Adjusted ^{m,q}	10.6	9.6	8.9	8.4	7.6	7.2	7.2	—	—	—	—	—	—	—
Methaqualone ^{m,r}	1.2	1.0	0.8	0.7	0.4	0.6	0.8	—	—	—	—	—	—	—
Tranquilizers ^{c,m}	10.3	9.5	8.9	9.3	8.5	8.7	8.5	7.7	7.4	6.9	7.6	7.5	6.6	-0.9
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s	72.7	72.2	71.9	72.3	71.0	70.0	69.4	68.2	66.0	64.0	61.2	61.5	58.5	-3.0 s
Been Drunk ^o	56.4	55.1	54.7	56.5	54.1	51.0	54.2	52.3	49.8	46.7	46.3	45.3	42.9	-2.4
Cigarettes	47.1	46.2	44.7	43.6	42.2	40.0	39.5	38.1	34.4	31.1	28.3	26.6	23.8	-2.8 s
Smokeless Tobacco ^{ft}	15.2	15.1	15.6	16.3	17.6	16.9	17.4	17.2	15.1	13.2	14.2	11.0	10.1	-0.9
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	35.5	33.8‡	35.8	42.5	+6.7 ss
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	25.0	34.0	+9.0 sss
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	11.9	15.6	+3.8 ss
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	30.7	34.1	+3.4
Steroids ^{m,u}	2.7	2.2	2.2	2.2	2.0	1.8	1.8	2.1	1.9	2.3	1.6	1.6	1.6	-0.1
Legal Use of Over-the-Counter Stimulants														
Diet Pills ^f	13.0	10.4	10.5	9.5	7.2	7.7	7.7	8.1	9.1	7.9	6.4	6.7	6.2	-0.5
Stay-Awake Pills ^f	14.8	12.3	9.6	7.6	6.4	6.3	5.9	5.2	4.5	3.8	3.6	3.8	3.6	-0.2
Look-Alikes ^f	5.7	4.6	5.2	4.3	2.6	3.5	2.9	2.7	2.2	3.3	2.3	2.6	—	—
Legal Use of Prescription ADHD Drugs														
Stimulant-Type ^{aa}	7.8	7.6	8.6	8.2	8.3	8.4	9.0	9.6	9.1	9.9	8.4	8.6	8.6	-0.0
Non-Stimulant-Type ^{aa}	6.1	7.0	6.4	5.4	6.7	5.8	5.9	5.4	5.6	5.6	5.8	6.4	6.1	-0.4
Either Type ^{aa}	11.7	12.1	13.1	11.0	12.7	12.2	12.7	13.2	12.6	13.7	12.7	13.0	12.7	-0.3

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 5-4.

TABLE 5-2
Trends in Annual Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Any Illicit Drug ^{a,b}	45.0	48.1	51.1	53.8	54.2	53.1	52.1	49.4	47.4	45.8	46.3	44.3	41.7	38.5	35.4	32.5
Any Illicit Drug other than Marijuana ^{a,b,c}	26.2	25.4	26.0	27.1	28.2	30.4	34.0	30.1	28.4	28.0	27.4	25.9	24.1	21.1	20.0	17.9
Marijuana/Hashish	40.0	44.5	47.6	50.2	50.8	48.8	46.1	44.3	42.3	40.0	40.6	38.8	36.3	33.1	29.6	27.0
Inhalants ^d	—	3.0	3.7	4.1	5.4	4.6	4.1	4.5	4.3	5.1	5.7	6.1	6.9	6.5	5.9	6.9
Inhalants, Adjusted ^{d,e}	—	—	—	—	8.9	7.9	6.1	6.6	6.2	7.2	7.5	8.9	8.1	7.1	6.9	7.5
Amyl/Butyl Nitrites ^{f,g}	—	—	—	—	6.5	5.7	3.7	3.6	3.6	4.0	4.0	4.7	2.6	1.7	1.7	1.4
Hallucinogens ^c	11.2	9.4	8.8	9.6	9.9	9.3	9.0	8.1	7.3	6.5	6.3	6.0	6.4	5.5	5.6	5.9
Hallucinogens, Adjusted ^{c,h}	—	—	—	—	11.8	10.4	10.1	9.0	8.3	7.3	7.6	7.6	6.7	5.8	6.2	6.0
LSD ^c	7.2	6.4	5.5	6.3	6.6	6.5	6.5	6.1	5.4	4.7	4.4	4.5	5.2	4.8	4.9	5.4
Hallucinogens other than LSD ^c	9.4	7.0	6.9	7.3	6.8	6.2	5.6	4.7	4.1	3.8	3.6	3.0	3.2	2.1	2.2	2.1
PCP ^{f,g}	—	—	—	—	7.0	4.4	3.2	2.2	2.6	2.3	2.9	2.4	1.3	1.2	2.4	1.2
Ecstasy (MDMA), original wording ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvia ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	5.6	6.0	7.2	9.0	12.0	12.3	12.4	11.5	11.4	11.6	13.1	12.7	10.3	7.9	6.5	5.3
Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	4.1	3.9	3.1	3.1	1.9
Cocaine other than Crack ^j	—	—	—	—	—	—	—	—	—	—	—	—	9.8	7.4	5.2	4.6
Heroin ^k	1.0	0.8	0.8	0.8	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.6	0.5
With a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Without a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Narcotics other than Heroin ^{m,n}	5.7	5.7	6.4	6.0	6.2	6.3	5.9	5.3	5.1	5.2	5.9	5.2	5.3	4.6	4.4	4.5
OxyContin ^{m,v}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vicodin ^{m,v}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Amphetamines ^{b,m}	16.2	15.8	16.3	17.1	18.3	20.8	26.0†	20.3	17.9	17.7	15.8	13.4	12.2	10.9	10.8	9.1
Ritalin ^{m,o}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Adderall ^{m,o}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Provigil ^{m,o}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3
Sedatives (Barbiturates) ^{m,p}	10.7	9.6	9.3	8.1	7.5	6.8	6.6	5.5	5.2	4.9	4.6	4.2	3.6	3.2	3.3	3.4
Sedatives, Adjusted ^{m,q}	11.7	10.7	10.8	9.9	9.9	10.3	10.5	9.1	7.9	6.6	5.8	5.2	4.1	3.7	3.7	3.6
Methaqualone ^{m,r}	5.1	4.7	5.2	4.9	5.9	7.2	7.6	6.8	5.4	3.8	2.8	2.1	1.5	1.3	1.3	0.7
Tranquilizers ^{c,m}	10.6	10.3	10.8	9.9	9.6	8.7	8.0	7.0	6.9	6.1	6.1	5.8	5.5	4.8	3.8	3.5
OTC Cough/Cold Medicines ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

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(List of drugs continued.)

TABLE 5-2 (cont.)
Trends in Annual Prevalence of Use of Various Drugs for Grade 12

Percentage who used in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
GHB ^w	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ketamine ^x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s	84.8	85.7	87.0	87.7	88.1	87.9	87.0	86.8	87.3	86.0	85.6	84.5	85.7	85.3	82.7	80.6
Been Drunk ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cigarettes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bidis ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kreteks ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smokeless Tobacco ^{t,t}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Nicotine ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Just Flavoring ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids ^{m,u}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.9	1.7
Androstenedione ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Creatine ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Legal Use of Over-the-Counter Stimulants																
Diet Pills ^f	—	—	—	—	—	—	—	20.5	20.5	18.8	16.9	15.3	13.9	12.2	10.9	10.4
Stay-Awake Pills ^f	—	—	—	—	—	—	—	11.8	12.3	13.9	18.2	22.2	25.2	26.4	23.0	23.4
Look-Alikes ^f	—	—	—	—	—	—	—	10.8	9.4	9.7	8.2	6.9	6.3	5.7	5.6	5.6

Table continued on next page.

TABLE 5-2 (cont.)
Trends in Annual Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 12 months

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Any Illicit Drug ^{a,b}	29.4	27.1	31.0	35.8	39.0	40.2	42.4	41.4	42.1	40.9	41.4	41.0	39.3	38.8	38.4
Any Illicit Drug other than Marijuana ^{a,b,c}	16.2	14.9	17.1	18.0	19.4	19.8	20.7	20.2	20.7	20.4‡	21.6	20.9	19.8	20.5	19.7
Marijuana/Hashish	23.9	21.9	26.0	30.7	34.7	35.8	38.5	37.5	37.8	36.5	37.0	36.2	34.9	34.3	33.6
Inhalants ^d	6.6	6.2	7.0	7.7	8.0	7.6	6.7	6.2	5.6	5.9	4.5	4.5	3.9	4.2	5.0
Inhalants, Adjusted ^{d,e}	6.9	6.4	7.4	8.2	8.4	8.5	7.3	7.1	6.0	6.2	4.9	4.9	4.5	4.6	5.4
Amyl/Butyl Nitrites ^{f,g}	0.9	0.5	0.9	1.1	1.1	1.6	1.2	1.4	0.9	0.6	0.6	1.1	0.9	0.8	0.6
Hallucinogens ^c	5.8	5.9	7.4	7.6	9.3	10.1	9.8	9.0	9.4	8.1‡	9.1	6.6	5.9	6.2	5.5
Hallucinogens, Adjusted ^{c,h}	6.1	6.2	7.8	7.8	9.7	10.7	10.0	9.2	9.8	8.7‡	9.7	7.2	6.5	6.4	5.9
LSD ^c	5.2	5.6	6.8	6.9	8.4	8.8	8.4	7.6	8.1	6.6	6.6	3.5	1.9	2.2	1.8
Hallucinogens other than LSD ^c	2.0	1.7	2.2	3.1	3.8	4.4	4.6	4.6	4.3	4.4‡	5.9	5.4	5.4	5.6	5.0
PCP ^{f,g}	1.4	1.4	1.4	1.6	1.8	2.6	2.3	2.1	1.8	2.3	1.8	1.1	1.3	0.7	1.3
Ecstasy (MDMA), original wording ^f	—	—	—	—	—	4.6	4.0	3.6	5.6	8.2	9.2	7.4	4.5	4.0	3.0
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvia ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	3.5	3.1	3.3	3.6	4.0	4.9	5.5	5.7	6.2	5.0	4.8	5.0	4.8	5.3	5.1
Crack ⁱ	1.5	1.5	1.5	1.9	2.1	2.1	2.4	2.5	2.7	2.2	2.1	2.3	2.2	2.3	1.9
Cocaine other than Crack ^j	3.2	2.6	2.9	3.0	3.4	4.2	5.0	4.9	5.8	4.5	4.4	4.4	4.2	4.7	4.5
Heroin ^k	0.4	0.6	0.5	0.6	1.1	1.0	1.2	1.0	1.1	1.5	0.9	1.0	0.8	0.9	0.8
With a needle ^l	—	—	—	—	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5
Without a needle ^l	—	—	—	—	1.0	1.0	1.2	0.8	1.0	1.6	0.8	0.8	0.8	0.7	0.8
Narcotics other than Heroin ^{m,n}	3.5	3.3	3.6	3.8	4.7	5.4	6.2	6.3	6.7	7.0	6.7‡	9.4	9.3	9.5	9.0
OxyContin ^{m,v}	—	—	—	—	—	—	—	—	—	—	—	4.0	4.5	5.0	5.5
Vicodin ^{m,v}	—	—	—	—	—	—	—	—	—	—	—	9.6	10.5	9.3	9.5
Amphetamines ^{b,m}	8.2	7.1	8.4	9.4	9.3	9.5	10.2	10.1	10.2	10.5	10.9	11.1	9.9	10.0	8.6
Ritalin ^{m,o}	—	—	—	—	—	—	—	—	—	—	5.1	4.0	4.0	5.1	4.4
Adderall ^{m,o}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Provigil ^{m,o}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine ^o	—	—	—	—	—	—	—	—	4.7	4.3	3.9	3.6	3.2	3.4	2.5
Crystal Methamphetamine (Ice) ^o	1.4	1.3	1.7	1.8	2.4	2.8	2.3	3.0	1.9	2.2	2.5	3.0	2.0	2.1	2.3
Sedatives (Barbiturates) ^{m,p}	3.4	2.8	3.4	4.1	4.7	4.9	5.1	5.5	5.8	6.2	5.7	6.7	6.0	6.5	7.2
Sedatives, Adjusted ^{m,q}	3.6	2.9	3.4	4.2	4.9	5.3	5.4	6.0	6.3	6.3	5.9	7.0	6.2	6.6	7.6
Methaqualone ^{m,r}	0.5	0.6	0.2	0.8	0.7	1.1	1.0	1.1	1.1	0.3	0.8	0.9	0.6	0.8	0.9
Tranquilizers ^{c,m}	3.6	2.8	3.5	3.7	4.4	4.6	4.7	5.5	5.8	5.7‡	6.9	7.7	6.7	7.3	6.8
OTC Cough/Cold Medicines ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rohypnol ^f	—	—	—	—	—	1.1	1.2	1.4	1.0	0.8	0.9‡	1.6	1.3	1.6	1.2

Table continued on next page.

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(List of drugs continued.)

TABLE 5-2 (cont.)
Trends in Annual Prevalence of Use of Various Drugs for Grade 12

	Percentage who used in last 12 months															
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700	
GHB ^w	—	—	—	—	—	—	—	—	—	1.9	1.6	1.5	1.4	2.0	1.1	
Ketamine ^x	—	—	—	—	—	—	—	—	—	2.5	2.5	2.6	2.1	1.9	1.6	
Alcohol ^s	77.7	76.8†	72.7	73.0	73.7	72.5	74.8	74.3	73.8	73.2	73.3	71.5	70.1	70.6	68.6	
Been Drunk ^o	52.7	50.3	49.6	51.7	52.5	51.9	53.2	52.0	53.2	51.8	53.2	50.4	48.0	51.8	47.7	
Cigarettes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Bidis ^o	—	—	—	—	—	—	—	—	—	9.2	7.0	5.9	4.0	3.6	3.3	
Kreteks ^o	—	—	—	—	—	—	—	—	—	—	10.1	8.4	6.7	6.5	7.1	
Smokeless Tobacco ^{†t}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vaping Nicotine ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vaping Marijuana ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vaping Just Flavoring ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Steroids ^{m,u}	1.4	1.1	1.2	1.3	1.5	1.4	1.4	1.7	1.8	1.7	2.4	2.5	2.1	2.5	1.5	
Androstenedione ^y	—	—	—	—	—	—	—	—	—	—	3.0	2.5	2.5	2.1	1.7	
Creatine ^y	—	—	—	—	—	—	—	—	—	—	11.7	8.5	8.3	8.1	8.1	
Legal Use of Over-the-Counter Stimulants																
Diet Pills ^f	8.8	8.4	8.0	9.3	9.8	9.3	9.8	9.6	10.2	11.1	11.8	15.1	13.0	10.7	10.0	
Stay-Awake Pills ^f	22.2	20.4	19.1	20.7	20.3	19.0	19.7	19.0	15.7	15.0	17.3	14.9	12.5	11.8	10.4	
Look-Alikes ^f	5.2	5.4	6.2	6.0	6.8	6.5	6.4	5.7	5.0	5.8	7.1	6.6	5.4	5.0	4.2	

Table continued on next page.

TABLE 5-2 (cont.)
Trends in Annual Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 12 months

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
<i>Approximate weighted N =</i>														
	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Any Illicit Drug ^{a,b}	36.5	35.9	36.6	36.5	38.3	40.0	39.7	40.1	38.7	38.6	38.3	39.9	38.8	-1.1
Any Illicit Drug other than Marijuana ^{a,b,c}	19.2	18.5	18.3	17.0	17.3	17.6	17.0	17.8	15.9	15.2	14.3	13.3	12.4	-0.9
Marijuana/Hashish	31.5	31.7	32.4	32.8	34.8	36.4	36.4	36.4	35.1	34.9	35.6	37.1	35.9	-1.2
Inhalants ^d	4.5	3.7	3.8	3.4	3.6	3.2	2.9	2.5	1.9	1.9	1.7	1.5	1.6	+0.1
Inhalants, Adjusted ^{d,e}	4.7	4.1	4.0	4.1	—	—	—	—	—	—	—	—	—	—
Amyl/Butyl Nitrites ^{f,g}	0.5	0.8	0.6	0.9	—	—	—	—	—	—	—	—	—	—
Hallucinogens ^c	4.9	5.4	5.9	4.7	5.5	5.2	4.8	4.5	4.0	4.2	4.3	4.4	4.3	-0.2
Hallucinogens, Adjusted ^{c,h}	5.3	5.8	6.1	5.2	6.0	5.8	5.0	4.9	—	—	—	—	—	—
LSD ^c	1.7	2.1	2.7	1.9	2.6	2.7	2.4	2.2	2.5	2.9	3.0	3.3	3.2	-0.2
Hallucinogens other than LSD ^c	4.6	4.8	5.0	4.2	4.8	4.3	4.0	3.7	3.0	2.9	2.7	2.9	2.7	-0.2
PCP ^{f,g}	0.7	0.9	1.1	1.0	1.0	1.3	0.9	0.7	0.8	1.4	1.3	1.0	1.1	+0.1
Ecstasy (MDMA), original wording ^f	4.1	4.5	4.3	4.3	4.5	5.3	3.8	4.0	3.6	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	5.0	3.6	2.7	2.6	2.2	-0.4
Salvia ^o	—	—	—	5.7	5.5	5.9	4.4	3.4	1.8	1.9	1.8	1.5	0.9	-0.6
Cocaine	5.7	5.2	4.4	3.4	2.9	2.9	2.7	2.6	2.6	2.5	2.3	2.7	2.3	-0.4
Crack ⁱ	2.1	1.9	1.6	1.3	1.4	1.0	1.2	1.1	1.1	1.1	0.8	1.0	0.9	-0.1
Cocaine other than Crack ⁱ	5.2	4.5	4.0	3.0	2.6	2.6	2.4	2.4	2.4	2.1	2.0	2.3	2.0	-0.4
Heroin ^k	0.8	0.9	0.7	0.7	0.9	0.8	0.6	0.6	0.6	0.5	0.3	0.4	0.4	0.0
With a needle ^l	0.5	0.4	0.4	0.3	0.7	0.6	0.4	0.4	0.5	0.3	0.3	0.2	0.3	+0.1
Without a needle ^l	0.6	1.0	0.5	0.6	0.8	0.7	0.4	0.4	0.5	0.4	0.3	0.2	0.2	0.0
Narcotics other than Heroin ^{m,n}	9.0	9.2	9.1	9.2	8.7	8.7	7.9	7.1	6.1	5.4	4.8	4.2	3.4	-0.8 s
OxyContin ^{m,v}	4.3	5.2	4.7	4.9	5.1	4.9	4.3	3.6	3.3	3.7	3.4	2.7	2.3	-0.4
Vicodin ^{m,v}	9.7	9.6	9.7	9.7	8.0	8.1	7.5	5.3	4.8	4.4	2.9	2.0	1.7	-0.2
Amphetamines ^{b,m}	8.1	7.5	6.8	6.6	7.4	8.2	7.9	9.2	8.1	7.7	6.7	5.9	5.5	-0.4
Ritalin ^{m,o}	4.4	3.8	3.4	2.1	2.7	2.6	2.6	2.3	1.8	2.0	1.2	1.3	0.9	-0.4
Adderall ^{m,o}	—	—	—	5.4	6.5	6.5	7.6	7.4	6.8	7.5	6.2	5.5	4.6	-1.0
Provigil ^{m,o}	—	—	—	1.8	1.3	1.5	—	—	—	—	—	—	—	—
Methamphetamine ^o	2.5	1.7	1.2	1.2	1.0	1.4	1.1	0.9	1.0	0.6	0.6	0.6	0.5	-0.1
Crystal Methamphetamine (Ice) ^o	1.9	1.6	1.1	0.9	0.9	1.2	0.8	1.1	0.8	0.5	0.8	0.8	0.6	-0.2
Sedatives (Barbiturates) ^{m,p}	6.6	6.2	5.8	5.2	4.8	4.3	4.5	4.8	4.3	3.6	3.0	2.9	2.7	-0.3
Sedatives, Adjusted ^{m,q}	6.8	6.4	6.1	5.4	5.0	4.4	4.5	—	—	—	—	—	—	—
Methaqualone ^{m,r}	0.8	0.5	0.5	0.6	0.3	0.3	0.4	—	—	—	—	—	—	—
Tranquilizers ^{c,m}	6.6	6.2	6.2	6.3	5.6	5.6	5.3	4.6	4.7	4.7	4.9	4.7	3.9	-0.8 s
OTC Cough/Cold Medicines ^o	6.9	5.8	5.5	5.9	6.6	5.3	5.6	5.0	4.1	4.6	4.0	3.2	3.4	+0.2
Rohypnol ^f	1.1	1.0	1.3	1.0	1.5	1.3	1.5	0.9	0.7	1.0	1.1	0.8	0.7	0.0

Table continued on next page.

↓
(List of drugs continued.)

TABLE 5-2 (cont.)
Trends in Annual Prevalence of Use of Various Drugs in Grade 12

	Percentage who used in last 12 months													
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change
<i>Approximate weighted N =</i>	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
GHB ^w	1.1	0.9	1.2	1.1	1.4	1.4	1.4	1.0	1.0	0.7	0.9	0.4	0.3	-0.1
Ketamine ^x	1.4	1.3	1.5	1.7	1.6	1.7	1.5	1.4	1.5	1.4	1.2	1.2	0.7	-0.4
Alcohol ^s	66.5	66.4	65.5	66.2	65.2	63.5	63.5	62.0	60.2	58.2	55.6	55.7	53.3	-2.4
Been Drunk ^o	47.9	46.1	45.6	47.0	44.0	42.2	45.0	43.5	41.4	37.7	37.3	35.6	33.9	-1.7
Cigarettes	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bidis ^o	2.3	1.7	1.9	1.5	1.4	—	—	—	—	—	—	—	—	—
Kreteks ^o	6.2	6.8	6.8	5.5	4.6	2.9	3.0	1.6	1.6	—	—	—	—	—
Smokeless Tobacco ^{ft}	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Vaping ^y	—	—	—	—	—	—	—	—	—	—	—	27.8	37.3	+9.4 sss
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	18.8	29.7	+10.9 sss
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	9.5	13.1	+3.6 sss
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	20.6	25.7	+5.2 ss
Steroids ^{m,u}	1.8	1.4	1.5	1.5	1.5	1.2	1.3	1.5	1.5	1.7	1.0	1.1	1.1	+0.1
Androstenedione ^y	1.1	0.9	1.3	1.1	1.5	0.7	1.0	0.7	1.1	0.9	0.9	0.6	0.5	0.0
Creatine ^y	7.8	8.0	8.3	9.1	9.2	8.6	9.5	9.3	10.0	8.8	9.0	8.1	9.3	+1.2
Legal Use of Over-the-Counter Stimulants														
Diet Pills ^f	9.4	6.7	7.2	6.1	4.3	4.9	5.5	5.3	6.4	5.1	4.5	4.0	3.5	-0.4
Stay-Awake Pills ^f	10.0	7.6	6.3	4.8	3.2	3.9	3.8	3.2	3.5	2.7	2.5	2.5	2.4	0.0
Look-Alikes ^f	3.7	2.8	3.1	2.6	1.7	2.2	2.1	1.7	1.4	2.3	1.6	1.5	—	—

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 5-4.

TABLE 5-3
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 30 days

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Any Illicit Drug ^{a,b}	30.7	34.2	37.6	38.9	38.9	37.2	36.9	32.5	30.5	29.2	29.7	27.1	24.7	21.3	19.7	17.2
Any Illicit Drug other than Marijuana ^{a,b,c}	15.4	13.9	15.2	15.1	16.8	18.4	21.7	17.0	15.4	15.1	14.9	13.2	11.6	10.0	9.1	8.0
Marijuana/Hashish	27.1	32.2	35.4	37.1	36.5	33.7	31.6	28.5	27.0	25.2	25.7	23.4	21.0	18.0	16.7	14.0
Inhalants ^d	—	0.9	1.3	1.5	1.7	1.4	1.5	1.5	1.7	1.9	2.2	2.5	2.8	2.6	2.3	2.7
Inhalants, Adjusted ^{d,e}	—	—	—	—	3.2	2.7	2.5	2.5	2.5	2.6	3.0	3.2	3.5	3.0	2.7	2.9
Amyl/Butyl Nitrites ^{f,g}	—	—	—	—	2.4	1.8	1.4	1.1	1.4	1.4	1.6	1.3	1.3	0.6	0.6	0.6
Hallucinogens ^c	4.7	3.4	4.1	3.9	4.0	3.7	3.7	3.4	2.8	2.6	2.5	2.5	2.5	2.2	2.2	2.2
Hallucinogens, Adjusted ^{c,h}	—	—	—	—	5.3	4.4	4.5	4.1	3.5	3.2	3.8	3.5	2.8	2.3	2.9	2.3
LSD ^c	2.3	1.9	2.1	2.1	2.4	2.3	2.5	2.4	1.9	1.5	1.6	1.7	1.8	1.8	1.8	1.9
Hallucinogens other than LSD ^c	3.7	2.3	3.0	2.7	2.4	2.3	2.1	1.7	1.5	1.6	1.3	1.3	1.1	0.7	0.8	0.8
PCP ^{f,g}	—	—	—	—	2.4	1.4	1.4	1.0	1.3	1.0	1.6	1.3	0.6	0.3	1.4	0.4
Ecstasy (MDMA), original wording ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	1.9	2.0	2.9	3.9	5.7	5.2	5.8	5.0	4.9	5.8	6.7	6.2	4.3	3.4	2.8	1.9
Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	1.3	1.6	1.4	0.7
Cocaine other than Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	4.1	3.2	1.9	1.7
Heroin ^k	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2
With a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Without a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Narcotics other than Heroin ^{m,n}	2.1	2.0	2.8	2.1	2.4	2.4	2.1	1.8	1.8	1.8	2.3	2.0	1.8	1.6	1.6	1.5
Amphetamines ^{b,m}	8.5	7.7	8.8	8.7	9.9	12.1	15.8†	10.7	8.9	8.3	6.8	5.5	5.2	4.6	4.2	3.7
Methamphetamine ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.6

Table continued on next page.

TABLE 5-3 (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 30 days

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Sedatives (Barbiturates) ^{m,p}	4.7	3.9	4.3	3.2	3.2	2.9	2.6	2.0	2.1	1.7	2.0	1.8	1.4	1.2	1.4	1.3
Sedatives, Adjusted ^{m,q}	5.4	4.5	5.1	4.2	4.4	4.8	4.6	3.4	3.0	2.3	2.4	2.2	1.7	1.4	1.6	1.4
Methaqualone ^{m,r}	2.1	1.6	2.3	1.9	2.3	3.3	3.1	2.4	1.8	1.1	1.0	0.8	0.6	0.5	0.6	0.2
Tranquilizers ^{c,m}	4.1	4.0	4.6	3.4	3.7	3.1	2.7	2.4	2.5	2.1	2.1	2.1	2.0	1.5	1.3	1.2
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s	68.2	68.3	71.2	72.1	71.8	72.0	70.7	69.7	69.4	67.2	65.9	65.3	66.4	63.9	60.0	57.1
Been Drunk ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cigarettes	36.7	38.8	38.4	36.7	34.4	30.5	29.4	30.0	30.3	29.3	30.1	29.6	29.4	28.7	28.6	29.4
Smokeless Tobacco ^{ft}	—	—	—	—	—	—	—	—	—	—	—	11.5	11.3	10.3	8.4	—
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Nicotine Use ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Nicotine Use other than Vaping ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids ^{m,u}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.8	1.0
Legal Use of Over-the-Counter Stimulants																
Diet Pills ^f	—	—	—	—	—	—	—	9.8	9.5	9.9	7.3	6.5	5.8	5.1	4.8	4.3
Stay-Awake Pills ^f	—	—	—	—	—	—	—	5.5	5.3	5.8	7.2	9.6	9.2	9.8	8.5	7.3
Look-Alikes ^f	—	—	—	—	—	—	—	5.6	5.2	4.4	3.6	3.4	2.7	2.7	2.4	2.3
Legal Use of Prescription ADHD Drugs																
Stimulant-Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Non-Stimulant-Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Either Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

TABLE 5-3 (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 30 days

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Any Illicit Drug ^{a,b}	16.4	14.4	18.3	21.9	23.8	24.6	26.2	25.6	25.9	24.9	25.7	25.4	24.1	23.4	23.1
Any Illicit Drug other than Marijuana ^{a,b,c}	7.1	6.3	7.9	8.8	10.0	9.5	10.7	10.7	10.4	10.4†	11.0	11.3	10.4	10.8	10.3
Marijuana/Hashish	13.8	11.9	15.5	19.0	21.2	21.9	23.7	22.8	23.1	21.6	22.4	21.5	21.2	19.9	19.8
Inhalants ^d	2.4	2.3	2.5	2.7	3.2	2.5	2.5	2.3	2.0	2.2	1.7	1.5	1.5	1.5	2.0
Inhalants, Adjusted ^{d,e}	2.6	2.5	2.8	2.9	3.5	2.9	2.9	3.1	2.4	2.4	2.1	1.8	2.3	1.9	2.3
Amyl/Butyl Nitrites ^{f,g}	0.4	0.3	0.6	0.4	0.4	0.7	0.7	1.0	0.4	0.3	0.5	0.6	0.7	0.7	0.5
Hallucinogens ^c	2.2	2.1	2.7	3.1	4.4	3.5	3.9	3.8	3.5	2.6‡	3.3	2.3	1.8	1.9	1.9
Hallucinogens, Adjusted ^{c,h}	2.4	2.3	3.3	3.2	4.6	3.8	4.1	4.1	3.9	3.0‡	3.5	2.7	2.7	2.2	2.5
LSD ^c	1.9	2.0	2.4	2.6	4.0	2.5	3.1	3.2	2.7	1.6	2.3	0.7	0.6	0.7	0.7
Hallucinogens other than LSD ^c	0.7	0.5	0.8	1.2	1.3	1.6	1.7	1.6	1.6	1.7‡	1.9	2.0	1.5	1.7	1.6
PCP ^{f,g}	0.5	0.6	1.0	0.7	0.6	1.3	0.7	1.0	0.8	0.9	0.5	0.4	0.6	0.4	0.7
Ecstasy (MDMA), original wording ^f	—	—	—	—	—	2.0	1.6	1.5	2.5	3.6	2.8	2.4	1.3	1.2	1.0
Revised, includes "Molly" ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	1.4	1.3	1.3	1.5	1.8	2.0	2.3	2.4	2.6	2.1	2.1	2.3	2.1	2.3	2.3
Crack ⁱ	0.7	0.6	0.7	0.8	1.0	1.0	0.9	1.0	1.1	1.0	1.1	1.2	0.9	1.0	1.0
Cocaine other than Crack ^j	1.2	1.0	1.2	1.3	1.3	1.6	2.0	2.0	2.5	1.7	1.8	1.9	1.8	2.2	2.0
Heroin ^k	0.2	0.3	0.2	0.3	0.6	0.5	0.5	0.5	0.5	0.7	0.4	0.5	0.4	0.5	0.5
With a needle ^l	—	—	—	—	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3
Without a needle ^l	—	—	—	—	0.6	0.4	0.6	0.4	0.4	0.7	0.3	0.5	0.4	0.3	0.5
Narcotics other than Heroin ^{m,n}	1.1	1.2	1.3	1.5	1.8	2.0	2.3	2.4	2.6	2.9	3.0‡	4.0	4.1	4.3	3.9
Amphetamines ^{b,m}	3.2	2.8	3.7	4.0	4.0	4.1	4.8	4.6	4.5	5.0	5.6	5.5	5.0	4.6	3.9
Methamphetamine ^o	—	—	—	—	—	—	—	—	1.7	1.9	1.5	1.7	1.7	1.4	0.9
Crystal Methamphetamine (Ice) ^o	0.6	0.5	0.6	0.7	1.1	1.1	0.8	1.2	0.8	1.0	1.1	1.2	0.8	0.8	0.9

Table continued on next page.

TABLE 5-3 (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 30 days

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Sedatives (Barbiturates) ^{m,p}	1.4	1.1	1.3	1.7	2.2	2.1	2.1	2.6	2.6	3.0	2.8	3.2	2.9	2.9	3.3
Sedatives, Adjusted ^{m,q}	1.5	1.2	1.3	1.8	2.3	2.3	2.1	2.8	2.8	3.1	3.0	3.4	3.0	2.9	3.5
Methaqualone ^{m,r}	0.2	0.4	0.1	0.4	0.4	0.6	0.3	0.6	0.4	0.2	0.5	0.3	0.4	0.5	0.5
Tranquilizers ^{c,m}	1.4	1.0	1.2	1.4	1.8	2.0	1.8	2.4	2.5	2.6†	2.9	3.3	2.8	3.1	2.9
Rohypnol ^f	—	—	—	—	—	0.5	0.3	0.3	0.3	0.4	0.3	—	—	—	—
Alcohol ^s	54.0	51.3‡	48.6	50.1	51.3	50.8	52.7	52.0	51.0	50.0	49.8	48.6	47.5	48.0	47.0
Been Drunk ^o	31.6	29.9	28.9	30.8	33.2	31.3	34.2	32.9	32.9	32.3	32.7	30.3	30.9	32.5	30.2
Cigarettes	28.3	27.8	29.9	31.2	33.5	34.0	36.5	35.1	34.6	31.4	29.5	26.7	24.4	25.0	23.2
Smokeless Tobacco ^{f,t}	—	11.4	10.7	11.1	12.2	9.8	9.7	8.8	8.4	7.6	7.8	6.5	6.7	6.7	7.6
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Nicotine Use ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Nicotine Use other than Vaping ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids ^{m,u}	0.8	0.6	0.7	0.9	0.7	0.7	1.0	1.1	0.9	0.8	1.3	1.4	1.3	1.6	0.9
Legal Use of Over-the-Counter Stimulants															
Diet Pills ^f	3.7	4.0	3.8	4.2	3.8	4.3	4.6	4.8	5.4	5.8	6.3	9.2	6.5	5.6	4.4
Stay-Awake Pills ^f	6.8	7.2	7.0	6.3	7.3	7.5	7.8	7.4	6.8	7.3	7.2	5.8	5.0	4.5	4.2
Look-Alikes ^f	2.1	2.4	2.7	2.4	3.0	3.1	2.7	2.7	2.4	2.6	3.3	2.8	2.4	2.5	1.9
Current, Legal Use of Prescription ADHD Drugs															
Stimulant-Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.9
Non-Stimulant-Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6
Either Type ^{aa,bb}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5

Table continued on next page.

TABLE 5-3 (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

Percentage who used in last 30 days

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
<i>Approximate weighted N =</i>														
	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Any Illicit Drug ^{a,b}	21.5	21.9	22.3	23.3	23.8	25.2	25.2	25.2	23.7	23.6	24.4	24.9	24.0	-0.9
Any Illicit Drug other than Marijuana ^{a,b,c}	9.8	9.5	9.3	8.6	8.6	8.9	8.4	8.2	7.7	7.6	6.9	6.3	6.0	-0.3
Marijuana/Hashish	18.3	18.8	19.4	20.6	21.4	22.6	22.9	22.7	21.2	21.3	22.5	22.9	22.2	-0.7
Inhalants ^d	1.5	1.2	1.4	1.2	1.4	1.0	0.9	1.0	0.7	0.7	0.8	0.8	0.7	-0.2
Inhalants, Adjusted ^{d,e}	1.7	1.6	1.5	1.8	—	—	—	—	—	—	—	—	—	—
Amyl/Butyl Nitrites ^{f,g}	0.3	0.5	0.3	0.6	—	—	—	—	—	—	—	—	—	—
Hallucinogens ^c	1.5	1.7	2.2	1.6	1.9	1.6	1.6	1.4	1.5	1.6	1.4	1.6	1.4	-0.1
Hallucinogens, Adjusted ^{c,h}	1.8	2.1	2.6	1.9	2.2	2.3	1.8	1.9	—	—	—	—	—	—
LSD ^c	0.6	0.6	1.1	0.5	0.8	0.8	0.8	0.8	1.0	1.1	1.0	0.3	0.4	+0.1
Hallucinogens other than LSD ^c	1.3	1.4	1.6	1.4	1.5	1.2	1.3	1.0	1.0	0.9	0.7	1.0	0.9	-0.1
PCP ^{f,g}	0.4	0.5	0.6	0.5	0.8	0.8	0.5	0.4	—	—	—	—	—	—
Ecstasy (MDMA), original wording ⁱ	1.3	1.6	1.8	1.8	1.4	2.3	0.9	1.5	1.4	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	1.5	1.1	0.9	0.9	0.5	-0.4 s
Cocaine	2.5	2.0	1.9	1.3	1.3	1.1	1.1	1.1	1.0	1.1	0.9	1.2	1.1	0.0
Crack ⁱ	0.9	0.9	0.8	0.6	0.7	0.5	0.6	0.6	0.7	0.6	0.5	0.6	0.5	-0.1
Cocaine other than Crack ⁱ	2.4	1.7	1.7	1.1	1.1	1.0	1.0	0.9	0.9	1.1	0.6	1.1	1.0	-0.1
Heroin ^k	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.3	0.2	-0.1
With a needle ^l	0.3	0.2	0.2	0.1	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	+0.0
Without a needle ^l	0.3	0.4	0.2	0.3	0.4	0.4	0.2	0.2	0.4	0.3	0.1	0.2	0.1	0.0
Narcotics other than Heroin ^{m,n}	3.8	3.8	3.8	4.1	3.6	3.6	3.0	2.8	2.2	2.1	1.7	1.6	1.1	-0.5 ss
Amphetamines ^{b,m}	3.7	3.7	2.9	3.0	3.3	3.7	3.3	4.2	3.8	3.2	3.0	2.6	2.4	-0.2
Methamphetamine ^o	0.9	0.6	0.6	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.0
Crystal Methamphetamine (Ice) ^o	0.7	0.6	0.6	0.5	0.6	0.6	0.4	0.8	0.4	0.3	0.4	0.5	0.4	-0.1

Table continued on next page.

TABLE 5-3 (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs in Grade 12

	Percentage who used in last 30 days													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
<i>Approximate weighted N =</i>														
	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Sedatives (Barbiturates) ^{m,p}	3.0	2.7	2.8	2.5	2.2	1.8	2.0	2.2	2.0	1.7	1.5	1.4	1.2	-0.2
Sedatives, Adjusted ^{m,q}	3.1	2.8	2.9	2.6	2.2	1.9	2.1	—	—	—	—	—	—	—
Methaqualone ^{m,r}	0.4	0.4	0.2	0.3	0.2	0.2	0.3	—	—	—	—	—	—	—
Tranquilizers ^{c,m}	2.7	2.6	2.6	2.7	2.5	2.3	2.1	2.0	2.1	2.0	1.9	2.0	1.3	-0.7 ss
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s	45.3	44.4	43.1	43.5	41.2	40.0	41.5	39.2	37.4	35.3	33.2	33.2	30.2	-3.0 s
Been Drunk ^o	30.0	28.7	27.6	27.4	26.8	25.0	28.1	26.0	23.5	20.6	20.4	19.1	17.5	-1.6
Cigarettes	21.6	21.6	20.4	20.1	19.2	18.7	17.1	16.3	13.6	11.4	10.5	9.7	7.6	-2.0 ss
Smokeless Tobacco ^{f,t}	6.1	6.6	6.5	8.4	8.5	8.3	7.9	8.1	8.4	6.1	6.6	4.9	4.2	-0.8
Any Vaping ^{y,z}	—	—	—	—	—	—	—	—	—	16.3	12.5‡	16.6	26.7	+9.9 sss
Vaping Nicotine ^y	—	—	—	—	—	—	—	—	—	—	—	11.0	20.9	+10.0 sss
Vaping Marijuana ^y	—	—	—	—	—	—	—	—	—	—	—	4.9	7.5	+2.5 sss
Vaping Just Flavoring ^y	—	—	—	—	—	—	—	—	—	—	—	9.7	13.5	+3.8 sss
Any Nicotine Use ^f	—	—	—	—	—	—	—	—	—	—	—	25.6	32.5	+6.9 ss
Any Nicotine Use other than Vaping ^f	—	—	—	—	—	—	—	—	—	—	—	20.6	18.5	-2.1
Steroids ^{m,u}	1.1	1.0	1.0	1.0	1.1	0.7	0.9	1.0	0.9	1.0	0.7	0.8	0.8	+0.0
Legal Use of Over-the-Counter Stimulants														
Diet Pills ^f	5.3	3.8	3.7	2.6	2.1	2.4	3.4	2.4	3.6	2.1	2.1	2.4	1.9	-0.4
Stay-Awake Pills ^f	4.2	3.3	2.6	2.3	1.6	2.2	1.9	1.5	1.7	1.2	1.7	1.6	1.2	-0.4
Look-Alikes ^f	2.3	1.1	1.6	1.0	0.8	1.2	0.8	0.7	0.7	0.9	0.9	0.8	—	—
Current, Legal Use of Prescription ADHD Drugs														
Stimulant-Type ^{aa,bb}	2.3	2.6	2.9	2.9	3.0	3.3	3.8	4.4	3.8	4.0	3.9	3.4	3.5	0.0
Non-Stimulant-Type ^{aa,bb}	1.6	1.7	1.9	1.5	2.3	1.9	1.8	1.8	2.2	1.5	2.1	2.5	2.6	+0.1
Either Type ^{aa,bb}	3.7	4.1	4.4	4.3	5.2	5.1	5.5	6.0	5.5	5.3	5.6	5.7	5.9	+0.1

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 5-4.

TABLE 5-4
Trends in 30-Day Prevalence of Daily Use of Various Drugs in Grade 12

Percentage who used daily in last 30 days

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Approximate weighted N =</i>																
	9,400	15,400	17,100	17,800	15,500	15,900	17,500	17,700	16,300	15,900	16,000	15,200	16,300	16,300	16,700	15,200
Marijuana/Hashish																
Used Daily in Past 30 Days	6.0	8.2	9.1	10.7	10.3	9.1	7.0	6.3	5.5	5.0	4.9	4.0	3.3	2.7	2.9	2.2
Ever Used Daily for Month or More in Lifetime ^f	—	—	—	—	—	—	—	20.5	16.8	16.3	15.6	14.9	14.7	12.8	11.5	10.0
Inhalants ^d	—	*	*	0.1	*	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.3
Inhalants, Adjusted ^{d,e}	—	—	—	—	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.3
Amyl/Butyl Nitrites ^{f,g}	—	—	—	—	*	0.1	0.1	0.0	0.2	0.1	0.3	0.5	0.3	0.1	0.3	0.1
Hallucinogens ^c	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*	0.1	0.1
Hallucinogens, Adjusted ^{c,h}	—	—	—	—	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.2	*	0.3	0.3
LSD ^c	*	*	*	*	*	*	0.1	*	0.1	0.1	0.1	*	0.1	*	*	0.1
Hallucinogens other than LSD ^c	—	0.1	0.1	*	*	*	0.1	*	*	0.1	*	*	*	*	*	*
PCP ^{f,g}	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.1	0.2	0.1
Ecstasy (MDMA), original wording	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.4	0.4	0.3	0.2	0.3	0.1
Crack ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	0.1	0.1	0.2	0.1
Cocaine other than Crack ^j	—	—	—	—	—	—	—	—	—	—	—	—	0.2	0.2	0.1	0.1
Heroin ^k	0.1	*	*	*	*	*	*	*	0.1	*	*	*	*	*	0.1	*
With a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Without a needle ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Narcotics other than Heroin ^{m,n}	0.1	0.1	0.2	0.1	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Amphetamines ^{b,m}	0.5	0.4	0.5	0.5	0.6	0.7	1.2†	0.7	0.8	0.6	0.4	0.3	0.3	0.3	0.3	0.2
Methamphetamine ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.1
Sedatives (Barbiturates) ^{m,p}	0.1	0.1	0.2	0.1	*	0.1	0.1	0.1	0.1	*	0.1	0.1	0.1	*	0.1	0.1
Sedatives, Adjusted ^{m,q}	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Methaqualone ^{m,r}	*	*	*	*	*	0.1	0.1	0.1	*	*	*	*	*	0.1	*	*
Tranquilizers ^{c,m}	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*	*	0.1	*	0.1	0.1
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s																
Daily ^s	5.7	5.6	6.1	5.7	6.9	6.0	6.0	5.7	5.5	4.8	5.0	4.8	4.8	4.2	4.2	3.7
Been drunk daily ^o	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5+ drinks in a row in last 2 weeks	36.8	37.1	39.4	40.3	41.2	41.2	41.4	40.5	40.8	38.7	36.7	36.8	37.5	34.7	33.0	32.2
Cigarettes																
Daily	26.9	28.8	28.8	27.5	25.4	21.3	20.3	21.1	21.2	18.7	19.5	18.7	18.7	18.1	18.9	19.1
Half pack or more per day	17.9	19.2	19.4	18.8	16.5	14.3	13.5	14.2	13.8	12.3	12.5	11.4	11.4	10.6	11.2	11.3
Smokeless Tobacco ^{t,t}	—	—	—	—	—	—	—	—	—	—	—	4.7	5.1	4.3	3.3	—
Steroids ^{m,u}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.1	0.2

Table continued on next page.

TABLE 5-4 (cont.)
Trends in 30-Day Prevalence of Daily Use of Various Drugs in Grade 12

Percentage who used daily in last 30 days

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<i>Approximate weighted N =</i>	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700
Marijuana/Hashish															
Used Daily in Past 30 Days	2.0	1.9	2.4	3.6	4.6	4.9	5.8	5.6	6.0	6.0	5.8	6.0	6.0	5.6	5.0
Ever Used Daily for Month or More in Lifetime ^f	9.0	8.4	9.6	11.3	12.1	15.7	18.8	18.0	17.9	17.0	18.0	15.5	16.4	17.8	14.5
Inhalants ^d	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2
Inhalants, Adjusted ^{d,e}	0.5	0.2	0.2	—	—	0.4	0.2	0.9	0.3	0.3	0.1	0.3	0.4	0.4	0.3
Amyl/Butyl Nitrites ^{f,g}	0.2	0.1	0.1	0.2	0.2	0.4	0.1	0.3	0.2	*	0.1	0.3	0.2	0.2	0.2
Hallucinogens ^c	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.2†	0.2	0.1	0.1	0.2	0.1
Hallucinogens, Adjusted ^{c,h}	0.1	0.1	0.1	—	—	0.4	0.4	0.8	0.2	0.2†	0.2	0.4	0.5	0.4	0.3
LSD ^c	0.1	0.1	0.1	0.1	0.1	*	0.2	0.1	0.1	0.1	0.2	0.1	*	0.2	0.1
Hallucinogens other than LSD ^c	*	*	*	*	0.1	0.1	0.1	0.1	*	0.1†	0.1	*	0.1	0.1	*
PCP ^{f,g}	0.1	0.1	0.1	0.3	0.3	0.3	0.1	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.2
Ecstasy (MDMA), original wording	—	—	—	—	—	0.0	0.1	0.2	0.1	*	0.2	*	0.1	0.1	0.1
Revised, includes "Molly"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2
Crack ⁱ	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Cocaine other than Crack ^j	0.1	*	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Heroin ^k	*	*	*	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
With a needle ^l	—	—	—	—	0.1	0.2	0.1	*	*	*	*	0.1	0.1	*	0.1
Without a needle ^l	—	—	—	—	*	0.1	0.1	0.0	0.0	*	*	0.1	0.1	*	0.1
Narcotics other than Heroin ^{m,n}	0.1	*	*	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2†	0.3	0.2	0.3	0.2
Amphetamines ^{b,m}	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.7	0.5	0.3	0.4
Methamphetamine ^o	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.3	0.2	0.2	0.2
Crystal Methamphetamine (Ice) ^o	0.1	0.1	0.1	*	0.1	0.1	0.1	*	*	0.1	0.2	0.2	0.1	0.1	0.1
Sedatives (Barbiturates) ^{m,p}	0.1	*	0.1	*	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2
Sedatives, Adjusted ^{m,q}	0.1	0.1	0.1	*	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2
Methaqualone ^{m,r}	*	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Tranquilizers ^{c,m}	0.1	*	*	0.1	*	0.2	0.1	0.1	0.1	0.1†	0.1	0.2	0.2	0.2	0.2
Rohypnol ^t	—	—	—	—	—	0.1	0.0	0.1	0.1	0.1	*	—	—	—	—
Alcohol ^s															
Daily ^s	3.6	3.4†	3.4	2.9	3.5	3.7	3.9	3.9	3.4	2.9	3.6	3.5	3.2	2.8	3.1
Been drunk daily ^o	0.9	0.8	0.9	1.2	1.3	1.6	2.0	1.5	1.9	1.7	1.4	1.2	1.6	1.8	1.5
5+ drinks in a row in last 2 weeks	29.8	27.9	27.5	28.2	29.8	30.2	31.3	31.5	30.8	30.0	29.7	28.6	27.9	29.2	27.1
Cigarettes															
Daily	18.5	17.2	19.0	19.4	21.6	22.2	24.6	22.4	23.1	20.6	19.0	16.9	15.8	15.6	13.6
Half pack or more per day	10.7	10.0	10.9	11.2	12.4	13.0	14.3	12.6	13.2	11.3	10.3	9.1	8.4	8.0	6.9
Smokeless Tobacco ^{t,t}	—	4.3	3.3	3.9	3.6	3.3	4.4	3.2	2.9	3.2	2.8	2.0	2.2	2.8	2.5
Steroids ^{m,u}	0.1	0.1	0.1	0.4	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.4	0.2

Table continued on next page.

TABLE 5-4 (cont.)
Trends in 30-Day Prevalence of Daily Use of Various Drugs in Grade 12

	Percentage who used daily in last 30 days													
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
<i>Approximate weighted N =</i>	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	
Marijuana/Hashish														
Used Daily in Past 30 Days	5.0	5.1	5.4	5.2	6.1	6.6	6.5	6.5	5.8	6.0	6.0	5.9	5.8	-0.2
Ever Used Daily for Month or More in Lifetime ^f	16.6	15.7	15.06	14.89	15.5	17.37	18.2	15.8	13.7	12.4	14.3	13.9	12.3	-1.6
Inhalants ^d														
Inhalants, Adjusted ^{d,e}	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Amyl/Butyl Nitrites ^{f,g}	0.2	0.2	0.1	0.1	—	—	—	—	—	—	—	—	—	—
Hallucinogens ^c														
Hallucinogens, Adjusted ^{c,h}	—	—	—	—	—	—	—	—	—	—	—	—	—	—
LSD ^c	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	+0.1
Hallucinogens other than LSD ^c	0.1	0.1	0.2	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
PCP ^{f,g}	0.1	0.1	0.3	0.2	0.2	0.3	0.1	0.1	—	—	—	—	—	—
Ecstasy (MDMA), original wording	*	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	—	—	—	—	—
Revised, includes "Molly"	—	—	—	—	—	—	—	—	0.1	0.1	0.1	*	0.0	0.0
Cocaine														
Crack ⁱ	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.0
Cocaine other than Crack ⁱ	0.1	0.1	0.1	0.1	0.1	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Heroin ^k														
With a needle ^l	*	0.1	*	*	0.1	0.1	0.1	*	0.1	0.0	0.0	*	0.1	+0.1
Without a needle ^l	*	*	*	0.1	0.1	0.1	0.1	*	0.1	0.1	0.0	*	0.0	0.0
Narcotics other than Heroin ^{m,n}														
Amphetamines ^{b,m}	0.3	0.3	0.2	0.3	0.3	0.4	0.3	0.6	0.4	0.3	0.4	0.3	0.4	+0.1
Methamphetamine ^o	*	*	0.1	0.1	0.1	0.1	*	*	0.1	0.1	0.1	*	0.0	0.0
Crystal Methamphetamine (Ice) ^o	*	0.1	0.2	*	0.1	0.1	0.2	0.1	0.1	0.1	0.1	*	0.0	0.0
Sedatives (Barbiturates) ^{m,p}														
Sedatives, Adjusted ^{m,q}	0.1	0.2	0.2	0.2	0.2	0.1	0.3	—	—	—	—	—	—	—
Methaqualone ^{m,r}	*	*	*	0.1	0.1	*	0.3	—	—	—	—	—	—	—
Tranquilizers ^{c,m}														
Rohypnol ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s														
Daily ^s	3.0	3.1	2.8	2.5	2.7	2.1	2.5	2.2	1.9	1.9	1.3	1.6	1.2	-0.4 s
Been drunk daily ^o	1.6	1.3	1.4	1.1	1.6	1.3	1.5	1.3	1.1	0.8	0.8	1.1	0.7	-0.4
5+ drinks in a row in last 2 weeks	25.4	25.9	24.6	25.2	23.2	21.6	23.7	22.1	19.4	17.2	15.5	16.6	13.8	-2.8 ss
Cigarettes														
Daily	12.2	12.3	11.4	11.2	10.7	10.3	9.3	8.5	6.7	5.5	4.8	4.2	3.6	-0.6
Half pack or more per day	5.9	5.7	5.4	5.0	4.7	4.3	4.0	3.4	2.6	2.1	1.8	1.7	1.5	-0.2
Smokeless Tobacco ^{f,t}														
Steroids ^{m,u}	0.4	0.2	0.2	0.2	0.4	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.2	+0.1

Source. The Monitoring the Future study, the University of Michigan.

See footnotes on the following page.

Footnotes for Tables 5-1 through 5-4

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%. ' ‡ ' indicates that the question changed in the following year. See relevant footnote for that drug. See relevant figure to assess the impact of the wording changes. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. Daily use is defined as use on 20 or more occasions in the past 30 days except for 5+ drinks, cigarettes, and smokeless tobacco, for which actual daily use is measured.

^aUse of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers not under a doctor's orders. Due to changes in the amphetamine questions 2013 data are based on half the forms for all grades; N is one half of N indicated except for 12th grade any illicit use including inhalants which are based on one form; N is one sixth of N indicated.

See the amphetamine note for details. 2014 data based on all forms

^bBeginning in 1982, the question about amphetamine use was revised to get respondents to exclude the inappropriate reporting of nonprescription amphetamines. The prevalence-of-use rate dropped slightly as a result of this methodological change. In 2009, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. In 2010 the remaining forms were changed in a like manner. In 2011 the question text was changed slightly in one form; bennies, Benzedrine and Methadrine were dropped from the list of examples. An examination of the data did not show any effect from the wording change. In 2013 the question wording was changed in three of the questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines **or other prescription stimulant drugs...**" In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was 21% higher in 12th grade. 2013 data are based on the changed forms only; N is one half of N indicated. In 2014 all questionnaires included the new, updated wording.

^cIn 2001 the question text was changed in half of the questionnaire forms. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. For the tranquilizer list of examples, Miltown was replaced with Xanax. The 2001 data presented here are based on the changed forms only; N is one half of N indicated. In 2002 the remaining forms were changed to the new wording. Data based on all forms beginning in 2002. Data for any illicit drug other than marijuana and for hallucinogens are also affected by these changes and have been handled in a parallel manner. For hallucinogens, LSD, and hallucinogens other than LSD data based on five of six forms beginning in 2014; N is five sixths of N indicated.

^dData based on four of five forms in 1976–1988; N is four fifths of N indicated. Data based on five of six forms in 1989–1998; N is five sixths of N indicated. Beginning in 1999, data based on three of six forms; N is three sixths of N indicated.

^eAdjusted for underreporting of amyl and butyl nitrites. See text for details. Data for the daily prevalence of use are no longer presented due to low rates of inhalant use and fairly stable rates of nitrite use.

^fData based on one form; N is one fifth of N indicated in 1979–1988 and one sixth of N indicated beginning in 1989. Data for ecstasy (MDMA) and Rohypnol based on two of six forms beginning in 2002; N is two sixths of N indicated. Data for Rohypnol for 2001 and 2002 are not comparable due to changes in the questionnaire forms. Data for Rohypnol based on one of six forms beginning in 2010; N is one sixth of N indicated. The PCP triplet question was dropped in 2014 however the annual use question was moved to another form; N is one sixth of N indicated. In 2014 a revised question on use of ecstasy (MDMA) including "Molly" was added to one form. The 2013 and 2014 "Original wording" data reported here are for only the questionnaires using the original question wording; N is two sixths of N indicated. Beginning in 2014 data reported here for the "Revised wording" which includes "Molly" are for only the questionnaires using the revised wording; N is one sixth of the N indicated in 2014 and three sixths of the N indicated beginning in 2015.

^gQuestion text changed slightly in 1987.

^hAdjusted for underreporting of PCP. See text for details. Data for the daily prevalence of use are no longer presented due to low rates of hallucinogen use and fairly stable rates of PCP use.

ⁱData based on one of five forms in 1986; N is one fifth of N indicated. Data based on two forms in 1987–1989; N is two fifths of N indicated in 1987–1988 and two sixths of N indicated in 1989. Data based on six forms beginning in 1990.

^jData based on one form in 1987–1989; N is one fifth of N indicated in 1987–1988 and one sixth of N indicated in 1989. Data based on four of six forms beginning in 1990; N is four sixths of N indicated.

Footnotes for Tables 5-1 through 5-4 (cont.)

^kIn 1995 the heroin question was changed in half of the questionnaire forms. Separate questions were asked for use with and without injection. Data presented here represent the combined data from all forms.

^lData based on three of six forms; N is three sixths of N indicated.

^mOnly drug use not under a doctor's orders is included here.

ⁿIn 2002 the question text was changed in half of the questionnaire forms. The list of examples of narcotics other than heroin was updated: Talwin, laudanum, and paregoric—all of which had negligible rates of use by 2001—were replaced with Vicodin, OxyContin, and Percocet. The 2002 data presented here are based on the changed forms only; N is one half of N indicated. In 2003, the remaining forms were changed to the new wording. Data based on all forms beginning in 2003. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

^oData based on two of six forms; N is two sixths of N indicated. Bidis and kreteks based on one of six forms beginning in 2009; N is one sixth of N indicated.

^pFor 12th graders only: In 2004 the barbiturate question text was changed on half of the questionnaire forms. Barbiturates was changed to sedatives including barbiturates, and "have you taken barbiturates . . ." was changed to "have you taken sedatives . . ." In the list of examples downs, downers, goofballs, yellows, reds, blues, rainbows were changed to downs, or downers, and include Phenobarbital, Tuinal, Nembutal, and Seconal. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

^qData based on five forms in 1975–1988, six forms in 1989, one form in 1990 (N is one sixth of N indicated in 1990), and six forms adjusted by one-form data beginning in 1991.

^rData based on five forms in 1975–1988, six forms in 1989, and one of six forms beginning in 1990; N is one sixth of N indicated beginning in 1990.

^sData based on five forms in 1975–1988 and on six forms in 1989–1992. In 1993, the question text was changed slightly in three of six forms to indicate that a drink meant more than a few sips. The 1993 data are based on the changed forms only; N is one half of N indicated. In 1994 the remaining forms were changed to the new wording. Data based on all forms beginning in 1994. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

^tThe prevalence of smokeless tobacco use was not asked of 12th graders in 1990 and 1991. Prior to 1990, the prevalence-of-use question on smokeless tobacco was located near the end of one 12th-grade questionnaire form, whereas after 1991 the question was placed earlier and in a different form. This shift could explain the discontinuities between the corresponding data.

^uData based on one of six forms in 1989–1990; N is one sixth of N indicated. Data based on two of six forms in 1991–2005; N is two sixths of N indicated. Data based on three of six forms beginning in 2006; N is three sixths of N indicated. In 2006, a slightly altered version of this question was added to a third form. An examination of the data did not show any effect from the wording change. In 2007 the remaining forms were changed in a like manner. In 2008, the question text was changed slightly in two of the questionnaire forms. An examination of the data did not show any effect from the wording change. In 2009 the remaining form was changed in a like manner.

^vData based on two of six forms in 2002–2005; N is two sixths of N indicated. Data based on three of six forms beginning in 2006; N is three sixths of N indicated.

^wData based on two of six forms in 2000; N is two sixths of N indicated. Data based on three of six forms in 2001; N is three sixths of N indicated. Data based on one form beginning in 2002; N is one sixth of N indicated.

^xData based on two of six forms in 2000; N is two sixths of N indicated. Data based on three of six forms beginning in 2001; N is three sixths of N indicated. Data based on two of six forms beginning in 2010; N is two sixths of N indicated.

^y8th and 10th grade data based on one third of N indicated. 12th grade data based on two of six forms; N is two sixths of N indicated.

^zIn 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

^{aa}In 2005, data omitted for one of the questionnaire forms due to an error in the skip pattern in the questionnaire. In 2005, data based on one of six forms and N is one sixth of N indicated. Beginning in 2006, data based on two of six forms and N is two sixths of N indicated.

^{bb}For the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

Footnotes for Tables 5-1 through 5-4 (cont.)

^{cc}Includes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

^{dd}Includes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

TABLE 5-5a
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change		
Any Illicit Drug ^a																															
8th Grade	18.7	20.6	22.5	25.7	28.5	31.2	29.4	29.0	28.3	26.8	26.8	24.5	22.8	21.5	21.4	20.9	19.0	19.6	19.9	21.4	20.1	18.5†	21.1	20.3	20.5	17.2	18.2	18.7	+0.6		
10th Grade	30.6	29.8	32.8	37.4	40.9	45.4	47.3	44.9	46.2	45.6	45.6	44.6	41.4	39.8	38.2	36.1	35.6	34.1	36.0	37.0	37.7	36.8†	39.1	37.4	34.7	33.7	34.3	36.3	+2.0		
12th Grade	44.1	40.7	42.9	45.6	48.4	50.8	54.3	54.1	54.7	54.0	53.9	53.0	51.1	51.1	50.4	48.2	46.8	47.4	46.7	48.2	49.9	49.1†	49.8	49.1	48.9	48.3	48.9	47.8	-1.1		
Any Illicit Drug other than Marijuana ^{a,b}																															
8th Grade	14.3	15.6	16.8	17.5	18.8	19.2	17.7	16.9	16.3	15.8†	17.0	13.7	13.6	12.2	12.1	12.2	11.1	11.2	10.4	10.6	9.8	8.7†	10.4	10.0	10.3	8.9	9.3	9.8	+0.5		
10th Grade	19.1	19.2	20.9	21.7	24.3	25.5	25.0	23.6	24.0	23.1†	23.6	22.1	19.7	18.8	18.0	17.5	18.2	15.9	16.7	16.8	15.6	14.9†	16.4	15.9	14.6	14.0	13.7	14.2	+0.5		
12th Grade	26.9	25.1	26.7	27.6	28.1	28.5	30.0	29.4	29.4	29.0†	30.7	29.5	27.7	28.7	27.4	26.9	25.5	24.9	24.0	24.7	24.9	24.1†	24.8	22.6	21.1	20.7	19.5	18.9	-0.6		
Any Illicit Drug including Inhalants ^{a,c}																															
8th Grade	28.5	29.6	32.3	35.1	38.1	39.4	38.1	37.8	37.2	35.1	34.5	31.6	30.3	30.2	30.0	29.2	27.7	28.3	27.9	28.6	26.4	25.1†	25.9	25.2	24.9	20.6	23.3	23.2	-0.1		
10th Grade	36.1	36.2	38.7	42.7	45.9	49.8	50.9	49.3	49.9	49.3	48.8	47.7	44.9	43.1	42.1	40.1	39.8	38.7	40.0	40.6	40.8	40.0†	41.6	40.4	37.2	35.9	37.0	38.7	+1.7		
12th Grade	47.6	44.4	46.6	49.1	51.5	53.5	56.3	56.1	56.3	57.0	56.0	54.6	52.8	53.0	53.5	51.2	49.1	49.3	48.4	49.9	51.8	50.3†	52.3	49.9	51.4	49.3	50.3	49.0	-1.3		
Marijuana/Hashish																															
8th Grade	10.2	11.2	12.6	16.7	19.9	23.1	22.6	22.2	22.0	20.3	20.4	19.2	17.5	16.3	16.5	15.7	14.2	14.6	15.7	17.3	16.4	15.2	16.5	15.6	15.5	12.8	13.5	13.9	+0.4		
10th Grade	23.4	21.4	24.4	30.4	34.1	39.8	42.3	39.6	40.9	40.3	40.1	38.7	36.4	35.1	34.1	31.8	31.0	29.9	32.3	33.4	34.5	33.8	35.8	33.7	31.1	29.7	30.7	32.6	+1.8		
12th Grade	36.7	32.6	35.3	38.2	41.7	44.9	49.6	49.1	49.7	48.8	49.0	47.8	46.1	45.7	44.8	42.3	41.8	42.6	42.0	43.8	45.5	45.2	45.5	44.4	44.7	44.5	45.0	43.6	-1.4		
Marijuana Under a Doctor's Orders ^{n,o}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.1	1.1	+0.1	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.1	1.3	+0.2	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	1.2	-0.2	
Inhalants ^{c,d}																															
8th Grade	17.6	17.4	19.4	19.9	21.6	21.2	21.0	20.5	19.7	17.9	17.1	15.2	15.8	17.3	17.1	16.1	15.6	15.7	14.9	14.5	13.1	11.8	10.8	10.8	9.4	7.7	8.9	8.7	-0.2		
10th Grade	15.7	16.6	17.5	18.0	19.0	19.3	18.3	18.3	17.0	16.6	15.2	13.5	12.7	12.4	13.1	13.3	13.6	12.8	12.3	12.0	10.1	9.9	8.7	8.7	7.2	6.6	6.1	6.5	+0.4		
12th Grade	17.6	16.6	17.4	17.7	17.4	16.6	16.1	15.2	15.4	14.2	13.0	11.7	11.2	10.9	11.4	11.1	10.5	9.9	9.5	9.0	8.1	7.9	6.9	6.5	5.7	5.0	4.9	4.4	-0.5		
Hallucinogens ^{b,f}																															
8th Grade	3.2	3.8	3.9	4.3	5.2	5.9	5.4	4.9	4.8	4.6†	5.2	4.1	4.0	3.5	3.8	3.4	3.1	3.3	3.0	3.4	3.3	2.8	2.5	2.0	2.0	1.9	1.9	2.2	+0.3		
10th Grade	6.1	6.4	6.8	8.1	9.3	10.5	10.5	9.8	9.7	8.9†	8.9	7.8	6.9	6.4	5.8	6.1	6.4	5.5	6.1	6.1	6.0	5.2	5.4	5.0	4.6	4.4	4.2	3.9	-0.3		
12th Grade	9.6	9.2	10.9	11.4	12.7	14.0	15.1	14.1	13.7	13.0†	14.7	12.0	10.6	9.7	8.8	8.3	8.4	8.7	7.4	8.6	8.3	7.5	7.6	6.3	6.4	6.7	6.7	6.6	-0.1		

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
LSD^b																													
8th Grade	2.7	3.2	3.5	3.7	4.4	5.1	4.7	4.1	4.1	3.9	3.4	2.5	2.1	1.8	1.9	1.6	1.6	1.9	1.7	1.8	1.7	1.3	1.4	1.1	1.3	1.2	1.3	1.4	+0.1
10th Grade	5.6	5.8	6.2	7.2	8.4	9.4	9.5	8.5	8.5	7.6	6.3	5.0	3.5	2.8	2.5	2.7	3.0	2.6	3.0	3.0	2.8	2.6	2.7	2.6	3.0	3.2	3.0	2.8	-0.2
12th Grade	8.8	8.6	10.3	10.5	11.7	12.6	13.6	12.6	12.2	11.1	10.9	8.4	5.9	4.6	3.5	3.3	3.4	4.0	3.1	4.0	4.0	3.8	3.9	3.7	4.3	4.9	5.0	5.1	+0.1
Hallucinogens other than LSD^b																													
8th Grade	1.4	1.7	1.7	2.2	2.5	3.0	2.6	2.5	2.4	2.3†	3.9	3.3	3.2	3.0	3.3	2.8	2.6	2.5	2.4	2.7	2.8	2.3	1.9	1.5	1.2	1.3	1.2	1.5	+0.3
10th Grade	2.2	2.5	2.8	3.8	3.9	4.7	4.8	5.0	4.7	4.8†	6.6	6.3	5.9	5.8	5.2	5.5	5.7	4.8	5.4	5.3	5.2	4.5	4.4	4.1	3.3	3.1	2.9	2.7	-0.2
12th Grade	3.7	3.3	3.9	4.9	5.4	6.8	7.5	7.1	6.7	6.9†	10.4	9.2	9.0	8.7	8.1	7.8	7.7	7.8	6.8	7.7	7.3	6.6	6.4	5.1	4.8	4.7	4.8	4.5	-0.3
Ecstasy (MDMA)^g																													
8th Grade, original	—	—	—	—	—	3.4	3.2	2.7	2.7	4.3	5.2	4.3	3.2	2.8	2.8	2.5	2.3	2.4	2.2	3.3	2.6	2.0	1.8	1.4	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.4	2.3	1.7	1.5	1.6	+0.1
10th Grade, original	—	—	—	—	—	5.6	5.7	5.1	6.0	7.3	8.0	6.6	5.4	4.3	4.0	4.5	5.2	4.3	5.5	6.4	6.6	5.0	5.7	3.7	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.2	3.8	2.8	2.8	2.4	-0.3
12th Grade, original	—	—	—	—	—	6.1	6.9	5.8	8.0	11.0	11.7	10.5	8.3	7.5	5.4	6.5	6.5	6.2	6.5	7.3	8.0	7.2	7.1	5.6	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.9	5.9	4.9	4.9	4.1	-0.9
Cocaine																													
8th Grade	2.3	2.9	2.9	3.6	4.2	4.5	4.4	4.6	4.7	4.5	4.3	3.6	3.6	3.4	3.7	3.4	3.1	3.0	2.6	2.6	2.2	1.9	1.7	1.8	1.6	1.4	1.3	1.4	+0.2
10th Grade	4.1	3.3	3.6	4.3	5.0	6.5	7.1	7.2	7.7	6.9	5.7	6.1	5.1	5.4	5.2	4.8	5.3	4.5	4.6	3.7	3.3	3.3	3.3	2.6	2.7	2.1	2.1	2.6	+0.5
12th Grade	7.8	6.1	6.1	5.9	6.0	7.1	8.7	9.3	9.8	8.6	8.2	7.8	7.7	8.1	8.0	8.5	7.8	7.2	6.0	5.5	5.2	4.9	4.5	4.6	4.0	3.7	4.2	3.9	-0.3
Crack																													
8th Grade	1.3	1.6	1.7	2.4	2.7	2.9	2.7	3.2	3.1	3.1	3.0	2.5	2.5	2.4	2.4	2.3	2.1	2.0	1.7	1.5	1.5	1.0	1.2	1.2	1.0	0.9	0.8	0.9	+0.1
10th Grade	1.7	1.5	1.8	2.1	2.8	3.3	3.6	3.9	4.0	3.7	3.1	3.6	2.7	2.6	2.5	2.2	2.3	2.0	2.1	1.8	1.6	1.4	1.5	1.0	1.1	0.8	0.8	1.0	+0.1
12th Grade	3.1	2.6	2.6	3.0	3.0	3.3	3.9	4.4	4.6	3.9	3.7	3.8	3.6	3.9	3.5	3.5	3.2	2.8	2.4	2.4	1.9	2.1	1.8	1.8	1.7	1.4	1.7	1.5	-0.1
Cocaine other than Crack^h																													
8th Grade	2.0	2.4	2.4	3.0	3.4	3.8	3.5	3.7	3.8	3.5	3.3	2.8	2.7	2.6	2.9	2.7	2.6	2.4	2.1	2.1	1.8	1.6	1.4	1.4	1.3	1.1	1.0	1.2	+0.1
10th Grade	3.8	3.0	3.3	3.8	4.4	5.5	6.1	6.4	6.8	6.0	5.0	5.2	4.5	4.8	4.6	4.3	4.8	4.0	4.1	3.4	3.0	3.0	2.9	2.2	2.3	1.9	1.9	2.4	+0.5
12th Grade	7.0	5.3	5.4	5.2	5.1	6.4	8.2	8.4	8.8	7.7	7.4	7.0	6.7	7.3	7.1	7.9	6.8	6.5	5.3	5.1	4.9	4.4	4.2	4.1	3.4	3.3	3.5	3.3	-0.2

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Heroin ^{l,j}																													
8th Grade	1.2	1.4	1.4	2.0	2.3	2.4	2.1	2.3	2.3	1.9	1.7	1.6	1.6	1.6	1.5	1.4	1.3	1.4	1.3	1.3	1.2	0.8	1.0	0.9	0.5	0.5	0.7	0.6	-0.1
10th Grade	1.2	1.2	1.3	1.5	1.7	2.1	2.1	2.3	2.3	2.2	1.7	1.8	1.5	1.5	1.5	1.4	1.5	1.2	1.5	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.4	0.4	-0.1
12th Grade	0.9	1.2	1.1	1.2	1.6	1.8	2.1	2.0	2.0	2.4	1.8	1.7	1.5	1.5	1.5	1.4	1.5	1.3	1.2	1.6	1.4	1.1	1.0	1.0	0.8	0.7	0.7	0.8	+0.1
With a Needle ⁱ																													
8th Grade	—	—	—	—	1.5	1.6	1.3	1.4	1.6	1.1	1.2	1.0	1.0	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.6	0.6	0.8	0.3	0.3	0.4	0.4	0.0
10th Grade	—	—	—	—	1.0	1.1	1.1	1.2	1.3	1.0	0.8	1.0	0.9	0.8	0.8	0.9	0.9	0.7	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.3	0.2	-0.1
12th Grade	—	—	—	—	0.7	0.8	0.9	0.8	0.9	0.8	0.7	0.8	0.7	0.7	0.9	0.8	0.7	0.7	0.6	1.1	0.9	0.7	0.7	0.8	0.6	0.5	0.4	0.5	0.0
Without a Needle ⁱ																													
8th Grade	—	—	—	—	1.5	1.6	1.4	1.5	1.4	1.3	1.1	1.0	1.1	1.0	0.9	0.9	0.7	0.9	0.8	0.7	0.7	0.5	0.5	0.4	0.3	0.4	0.5	0.3	-0.1
10th Grade	—	—	—	—	1.1	1.7	1.7	1.7	1.6	1.7	1.3	1.3	1.0	1.1	1.1	1.0	1.1	0.8	1.0	0.9	0.8	0.8	0.7	0.5	0.4	0.3	0.3	0.2	-0.1
12th Grade	—	—	—	—	1.4	1.7	2.1	1.6	1.8	2.4	1.5	1.6	1.8	1.4	1.3	1.1	1.4	1.1	0.9	1.4	1.3	0.8	0.9	0.7	0.7	0.6	0.4	0.6	+0.1
Narcotics other than Heroin ^{k,l}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.6	6.1	6.4	6.6	7.2	8.2	9.7	9.8	10.2	10.6	9.9†	13.5	13.2	13.5	12.8	13.4	13.1	13.2	13.2	13.0	13.0	12.2	11.1	9.5	8.4	7.8	6.8	6.0	-0.8
Amphetamines ^{k,m}																													
8th Grade	10.5	10.8	11.8	12.3	13.1	13.5	12.3	11.3	10.7	9.9	10.2	8.7	8.4	7.5	7.4	7.3	6.5	6.8	6.0	5.7	5.2	4.5‡	6.9	6.7	6.8	5.7	5.7	5.9	+0.3
10th Grade	13.2	13.1	14.9	15.1	17.4	17.7	17.0	16.0	15.7	15.7	16.0	14.9	13.1	11.9	11.1	11.2	11.1	9.0	10.3	10.6	9.0	8.9‡	11.2	10.6	9.7	8.8	8.2	8.6	+0.4
12th Grade	15.4	13.9	15.1	15.7	15.3	15.3	16.5	16.4	16.3	15.6	16.2	16.8	14.4	15.0	13.1	12.4	11.4	10.5	9.9	11.1	12.2	12.0‡	13.8	12.1	10.8	10.0	9.2	8.6	-0.6
Methamphetamine ^{n,o}																													
8th Grade	—	—	—	—	—	—	—	—	4.5	4.2	4.4	3.5	3.9	2.5	3.1	2.7	1.8	2.3	1.6	1.8	1.3	1.3	1.4	1.0	0.8	0.6	0.7	0.7	0.0
10th Grade	—	—	—	—	—	—	—	—	7.3	6.9	6.4	6.1	5.2	5.3	4.1	3.2	2.8	2.4	2.8	2.5	2.1	1.8	1.6	1.4	1.3	0.7	0.9	0.8	-0.1
12th Grade	—	—	—	—	—	—	—	—	8.2	7.9	6.9	6.7	6.2	6.2	4.5	4.4	3.0	2.8	2.4	2.3	2.1	1.7	1.5	1.9	1.0	1.2	1.1	0.7	-0.4

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Crystal Methamphetamine (Ice) ^o																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.3	2.9	3.1	3.4	3.9	4.4	4.4	5.3	4.8	4.0	4.1	4.7	3.9	4.0	4.0	3.4	3.4	2.8	2.1	1.8	2.1	1.7	2.0	1.3	1.2	1.4	1.5	1.1	-0.3
Sedatives (Barbiturates) ^{k,p}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.2	5.5	6.3	7.0	7.4	7.6	8.1	8.7	8.9	9.2	8.7	9.5	8.8	9.9	10.5	10.2	9.3	8.5	8.2	7.5	7.0	6.9	7.5	6.8	5.9	5.2	4.5	4.2	-0.3
Tranquilizers ^{b,k}																													
8th Grade	3.8	4.1	4.4	4.6	4.5	5.3	4.8	4.6	4.4	4.4†	5.0	4.3	4.4	4.0	4.1	4.3	3.9	3.9	3.9	4.4	3.4	3.0	2.9	2.9	3.0	3.0	3.4	3.5	+0.1
10th Grade	5.8	5.9	5.7	5.4	6.0	7.1	7.3	7.8	7.9	8.0†	9.2	8.8	7.8	7.3	7.1	7.2	7.4	6.8	7.0	7.3	6.8	6.3	5.5	5.8	5.8	6.1	6.0	6.0	0.0
12th Grade	7.2	6.0	6.4	6.6	7.1	7.2	7.8	8.5	9.3	8.9†	10.3	11.4	10.2	10.6	9.9	10.3	9.5	8.9	9.3	8.5	8.7	8.5	7.7	7.4	6.9	7.6	7.5	6.6	-0.9
Any Prescription Drug ^q																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.0	23.9	22.2	21.5	20.9	21.6	21.7	21.2†	22.2	19.9	18.3	18.0	16.5	15.5	-0.9
Rohypnol ^r																													
8th Grade	—	—	—	—	—	1.5	1.1	1.4	1.3	1.0	1.1	0.8	1.0	1.0	1.1	1.0	1.0	0.7	0.7	0.9	2.0	1.0	0.7	0.6	0.8	0.9	0.6	0.7	+0.1
10th Grade	—	—	—	—	—	1.5	1.7	2.0	1.8	1.3	1.5	1.3	1.0	1.2	1.0	0.8	1.3	0.9	0.7	1.4	1.2	0.8	1.1	1.0	0.5	1.0	0.7	0.5	-0.2
12th Grade	—	—	—	—	—	1.2	1.8	3.0	2.0	1.5	1.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^s																													
Any Use																													
8th Grade	70.1	69.3†	55.7	55.8	54.5	55.3	53.8	52.5	52.1	51.7	50.5	47.0	45.6	43.9	41.0	40.5	38.9	38.9	36.6	35.8	33.1	29.5	27.8	26.8	26.1	22.8	23.1	23.5	+0.4
10th Grade	83.8	82.3†	71.6	71.1	70.5	71.8	72.0	69.8	70.6	71.4	70.1	66.9	66.0	64.2	63.2	61.5	61.7	58.3	59.1	58.2	56.0	54.0	52.1	49.3	47.1	43.4	42.2	43.0	+0.8
12th Grade	88.0	87.5†	80.0	80.4	80.7	79.2	81.7	81.4	80.0	80.3	79.7	78.4	76.6	76.8	75.1	72.7	72.2	71.9	72.3	71.0	70.0	69.4	68.2	66.0	64.0	61.2	61.5	58.5	-3.0 s

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change		
Been Drunk ^o																															
8th Grade	26.7	26.8	26.4	25.9	25.3	26.8	25.2	24.8	24.8	25.1	23.4	21.3	20.3	19.9	19.5	19.5	17.9	18.0	17.4	16.3	14.8	12.8	12.2	10.8	10.9	8.6	9.2	9.2	0.0		
10th Grade	50.0	47.7	47.9	47.2	46.9	48.5	49.4	46.7	48.9	49.3	48.2	44.0	42.4	42.3	42.1	41.4	41.2	37.2	38.6	36.9	35.9	34.6	33.5	30.2	28.6	26.0	25.1	26.2	+1.2		
12th Grade	65.4	63.4	62.5	62.9	63.2	61.8	64.2	62.4	62.3	62.3	63.9	61.6	58.1	60.3	57.5	56.4	55.1	54.7	56.5	54.1	51.0	54.2	52.3	49.8	46.7	46.3	45.3	42.9	-2.4		
Flavored Alcoholic Beverages ^{e,n}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	37.9	35.5	35.5	34.0	32.8	29.4	30.0	27.0	23.5	21.9	19.2	19.3	16.3	16.0	18.0	+2.0		
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	58.6	58.8	58.1	55.7	53.5	51.4	51.3	48.4	46.7	44.9	42.3	38.7	33.3	34.8	35.9	+1.1		
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	71.0	73.6	69.9	68.4	65.5	67.4	62.6	62.4	60.5	58.9	57.5	55.6	53.6	51.2	50.4	-0.9		
Cigarettes																															
Any Use																															
8th Grade	44.0	45.2	45.3	46.1	46.4	49.2	47.3	45.7	44.1	40.5	36.6	31.4	28.4	27.9	25.9	24.6	22.1	20.5	20.1	20.0	18.4	15.5	14.8	13.5	13.3	9.8	9.4	9.1	-0.3		
10th Grade	55.1	53.5	56.3	56.9	57.6	61.2	60.2	57.7	57.6	55.1	52.8	47.4	43.0	40.7	38.9	36.1	34.6	31.7	32.7	33.0	30.4	27.7	25.7	22.6	19.9	17.5	15.9	16.0	0.0		
12th Grade	63.1	61.8	61.9	62.0	64.2	63.5	65.4	65.3	64.6	62.5	61.0	57.2	53.7	52.8	50.0	47.1	46.2	44.7	43.6	42.2	40.0	39.5	38.1	34.4	31.1	28.3	26.6	23.8	-2.8 s		
Smokeless Tobacco ^t																															
8th Grade	22.2	20.7	18.7	19.9	20.0	20.4	16.8	15.0	14.4	12.8	11.7	11.2	11.3	11.0	10.1	10.2	9.1	9.8	9.6	9.9	9.7	8.1	7.9	8.0	8.6	6.9	6.2	6.4	+0.1		
10th Grade	28.2	26.6	28.1	29.2	27.6	27.4	26.3	22.7	20.4	19.1	19.5	16.9	14.6	13.8	14.5	15.0	15.1	12.2	15.2	16.8	15.6	15.4	14.0	13.6	12.3	10.2	9.1	10.0	+0.9		
12th Grade	—	32.4	31.0	30.7	30.9	29.8	25.3	26.2	23.4	23.1	19.7	18.3	17.0	16.7	17.5	15.2	15.1	15.6	16.3	17.6	16.9	17.4	17.2	15.1	13.2	14.2	11.0	10.1	-0.9		
Any Vaping ^{bb,cc}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.7	17.5‡	18.5	21.5	+3.0 s	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32.8	29.0‡	30.9	36.9	+6.0 sss	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35.5	33.8‡	35.8	42.5	+6.7 ss	
Vaping Nicotine ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	13.5	+2.9 ss	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.4	28.6	+7.2 sss	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.0	34.0	+9.0 sss	

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change				
Vaping Marijuana^{bb}																																	
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.0	5.5	+1.5 s				
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.8	14.2	+4.4 sss				
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.9	15.6	+3.8 ss				
Vaping Just Flavoring^{bb}																																	
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17.0	19.4	+2.4				
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.5	31.7	+4.3 ss				
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30.7	34.1	+3.4				
Steroids^{k,u}																																	
8th Grade	1.9	1.7	1.6	2.0	2.0	1.8	1.8	2.3	2.7	3.0	2.8	2.5	2.5	1.9	1.7	1.6	1.5	1.4	1.3	1.1	1.2	1.2	1.1	1.0	1.0	0.9	1.1	1.1	0.0				
10th Grade	1.8	1.7	1.7	1.8	2.0	1.8	2.0	2.0	2.7	3.5	3.5	3.5	3.0	2.4	2.0	1.8	1.8	1.4	1.3	1.6	1.4	1.3	1.3	1.4	1.2	1.3	1.1	1.2	+0.1				
12th Grade	2.1	2.1	2.0	2.4	2.3	1.9	2.4	2.7	2.9	2.5	3.7	4.0	3.5	3.4	2.6	2.7	2.2	2.2	2.2	2.0	1.8	1.8	2.1	1.9	2.3	1.6	1.6	1.6	-0.1				
Legal Use of Over-the-Counter Stimulants																																	
Diet Pills^e																																	
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
12th Grade	17.2	15.0	14.8	14.9	15.6	16.0	16.6	15.7	17.1	16.6	17.1	21.0	17.9	15.6	13.7	13.0	10.4	10.5	9.5	7.2	7.7	7.7	8.1	9.1	7.9	6.4	6.7	6.2	-0.5				
Stay-Awake Pills^e																																	
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	37.0	35.6	30.5	31.3	31.2	30.5	31.0	29.6	25.5	23.0	25.6	22.5	19.8	18.4	15.8	14.8	12.3	9.6	7.6	6.4	6.3	5.9	5.2	4.5	3.8	3.6	3.8	3.6	-0.2				
Look-Alikes^e																																	
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	8.9	10.1	10.5	10.3	11.6	10.7	10.8	9.4	9.2	10.0	9.8	9.6	8.6	8.1	7.4	5.7	4.6	5.2	4.3	2.6	3.5	2.9	2.7	2.2	3.3	2.3	2.6	—	—	—	—		

(Table continued on next page.)

TABLE 5-5a (cont.)
Trends in Lifetime Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Legal Use of Prescription ADHD Drugs																													
Stimulant-Type ^{n,dd}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.3	9.3	8.3	8.1	7.8	8.2	7.6	7.7	7.1	7.2	7.1	7.5	6.6	7.1	+0.5
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.7	8.5	8.4	7.8	8.2	8.6	7.2	8.0	8.3	6.8	8.8	7.1	6.5	8.2	+1.6 s
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.5	7.8	7.6	8.6	8.2	8.3	8.4	9.0	9.6	9.1	9.9	8.4	8.6	8.6	-0.0
Non-Stimulant-Type ^{n,dd}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.3	7.9	6.3	6.3	5.8	5.8	6.1	5.1	5.1	4.8	5.1	5.7	4.9	4.4	-0.5
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.3	8.3	6.7	6.8	6.8	6.1	6.4	5.2	4.9	5.8	5.8	5.2	4.6	5.1	+0.5
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.2	6.1	7.0	6.4	5.4	6.7	5.8	5.9	5.4	5.6	5.6	5.8	6.4	6.1	-0.4
Either Type ^{n,dd}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.7	15.8	13.4	13.1	12.8	12.8	12.4	11.6	11.5	11.2	11.4	12.1	10.9	11.0	+0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14.3	14.2	12.9	12.8	13.0	12.7	12.0	12.0	11.7	11.3	13.1	11.5	10.1	12.1	+2.1 s
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.4	11.7	12.1	13.1	11.0	12.7	12.2	12.7	13.2	12.6	13.7	12.7	13.0	12.7	-0.3
Previously surveyed drugs that have been dropped.																													
Nitrites ^e																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.6	1.5	1.4	1.7	1.5	1.8	2.0	2.7	1.7	0.8	1.9	1.5	1.6	1.3	1.1	1.2	1.2	0.6	1.1	—	—	—	—	—	—	—	—	—	
PCP ^e																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	2.9	2.4	2.9	2.8	2.7	4.0	3.9	3.9	3.4	3.4	3.5	3.1	2.5	1.6	2.4	2.2	2.1	1.8	1.7	1.8	2.3	1.6	1.3	—	—	—	—	—	
Methaqualone ^{e,k}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.3	1.6	0.8	1.4	1.2	2.0	1.7	1.6	1.8	0.8	1.1	1.5	1.0	1.3	1.3	1.2	1.0	0.8	0.7	0.4	0.6	0.8	—	—	—	—	—	—	

Source: The Monitoring the Future study, the University of Michigan.

Note: See footnotes following Table 5-5e.

TABLE 5-5b
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change		
Any Illicit Drug^a																															
8th Grade	11.3	12.9	15.1	18.5	21.4	23.6	22.1	21.0	20.5	19.5	19.5	17.7	16.1	15.2	15.5	14.8	13.2	14.1	14.5	16.0	14.7	13.4†	15.2	14.6	14.8	12.0	12.9	13.4	+0.5		
10th Grade	21.4	20.4	24.7	30.0	33.3	37.5	38.5	35.0	35.9	36.4	37.2	34.8	32.0	31.1	29.8	28.7	28.1	26.9	29.4	30.2	31.1	30.1†	32.1	29.9	27.9	26.8	27.8	29.9	+2.1		
12th Grade	29.4	27.1	31.0	35.8	39.0	40.2	42.4	41.4	42.1	40.9	41.4	41.0	39.3	38.8	38.4	36.5	35.9	36.6	36.5	38.3	40.0	39.7†	40.1	38.7	38.6	38.3	39.9	38.8	-1.1		
Any Illicit Drug other than Marijuana^{a,b}																															
8th Grade	8.4	9.3	10.4	11.3	12.6	13.1	11.8	11.0	10.5	10.2‡	10.8	8.8	8.8	7.9	8.1	7.7	7.0	7.4	7.0	7.1	6.4	5.5‡	6.3	6.4	6.3	5.4	5.8	6.1	+0.3		
10th Grade	12.2	12.3	13.9	15.2	17.5	18.4	18.2	16.6	16.7	16.7‡	17.9	15.7	13.8	13.5	12.9	12.7	13.1	11.3	12.2	12.1	11.2	10.8‡	11.2	11.2	10.5	9.8	9.4	9.6	+0.2		
12th Grade	16.2	14.9	17.1	18.0	19.4	19.8	20.7	20.2	20.7	20.4‡	21.6	20.9	19.8	20.5	19.7	19.2	18.5	18.3	17.0	17.3	17.6	17.0‡	17.8	15.9	15.2	14.3	13.3	12.4	-0.9		
Any Illicit Drug including Inhalants^{a,c}																															
8th Grade	16.7	18.2	21.1	24.2	27.1	28.7	27.2	26.2	25.3	24.0	23.9	21.4	20.4	20.2	20.4	19.7	18.0	19.0	18.8	20.3	18.2	17.0‡	17.6	16.8	17.0	13.5	15.8	16.0	+0.2		
10th Grade	23.9	23.5	27.4	32.5	35.6	39.6	40.3	37.1	37.7	38.0	38.7	36.1	33.5	32.9	31.7	30.7	30.2	28.8	31.2	31.8	32.5	31.5‡	33.2	31.0	28.9	27.7	29.1	31.0	+2.0		
12th Grade	31.2	28.8	32.5	37.6	40.2	41.9	43.3	42.4	42.8	42.5	42.6	42.1	40.5	39.1	40.3	38.0	37.0	37.3	37.6	39.2	41.5	40.2‡	42.3	39.2	40.2	38.7	41.2	40.2	-1.0		
Marijuana/Hashish																															
8th Grade	6.2	7.2	9.2	13.0	15.8	18.3	17.7	16.9	16.5	15.6	15.4	14.6	12.8	11.8	12.2	11.7	10.3	10.9	11.8	13.7	12.5	11.4	12.7	11.7	11.8	9.4	10.1	10.5	+0.3		
10th Grade	16.5	15.2	19.2	25.2	28.7	33.6	34.8	31.1	32.1	32.2	32.7	30.3	28.2	27.5	26.6	25.2	24.6	23.9	26.7	27.5	28.8	28.0	29.8	27.3	25.4	23.9	25.5	27.5	+2.0		
12th Grade	23.9	21.9	26.0	30.7	34.7	35.8	38.5	37.5	37.8	36.5	37.0	36.2	34.9	34.3	33.6	31.5	31.7	32.4	32.8	34.8	36.4	36.4	36.4	35.1	34.9	35.6	37.1	35.9	-1.2		
Synthetic Marijuana^{n,o}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.4	4.0	3.3	3.1	2.7	2.0	1.6	-0.5	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.8	7.4	5.4	4.3	3.3	2.7	2.9	+0.3	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.4	11.3	7.9	5.8	5.2	3.5	3.7	3.5	-0.2
Inhalants^{c,d}																															
8th Grade	9.0	9.5	11.0	11.7	12.8	12.2	11.8	11.1	10.3	9.4	9.1	7.7	8.7	9.6	9.5	9.1	8.3	8.9	8.1	8.1	7.0	6.2	5.2	5.3	4.6	3.8	4.7	4.6	-0.1		
10th Grade	7.1	7.5	8.4	9.1	9.6	9.5	8.7	8.0	7.2	7.3	6.6	5.8	5.4	5.9	6.0	6.5	6.6	5.9	6.1	5.7	4.5	4.1	3.5	3.3	2.9	2.4	2.3	2.4	+0.1		
12th Grade	6.6	6.2	7.0	7.7	8.0	7.6	6.7	6.2	5.6	5.9	4.5	4.5	3.9	4.2	5.0	4.5	3.7	3.8	3.4	3.6	3.2	2.9	2.5	1.9	1.9	1.7	1.5	1.6	+0.1		

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change		
Hallucinogens ^{b,f}																															
8th Grade	1.9	2.5	2.6	2.7	3.6	4.1	3.7	3.4	2.9	2.8†	3.4	2.6	2.6	2.2	2.4	2.1	1.9	2.1	1.9	2.2	2.2	1.6	1.6	1.3	1.3	1.2	1.1	1.4	+0.2		
10th Grade	4.0	4.3	4.7	5.8	7.2	7.8	7.6	6.9	6.9	6.1†	6.2	4.7	4.1	4.1	4.0	4.1	4.4	3.9	4.1	4.2	4.1	3.5	3.4	3.3	3.1	2.9	2.8	2.7	-0.1		
12th Grade	5.8	5.9	7.4	7.6	9.3	10.1	9.8	9.0	9.4	8.1†	9.1	6.6	5.9	6.2	5.5	4.9	5.4	5.9	4.7	5.5	5.2	4.8	4.5	4.0	4.2	4.3	4.4	4.3	-0.2		
LSD ^b																															
8th Grade	1.7	2.1	2.3	2.4	3.2	3.5	3.2	2.8	2.4	2.4	2.2	1.5	1.3	1.1	1.2	0.9	1.1	1.3	1.1	1.2	1.1	0.8	1.0	0.7	0.9	0.8	0.9	0.9	+0.1		
10th Grade	3.7	4.0	4.2	5.2	6.5	6.9	6.7	5.9	6.0	5.1	4.1	2.6	1.7	1.6	1.5	1.7	1.9	1.8	1.9	1.9	1.8	1.7	1.7	1.9	2.0	2.1	2.1	2.0	-0.1		
12th Grade	5.2	5.6	6.8	6.9	8.4	8.8	8.4	7.6	8.1	6.6	6.6	3.5	1.9	2.2	1.8	1.7	2.1	2.7	1.9	2.6	2.7	2.4	2.2	2.5	2.9	3.0	3.3	3.2	-0.2		
Hallucinogens other than LSD ^b																															
8th Grade	0.7	1.1	1.0	1.3	1.7	2.0	1.8	1.6	1.5	1.4†	2.4	2.1	2.1	1.9	2.0	1.8	1.6	1.6	1.5	1.8	1.8	1.3	1.2	1.0	0.8	0.8	0.7	0.9	+0.2		
10th Grade	1.3	1.4	1.9	2.4	2.8	3.3	3.3	3.4	3.2	3.1†	4.3	4.0	3.6	3.7	3.5	3.7	3.8	3.3	3.5	3.5	3.5	3.0	2.7	2.6	1.9	2.0	1.8	1.7	-0.1		
12th Grade	2.0	1.7	2.2	3.1	3.8	4.4	4.6	4.6	4.3	4.4†	5.9	5.4	5.4	5.6	5.0	4.6	4.8	5.0	4.2	4.8	4.3	4.0	3.7	3.0	2.9	2.7	2.9	2.7	-0.2		
PCP ^g																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	1.4	1.4	1.4	1.6	1.8	2.6	2.3	2.1	1.8	2.3	1.8	1.1	1.3	0.7	1.3	0.7	0.9	1.1	1.0	1.0	1.3	0.9	0.7	0.8	1.4	1.3	1.0	1.1	+0.1		
Ecstasy (MDMA) ^g																															
8th Grade, original	—	—	—	—	2.3	2.3	1.8	1.7	3.1	3.5	2.9	2.1	1.7	1.7	1.4	1.5	1.7	1.3	2.4	1.7	1.1	1.1	0.9	—	—	—	—	—	—		
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	1.4	1.0	0.9	1.1	+0.2		
10th Grade, original	—	—	—	—	4.6	3.9	3.3	4.4	5.4	6.2	4.9	3.0	2.4	2.6	2.8	3.5	2.9	3.7	4.7	4.5	3.0	3.6	2.3	—	—	—	—	—	—		
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.8	2.4	1.8	1.7	1.4	-0.3		
12th Grade, original	—	—	—	—	4.6	4.0	3.6	5.6	8.2	9.2	7.4	4.5	4.0	3.0	4.1	4.5	4.3	4.3	4.5	5.3	3.8	4.0	3.6	—	—	—	—	—	—		
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.0	3.6	2.7	2.6	2.2	-0.4		
Salvia ^{n,o}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.7	1.6	1.4	1.2	0.6	0.7	0.9	0.4	0.6	+0.2	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.7	3.9	2.5	2.3	1.8	1.2	0.9	0.9	0.7	-0.2	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.7	5.5	5.9	4.4	3.4	1.8	1.9	1.8	1.5	0.9	-0.6

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Cocaine																													
8th Grade	1.1	1.5	1.7	2.1	2.6	3.0	2.8	3.1	2.7	2.6	2.5	2.3	2.2	2.0	2.2	2.0	2.0	1.8	1.6	1.6	1.4	1.2	1.0	1.0	0.9	0.8	0.8	0.8	0.0
10th Grade	2.2	1.9	2.1	2.8	3.5	4.2	4.7	4.7	4.9	4.4	3.6	4.0	3.3	3.7	3.5	3.2	3.4	3.0	2.7	2.2	1.9	2.0	1.9	1.5	1.8	1.3	1.4	1.5	+0.2
12th Grade	3.5	3.1	3.3	3.6	4.0	4.9	5.5	5.7	6.2	5.0	4.8	5.0	4.8	5.3	5.1	5.7	5.2	4.4	3.4	2.9	2.9	2.7	2.6	2.6	2.5	2.3	2.7	2.3	-0.4
Crack																													
8th Grade	0.7	0.9	1.0	1.3	1.6	1.8	1.7	2.1	1.8	1.8	1.7	1.6	1.6	1.3	1.4	1.3	1.3	1.1	1.1	1.0	0.9	0.6	0.6	0.7	0.5	0.5	0.5	0.4	-0.1
10th Grade	0.9	0.9	1.1	1.4	1.8	2.1	2.2	2.5	2.4	2.2	1.8	2.3	1.6	1.7	1.7	1.3	1.3	1.3	1.2	1.0	0.9	0.8	0.8	0.5	0.7	0.4	0.6	0.6	0.0
12th Grade	1.5	1.5	1.5	1.9	2.1	2.1	2.4	2.5	2.7	2.2	2.1	2.3	2.2	2.3	1.9	2.1	1.9	1.6	1.3	1.4	1.0	1.2	1.1	1.1	1.1	0.8	1.0	0.9	-0.1
Cocaine other than Crack^h																													
8th Grade	1.0	1.2	1.3	1.7	2.1	2.5	2.2	2.4	2.3	1.9	1.9	1.8	1.6	1.6	1.7	1.6	1.5	1.4	1.3	1.3	1.1	1.0	0.8	0.8	0.8	0.6	0.6	0.7	0.0
10th Grade	2.1	1.7	1.8	2.4	3.0	3.5	4.1	4.0	4.4	3.8	3.0	3.4	2.8	3.3	3.0	2.9	3.1	2.6	2.3	1.9	1.7	1.8	1.6	1.3	1.5	1.1	1.2	1.4	+0.2
12th Grade	3.2	2.6	2.9	3.0	3.4	4.2	5.0	4.9	5.8	4.5	4.4	4.4	4.2	4.7	4.5	5.2	4.5	4.0	3.0	2.6	2.6	2.4	2.4	2.4	2.1	2.0	2.3	2.0	-0.4
Heroin^{l,j}																													
8th Grade	0.7	0.7	0.7	1.2	1.4	1.6	1.3	1.3	1.4	1.1	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.9	0.7	0.8	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.0
10th Grade	0.5	0.6	0.7	0.9	1.1	1.2	1.4	1.4	1.4	1.4	0.9	1.1	0.7	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.5	0.5	0.3	0.2	0.2	-0.1
12th Grade	0.4	0.6	0.5	0.6	1.1	1.0	1.2	1.0	1.1	1.5	0.9	1.0	0.8	0.9	0.8	0.8	0.9	0.7	0.7	0.9	0.8	0.6	0.6	0.6	0.5	0.3	0.4	0.4	0.0
With a Needleⁱ																													
8th Grade	—	—	—	—	0.9	1.0	0.8	0.8	0.9	0.6	0.7	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.5	0.6	0.5	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.0
10th Grade	—	—	—	—	0.6	0.7	0.7	0.8	0.6	0.5	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.5	0.4	0.2	0.3	0.2	0.1	-0.1
12th Grade	—	—	—	—	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.7	0.6	0.4	0.4	0.5	0.3	0.3	0.2	0.3	+0.1
Without a Needleⁱ																													
8th Grade	—	—	—	—	0.8	1.0	0.8	0.8	0.9	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.0
10th Grade	—	—	—	—	0.8	0.9	1.1	1.0	1.1	1.1	0.7	0.8	0.5	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.0
12th Grade	—	—	—	—	1.0	1.0	1.2	0.8	1.0	1.6	0.8	0.8	0.8	0.7	0.8	0.6	1.0	0.5	0.6	0.8	0.7	0.4	0.4	0.5	0.4	0.3	0.2	0.2	0.0

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Narcotics other than Heroin ^{k,l}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.5	3.3	3.6	3.8	4.7	5.4	6.2	6.3	6.7	7.0	6.7†	9.4	9.3	9.5	9.0	9.0	9.2	9.1	9.2	8.7	8.7	7.9	7.1	6.1	5.4	4.8	4.2	3.4	-0.8 s
OxyContin ^{k,n,v}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	1.3	1.7	1.7	1.8	2.6	1.8	2.1	2.0	2.1	1.8	1.6	2.0	1.0	0.8	0.9	0.8	0.8	-0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	3.0	3.6	3.5	3.2	3.8	3.9	3.6	5.1	4.6	3.9	3.0	3.4	3.0	2.6	2.1	2.2	2.2	0.0
12th Grade	—	—	—	—	—	—	—	—	—	—	—	4.0	4.5	5.0	5.5	4.3	5.2	4.7	4.9	5.1	4.9	4.3	3.6	3.3	3.7	3.4	2.7	2.3	-0.4
Vicodin ^{k,n,v}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	2.5	2.8	2.5	2.6	3.0	2.7	2.9	2.5	2.7	2.1	1.3	1.4	1.0	0.9	0.8	0.7	0.6	-0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	6.9	7.2	6.2	5.9	7.0	7.2	6.7	8.1	7.7	5.9	4.4	4.6	3.4	2.5	1.7	1.5	1.1	-0.3
12th Grade	—	—	—	—	—	—	—	—	—	—	—	9.6	10.5	9.3	9.5	9.7	9.6	9.7	9.7	8.0	8.1	7.5	5.3	4.8	4.4	2.9	2.0	1.7	-0.2
Amphetamines ^{k,m}																													
8th Grade	6.2	6.5	7.2	7.9	8.7	9.1	8.1	7.2	6.9	6.5	6.7	5.5	5.5	4.9	4.9	4.7	4.2	4.5	4.1	3.9	3.5	2.9†	4.2	4.3	4.1	3.5	3.5	3.7	+0.2
10th Grade	8.2	8.2	9.6	10.2	11.9	12.4	12.1	10.7	10.4	11.1	11.7	10.7	9.0	8.5	7.8	7.9	8.0	6.4	7.1	7.6	6.6	6.5†	7.9	7.6	6.8	6.1	5.6	5.7	0.0
12th Grade	8.2	7.1	8.4	9.4	9.3	9.5	10.2	10.1	10.2	10.5	10.9	11.1	9.9	10.0	8.6	8.1	7.5	6.8	6.6	7.4	8.2	7.9†	9.2	8.1	7.7	6.7	5.9	5.5	-0.4
Ritalin ^{k,n,o}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	2.9	2.8	2.6	2.5	2.4	2.6	2.1	1.6	1.8	1.5	1.3	0.7	1.1	0.9	0.6	0.8	0.4	0.5	+0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	4.8	4.8	4.1	3.4	3.4	3.6	2.8	2.9	3.6	2.7	2.6	1.9	1.8	1.8	1.6	1.2	0.8	0.9	+0.1
12th Grade	—	—	—	—	—	—	—	—	—	—	5.1	4.0	4.0	5.1	4.4	4.4	3.8	3.4	2.1	2.7	2.6	2.6	2.3	1.8	2.0	1.2	1.3	0.9	-0.4
Adderall ^{k,n,o}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.0	2.3	1.7	1.7	1.8	1.3	1.0	1.5	1.3	1.8	+0.5
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.7	5.3	4.6	4.5	4.4	4.6	5.2	4.2	4.0	4.1	+0.1
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.4	6.5	6.5	7.6	7.4	6.8	7.5	6.2	5.5	4.6	-1.0

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Methamphetamine^{n,o}																													
8th Grade	—	—	—	—	—	—	—	—	3.2	2.5	2.8	2.2	2.5	1.5	1.8	1.8	1.1	1.2	1.0	1.2	0.8	1.0	1.0	0.6	0.5	0.4	0.5	0.4	-0.1
10th Grade	—	—	—	—	—	—	—	—	4.6	4.0	3.7	3.9	3.3	3.0	2.9	1.8	1.6	1.5	1.6	1.6	1.4	1.0	1.0	0.8	0.8	0.4	0.4	0.4	0.0
12th Grade	—	—	—	—	—	—	—	—	4.7	4.3	3.9	3.6	3.2	3.4	2.5	2.5	1.7	1.2	1.2	1.0	1.4	1.1	0.9	1.0	0.6	0.6	0.6	0.5	-0.1
Crystal Methamphetamine (Ice)^o																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.4	1.3	1.7	1.8	2.4	2.8	2.3	3.0	1.9	2.2	2.5	3.0	2.0	2.1	2.3	1.9	1.6	1.1	0.9	0.9	1.2	0.8	1.1	0.8	0.5	0.8	0.8	0.6	-0.2
Bath salts (synthetic stimulants)^{n,o}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.8	1.0	0.5	0.4	0.9	0.5	0.9	+0.3
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.6	0.9	0.9	0.7	0.8	0.4	0.5	+0.1
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3	0.9	0.9	1.0	0.8	0.6	0.6	0.0
Sedatives (Barbiturates)^{k,p}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.4	2.8	3.4	4.1	4.7	4.9	5.1	5.5	5.8	6.2	5.7	6.7	6.0	6.5	7.2	6.6	6.2	5.8	5.2	4.8	4.3	4.5	4.8	4.3	3.6	3.0	2.9	2.7	-0.3
Tranquilizers^{b,k}																													
8th Grade	1.8	2.0	2.1	2.4	2.7	3.3	2.9	2.6	2.5	2.6†	2.8	2.6	2.7	2.5	2.8	2.6	2.4	2.4	2.6	2.8	2.0	1.8	1.8	1.7	1.7	1.7	2.0	2.0	+0.1
10th Grade	3.2	3.5	3.3	3.3	4.0	4.6	4.9	5.1	5.4	5.6†	7.3	6.3	5.3	5.1	4.8	5.2	5.3	4.6	5.0	5.1	4.5	4.3	3.7	3.9	3.9	4.1	4.1	3.9	-0.2
12th Grade	3.6	2.8	3.5	3.7	4.4	4.6	4.7	5.5	5.8	5.7†	6.9	7.7	6.7	7.3	6.8	6.6	6.2	6.2	6.3	5.6	5.6	5.3	4.6	4.7	4.7	4.9	4.7	3.9	-0.8 s
Any Prescription Drug^q																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17.1	16.8	15.8	15.4	14.4	15.0	15.2	14.8†	15.9	13.9	12.9	12.0	10.9	9.9	-1.1

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change		
OTC Cough/Cold Medicines ^{n,o}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.2	4.0	3.6	3.8	3.2	2.7	3.0	2.9	2.0	1.6	2.6	2.1	2.8	+0.7		
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.3	5.4	5.3	6.0	5.1	5.5	4.7	4.3	3.7	3.3	3.0	3.6	3.3	-0.3		
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.9	5.8	5.5	5.9	6.6	5.3	5.6	5.0	4.1	4.6	4.0	3.2	3.4	+0.2		
Rohypnol ^f																															
8th Grade	—	—	—	—	—	1.0	0.8	0.8	0.5	0.5	0.7	0.3	0.5	0.6	0.7	0.5	0.7	0.5	0.4	0.5	0.8	0.4	0.4	0.3	0.3	0.5	0.4	0.3	-0.1		
10th Grade	—	—	—	—	—	1.1	1.3	1.2	1.0	0.8	1.0	0.7	0.6	0.7	0.5	0.5	0.7	0.4	0.4	0.6	0.6	0.5	0.6	0.5	0.2	0.5	0.3	0.3	0.0		
12th Grade	—	—	—	—	—	1.1	1.2	1.4	1.0	0.8	0.9‡	1.6	1.3	1.6	1.2	1.1	1.0	1.3	1.0	1.5	1.3	1.5	0.9	0.7	1.0	1.1	0.8	0.7	0.0		
GHB ^{n,w}																															
8th Grade	—	—	—	—	—	—	—	—	—	1.2	1.1	0.8	0.9	0.7	0.5	0.8	0.7	1.1	0.7	0.6	0.6	—	—	—	—	—	—	—	—		
10th Grade	—	—	—	—	—	—	—	—	—	1.1	1.0	1.4	1.4	0.8	0.8	0.7	0.6	0.5	1.0	0.6	0.5	—	—	—	—	—	—	—	—		
12th Grade	—	—	—	—	—	—	—	—	—	1.9	1.6	1.5	1.4	2.0	1.1	1.1	0.9	1.2	1.1	1.4	1.4	1.4	1.0	1.0	0.7	0.9	0.4	0.3	-0.1		
Ketamine ^{n,x}																															
8th Grade	—	—	—	—	—	—	—	—	—	1.6	1.3	1.3	1.1	0.9	0.6	0.9	1.0	1.2	1.0	1.0	0.8	—	—	—	—	—	—	—	—		
10th Grade	—	—	—	—	—	—	—	—	—	2.1	2.1	2.2	1.9	1.3	1.0	1.0	0.8	1.0	1.3	1.1	1.2	—	—	—	—	—	—	—	—		
12th Grade	—	—	—	—	—	—	—	—	—	2.5	2.5	2.6	2.1	1.9	1.6	1.4	1.3	1.5	1.7	1.6	1.7	1.5	1.4	1.5	1.4	1.2	1.2	0.7	-0.4		
Alcohol ^s																															
Any Use																															
8th Grade	54.0	53.7‡	45.4	46.8	45.3	46.5	45.5	43.7	43.5	43.1	41.9	38.7	37.2	36.7	33.9	33.6	31.8	32.1	30.3	29.3	26.9	23.6	22.1	20.8	21.0	17.6	18.2	18.7	+0.5		
10th Grade	72.3	70.2‡	63.4	63.9	63.5	65.0	65.2	62.7	63.7	65.3	63.5	60.0	59.3	58.2	56.7	55.8	56.3	52.5	52.8	52.1	49.8	48.5	47.1	44.0	41.9	38.3	37.7	37.8	+0.1		
12th Grade	77.7	76.8‡	72.7	73.0	73.7	72.5	74.8	74.3	73.8	73.2	73.3	71.5	70.1	70.6	68.6	66.5	66.4	65.5	66.2	65.2	63.5	63.5	62.0	60.2	58.2	55.6	55.7	53.3	-2.4		
Been Drunk ^o																															
8th Grade	17.5	18.3	18.2	18.2	18.4	19.8	18.4	17.9	18.5	18.5	16.6	15.0	14.5	14.5	14.1	13.9	12.6	12.7	12.2	11.5	10.5	8.6	8.4	7.3	7.7	5.7	6.4	6.5	+0.1		
10th Grade	40.1	37.0	37.8	38.0	38.5	40.1	40.7	38.3	40.9	41.6	39.9	35.4	34.7	35.1	34.2	34.5	34.4	30.0	31.2	29.9	28.8	28.2	27.1	24.6	23.4	20.5	20.4	20.9	+0.5		
12th Grade	52.7	50.3	49.6	51.7	52.5	51.9	53.2	52.0	53.2	51.8	53.2	50.4	48.0	51.8	47.7	47.9	46.1	45.6	47.0	44.0	42.2	45.0	43.5	41.4	37.7	37.3	35.6	33.9	-1.7		

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change	
Flavored Alcoholic Beverages^{e,n,y}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	30.4	27.9	26.8	26.0	25.0	22.2	21.9	19.2	17.0	15.7	13.4	13.4	11.2	10.8	12.1	+1.3	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	49.7	48.5	48.8	45.9	43.4	41.5	41.0	38.3	37.8	35.6	33.2	31.4	26.1	28.3	28.8	+0.5	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	55.2	55.8	58.4	54.7	53.6	51.8	53.4	47.9	47.0	44.4	44.2	43.6	42.8	40.0	39.6	38.4	-1.2	
Alcoholic Beverages containing Caffeine^{n,o,z}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.8	10.9	10.2	9.5	8.4	6.5	5.6	6.0	+0.4	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.5	19.7	16.9	14.3	12.8	10.6	9.9	9.8	-0.1	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26.4	26.4	23.5	20.0	18.3	17.0	16.9	14.7	-2.2	
Powdered Alcohol^{n,o}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.0	0.8	0.8	-0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3	0.8	1.2	+0.4
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.7	1.0	1.3	+0.4
Tobacco using a Hookah^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17.1	18.5	18.3	21.4	22.9	19.8	13.0	10.1	7.8	-2.2
Small cigars^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23.1	19.5	19.9	20.4	18.9	15.9	15.6	13.3	9.2	-4.1 ss
Dissolvable Tobacco Products^{e,n}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.0	1.1	1.1	0.9	0.7	0.6	0.6	-0.1	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6	1.2	1.3	1.1	0.9	0.6	1.1	+0.4	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	1.6	1.9	1.1	1.4	1.1	1.4	1.3	-0.1
Snus^{e,n}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.4	2.0	2.2	1.9	2.2	1.1	1.3	+0.2
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.9	5.2	4.5	4.0	3.0	2.6	3.1	+0.5
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.9	7.9	7.7	5.8	5.8	5.8	4.2	4.7	+0.6

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Any Vaping ^{bb}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.3	17.6	+4.3 sss
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23.9	32.3	+8.5 sss
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.8	37.3	+9.4 sss
Vaping Nicotine ^{bb}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.5	10.9	+3.4 sss
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.8	24.7	+8.9 sss
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18.8	29.7	+10.9 sss
Vaping Marijuana ^{bb}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0	4.4	+1.3 ss
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.1	12.4	+4.2 sss
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.5	13.1	+3.6 sss
Vaping Just Flavoring ^{bb}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.8	15.1	+3.2 ss
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.3	24.7	+5.4 sss
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.6	25.7	+5.2 ss
Steroids ^{k,u}																													
8th Grade	1.0	1.1	0.9	1.2	1.0	0.9	1.0	1.2	1.7	1.7	1.6	1.5	1.4	1.1	1.1	0.9	0.8	0.9	0.8	0.5	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.0
10th Grade	1.1	1.1	1.0	1.1	1.2	1.2	1.2	1.2	1.7	2.2	2.1	2.2	1.7	1.5	1.3	1.2	1.1	0.9	0.8	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.6	-0.1
12th Grade	1.4	1.1	1.2	1.3	1.5	1.4	1.4	1.7	1.8	1.7	2.4	2.5	2.1	2.5	1.5	1.8	1.4	1.5	1.5	1.5	1.2	1.3	1.5	1.5	1.7	1.0	1.1	1.1	+0.1
Androstenedione ^{bb}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	1.1	1.2	1.0	0.9	0.6	1.0	0.9	0.9	0.8	0.9	0.6	0.6	0.7	0.4	0.4	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	2.2	1.9	1.7	1.1	0.9	0.9	0.6	0.9	1.1	1.0	0.8	0.9	0.9	0.9	0.7	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	3.0	2.5	2.5	2.1	1.7	1.1	0.9	1.3	1.1	1.5	0.7	1.0	0.7	1.1	0.9	0.9	0.6	0.5	0.0

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change	
Creatine ^{bb}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	2.7	2.3	2.3	1.9	1.3	2.2	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.6	1.2	1.8	1.7	1.7	0.0	
10th Grade	—	—	—	—	—	—	—	—	—	—	7.9	7.6	5.8	5.3	5.1	6.5	6.1	5.8	6.0	6.0	7.1	6.8	5.7	6.0	6.0	7.8	6.8	6.2	-0.6	
12th Grade	—	—	—	—	—	—	—	—	—	—	11.7	8.5	8.3	8.1	8.1	7.8	8.0	8.3	9.1	9.2	8.6	9.5	9.3	10.0	8.8	9.0	8.1	9.3	+1.2	
Legal Use of Over-the-Counter Stimulants																														
Diet Pills ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	8.8	8.4	8.0	9.3	9.8	9.3	9.8	9.6	10.2	11.1	11.8	15.1	13.0	10.7	10.0	9.4	6.7	7.2	6.1	4.3	4.9	5.5	5.3	6.4	5.1	4.5	4.0	3.5	-0.4	
Stay-Awake Pills ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	22.2	20.4	19.1	20.7	20.3	19.0	19.7	19.0	15.7	15.0	17.3	14.9	12.5	11.8	10.4	10.0	7.6	6.3	4.8	3.2	3.9	3.8	3.2	3.5	2.7	2.5	2.5	2.4	0.0	
Look-Alikes ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	5.2	5.4	6.2	6.0	6.8	6.5	6.4	5.7	5.0	5.8	7.1	6.6	5.4	5.0	4.2	3.7	2.8	3.1	2.6	1.7	2.2	2.1	1.7	1.4	2.3	1.6	1.5	—	—	
Previously surveyed drugs that have been dropped.																														
Nitrites ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.9	0.5	0.9	1.1	1.1	1.6	1.2	1.4	0.9	0.6	0.6	1.1	0.9	0.8	0.6	0.5	0.8	0.6	0.9	—	—	—	—	—	—	—	—	—	—	—
Provigil ^{k,o}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Table continued on next page.)

TABLE 5-5b (cont.)
Trends in Annual Prevalence of Use of Various Drugs
in Grades 8, 10, and 12
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Methaqualone ^{e,k}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.5	0.6	0.2	0.8	0.7	1.1	1.0	1.1	1.1	0.3	0.8	0.9	0.6	0.8	0.9	0.8	0.5	0.5	0.6	0.3	0.3	0.4	—	—	—	—	—	—	—
Bidis ^{n,o}																													
8th Grade	—	—	—	—	—	—	—	—	—	3.9	2.7	2.7	2.0	1.7	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	6.4	4.9	3.1	2.8	2.1	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	9.2	7.0	5.9	4.0	3.6	3.3	2.3	1.7	1.9	1.5	1.4	—	—	—	—	—	—	—	—	—
Kreteks ^{n,o}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	2.6	2.6	2.0	1.9	1.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	6.0	4.9	3.8	3.7	2.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	10.1	8.4	6.7	6.5	7.1	6.2	6.8	6.8	5.5	4.6	2.9	3.0	1.6	1.6	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note: See footnotes following Table 5-5e.

TABLE 5-5c
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Any Illicit Drug ^a																													
8th Grade	5.7	6.8	8.4	10.9	12.4	14.6	12.9	12.1	12.2	11.9	11.7	10.4	9.7	8.4	8.5	8.1	7.4	7.6	8.1	9.5	8.5	7.7‡	8.7	8.3	8.1	6.9	7.0	7.3	+0.3
10th Grade	11.6	11.0	14.0	18.5	20.2	23.2	23.0	21.5	22.1	22.5	22.7	20.8	19.5	18.3	17.3	16.8	16.9	15.8	17.8	18.5	19.2	18.6‡	19.2	18.5	16.5	15.9	17.2	18.3	+1.0
12th Grade	16.4	14.4	18.3	21.9	23.8	24.6	26.2	25.6	25.9	24.9	25.7	25.4	24.1	23.4	23.1	21.5	21.9	22.3	23.3	23.8	25.2	25.2‡	25.2	23.7	23.6	24.4	24.9	24.0	-0.9
Any Illicit Drug other than Marijuana ^{a,b}																													
8th Grade	3.8	4.7	5.3	5.6	6.5	6.9	6.0	5.5	5.5	5.6‡	5.5	4.7	4.7	4.1	4.1	3.8	3.6	3.8	3.5	3.5	3.4	2.6‡	3.6	3.3	3.1	2.7	2.7	3.0	+0.3
10th Grade	5.5	5.7	6.5	7.1	8.9	8.9	8.8	8.6	8.6	8.5‡	8.7	8.1	6.9	6.9	6.4	6.3	6.9	5.3	5.7	5.8	5.4	5.0‡	4.9	5.6	4.9	4.4	4.5	4.2	-0.3
12th Grade	7.1	6.3	7.9	8.8	10.0	9.5	10.7	10.7	10.4	10.4‡	11.0	11.3	10.4	10.8	10.3	9.8	9.5	9.3	8.6	8.6	8.9	8.4‡	8.2	7.7	7.6	6.9	6.3	6.0	-0.3
Any Illicit Drug including Inhalants ^{a,c}																													
8th Grade	8.8	10.0	12.0	14.3	16.1	17.5	16.0	14.9	15.1	14.4	14.0	12.6	12.1	11.2	11.2	10.9	10.1	10.4	10.6	11.7	10.5	9.5‡	10.0	9.5	9.3	7.9	8.6	8.3	-0.4
10th Grade	13.1	12.6	15.5	20.0	21.6	24.5	24.1	22.5	23.1	23.6	23.6	21.7	20.5	19.3	18.4	17.7	18.1	16.8	18.8	19.4	20.1	19.3‡	20.0	19.1	17.1	16.4	18.0	18.7	+0.8
12th Grade	17.8	15.5	19.3	23.0	24.8	25.5	26.9	26.6	26.4	26.4	26.5	25.9	24.6	23.3	24.2	22.1	22.8	22.8	24.1	24.5	26.2	25.2‡	26.5	24.3	24.7	24.6	25.7	25.0	-0.6
Marijuana/Hashish																													
8th Grade	3.2	3.7	5.1	7.8	9.1	11.3	10.2	9.7	9.7	9.1	9.2	8.3	7.5	6.4	6.6	6.5	5.7	5.8	6.5	8.0	7.2	6.5	7.0	6.5	6.5	5.4	5.5	5.6	+0.1
10th Grade	8.7	8.1	10.9	15.8	17.2	20.4	20.5	18.7	19.4	19.7	19.8	17.8	17.0	15.9	15.2	14.2	14.2	13.8	15.9	16.7	17.6	17.0	18.0	16.6	14.8	14.0	15.7	16.7	+0.9
12th Grade	13.8	11.9	15.5	19.0	21.2	21.9	23.7	22.8	23.1	21.6	22.4	21.5	21.2	19.9	19.8	18.3	18.8	19.4	20.6	21.4	22.6	22.9	22.7	21.2	21.3	22.5	22.9	22.2	-0.7
Inhalants ^{c,d}																													
8th Grade	4.4	4.7	5.4	5.6	6.1	5.8	5.6	4.8	5.0	4.5	4.0	3.8	4.1	4.5	4.2	4.1	3.9	4.1	3.8	3.6	3.2	2.7	2.3	2.2	2.0	1.8	2.1	1.8	-0.4
10th Grade	2.7	2.7	3.3	3.6	3.5	3.3	3.0	2.9	2.6	2.6	2.4	2.4	2.2	2.4	2.2	2.3	2.5	2.1	2.2	2.0	1.7	1.4	1.3	1.1	1.2	1.0	1.1	1.0	-0.1
12th Grade	2.4	2.3	2.5	2.7	3.2	2.5	2.5	2.3	2.0	2.2	1.7	1.5	1.5	1.5	2.0	1.5	1.2	1.4	1.2	1.4	1.0	0.9	1.0	0.7	0.7	0.8	0.8	0.7	-0.2
Hallucinogens ^{b,f}																													
8th Grade	0.8	1.1	1.2	1.3	1.7	1.9	1.8	1.4	1.3	1.2‡	1.6	1.2	1.2	1.0	1.1	0.9	1.0	0.9	0.9	1.0	1.0	0.6	0.8	0.5	0.6	0.6	0.5	0.6	+0.1
10th Grade	1.6	1.8	1.9	2.4	3.3	2.8	3.3	3.2	2.9	2.3‡	2.1	1.6	1.5	1.6	1.5	1.5	1.7	1.3	1.4	1.6	1.4	1.2	1.1	1.2	0.9	0.9	1.1	0.8	-0.3
12th Grade	2.2	2.1	2.7	3.1	4.4	3.5	3.9	3.8	3.5	2.6‡	3.3	2.3	1.8	1.9	1.9	1.5	1.7	2.2	1.6	1.9	1.6	1.6	1.4	1.5	1.6	1.4	1.6	1.4	-0.1

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
LSD^b																													
8th Grade	0.6	0.9	1.0	1.1	1.4	1.5	1.5	1.1	1.1	1.0	1.0	0.7	0.6	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.3	0.5	0.3	0.4	0.4	0.3	0.4	0.4	+0.1
10th Grade	1.5	1.6	1.6	2.0	3.0	2.4	2.8	2.7	2.3	1.6	1.5	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.5	0.7	0.7	0.5	0.6	0.6	0.6	0.7	0.8	0.5	-0.3 ^s
12th Grade	1.9	2.0	2.4	2.6	4.0	2.5	3.1	3.2	2.7	1.6	2.3	0.7	0.6	0.7	0.7	0.6	0.6	1.1	0.5	0.8	0.8	0.8	0.8	1.0	1.1	1.0	1.2	1.0	-0.2
Hallucinogens other than LSD^b																													
8th Grade	0.3	0.4	0.5	0.7	0.8	0.9	0.7	0.7	0.6	0.6†	1.1	1.0	1.0	0.8	0.9	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.4	0.3	0.3	0.3	0.4	+0.1
10th Grade	0.4	0.5	0.7	1.0	1.0	1.0	1.2	1.4	1.2	1.2†	1.4	1.4	1.2	1.4	1.3	1.3	1.4	1.0	1.1	1.2	1.1	0.9	0.8	0.8	0.6	0.5	0.6	0.5	-0.1
12th Grade	0.7	0.5	0.8	1.2	1.3	1.6	1.7	1.6	1.6	1.7†	1.9	2.0	1.5	1.7	1.6	1.3	1.4	1.6	1.4	1.5	1.2	1.3	1.0	1.0	0.9	0.7	1.0	0.9	-0.1
Ecstasy (MDMA)^g																													
8th Grade, original	—	—	—	—	1.0	1.0	0.9	0.8	1.4	1.8	1.4	0.7	0.8	0.6	0.7	0.6	0.8	0.6	1.1	0.6	0.5	0.5	0.4	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.7	0.5	0.3	0.4	0.4	+0.1
10th Grade, original	—	—	—	—	1.8	1.3	1.3	1.8	2.6	2.6	1.8	1.1	0.8	1.0	1.2	1.2	1.1	1.3	1.9	1.6	1.0	1.2	0.8	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.1	0.9	0.5	0.5	0.4	-0.1
12th Grade, original	—	—	—	—	2.0	1.6	1.5	2.5	3.6	2.8	2.4	1.3	1.2	1.0	1.3	1.6	1.8	1.8	1.4	2.3	0.9	1.5	1.4	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	1.1	0.9	0.9	0.5	-0.4 ^s
Cocaine																													
8th Grade	0.5	0.7	0.7	1.0	1.2	1.3	1.1	1.4	1.3	1.2	1.2	1.1	0.9	0.9	1.0	1.0	0.9	0.8	0.8	0.6	0.8	0.5	0.5	0.5	0.5	0.3	0.4	0.3	-0.1
10th Grade	0.7	0.7	0.9	1.2	1.7	1.7	2.0	2.1	1.8	1.8	1.3	1.6	1.3	1.7	1.5	1.5	1.3	1.2	0.9	0.9	0.7	0.8	0.8	0.6	0.8	0.4	0.5	0.6	+0.1
12th Grade	1.4	1.3	1.3	1.5	1.8	2.0	2.3	2.4	2.6	2.1	2.1	2.3	2.1	2.3	2.3	2.5	2.0	1.9	1.3	1.3	1.1	1.1	1.1	1.0	1.1	0.9	1.2	1.1	0.0
Crack																													
8th Grade	0.3	0.5	0.4	0.7	0.7	0.8	0.7	0.9	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.3	0.3	0.3	0.3	0.2	0.3	0.2	-0.1
10th Grade	0.3	0.4	0.5	0.6	0.9	0.8	0.9	1.1	0.8	0.9	0.7	1.0	0.7	0.8	0.7	0.7	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.3	-0.1
12th Grade	0.7	0.6	0.7	0.8	1.0	1.0	0.9	1.0	1.1	1.0	1.1	1.2	0.9	1.0	1.0	0.9	0.9	0.8	0.6	0.7	0.5	0.6	0.6	0.7	0.6	0.5	0.6	0.5	-0.1
Cocaine other than Crack^h																													
8th Grade	0.5	0.5	0.6	0.9	1.0	1.0	0.8	1.0	1.1	0.9	0.9	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.5	0.6	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.0
10th Grade	0.6	0.6	0.7	1.0	1.4	1.3	1.6	1.8	1.6	1.6	1.2	1.3	1.1	1.5	1.3	1.3	1.1	1.0	0.8	0.7	0.6	0.7	0.7	0.5	0.7	0.3	0.4	0.5	+0.2
12th Grade	1.2	1.0	1.2	1.3	1.3	1.6	2.0	2.0	2.5	1.7	1.8	1.9	1.8	2.2	2.0	2.4	1.7	1.7	1.1	1.1	1.0	1.0	0.9	0.9	1.1	0.6	1.1	1.0	-0.1

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Heroin ^{l,j}																														
8th Grade	0.3	0.4	0.4	0.6	0.6	0.7	0.6	0.6	0.6	0.5	0.6	0.5	0.4	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.3	0.3	0.1	0.2	0.2	0.1	-0.1	
10th Grade	0.2	0.2	0.3	0.4	0.6	0.5	0.6	0.7	0.7	0.5	0.3	0.5	0.3	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.2	0.2	0.1	0.1	0.0	
12th Grade	0.2	0.3	0.2	0.3	0.6	0.5	0.5	0.5	0.5	0.7	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.3	0.2	-0.1	
With a Needle ⁱ																														
8th Grade	—	—	—	—	0.4	0.5	0.4	0.5	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	-0.1	
10th Grade	—	—	—	—	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.1	0.1	0.0	
12th Grade	—	—	—	—	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.1	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	+0.0	
Without a Needle ⁱ																														
8th Grade	—	—	—	—	0.3	0.4	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	-0.1	
10th Grade	—	—	—	—	0.3	0.3	0.4	0.5	0.5	0.4	0.2	0.4	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0
12th Grade	—	—	—	—	0.6	0.4	0.6	0.4	0.4	0.7	0.3	0.5	0.4	0.3	0.5	0.3	0.4	0.2	0.3	0.4	0.4	0.2	0.2	0.4	0.3	0.1	0.2	0.1	0.0	
Narcotics other than Heroin ^{k,l}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	1.1	1.2	1.3	1.5	1.8	2.0	2.3	2.4	2.6	2.9	3.0†	4.0	4.1	4.3	3.9	3.8	3.8	3.8	4.1	3.6	3.6	3.0	2.8	2.2	2.1	1.7	1.6	1.1	-0.5 ss	
Amphetamines ^{k,m}																														
8th Grade	2.6	3.3	3.6	3.6	4.2	4.6	3.8	3.3	3.4	3.4	3.2	2.8	2.7	2.3	2.3	2.1	2.0	2.2	1.9	1.8	1.8	1.3‡	2.3	2.1	1.9	1.7	1.7	1.8	+0.1	
10th Grade	3.3	3.6	4.3	4.5	5.3	5.5	5.1	5.1	5.0	5.4	5.6	5.2	4.3	4.0	3.7	3.5	4.0	2.8	3.3	3.3	3.1	2.8‡	3.3	3.7	3.1	2.7	2.5	2.4	0.0	
12th Grade	3.2	2.8	3.7	4.0	4.0	4.1	4.8	4.6	4.5	5.0	5.6	5.5	5.0	4.6	3.9	3.7	3.7	2.9	3.0	3.3	3.7	3.3‡	4.2	3.8	3.2	3.0	2.6	2.4	-0.2	
Methamphetamine ^{n,o}																														
8th Grade	—	—	—	—	—	—	—	—	1.1	0.8	1.3	1.1	1.2	0.6	0.7	0.6	0.6	0.7	0.5	0.7	0.4	0.5	0.4	0.2	0.3	0.3	0.2	0.1	-0.1	
10th Grade	—	—	—	—	—	—	—	—	1.8	2.0	1.5	1.8	1.4	1.3	1.1	0.7	0.4	0.7	0.6	0.7	0.5	0.6	0.4	0.3	0.3	0.2	0.1	0.1	0.0	
12th Grade	—	—	—	—	—	—	—	—	1.7	1.9	1.5	1.7	1.7	1.4	0.9	0.9	0.6	0.6	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.0	

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Crystal Methamphetamine (Ice) ^o																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.6	0.5	0.6	0.7	1.1	1.1	0.8	1.2	0.8	1.0	1.1	1.2	0.8	0.8	0.9	0.7	0.6	0.6	0.5	0.6	0.6	0.4	0.8	0.4	0.3	0.4	0.5	0.4	-0.1	
Sedatives (Barbiturates) ^{k,p}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	1.4	1.1	1.3	1.7	2.2	2.1	2.1	2.6	2.6	3.0	2.8	3.2	2.9†	2.9	3.3	3.0	2.7	2.8	2.5	2.2	1.8	2.0	2.2	2.0	1.7	1.5	1.4	1.2	-0.2	
Tranquilizers ^{b,k}																														
8th Grade	0.8	0.8	0.9	1.1	1.2	1.5	1.2	1.2	1.1	1.4‡	1.2	1.2	1.4	1.2	1.3	1.3	1.1	1.2	1.2	1.2	1.0	0.8	0.9	0.8	0.8	0.8	0.7	0.9	+0.1	
10th Grade	1.2	1.5	1.1	1.5	1.7	1.7	2.2	2.2	2.2	2.5‡	2.9	2.9	2.4	2.3	2.3	2.4	2.6	1.9	2.0	2.2	1.9	1.7	1.6	1.6	1.7	1.5	1.5	1.3	-0.2	
12th Grade	1.4	1.0	1.2	1.4	1.8	2.0	1.8	2.4	2.5	2.6‡	2.9	3.3	2.8	3.1	2.9	2.7	2.6	2.6	2.7	2.5	2.3	2.1	2.0	2.1	2.0	1.9	2.0	1.3	-0.7 ss	
Any Prescription Drug ^q																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.6	8.1	7.8	7.2	7.3	6.9	7.2	7.0‡	7.1	6.4	5.9	5.4	4.9	4.2	-0.6	
Rohypnol ^r																														
8th Grade	—	—	—	—	—	0.5	0.3	0.4	0.3	0.3	0.4	0.2	0.1	0.2	0.2	0.4	0.3	0.1	0.2	0.2	0.6	0.1	0.1	0.2	0.1	0.2	0.1	0.3	+0.1	
10th Grade	—	—	—	—	—	0.5	0.5	0.4	0.5	0.4	0.2	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.4	0.1	0.3	0.0	0.1	0.0
12th Grade	—	—	—	—	—	0.5	0.3	0.3	0.3	0.4	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Alcohol ^s																														
Any Use																														
8th Grade	25.1	26.1‡	24.3	25.5	24.6	26.2	24.5	23.0	24.0	22.4	21.5	19.6	19.7	18.6	17.1	17.2	15.9	15.9	14.9	13.8	12.7	11.0	10.2	9.0	9.7	7.3	8.0	8.2	+0.2	
10th Grade	42.8	39.9‡	38.2	39.2	38.8	40.4	40.1	38.8	40.0	41.0	39.0	35.4	35.4	35.2	33.2	33.8	33.4	28.8	30.4	28.9	27.2	27.6	25.7	23.5	21.5	19.9	19.7	18.6	-1.1	
12th Grade	54.0	51.3‡	48.6	50.1	51.3	50.8	52.7	52.0	51.0	50.0	49.8	48.6	47.5	48.0	47.0	45.3	44.4	43.1	43.5	41.2	40.0	41.5	39.2	37.4	35.3	33.2	33.2	30.2	-3.0 s	

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Been Drunk ^o																														
8th Grade	7.6	7.5	7.8	8.7	8.3	9.6	8.2	8.4	9.4	8.3	7.7	6.7	6.7	6.2	6.0	6.2	5.5	5.4	5.4	5.0	4.4	3.6	3.5	2.7	3.1	1.8	2.2	2.1	-0.2	
10th Grade	20.5	18.1	19.8	20.3	20.8	21.3	22.4	21.1	22.5	23.5	21.9	18.3	18.2	18.5	17.6	18.8	18.1	14.4	15.5	14.7	13.7	14.5	12.8	11.2	10.3	9.0	8.9	8.4	-0.5	
12th Grade	31.6	29.9	28.9	30.8	33.2	31.3	34.2	32.9	32.9	32.3	32.7	30.3	30.9	32.5	30.2	30.0	28.7	27.6	27.4	26.8	25.0	28.1	26.0	23.5	20.6	20.4	19.1	17.5	-1.6	
Flavored Alcoholic Beverages ^{e,n}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	14.6	12.9	13.1	12.2	10.2	9.5	9.4	8.6	7.6	6.3	5.7	5.5	4.0	4.4	4.9	+0.5	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	25.1	23.1	24.7	21.8	20.2	19.0	19.4	15.8	16.3	15.5	14.0	12.8	11.0	12.9	11.8	-1.1	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	31.1	30.5	29.3	29.1	27.4	27.4	24.1	23.1	21.8	21.0	19.9	20.8	18.3	20.2	18.1	-2.2	
Cigarettes																														
Any Use																														
8th Grade	14.3	15.5	16.7	18.6	19.1	21.0	19.4	19.1	17.5	14.6	12.2	10.7	10.2	9.2	9.3	8.7	7.1	6.8	6.5	7.1	6.1	4.9	4.5	4.0	3.6	2.6	1.9	2.2	+0.3	
10th Grade	20.8	21.5	24.7	25.4	27.9	30.4	29.8	27.6	25.7	23.9	21.3	17.7	16.7	16.0	14.9	14.5	14.0	12.3	13.1	13.6	11.8	10.8	9.1	7.2	6.3	4.9	5.0	4.2	-0.8	
12th Grade	28.3	27.8	29.9	31.2	33.5	34.0	36.5	35.1	34.6	31.4	29.5	26.7	24.4	25.0	23.2	21.6	21.6	20.4	20.1	19.2	18.7	17.1	16.3	13.6	11.4	10.5	9.7	7.6	-2.0 ss	
Smokeless Tobacco ¹																														
8th Grade	6.9	7.0	6.6	7.7	7.1	7.1	5.5	4.8	4.5	4.2	4.0	3.3	4.1	4.1	3.3	3.7	3.2	3.5	3.7	4.1	3.5	2.8	2.8	3.0	3.2	2.5	1.7	2.1	+0.3	
10th Grade	10.0	9.6	10.4	10.5	9.7	8.6	8.9	7.5	6.5	6.1	6.9	6.1	5.3	4.9	5.6	5.7	6.1	5.0	6.5	7.5	6.6	6.4	6.4	5.3	4.9	3.5	3.8	3.9	+0.1	
12th Grade	—	11.4	10.7	11.1	12.2	9.8	9.7	8.8	8.4	7.6	7.8	6.5	6.7	6.7	7.6	6.1	6.6	6.5	8.4	8.5	8.3	7.9	8.1	8.4	6.1	6.6	4.9	4.2	-0.8	
Large Cigars ^{bb}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.9	2.4	1.5	1.5	1.7	+0.2
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.9	3.4	2.3	2.6	2.8	+0.1
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.4	7.0	6.5	5.6	5.2	-0.3
Flavored Little Cigars ^{bb}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.1	4.1	2.8	2.6	2.6	0.0
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.9	6.1	4.9	4.0	5.3	+1.4
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.9	11.4	9.5	10.1	8.9	-1.2

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change		
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018			
Regular Little Cigars ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.5	3.3	1.9	1.6	1.6	0.0	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.4	3.8	3.0	3.0	3.1	+0.1	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.0	7.8	6.1	6.6	5.8	-0.7	
Any Vaping ^{bb,cc}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.0	6.2‡	6.6	10.4	+3.7 sss		
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14.2	11.0‡	13.1	21.7	+8.5 sss		
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.3	12.5‡	16.6	26.7	+9.9 sss		
Vaping Nicotine ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.5	6.1	+2.6 sss	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.2	16.1	+7.9 sss	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.0	20.9	+10.0 sss	
Vaping Marijuana ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6	2.6	+1.0 ss	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.3	7.0	+2.7 sss	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.9	7.5	+2.5 sss	
Vaping Just Flavoring ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.3	8.1	+2.8 sss	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.2	13.1	+4.0 sss	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.7	13.5	+3.8 sss	
Tobacco Using a Hookah ^{bb}																															
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.8	2.5	1.6	-0.9 s	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.0	3.0	2.4	-0.7
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.1	5.0	4.4	-0.6

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Any Nicotine Use ^{e,gg}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.6	32.5	+6.9 ss	
Any Nicotine Use other than Vaping ^{e,hh}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.6	18.5	-2.1	
Steroids ^{k,u}																														
8th Grade	0.4	0.5	0.5	0.5	0.6	0.4	0.5	0.5	0.7	0.8	0.7	0.8	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.0
10th Grade	0.6	0.6	0.5	0.6	0.6	0.5	0.7	0.6	0.9	1.0	0.9	1.0	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	+0.1	
12th Grade	0.8	0.6	0.7	0.9	0.7	0.7	1.0	1.1	0.9	0.8	1.3	1.4	1.3	1.6	0.9	1.1	1.0	1.0	1.0	1.1	0.7	0.9	1.0	0.9	1.0	0.7	0.8	0.8	+0.0	
Legal Use of Over-the-Counter Stimulants																														
Diet Pills ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	3.7	4.0	3.8	4.2	3.8	4.3	4.6	4.8	5.4	5.8	6.3	9.2	6.5	5.6	4.4	5.3	3.8	3.7	2.6	2.1	2.4	3.4	2.4	3.6	2.1	2.1	2.4	1.9	-0.4	
Stay-Awake Pills ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	6.8	7.2	7.0	6.3	7.3	7.5	7.8	7.4	6.8	7.3	7.2	5.8	5.0	4.5	4.2	4.2	3.3	2.6	2.3	1.6	2.2	1.9	1.5	1.7	1.2	1.7	1.6	1.2	-0.4	
Look-Alikes ^e																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12th Grade	2.1	2.4	2.7	2.4	3.0	3.1	2.7	2.7	2.4	2.6	3.3	2.8	2.4	2.5	1.9	2.3	1.1	1.6	1.0	0.8	1.2	0.8	0.7	0.7	0.9	0.9	0.8	—	—	

(Table continued on next page.)

TABLE 5-5c (cont.)
Trends in 30-Day Prevalence of Use of Various Drugs
in Grades 8, 10, and 12

	Percentage who used in last 30 days																												2017– 2018 change
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Legal Use of Prescription ADHD Drugs																													
Stimulant-Type ^{n,dd,ee}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.9	3.5	3.1	3.5	3.7	3.4	3.3	3.5	3.4	3.2	3.6	3.7	3.4	3.7	+0.3
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.4	2.8	2.8	2.9	3.3	3.1	2.8	3.8	3.7	3.4	4.2	3.0	3.0	3.9	+0.8
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.9	2.3	2.6	2.9	2.9	3.0	3.3	3.8	4.4	3.8	4.0	3.9	3.4	3.5	0.0
Non-Stimulant-Type ^{n,dd,ee}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2	1.9	1.4	1.6	1.2	1.4	1.5	1.2	1.4	1.2	1.2	2.0	1.1	1.2	+0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.3	2.3	1.6	1.7	1.9	1.6	1.3	1.3	1.3	1.4	1.7	1.2	1.0	1.4	+0.4
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6	1.6	1.7	1.9	1.5	2.3	1.9	1.8	1.8	2.2	1.5	2.1	2.5	2.6	+0.1
Either Type ^{n,dd,ee}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.1	5.2	4.5	5.1	4.9	4.7	4.9	4.7	5.0	4.6	4.9	5.6	4.7	5.2	+0.5
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.6	4.8	4.2	4.5	5.0	4.6	4.2	5.1	5.0	4.8	5.8	4.3	4.0	5.1	+1.1
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5	3.7	4.1	4.4	4.3	5.2	5.1	5.5	6.0	5.5	5.3	5.6	5.7	5.9	+0.1
Previously surveyed drugs that have been dropped.																													
Nitrites ^e																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.4	0.3	0.6	0.4	0.4	0.7	0.7	1.0	0.4	0.3	0.5	0.6	0.7	0.7	0.5	0.3	0.5	0.3	0.6	—	—	—	—	—	—	—	—	—	
PCP ^e																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.5	0.6	1.0	0.7	0.6	1.3	0.7	1.0	0.8	0.9	0.5	0.4	0.6	0.4	0.7	0.4	0.5	0.6	0.5	0.8	0.8	0.5	0.4	—	—	—	—	—	
Methaqualone ^{e,k}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.2	0.4	0.1	0.4	0.4	0.6	0.3	0.6	0.4	0.2	0.5	0.3	0.4	0.5	0.5	0.4	0.4	0.2	0.3	0.2	0.2	0.3	—	—	—	—	—	—	

Source: The Monitoring the Future study, the University of Michigan.

Note: See footnotes following Table 5-5e.

TABLE 5-5d
Trends in 30-Day Prevalence of Daily Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change
Marijuana/Hashish																													
Used Daily in Past 30 Days ^{aa}																													
8th Grade	0.2	0.2	0.4	0.7	0.8	1.5	1.1	1.1	1.4	1.3	1.3	1.2	1.0	0.8	1.0	1.0	0.8	0.9	1.0	1.2	1.3	1.1	1.1	1.0	1.1	0.7	0.8	0.7	0.0
10th Grade	0.8	0.8	1.0	2.2	2.8	3.5	3.7	3.6	3.8	3.8	4.5	3.9	3.6	3.2	3.1	2.8	2.8	2.7	2.8	3.3	3.6	3.5	4.0	3.4	3.0	2.5	2.9	3.4	+0.5
12th Grade	2.0	1.9	2.4	3.6	4.6	4.9	5.8	5.6	6.0	6.0	5.8	6.0	6.0	5.6	5.0	5.0	5.1	5.4	5.2	6.1	6.6	6.5	6.5	5.8	6.0	6.0	5.9	5.8	-0.2
Ever Used Daily for Month or More in Lifetime ^e																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	9.0	8.4	9.6	11.3	12.1	15.7	18.8	18.0	17.9	17.0	18.0	15.5	16.4	17.8	14.5	16.6	15.7	15.1	14.9	15.5	17.4	18.2	15.8	13.7	12.4	14.3	13.9	12.3	-1.6
Alcohol ^{s,aa}																													
Any Daily Use																													
8th Grade	0.5	0.6‡	1.0	1.0	0.7	1.0	0.8	0.9	1.0	0.8	0.9	0.7	0.8	0.6	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.0
10th Grade	1.3	1.2‡	1.8	1.7	1.7	1.6	1.7	1.9	1.9	1.8	1.9	1.8	1.5	1.3	1.3	1.4	1.4	1.0	1.1	1.1	0.8	1.0	0.9	0.8	0.5	0.5	0.6	0.5	-0.1
12th Grade	3.6	3.4‡	3.4	2.9	3.5	3.7	3.9	3.9	3.4	2.9	3.6	3.5	3.2	2.8	3.1	3.0	3.1	2.8	2.5	2.7	2.1	2.5	2.2	1.9	1.9	1.3	1.6	1.2	-0.4 s
Been Drunk																													
Daily ^{o,aa}																													
8th Grade	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
10th Grade	0.2	0.3	0.4	0.4	0.6	0.4	0.6	0.6	0.7	0.5	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.3	0.4	0.3	0.2	0.4	0.3	0.3	0.1	0.1	0.2	0.2	0.0
12th Grade	0.9	0.8	0.9	1.2	1.3	1.6	2.0	1.5	1.9	1.7	1.4	1.2	1.6	1.8	1.5	1.6	1.3	1.4	1.1	1.6	1.3	1.5	1.3	1.1	0.8	0.8	1.1	0.7	-0.4
5+ Drinks in a Row																													
in Last 2 Weeks																													
8th Grade	10.9	11.3	11.3	12.1	12.3	13.3	12.3	11.5	13.1	11.7	11.0	10.3	9.8	9.4	8.4	8.7	8.3	8.1	7.8	7.2	6.4	5.1	5.1	4.1	4.6	3.4	3.7	3.7	0.0
10th Grade	21.0	19.1	21.0	21.9	22.0	22.8	23.1	22.4	23.5	24.1	22.8	20.3	20.0	19.9	19.0	19.9	19.6	16.0	17.5	16.3	14.7	15.6	13.7	12.6	10.9	9.7	9.8	8.7	-1.1
12th Grade	29.8	27.9	27.5	28.2	29.8	30.2	31.3	31.5	30.8	30.0	29.7	28.6	27.9	29.2	27.1	25.4	25.9	24.6	25.2	23.2	21.6	23.7	22.1	19.4	17.2	15.5	16.6	13.8	-2.8 ss

(Table continued on next page.)

TABLE 5-5d (cont.)
Trends in 30-Day Prevalence of Daily Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017– 2018 change	
Cigarettes																														
Any Daily Use																														
8th Grade	7.2	7.0	8.3	8.8	9.3	10.4	9.0	8.8	8.1	7.4	5.5	5.1	4.5	4.4	4.0	4.0	3.0	3.1	2.7	2.9	2.4	1.9	1.8	1.4	1.3	0.9	0.6	0.8	+0.3	
10th Grade	12.6	12.3	14.2	14.6	16.3	18.3	18.0	15.8	15.9	14.0	12.2	10.1	8.9	8.3	7.5	7.6	7.2	5.9	6.3	6.6	5.5	5.0	4.4	3.2	3.0	1.9	2.2	1.8	-0.4	
12th Grade	18.5	17.2	19.0	19.4	21.6	22.2	24.6	22.4	23.1	20.6	19.0	16.9	15.8	15.6	13.6	12.2	12.3	11.4	11.2	10.7	10.3	9.3	8.5	6.7	5.5	4.8	4.2	3.6	-0.6	
1/2 Pack+/Day																														
8th Grade	3.1	2.9	3.5	3.6	3.4	4.3	3.5	3.6	3.3	2.8	2.3	2.1	1.8	1.7	1.7	1.5	1.1	1.2	1.0	0.9	0.7	0.6	0.7	0.5	0.4	0.3	0.2	0.3	+0.1	
10th Grade	6.5	6.0	7.0	7.6	8.3	9.4	8.6	7.9	7.6	6.2	5.5	4.4	4.1	3.3	3.1	3.3	2.7	2.0	2.4	2.4	1.9	1.5	1.5	1.2	1.0	0.6	0.7	0.7	0.0	
12th Grade	10.7	10.0	10.9	11.2	12.4	13.0	14.3	12.6	13.2	11.3	10.3	9.1	8.4	8.0	6.9	5.9	5.7	5.4	5.0	4.7	4.3	4.0	3.4	2.6	2.1	1.8	1.7	1.5	-0.2	
Smokeless Tobacco																														
Daily[†]																														
8th Grade	1.6	1.8	1.5	1.9	1.2	1.5	1.0	1.0	0.9	0.9	1.2	0.8	0.8	1.0	0.7	0.7	0.8	0.8	0.8	0.9	0.8	0.5	0.5	0.5	0.8	0.6	0.4	0.3	-0.1	
10th Grade	3.3	3.0	3.3	3.0	2.7	2.2	2.2	2.2	1.5	1.9	2.2	1.7	1.8	1.6	1.9	1.7	1.6	1.4	1.9	2.5	1.7	2.0	1.9	1.8	1.6	1.0	0.6	1.0	+0.4	
12th Grade	—	4.3	3.3	3.9	3.6	3.3	4.4	3.2	2.9	3.2	2.8	2.0	2.2	2.8	2.5	2.2	2.8	2.7	2.9	3.1	3.1	3.2	3.0	3.4	2.9	2.7	2.0	1.6	-0.4	
Legal Use of Stimulants																														
Energy Drinks																														
1 or More Daily^{e,z}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18.6	17.7	16.3	14.2	12.8	12.1	11.3	10.1	10.3	+0.2
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.6	11.4	10.8	10.3	9.6	7.8	9.2	8.8	9.1	+0.3
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.3	9.5	9.2	8.2	8.3	7.8	9.8	9.4	10.1	+0.7
Energy Shots																														
1 or More Daily^{e,z}																														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.4	6.8	5.7	5.6	4.2	5.3	4.4	4.0	3.7	-0.2
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.3	4.6	4.0	4.0	3.4	2.6	3.3	3.3	3.8	+0.5
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.3	4.0	2.7	2.5	2.1	3.1	4.1	3.8	4.2	+0.3

(Table continued on next page.)

TABLE 5-5d (cont.)
Trends in 30-Day Prevalence of Daily Use of Various Drugs
in Grades 8, 10, and 12

(Entries are percentages.)

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2017– 2018</u> change
Either Energy Drinks or Energy Shots 1 or More Daily ^{a,z}																													
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.5	18.9	17.2	15.4	13.5	13.0	12.3	11.1	11.4	+0.2
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14.4	12.4	11.8	11.3	10.1	8.4	10.0	9.5	9.9	+0.4
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.5	11.0	9.9	9.1	9.3	9.0	10.9	10.9	11.2	+0.4

Source. The Monitoring the Future study, the University of Michigan.

Note. See footnotes following Table 5-5e.

TABLE 5-5e
Trends in Two Week Prevalence of Binge and Extreme Binge Drinking
in Grades 8, 10, and 12

	Percentage who used in last two weeks															
	<u>1975- 2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2017- 2018 change</u>
5+ drinks in a row in last 2 weeks																
8th Grade	—	8.4	8.7	8.3	8.1	7.8	7.2	6.4	5.1	5.1	4.1	4.6	3.4	3.7	3.7	0.0
10th Grade	—	19.0	19.9	19.6	16.0	17.5	16.3	14.7	15.6	13.7	12.6	10.9	9.7	9.8	8.7	-1.1
12th Grade	—	27.1	25.4	25.9	24.6	25.2	23.2	21.6	23.7	22.1	19.4	17.2	15.5	16.6	13.8	-2.8 ss
10+ drinks in a row in last 2 weeks ^{e,ff}																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	1.2	1.1	1.1	+0.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	3.0	3.6	3.3	-0.3
12th Grade	—	10.6	12.9	11.1	10.4	10.6	9.9	9.8	10.4	8.1	7.1	6.1	4.4	6.0	4.6	-1.4
15+ drinks in a row in last 2 weeks ^e																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	5.7	7.2	5.6	5.6	6.0	6.3	4.6	5.5	4.4	4.1	3.5	2.3	3.1	2.5	-0.7

Source. The Monitoring the Future study, the University of Michigan.

Note. See footnotes following Table 5-5e.

Footnotes for Tables 5-5a through 5-5e

Approximate Weighted Ns	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
8th Graders	17,500	18,600	18,300	17,300	17,500	17,800	18,600	18,100	16,700	16,700	16,200	15,100	16,500	17,000
10th Graders	14,800	14,800	15,300	15,800	17,000	15,600	15,500	15,000	13,600	14,300	14,000	14,300	15,800	16,400
12th Graders	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600

Approximate Weighted Ns	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
8th Graders	16,800	16,500	16,100	15,700	15,000	15,300	16,000	15,100	14,600	14,600	14,400	16,900	15,300	14,000
10th Graders	16,200	16,200	16,100	15,100	15,900	15,200	14,900	15,000	12,900	13,000	15,600	14,700	13,500	14,300
12th Graders	14,700	14,200	14,500	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. '—' indicates data not available. '‡' indicates that the question changed in the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aFor 12th graders only: Use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders only: The use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers). Due to changes in the amphetamines questions 2013 data for all grades for any illicit drug use, any illicit drug use other than marijuana and 8th and 10th grade any illicit drug use including inhalants are based on one half of the N indicated. 12th grade any illicit drug use including inhalants data are based on one form; N is one sixth of N indicated. 2014 data are based on all forms. See the amphetamine note for details.

^bIn 2001 the question text was changed on half of the questionnaire forms for each age group. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. For the tranquilizer list of examples, Miltown was replaced with Xanax. For 8th, 10th, and 12th graders: The 2001 data presented here are based on the changed forms only; N is one half of N indicated. In 2002 the remaining forms were changed to the new wording. The data are based on all forms beginning in 2002. Data for any illicit drug other than marijuana and data for hallucinogens are also affected by these changes and have been handled in a parallel manner. Hallucinogens, LSD, and hallucinogens other than LSD are based on five of six forms beginning in 2014; N is five sixths of N indicated.

^cFor 12th graders only: Data based on five of six forms in 1991–1998; N is five sixths of N indicated. Data based on three of six forms beginning in 1999; N is three sixths of N indicated. For 8th and 10th graders only, beginning in 2014 data based on two thirds of N indicated.

^dInhalants are unadjusted for underreporting of amyl and butyl nitrites.

^eFor 12th graders only: Data based on one of six forms; N is one sixth of N indicated. In 2011 for flavored alcoholic beverages Skyy Blue and Zima were dropped from the list of examples. An examination of the data did not show any effect from the wording change. In 2014 the PCP use questions were dropped; annual PCP use was moved to another form. In 2016 a question on use of tobacco using a hookah was added to two additional forms; N is three sixths of N indicated.

^fHallucinogens are unadjusted for underreporting of PCP.

^gFor 8th and 10th graders only: Data based on one of two forms in 1996; N is one half of N indicated. Data based on one third of N indicated in 1997–2001 due to changes in the questionnaire forms. Data based on two of four forms beginning in 2002; N is one half of N indicated. In 2014 a revised question on use of ecstasy (MDMA) including "Molly" was added to one form. The 2013 and 2014 "Original wording" data reported here are for only the questionnaires using the original question wording; N is one half of N indicated. Beginning in 2014 data

(Footnote continued on next page.)

Footnotes for Tables 5-5a through 5-5e (cont.)

reported here for the "Revised wording" are for only the questionnaires which include "Molly;" N is two sixths of N indicated in 2014 and five sixths of the N indicated in 2015. For 12th graders only: Data based on one of six forms in 1996–2001; N is one sixth of N indicated. Data based on two of six forms beginning in 2002; N is two sixths of N indicated. In 2014 a revised question on use of ecstasy (MDMA) including "Molly" was added to one form. The 2013 and 2014 "Original wording" data reported here are for only the questionnaires using the original question wording; N is two sixths of N indicated. Beginning in 2014 data reported for the "Revised wording" are for only the questionnaires which include "Molly.;" N is one sixth of the N indicated in 2014 and three sixths of the N indicated in 2015.

^hFor 12th graders only: Data based on four of six forms; N is four sixths of N indicated.

ⁱIn 1995 the heroin question was changed in one of two forms for 8th and 10th graders and in three of six forms for 12th graders. Separate questions were asked for use with and without injection. In 1996, the heroin question was changed in the remaining 8th- and 10th-grade forms. Data presented here represent the combined data from all forms.

^jFor 8th and 10th graders only: Data based on one of two forms in 1995; N is one half of N indicated. Data based on all forms in 1996 through 2014. In 2015 the question was dropped from 1 form; N is four sixths of N indicated. For 12th graders only: Data based on three of six forms; N is three sixths of N indicated.

^kOnly drug use not under a doctor's orders is included here.

^lIn 2002 the question text was changed in half of the questionnaire forms. The list of examples of narcotics other than heroin was updated: Talwin, laudanum, and paregoric—all of which had negligible rates of use by 2001—were replaced with Vicodin, OxyContin, and Percocet. The 2002 data presented here are based on the changed forms only; N is one half of N indicated. In 2003, the remaining forms were changed to the new wording. The data are based on all forms beginning in 2003. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

^mFor 8th, 10th, and 12th graders: In 2009, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. In 2010 the remaining forms were changed in a like manner. In 2011 the question text was changed slightly in one form; bennies, Benzedrine and Methadrine were dropped from the list of examples. An examination of the data did not show any effect from the wording change. In 2013 the question wording was changed slightly in two of the 8th and 10th grade questionnaires and in three of the 12th grade questionnaires. The new wording in 2013 asked "On how many occasions (if any) have taken amphetamines **or other prescription stimulant drugs...**" In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new wording as compared to the old wording; it was proportionally 61% higher in 8th grade, 34% higher in 10th grade, and 21% higher in 12th grade. 2013 data are based on the changed forms only; for 8th, 10th, and 12th graders N is one half of N indicated. Beginning in 2014 all questionnaires included the new, updated wording.

ⁿFor 8th and 10th graders only: Data based on one of four forms; N is one third of N indicated. See text for detailed explanation. In 2011 for flavored alcoholic beverages: Skyy Blue and Zima were dropped from the list of examples. An examination of the data did not show any effect from the wording change. Annual synthetic marijuana use questions asked of one third of N indicated.

^oFor 12th graders only: Data based on two of six forms; N is two sixths of N indicated. Bidis and kreteks based on one of six forms beginning in 2009; N is one sixth N indicated.

^pFor 12th graders only: In 2004 the barbiturate question text was changed on half of the questionnaire forms. Barbiturates was changed to sedatives including barbiturates, and "have you taken barbiturates . . ." was changed to "have you taken sedatives . . ." In the list of examples downs, downers, goofballs, yellow, reds, blues, rainbows were changed to downs, or downers, and include Phenobarbital, Tuinal, Nembutal, and Seconal. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

(Footnote continued on next page.)

Footnotes for Tables 5-5a through 5-5e (cont.)

^qThe use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers "...without a doctor telling you to use them."

^rFor 8th and 10th graders only: Data based on one of two forms in 1996; *N* is one half of *N* indicated. Data based on three of four forms in 1997–1998; *N* is two thirds of *N* indicated. Data based on two of four forms in 1999–2001; *N* is one third of *N* indicated. Data based on one of four forms beginning in 2002; *N* is one sixth of *N* indicated. See text for detailed explanation. For 12th graders only: Data based on one of six forms in 1996–2001; *N* is one sixth of *N* indicated. Data based on two of six forms in 2002–2009; *N* is two sixths of *N* indicated. Data for 2001 and 2002 are not comparable due to changes in the questionnaire forms. Data based on one of six forms beginning in 2010; *N* is one sixth of *N* indicated.

^sFor 8th, 10th, and 12th graders: In 1993, the question text was changed slightly in half of the forms to indicate that a drink meant more than just a few sips. The 1993 data are based on the changed forms only; *N* is one half of *N* indicated for these groups. In 1994 the remaining forms were changed to the new wording. The data are based on all forms beginning in 1994. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

^tFor 8th and 10th graders only: Data based on one of two forms for 1991–1996 and on two of four forms beginning in 1997; *N* is one half of *N* indicated. For 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated. For all grades in 2011: snus and dissolvable tobacco were added to the list of examples. An examination of the data did not show any effect from the wording change.

^uFor 8th and 10th graders only: In 2006, the question text was changed slightly in half of the questionnaire forms. An examination of the data did not show any effect from the wording change. In 2007 the remaining forms were changed in a like manner. In 2008 the question text was changed slightly in half of the questionnaire forms. An examination of the data did not show any effect from the wording change. In 2009 the remaining forms were changed in a like manner. For 12th graders only: Data based on two of six forms in 1991–2005; *N* is two sixths of *N* indicated. Data based on three of six forms beginning in 2006; *N* is three sixths of *N* indicated. In 2006 a slightly altered version of the question was added to a third form. An examination of the data did not show any effect from the wording change. In 2007 the remaining forms were changed in a like manner. In 2008 the question text was changed slightly in two of the questionnaire forms. An examination of the data did not show any effect from the wording change. In 2009 the remaining form was changed in a like manner.

^vFor 12th graders only: Data based on two of six forms in 2002–2005; *N* is two sixths of *N* indicated. Data based on three of six forms beginning in 2006; *N* is three sixths of *N* indicated.

^wFor 12th graders only: Data based on two of six forms in 2000; *N* is two sixths of *N* indicated. Data based on three of six forms in 2001; *N* is three sixths of *N* indicated. Data based on one of six forms beginning in 2002; *N* is one sixth of *N* indicated.

^xFor 12th graders only: Data based on two of six forms in 2000; *N* is two sixths of *N* indicated. Data based on three of six forms in 2001–2009; *N* is three sixths of *N* indicated. Data based on two of six forms beginning in 2010; *N* is two sixths of *N* indicated.

^yThe 2003 flavored alcoholic beverage data were created by adjusting the 2004 data to reflect the change in the 2003 and 2004 alcopops data.

^zFor 8th and 10th graders only: Data based on one of four forms; *N* is one third of *N* indicated. See text for detailed explanation.

For 12th graders only: Data based on two of six forms; *N* is two sixths of *N* indicated. For all grades: In 2011 the question text was "...had an alcoholic beverage containing caffeine (like Four Loko or Joose)." In 2012 the question text was changed to "...had an alcoholic beverage mixed with an energy drink (like Red Bull)." An examination of the data did not show any effect from the wording changes.

^{aa}Daily use is defined as use on 20 or more occasions in the past 30 days except for cigarettes and smokeless tobacco, for which actual daily use is measured, and for 5+ drinks, for which the prevalence of having five or more drinks in a row in the last two weeks is measured.

^{ab}8th and 10th grade data based on one third of *N* indicated. 12th grade data based on two of six forms; *N* is two sixths of *N* indicated. For androstenedione, beginning in 2016, data based on one form. *N* is one sixth of *N* indicated.

^{ac}In 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

^{ad}In 2005, data omitted for one of the questionnaire forms due to an error in the skip pattern in the questionnaire. In 2005, data based on one of six forms and *N* is one sixth of *N* indicated. Beginning in 2006, data based on two of six forms and *N* is two sixths of *N* indicated.

^{ae}For the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

^{af}For 8th and 10th graders only: Data based on two of four forms; *N* is one third of *N* indicated.

Footnotes for Tables 5-5a through 5-5e (cont.)

^gIncludes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

^hIncludes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

TABLE 5-6a
Trends in Lifetime Prevalence of Use of Heroin *with* and *without* a Needle
in Grades 8, 10, and 12

	Percentage who used in lifetime																								2017- 2018 change	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
8th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.7	0.8	0.7	0.8	0.9	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.6	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.2	0.1	0.2	0.3	+0.1	
Only <i>without</i> a needle	0.7	0.9	0.8	0.9	0.7	0.8	0.6	0.6	0.7	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.2	0.4	0.2	0.2	0.2	0.3	0.2	-0.1	
Both ways	0.8	0.7	0.6	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.0	
Used heroin at all	2.3	2.4	2.1	2.3	2.3	1.9	1.7	1.6	1.6	1.6	1.5	1.4	1.3	1.4	1.3	1.3	1.2	0.8	1.0	0.9	0.5	0.5	0.6	0.6	0.0	
<i>Approx. weighted N =</i> 8,800 17,800 18,600 18,100 16,700 16,700 16,200 15,100 16,500 17,000 16,800 16,500 16,100 15,700 15,000 15,300 16,000 15,100 14,600 14,500 9,600 11,300 10,200 9,300																										
10th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.6	0.5	0.4	0.6	0.7	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.3	0.5	0.4	0.4	0.3	0.4	0.3	0.2	0.3	0.2	0.1	-0.1	
Only <i>without</i> a needle	0.7	1.1	1.0	1.2	1.1	1.2	0.8	0.9	0.6	0.7	0.7	0.6	0.7	0.5	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	
Both ways	0.4	0.6	0.6	0.6	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.0	
Used heroin at all	1.7	2.1	2.1	2.3	2.3	2.2	1.7	1.8	1.5	1.5	1.5	1.4	1.5	1.2	1.5	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.4	0.3	-0.1	
<i>Approx. weighted N =</i> 8,500 15,600 15,500 15,000 13,600 14,300 14,000 14,300 15,800 16,400 16,200 16,200 16,100 15,100 15,900 15,200 14,900 15,000 12,900 13,000 10,400 9,800 9,000 9,500																										
12th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.1	0.2	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.2	0.3	0.2	0.1	0.2	0.2	0.0	
Only <i>without</i> a needle	0.9	1.1	1.3	1.2	1.2	1.8	1.2	1.0	1.0	0.9	0.7	0.7	0.9	0.6	0.6	0.6	0.6	0.4	0.4	0.2	0.2	0.3	0.2	0.3	+0.1	
Both ways	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.6	0.6	0.3	0.4	0.5	0.4	0.3	0.2	0.2	0.0	
Used heroin at all	1.6	1.8	2.1	2.0	2.0	2.4	1.8	1.7	1.5	1.5	1.5	1.4	1.5	1.3	1.2	1.6	1.4	1.1	1.0	1.0	0.8	0.7	0.6	0.7	0.0	
<i>Approx. weighted N =</i> 7,700 7,200 7,700 7,600 6,800 6,400 6,400 6,500 7,300 7,300 7,400 7,100 7,300 7,000 6,900 7,200 7,100 6,900 6,300 6,400 6,500 5,900 6,300 6,700																										

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. Any apparent inconsistency between the total who used heroin at all and the sum of those who used with a needle, those who used without a needle, and those who used both ways is due to rounding. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. For 8th and 10th graders only: Data based on one of two forms in 1995, on all forms in 1995-2014, and on three of four forms beginning in 2015. For 12th graders only: Data based on three of six forms except for used heroin at all which was based on all six forms until 2014. The six form N is approximately 11,800. Beginning in 2015 used heroin at all is based on three of six forms and is not comparable to the six-form heroin prevalences used elsewhere in this volume.

TABLE 5-6b
Trends in Annual Prevalence of Use of **Heroin *with* and *without* a Needle**
in Grades 8, 10, and 12

	Percentage who used in lifetime																							2017– 2018 change		
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
8th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.5	0.6	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.1	*	0.08	0.1	0.0	
Only <i>without</i> a needle	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	*	0.11	0.1	0.0	
Both ways	0.4	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.12	0.1	0.0	
Used heroin at all	1.4	1.6	1.3	1.3	1.4	1.1	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.9	0.7	0.8	0.7	0.5	0.5	0.5	0.3	0.2	0.3	0.3	0.0	
Approx. weighted N =	8,800	17,800	18,600	18,100	16,700	16,700	16,200	15,100	16,500	17,000	16,800	16,500	16,100	15,700	15,000	15,300	16,000	15,100	14,600	14,500	9,600	11,300	10,200	9,300		
10th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.0	
Only <i>without</i> a needle	0.5	0.6	0.7	0.6	0.8	0.8	0.5	0.5	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.2	*	*	0.1	0.0	
Both ways	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	*	0.0	
Used heroin at all	1.1	1.2	1.4	1.4	1.4	1.4	0.9	1.1	0.7	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.5	0.5	0.3	0.1	0.2	0.0	
Approx. weighted N =	8,500	15,600	15,500	15,000	13,600	14,300	14,000	14,300	15,800	16,400	16,200	16,200	16,100	15,100	15,900	15,200	14,900	15,000	12,900	13,000	10,400	9,800	9,000	9,500		
12th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	
Only <i>without</i> a needle	0.6	0.6	0.7	0.6	0.8	1.1	0.6	0.6	0.4	0.5	0.4	0.3	0.6	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	
Both ways	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.2	0.2	0.1	0.1	0.0	
Used heroin at all	1.1	1.0	1.2	1.0	1.1	1.5	0.9	1.0	0.8	0.9	0.8	0.8	0.9	0.7	0.7	0.9	0.8	0.6	0.6	0.6	0.5	0.3	0.3	0.3	+0.1	
Approx. weighted N =	7,700	7,200	7,700	7,600	6,800	6,400	6,400	6,500	7,300	7,300	7,400	7,100	7,300	7,000	6,900	7,200	7,100	6,900	6,300	6,300	6,500	5,900	6,300	6,700		

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. Any apparent inconsistency between the total who used heroin at all and the sum of those who used with a needle, those who used without a needle, and those who used both ways is due to rounding. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. For 8th and 10th graders only: Data based on one of two forms in 1995, on all forms in 1995-2014, and on three of four forms beginning in 2015. For 12th graders only: Data based on three of six forms except for used heroin at all which was based on all six forms until 2014. The six form N is approximately 11,800. Beginning in 2015 used heroin at all is based on three of six forms and is not comparable to the six-form heroin prevalences used elsewhere in this volume.

TABLE 5-6c
Trends in 30-Day Prevalence of Use of Heroin *with* and *without* a Needle
in Grades 8, 10, and 12

	Percentage who used in lifetime																							2017– 2018 change		
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
8th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	*	*	0.1	*	0.0	
Only <i>without</i> a needle	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*	*	0.1	0.1	*	0.0	
Both ways	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*	0.1	0.1	0.1	0.1	0.1	*	-0.1	
Used heroin at all	0.6	0.7	0.6	0.6	0.6	0.5	0.6	0.5	0.4	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.3	0.3	0.1	0.2	0.2	0.1	-0.1	
Approx. weighted N =	8,800	17,800	18,600	18,100	16,700	16,700	16,200	15,100	16,500	17,000	16,800	16,500	16,100	15,700	15,000	15,300	16,000	15,100	14,600	14,600	9,600	11,300	10,200	9,300		
10th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	*	0.1	0.1	*	0.0	
Only <i>without</i> a needle	0.2	0.2	0.3	0.3	0.4	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	*	0.1	0.1	*	*	*	0.0	
Both ways	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	*	0.1	*	*	0.0	
Used heroin at all	0.6	0.5	0.6	0.7	0.7	0.5	0.3	0.5	0.3	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.2	0.2	0.1	0.1	0.0	
Approx. weighted N =	8,500	15,600	15,500	15,000	13,600	14,300	14,000	14,300	15,800	16,400	16,200	16,200	16,100	15,100	15,900	15,200	14,900	15,000	12,900	12,900	10,400	9,800	9,000	9,500		
12th Graders																										
Used heroin:																										
Only <i>with</i> a needle	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	*	*	0.0	
Only <i>without</i> a needle	0.3	0.1	0.3	0.3	0.3	0.5	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	*	*	*	0.0	
Both ways	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	
Used heroin at all	0.6	0.5	0.5	0.5	0.5	0.7	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.0	
Approx. weighted N =	7,700	7,200	7,700	7,600	6,800	6,400	6,400	6,500	7,300	7,300	7,400	7,100	7,300	7,000	6,900	7,200	7,100	6,900	6,300	6,300	6,500	5,900	6,300	6,700		

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' * ' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the total who used heroin at all and the sum of those who used with a needle, those who used without a needle, and those who used both ways is due to rounding. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. For 8th and 10th graders only: Data based on one of two forms in 1995, on all forms in 1995-2014, and on three of four forms beginning in 2015. For 12th graders only: Data based on three of six forms except used heroin at all which was based on all six forms until 2014. The six form N is approximately 11,800. Beginning in 2015 used heroin at all is based on three of six forms and is not comparable to the six-form heroin prevalences used elsewhere in this volume.

TABLE 5-7a
Trends in Noncontinuation Rates among 12th Graders
Who Ever Used Drug in Lifetime

Percentage who did not use in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Marijuana/Hashish	15.4	15.7	15.6	15.2	15.9	19.1	22.5	24.5	25.8	27.1	25.1	23.8	27.7	29.9	32.3	33.7	34.9	32.8	26.3	19.6	16.8	20.3
Inhalants	—	70.9	66.7	65.8	57.5	61.3	66.7	64.8	68.4	64.6	63.0	61.6	59.4	61.1	66.5	61.7	62.5	62.7	59.8	56.5	54.0	54.2
Inhalants, Adjusted	—	—	—	—	50.8	55.7	65.5	63.3	64.4	58.4	59.8	55.7	56.5	59.4	62.9	59.5	61.7	62.4	58.2	55.2	52.8	51.4
Amyl/Butyl Nitrites	—	—	—	—	41.4	48.6	63.4	63.3	57.1	50.6	49.4	45.3	44.7	46.9	48.5	33.3	†	†	†	†	†	†
Hallucinogens ^a	31.3	37.7	36.7	32.9	29.8	30.1	32.3	35.2	38.7	39.3	38.8	38.1	37.9	38.2	40.4	37.2	39.6	35.9	32.1	33.3	26.8	27.9
Hallucinogens, Adjusted ^a	—	—	—	—	31.2	32.5	35.7	38.0	36.7	40.6	36.9	36.1	36.8	37.0	37.4	38.1	39.0	34.0	31.0	33.3	26.0	26.2
LSD	36.3	41.8	43.9	35.1	30.5	30.1	33.7	36.5	39.3	41.3	41.3	37.5	38.1	37.7	41.0	37.9	40.9	34.9	34.0	34.3	28.2	30.2
Hallucinogens other than LSD ^a	33.3	42.1	38.4	37.1	36.4	36.7	38.5	41.3	43.8	42.4	44.6	47.4	40.7	48.8	48.8	48.8	45.9	48.5	43.6	36.7	29.6	35.3
PCP	—	—	—	—	45.3	54.2	59.0	63.3	53.6	54.0	40.8	50.0	56.7	58.6	38.5	57.1	51.7	41.7	51.7	42.9	33.3	35.0
Ecstasy (MDMA)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.6
Cocaine	37.8	38.1	33.3	30.2	22.1	21.7	24.8	28.1	29.6	28.0	24.3	24.9	32.2	34.7	36.9	43.6	55.1	49.2	45.9	39.0	33.3	31.0
Crack	—	—	—	—	—	—	—	—	—	—	—	—	27.8	35.4	34.0	45.7	51.6	42.3	42.3	36.7	30.0	36.4
Cocaine other than Crack	—	—	—	—	—	—	—	—	—	—	—	—	30.0	38.8	38.8	46.5	54.3	50.9	46.3	42.3	33.3	34.4
Heroin ^b	54.5	55.6	55.6	50.0	54.5	54.5	54.5	50.0	50.0	61.5	50.0	54.5	58.3	54.5	53.8	61.5	55.6	50.0	54.5	50.0	31.3	44.4
With a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.6	37.5
Without a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.6	41.2
Narcotics other than Heroin ^{c,d}	36.7	40.6	37.9	39.4	38.6	35.7	41.6	44.8	45.7	46.4	42.2	42.2	42.4	46.5	47.0	45.8	47.0	45.9	43.8	42.4	34.7	34.2
Amphetamines ^{c,e}	27.4	30.1	29.1	25.3	24.4	21.2	19.3	27.2	33.5	36.6	39.7	42.7	43.5	44.9	43.5	48.0	46.8	48.9	44.4	40.1	39.2	37.9
Methamphetamine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	51.9	57.6	55.2	45.2	47.1	38.5	36.4
Sedatives (Barbiturates) ^{c,f}	36.7	40.7	40.4	40.9	36.4	38.2	41.6	46.6	47.5	50.5	50.0	50.0	51.4	52.2	49.2	50.0	45.2	49.1	46.0	41.4	36.5	35.5
Sedatives, Adjusted	35.7	39.5	37.9	38.1	32.2	30.9	34.4	40.1	45.1	50.4	50.8	50.0	52.9	52.6	50.0	—	—	—	—	—	—	—
Methaqualone ^c	37.0	39.7	38.8	38.0	28.9	24.2	28.3	36.4	46.5	54.2	58.2	59.6	62.5	60.6	51.9	69.6	†	†	†	†	†	†
Tranquilizers ^{c,g}	37.6	38.7	40.0	41.8	41.1	42.8	45.6	50.0	48.1	50.8	48.7	46.8	49.5	48.9	50.0	51.4	50.0	53.3	45.3	43.9	38.0	36.1
Rohypnol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†
Alcohol ^h	6.2	6.7	5.9	5.8	5.3	5.7	6.0	6.5	5.7	7.1	7.2	7.4	7.0	7.3	8.8	9.9	11.7	12.2†	9.1	9.2	8.7	8.5
Been Drunk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.4	20.7	20.6	17.8	16.9	16.0
Steroids ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.7	41.4	33.3	47.6	40.0	45.8	34.8	26.3

(Table continued on next page.)

TABLE 5-7a (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Ever Used Drug in Lifetime

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' † ' indicates that the cell entry was omitted because it was based on fewer than 50 twelfth graders who ever used drug in lifetime.

All other cells are based on more than 50 cases. ' ‡ ' indicates that the question changed in the following year. See relevant footnote for that drug.

^aIn 2001 the question text was changed in half of the questionnaire forms. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms. Data for hallucinogens are also affected by these changes and have been handled in a parallel manner. Beginning in 2014 hallucinogens, LSD and hallucinogens other than LSD were based on five of six forms.

^bIn 1995, the heroin question was changed in three of six forms. Separate questions were asked for use with and without injection. Data presented here represent the combined data from all forms.

^cOnly drug use not under a doctor's orders is included here.

^dIn 2002 the question text was changed in half of the questionnaire forms. In the list of examples of narcotics other than heroin, Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet. The 2002 data are based on the changed forms only. In 2003, the remaining forms were changed to the new wording. Beginning in 2003, the data are based on all forms. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

^eIn 2009, the question text was changed slightly in half of the questionnaire forms. An examination of the data did not show any effect from the wording change. The remaining forms where changed in 2010. In 2011 the introduction to the question was changed slightly in one of six forms. An examination of the data did not show any effect from the wording change. In 2013 the question wording was changed in three of the questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs..." In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was 21% higher in 12th grade. 2013 data are based on the changed forms only; *N* is one half of *N* indicated. In 2014 all questionnaires included the new, updated wording.

^fFor 12th graders only: In 2004 the question text was changed in half of the questionnaire forms. Barbiturates was changed to sedatives, including barbiturates. Goofballs, yellows, reds, blues, and rainbows were deleted from the list of examples; Phenobarbital, Tuinal, Nembutal, and Seconal were added. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

^gIn 2001, for the tranquilizer list of examples, Miltown was replaced with Xanax in half of the questionnaire forms. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms.

^hIn 1993, the question text was changed slightly in half of the questionnaire forms to indicate that a drink meant more than a few sips. The 1993 data are based on the changed forms only. In 1994 the remaining forms were changed to the new wording. Beginning in 1994, the data are based on all forms. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

ⁱIn 2006, the question text was changed slightly in one of the questionnaire forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2007. In 2008 the question text was changed slightly. An examination of the data did not show any effect from the wording change. In 2009 the remaining forms were changed.

TABLE 5-7b
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Percentage who did not use in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Marijuana/Hashish	4.0	4.0	4.1	3.7	4.6	5.4	7.2	7.6	8.3	8.8	7.8	7.9	9.2	9.9	10.6	12.3	10.5	10.9	7.8	5.0	4.7	6.6
Inhalants ^a	—	48.9	42.6	34.6	23.8	25.2	23.8	27.2	23.1	23.4	25.8	15.3	21.1	21.5	25.9	24.0	23.7	28.6	21.8	26.4	21.6	24.8
Amyl/Butyl Nitrites	—	—	—	—	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Hallucinogens ^b	10.8	16.1	15.2	10.8	8.1	8.4	7.7	7.5	13.0	14.1	12.2	11.1	11.9	16.6	21.8	16.5	17.4	11.5	12.1	14.3	10.6	9.0
LSD ^{b,c}	15.2	17.3	18.0	12.2	7.4	6.4	7.1	7.5	15.3	12.1	12.6	12.2	11.5	16.0	21.2	16.0	18.5	11.4	11.9	15.3	11.5	10.5
Hallucinogens other than LSD ^b	—	16.6	14.4	13.3	11.5	13.1	7.7	8.2	8.5	14.5	13.7	16.0	15.8	20.1	19.5	22.6	29.3	19.6	16.2	16.0	10.1	15.5
PCP	—	—	—	—	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Ecstasy (MDMA) ^d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†
Cocaine	7.7	8.2	6.2	3.8	3.1	3.1	3.1	2.9	6.2	3.1	2.5	3.5	7.6	11.4	11.3	19.6	25.3	20.2	14.1	22.9	9.6	8.8
Crack ^e	—	—	—	—	—	—	—	—	—	—	—	—	13.4	2.1	5.2	26.2	31.1	15.3	16.4	16.8	6.3	8.3
Cocaine other than Crack	—	—	—	—	—	—	—	—	—	—	—	—	10.2	6.1	16.2	18.5	24.3	23.2	14.7	24.1	15.5	13.9
Heroin ^f	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
With a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†
Without a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†
Narcotics other than Heroin ^{g,h}	9.6	11.6	9.7	9.9	8.7	10.8	10.1	13.5	16.4	15.4	12.2	13.8	15.6	19.3	15.2	15.9	16.1	16.8	16.7	16.8	12.6	11.5
Amphetamines ^{g,i}	8.0	9.8	7.6	7.4	6.1	4.1	4.4	8.4	10.7	12.7	17.5	17.6	17.5	16.0	17.4	18.1	17.2	19.8	13.5	13.8	11.9	10.2
Methamphetamine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) ^j	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†	†	†	†	†	†
Sedatives (Barbiturates) ^{g,k}	13.4	16.5	12.9	13.5	11.2	11.7	8.9	12.6	17.7	22.8	20.6	19.7	20.7	23.4	18.0	19.8	19.7	23.4	11.0	14.9	10.9	8.3
Sedatives, Adjusted	13.6	16.2	12.4	12.8	8.6	10.5	7.6	8.6	16.4	20.8	23.6	19.7	23.1	25.2	17.3	—	—	—	—	—	—	—
Methaqualone ^g	13.5	15.9	11.9	13.1	6.1	6.0	4.9	8.0	16.3	23.3	26.7	24.9	32.2	29.8	18.6	—	—	—	—	—	—	—
Tranquilizers ^{g,l}	12.0	13.0	11.1	14.4	14.1	14.3	16.3	16.0	14.8	18.8	19.2	15.0	17.1	15.8	11.7	19.3	13.1	21.0	6.7	13.8	6.2	6.9
Rohypnol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†
Alcohol ^m	0.6	0.8	0.6	0.9	0.7	0.8	1.0	0.9	0.9	1.1	1.2	1.0	1.1	1.2	1.5	1.9	1.9	2.3†	2.5	2.1	2.0	1.6
Been Drunk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	4.1	4.6	3.3	2.8	2.1
Cigarettes ^o	16.0	16.7	16.2	17.9	19.6	21.4	20.8	19.1	18.6	18.5	15.9	17.0	17.1	18.2	18.5	18.2	17.4	18.6	16.9	15.9	14.6	13.5
Smokeless Tobacco ^o	—	—	—	—	—	—	—	—	—	—	—	21.8	18.4	25.7	26.2	—	—	29.6	25.5	33.1	26.5	27.3
Steroids ⁿ	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†	†	†	†	†	†

(Table continued on next page.)

TABLE 5-7b (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Percentage who did not use in last 12 months

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Marijuana/Hashish	7.7	8.2	8.5	9.0	8.7	9.4	8.4	8.9	8.8	9.2	8.8	7.2	7.7	7.7	6.4	6.6	6.8	7.1	6.6	7.0	4.2	4.2
Inhalants ^a	25.2	28.0	27.8	23.0	30.8	25.7	23.8	30.1	12.2	26.3	24.8	19.3	20.7	26.4	23.2	24.4	31.7	33.8	20.7	†	†	41.7
Amyl/Butyl Nitrites	†	†	†	†	†	†	†	†	†	†	†	†	†	—	—	—	—	—	—	—	—	—
Hallucinogens ^b	12.2	16.4	12.8	12.9†	12.3	20.0	21.5	12.1	14.3	19.1	13.3	7.3	13.1	12.7	5.4	8.8	14.6	16.6	9.9	4.4	7.4	10.6
LSD ^c	16.8	20.3	14.3	15.7	14.6	28.6	47.8	23.0	16.3	23.4	14.9	5.9	15.8	11.6	4.8	5.5	8.0	7.9	10.6	†	15.2	3.6
Hallucinogens other than LSD ^b	15.9	17.5	13.4	6.2†	10.8	11.0	18.4	9.7	13.1	17.7	15.3	7.7	15.7	12.9	7.6	8.7	15.2	21.6	12.5	†	8.4	6.5
PCP	†	†	†	†	†	†	†	†	†	†	†	†	†	—	—	—	—	—	—	—	—	—
Ecstasy (MDMA) ^d	†	†	†	†	2.5	8.3	33.2	17.7	12.2	†	18.9	6.8	7.7	18.2	15.5	15.4	††	7.8	7.8	†	†	†
Cocaine	12.0	12.4	12.3	18.1	15.6	11.3	11.8	13.2	10.5	11.9	15.0	14.7	16.3	20.1	21.9	14.9	18.0	11.4	17.8	14.3	11.9	11.7
Crack ^e	17.4	19.5	16.0	13.5	7.1	10.9	12.1	13.7	7.5	18.5	18.4	17.9	14.6	21.9	19.9	15.2	13.2	8.7	17.4	†	†	†
Cocaine other than Crack	14.6	17.1	13.1	22.5	14.9	11.7	11.0	15.6	12.4	14.5	11.8	17.5	18.4	19.5	24.8	14.8	17.6	13.5	†	†	15.6	13.6
Heroin ^f	†	†	†	†	†	†	†	†	†	†	†	†	†	13.5	21.4	14.5	25.5	†	†	†	†	†
With a needle	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Without a needle	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Narcotics other than Heroin ^{g,h}	10.1	12.4	12.2	10.8	9.7†	8.3	9.2	8.2	8.4	12.2	9.0	9.0	11.1	12.4	9.2	14.2	14.5	13.8	11.5	19.2	16.2	20.3
Amphetamines ^{g,i}	10.8	15.0	12.7	11.2	7.7	10.0	8.9	12.9	13.0	11.3	13.8	17.7	13.3	11.2	17.2	16.3†	9.7	11.9	11.8	13.6	13.4	18.2
Methamphetamine	—	—	12.4	22.8	19.2	23.9	29.1	13.5	21.5	16.9	†	†	†	†	†	†	†	†	†	†	†	†
Crystal Methamphetamine (Ice) ^j	†	†	†	†	†	11.2	†	23.1	†	†	†	†	†	†	†	†	†	†	†	†	20.0	†
Sedatives (Barbiturates) ^{g,k}	11.1	12.5	10.7	7.0	5.6	5.7	6.9	8.5	10.4	11.4	11.9	10.0	11.6	10.3	16.8	10.4	12.2	9.4	14.9	10.6	9.8	10.4
Sedatives, Adjusted	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methaqualone ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tranquilizers ^{g,l}	13.9	13.6	9.9	5.3†	8.1	5.8	11.2	7.9	9.8	12.3	10.7	8.7	8.8	10.6	14.4	12.9	15.7	18.1	10.2	14.0	13.6	14.4
Rohypnol	†	†	†	†	†	†	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol ^m	1.9	1.9	1.7	1.7	1.3	1.9	1.5	1.3	1.6	1.4	1.2	1.5	1.6	1.6	1.8	1.4	1.7	1.5	1.5	1.2	1.3	1.2
Been Drunk	3.6	2.8	1.8	2.6	2.3	2.0	2.9	2.1	2.9	3.1	2.2	2.6	2.9	3.0	2.4	2.0	2.0	2.4	2.3	2.4	1.7	2.8
Cigarettes ^o	13.1	14.3	16.1	16.3	17.5	17.3	17.2	15.9	16.7	18.9	17.9	17.9	17.8	18.3	20.0	20.4	21.4	22.8	22.1	24.0	24.0	29.8
Smokeless Tobacco ^o	26.2	17.9	20.7	15.1	18.9	20.4	16.2	15.3	15.4	25.1	17.4	16.0	15.6	14.8	18.2	17.6	15.3	7.5	13.9	15.6	22.0	32.2
Steroids ⁿ	†	†	†	†	†	†	†	†	†	11.9	†	†	†	0.0	†	†	†	†	†	†	†	†

(Table continued on next page.)

TABLE 5-7b (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' † ' indicates that the cell entry was omitted because it was based on fewer than 50 twelfth graders who used 10 or more times.

All other cells are based on more than 50 cases. ' ‡ ' indicates that the question changed in the following year. See relevant footnote for that drug.

^aInhalants are unadjusted for underreporting of amyl and butyl nitrites.

^bIn 2001 the question text was changed in half of the questionnaire forms. Other psychedelics was changed to other hallucinogens, and shrooms was added to the list of examples.

The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms. Data for hallucinogens are also affected by these changes and have been handled in a parallel manner. Hallucinogens are unadjusted for underreporting of PCP. Beginning in 2014 hallucinogens, LSD and hallucinogens other than LSD were based on five of six forms.

^cBased on 55 cases in 2009.

^dBased on 54 cases in 2005, 55 cases in 2009, 56 cases in 2010, and 57 cases in 2012.

^eBased on 85 cases in 1987, 54 cases in 1988, and 56 cases in 1989. Crack was included in all six questionnaire forms beginning in 1990. Based on 56 cases in 2013.

^fIn 1995, the heroin question was changed in three of six forms. Separate questions were asked for use with and without injection. Data presented here represent the combined data from all forms. Based on 54 cases in 2009.

^gOnly drug use not under a doctor's orders is included here.

^hIn 2002 the question text was changed in half of the questionnaire forms. In the list of examples of narcotics other than heroin, Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet. The 2002 data are based on the changed forms only. In 2003, the remaining forms were changed to the new wording. Beginning in 2003, the data are based on all forms. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

ⁱIn 2009, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. In 2010 the remaining forms were changed. In 2011 the introduction to the question was changed slightly in one of six forms. An examination of the data did not show any effect from the wording change. In 2013 the question wording was changed in three of the questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs..." In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was 21% higher in 12th grade. 2013 data are based on the changed forms only; *N* is one half of *N* indicated. In 2014 all questionnaires included the new, updated wording.

^jBased on 55 cases in 2002 and 56 cases in 2004.

^kFor 12th graders only: In 2004 the question text was changed in half of the questionnaire forms. Barbiturates was changed to sedatives, including barbiturates. Goofballs, yellows, reds, blues, and rainbows were deleted from the list of examples; Phenobarbital, Tuinal, Nembutal, and Seconal were added. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

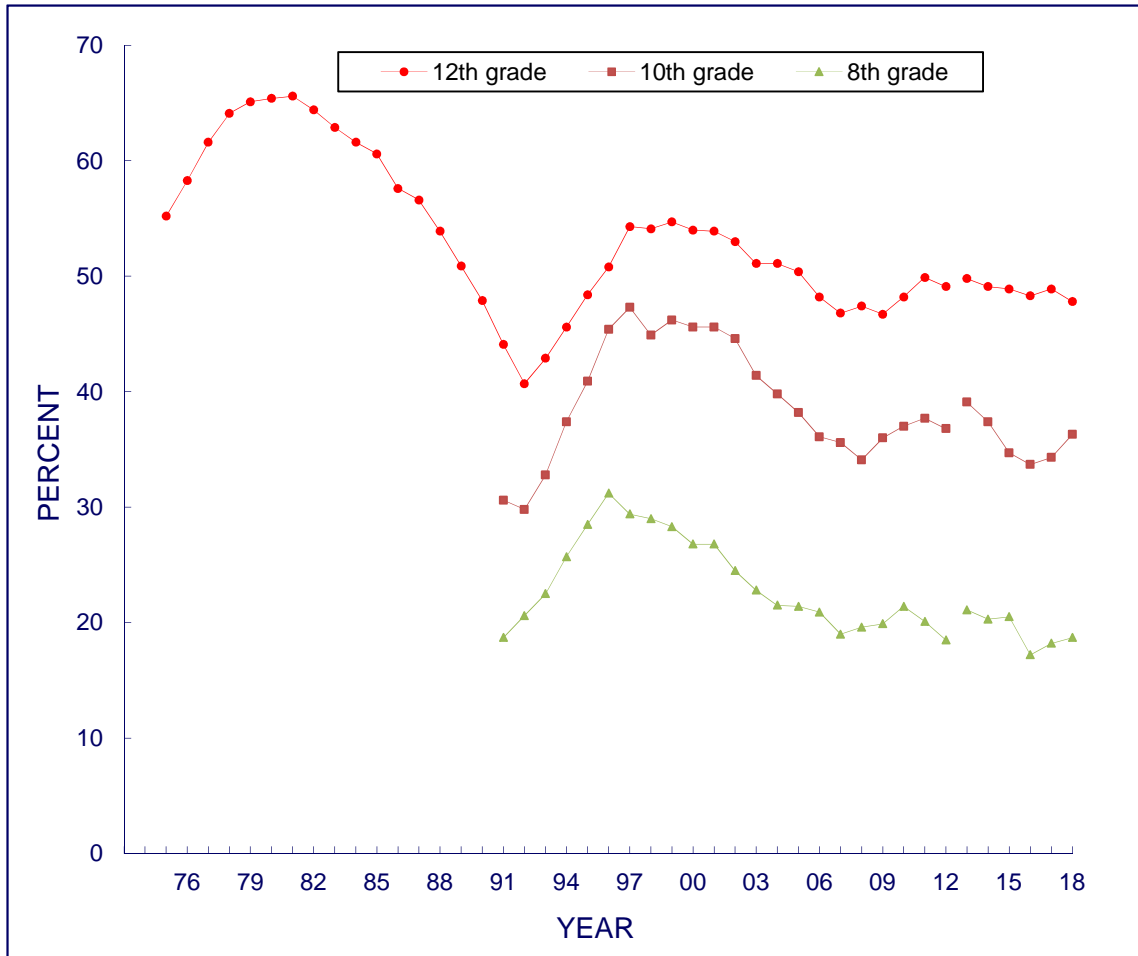
^lIn 2001, for the tranquilizer list of examples, Miltown was replaced with Xanax in half of the questionnaire forms. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms.

^mIn 1993, the question text was changed slightly in half of the questionnaire forms to indicate that a drink meant more than a few sips. The 1993 data are based on the changed forms only. In 1994 the remaining forms were changed to the new wording. Beginning in 1994, the data are based on all forms. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

ⁿIn 2006, the question text was changed slightly in one of the questionnaire forms. An examination of the data did not show any effect from the wording change. Based on 62 cases in 2006. The remaining forms were changed in 2007. In 2008 the question text was changed slightly. An examination of the data did not show any effect from the wording change. In 2009 the remaining forms were changed in a like manner. Based on 51 cases in 2010.

^oPercentage of regular users (ever) who did not use at all in the last 30 days.

FIGURE 5-1a
Any Illicit Drug Use
Trends in Lifetime Prevalence by Grade



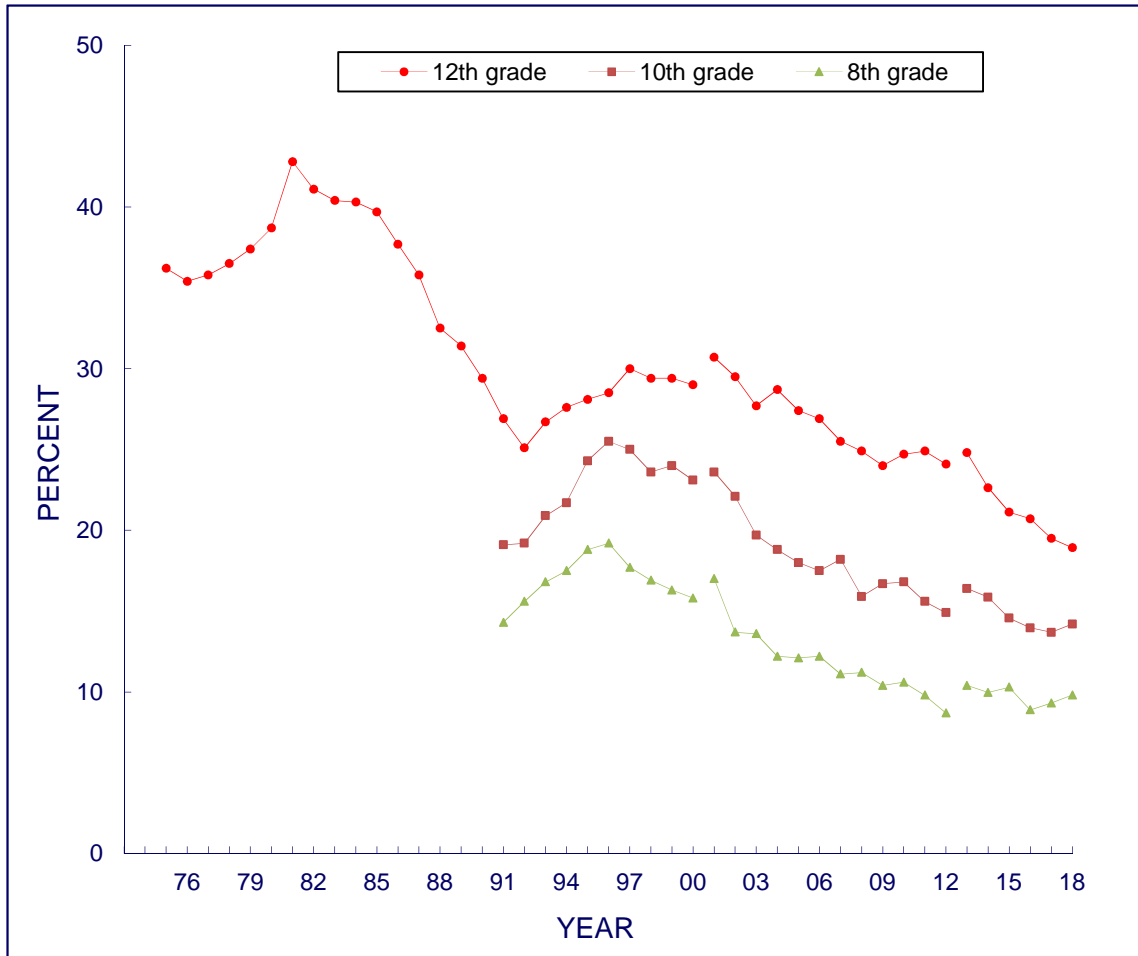
Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

For 8th and 10th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use.

FIGURE 5-1b
Any Illicit Drug Use other than Marijuana
Trends in Lifetime Prevalence by Grade



Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

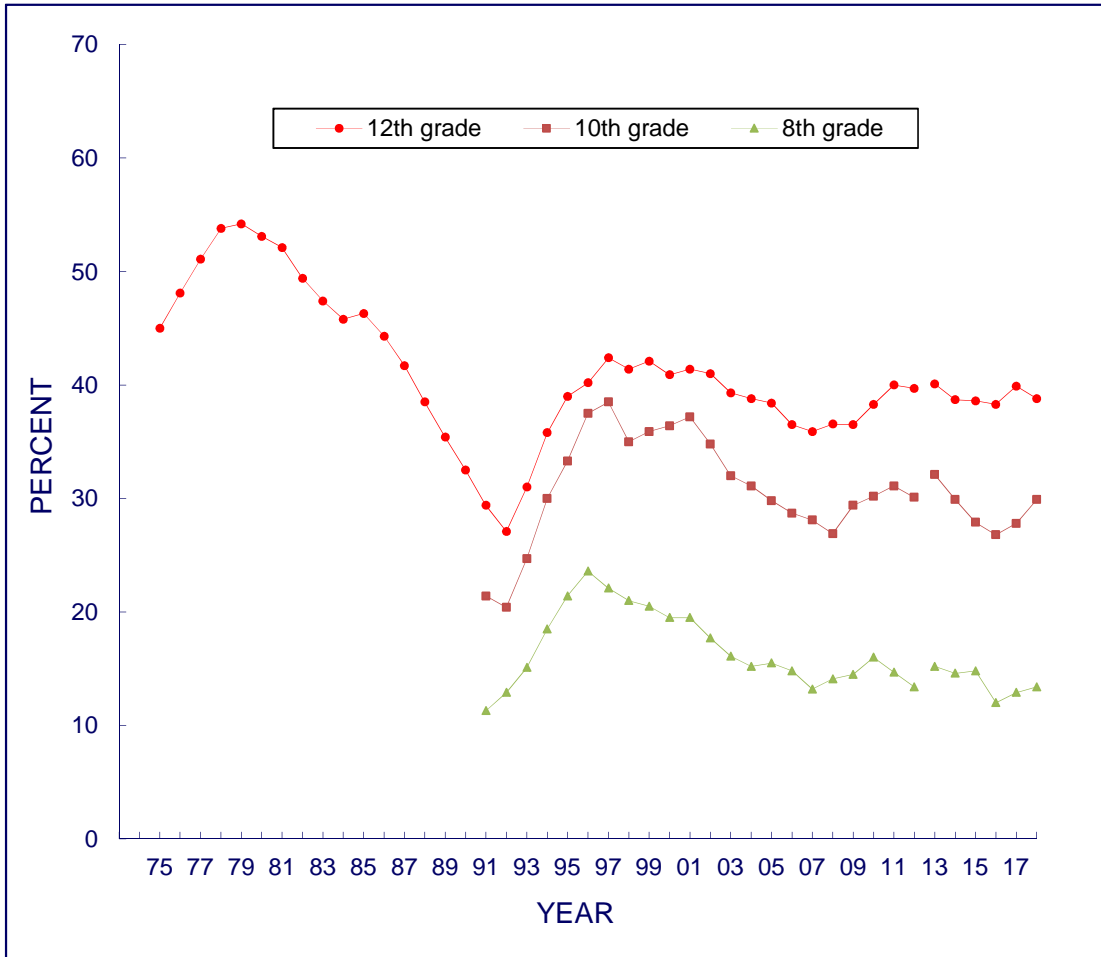
For 8th and 10th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced.

Data for any illicit drug other than marijuana are affected by these changes.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use other than marijuana.

FIGURE 5-2a
Any Illicit Drug Use
Trends in Annual Prevalence by Grade



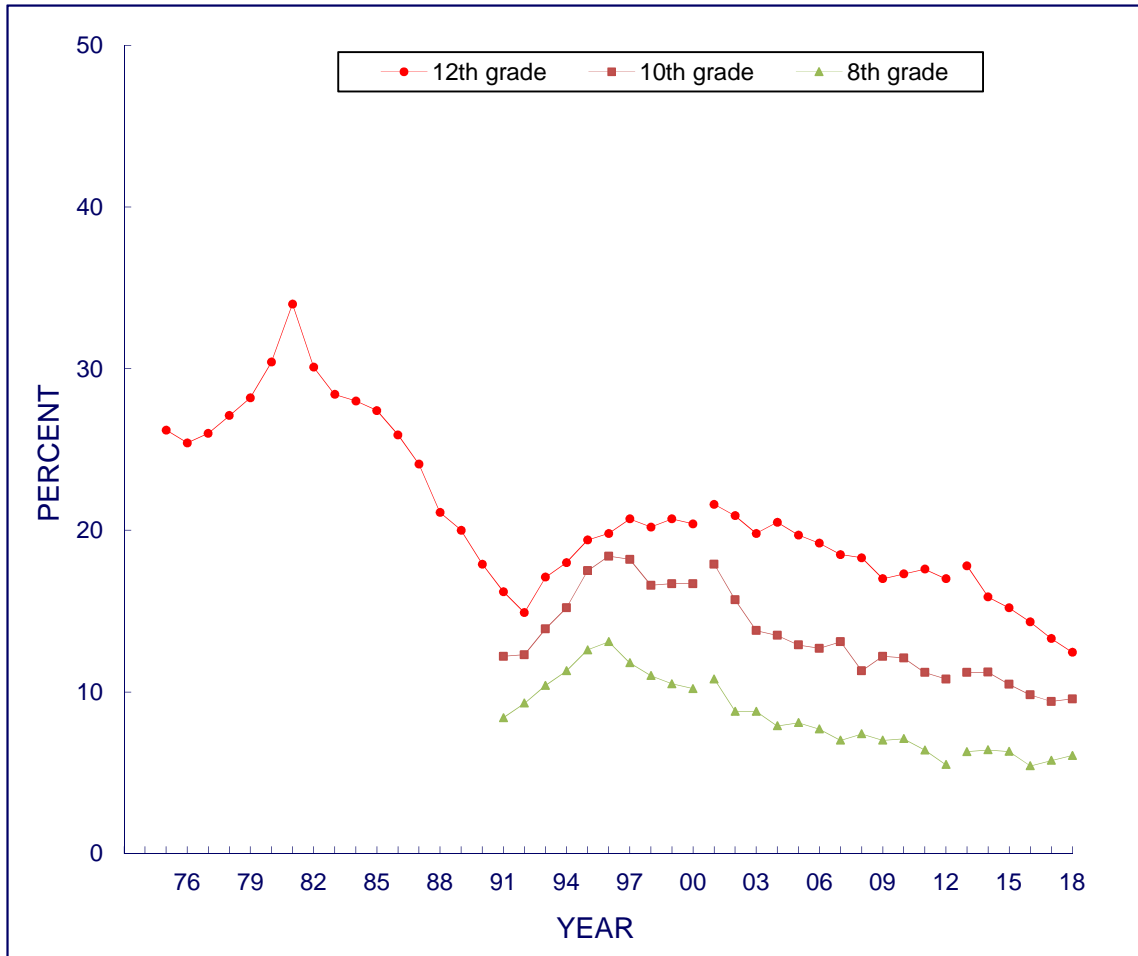
Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

For 8th and 10th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use.

FIGURE 5-2b
Any Illicit Drug Use other than Marijuana
Trends in Annual Prevalence by Grade



Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

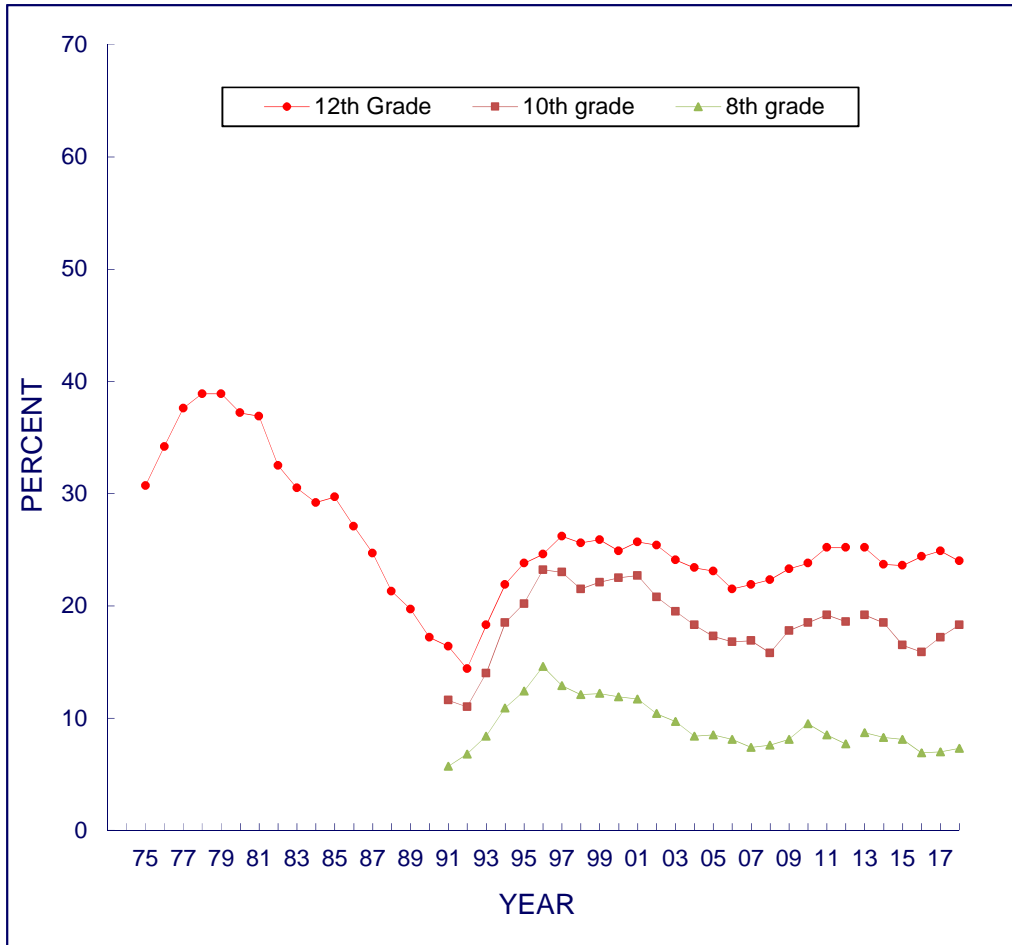
For 8th and 10th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced.

Data for any illicit drug other than marijuana are affected by these changes.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use other than marijuana.

FIGURE 5-3a
Any Illicit Drug Use Index
Trends in 30-Day Prevalence by Grade



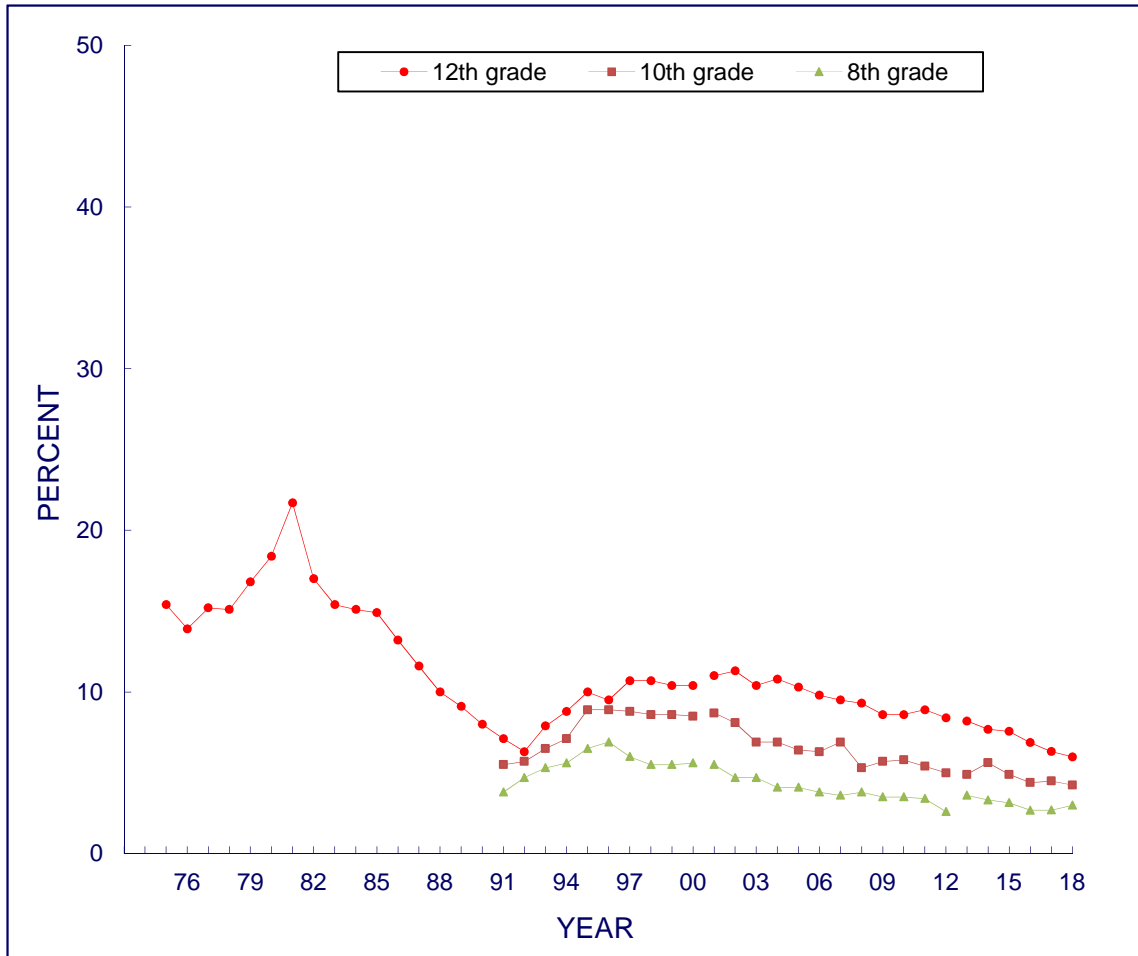
Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

For 8th and 10th graders, use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use.

FIGURE 5-3b
Any Illicit Drug Use other than Marijuana
Trends in 30-Day Prevalence by Grade



Source. The Monitoring the Future study, the University of Michigan.

Notes. For 12th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of other narcotics, stimulants, sedatives (barbiturates), methaqualone (excluded since 1990), or tranquilizers which are not under a doctor's orders.

For 8th and 10th graders, use of any illicit drug other than marijuana includes any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of stimulants or tranquilizers which are not under a doctor's orders.

Beginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced.

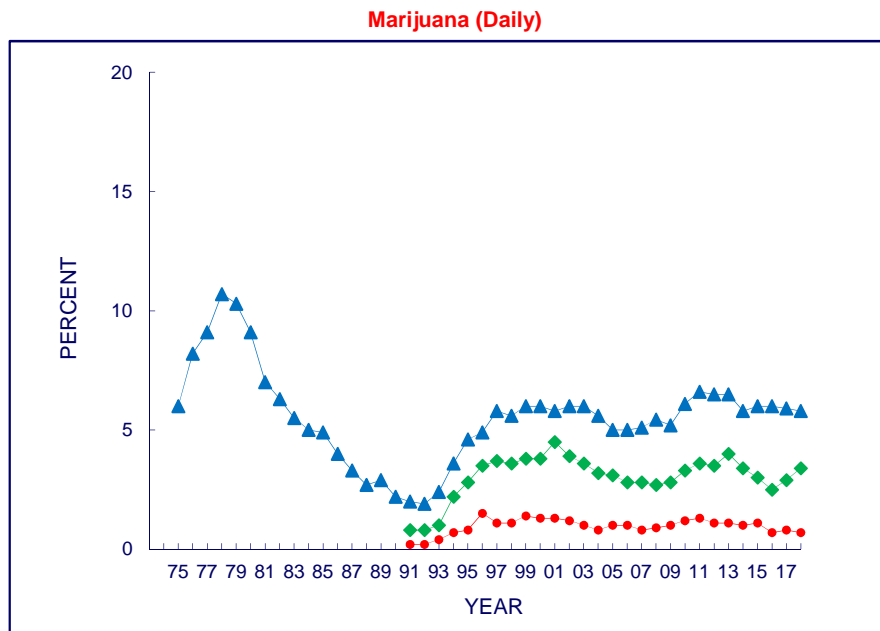
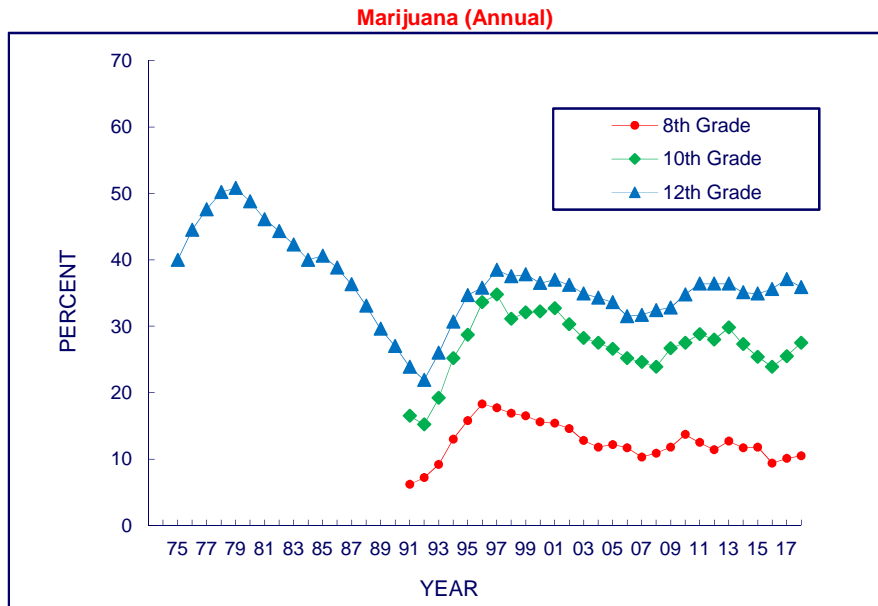
Data for any illicit drug other than marijuana are affected by these changes.

Beginning in 2013, revised sets of questions on amphetamine use were introduced, which affected data for any illicit drug use other than marijuana.

FIGURE 5-4a

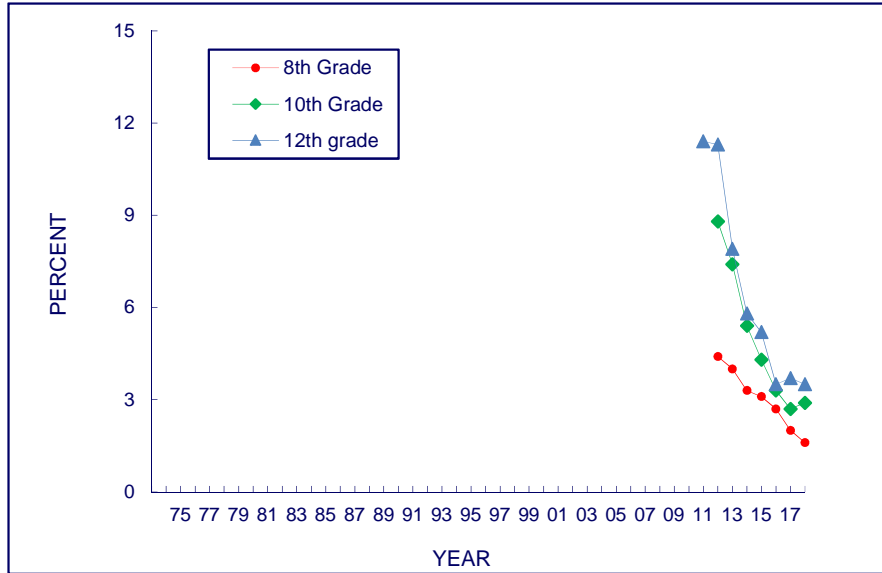
MARIJUANA

Trends in Annual Prevalence and 30-Day Prevalence of Daily Use in Grades 8, 10, and 12



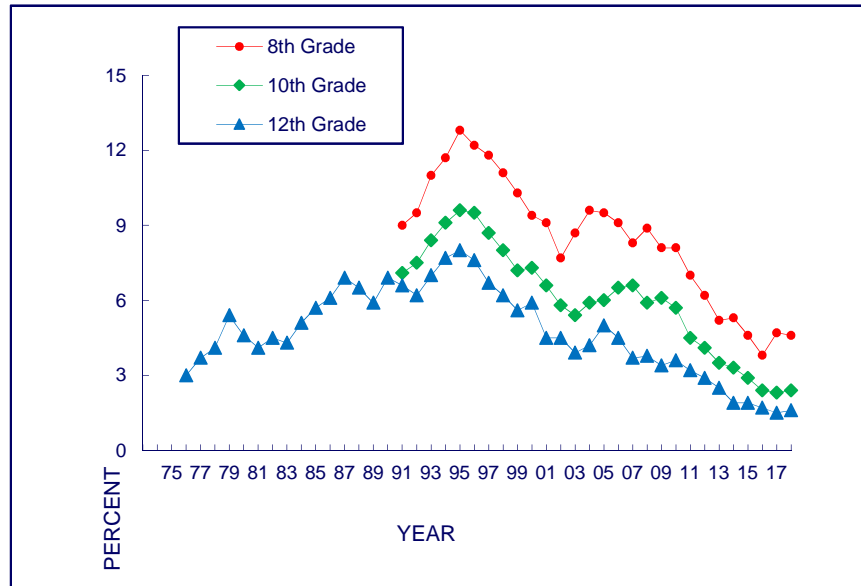
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4b
Synthetic Marijuana
Trends in Annual Prevalence
in Grades 8, 10, and 12



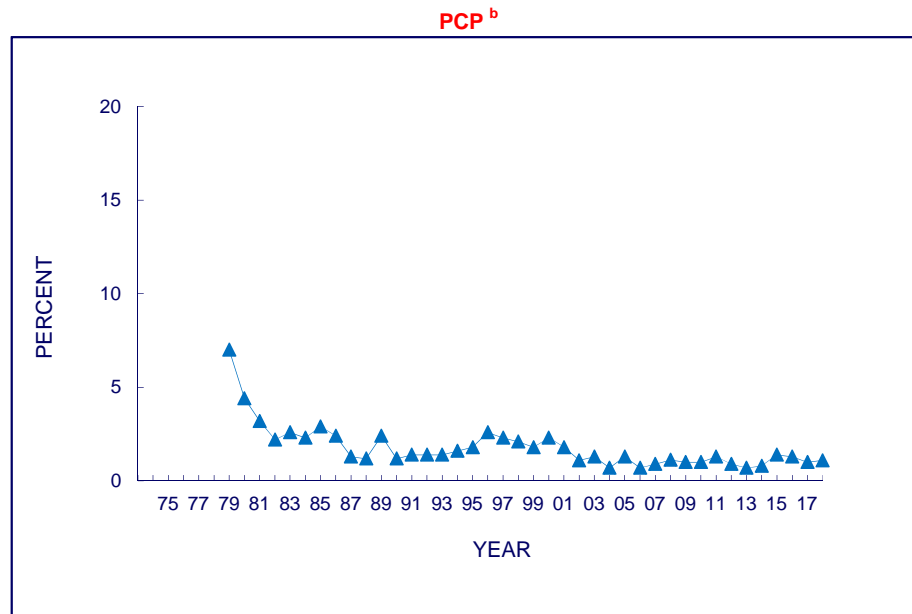
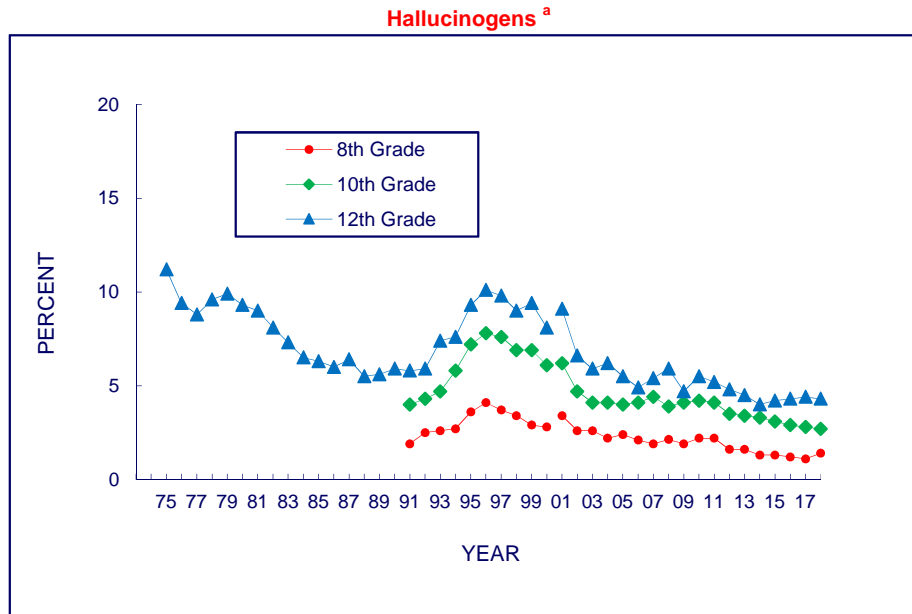
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4c
INHALANTS
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4d
HALLUCINOGENS AND PCP
Trends in Annual Prevalence
in Grades 8, 10, and 12



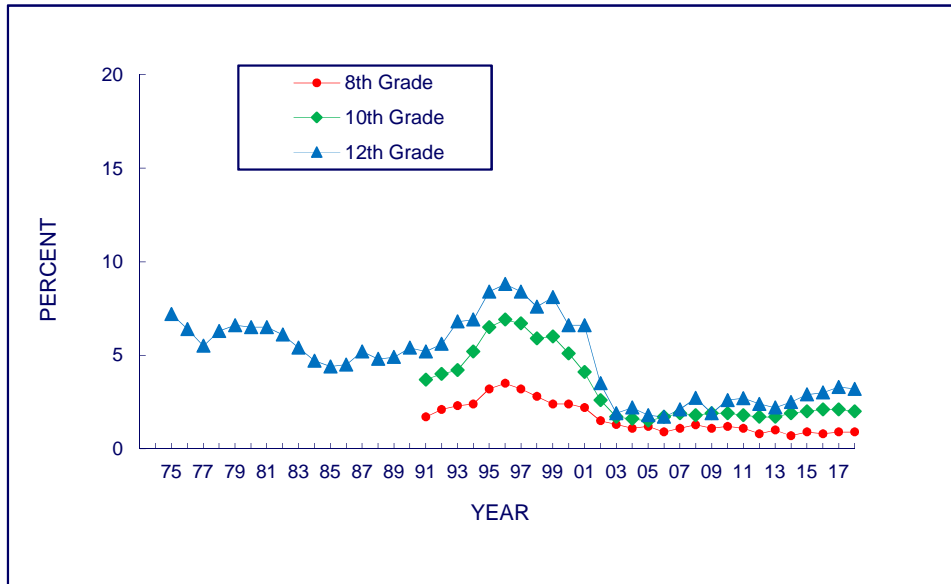
Source. The Monitoring the Future study, the University of Michigan.

^aIn 2001, a revised set of questions on other hallucinogen use was introduced. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. Data for hallucinogens were affected by these changes. From 2001 on, data points are based on the revised question.

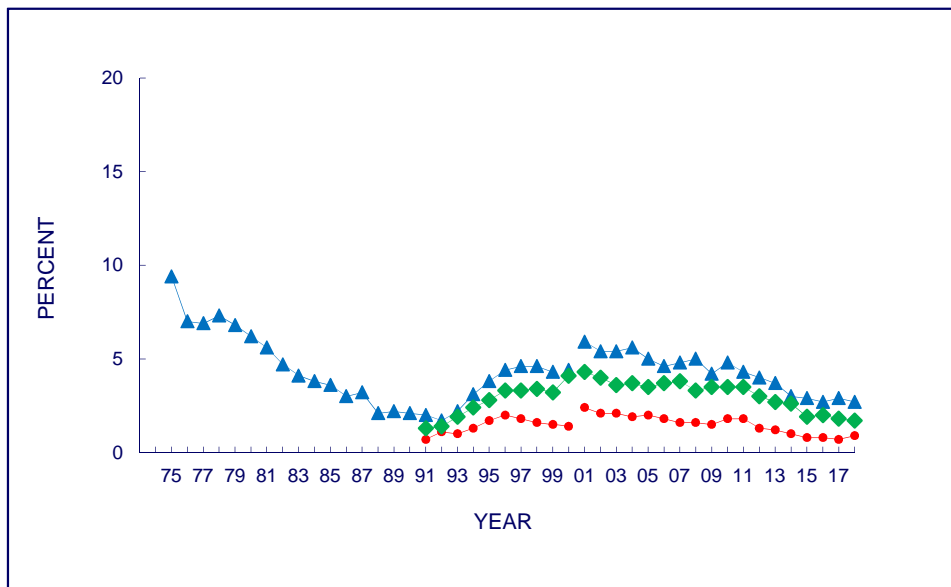
^bEighth and 10th graders are not asked about PCP use.

FIGURE 5-4e
LSD AND HALLUCINOGENS OTHER THAN LSD
Trends in Annual Prevalence
in Grades 8, 10, and 12

LSD



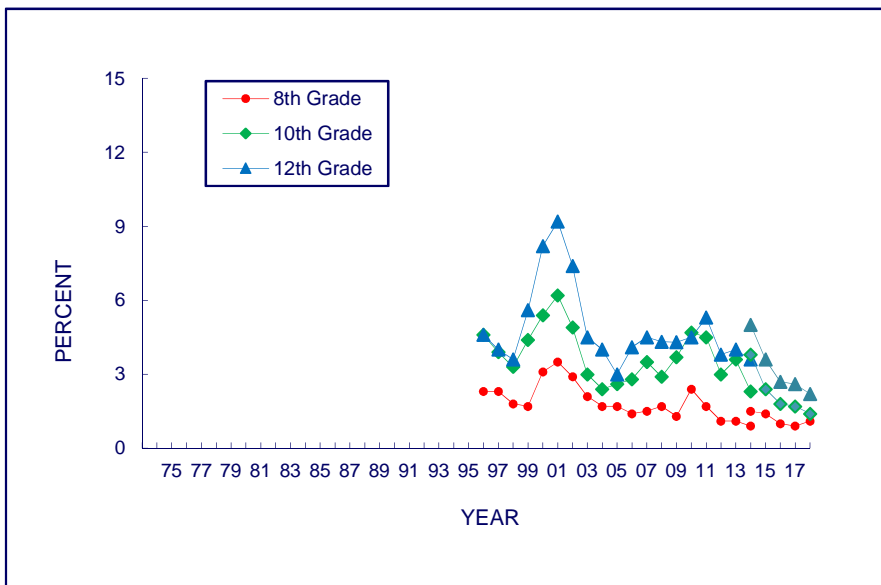
Hallucinogens other than LSD ^a



Source. The Monitoring the Future study, the University of Michigan.

^aIn 2001, a revised set of questions on other hallucinogen use was introduced. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. From 2001 on data points are based on the revised question.

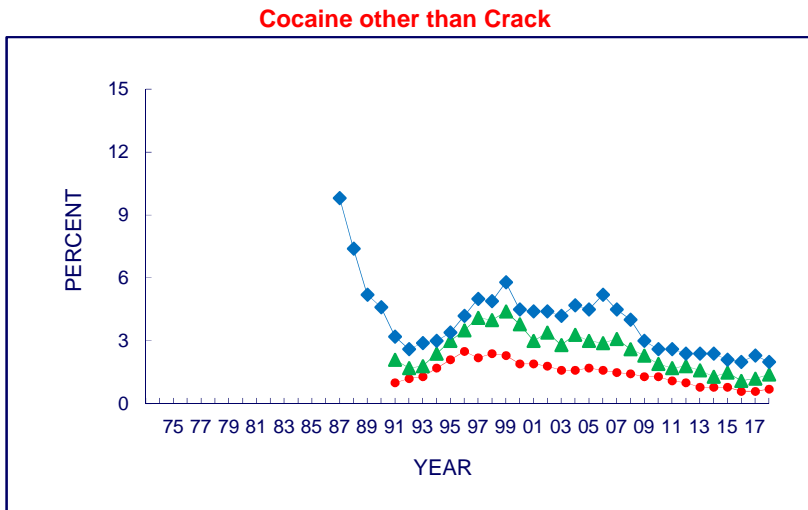
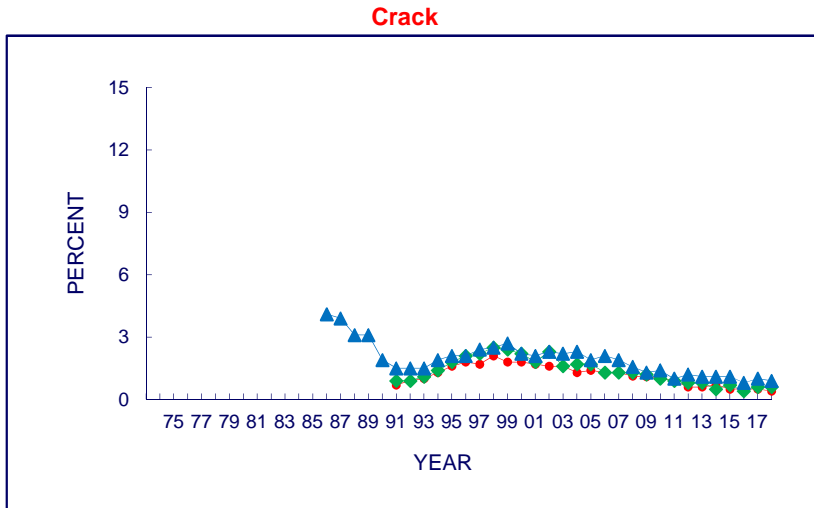
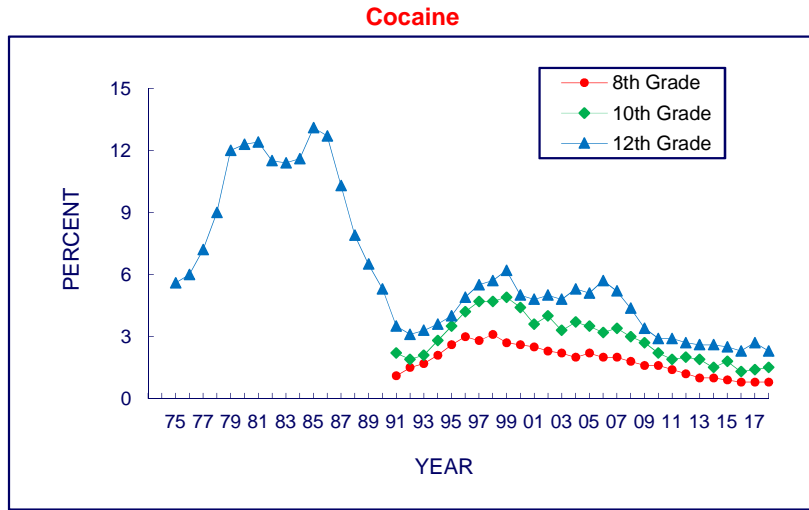
FIGURE 5-4f
ECSTASY (MDMA)
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source: The Monitoring the Future study, the University of Michigan.

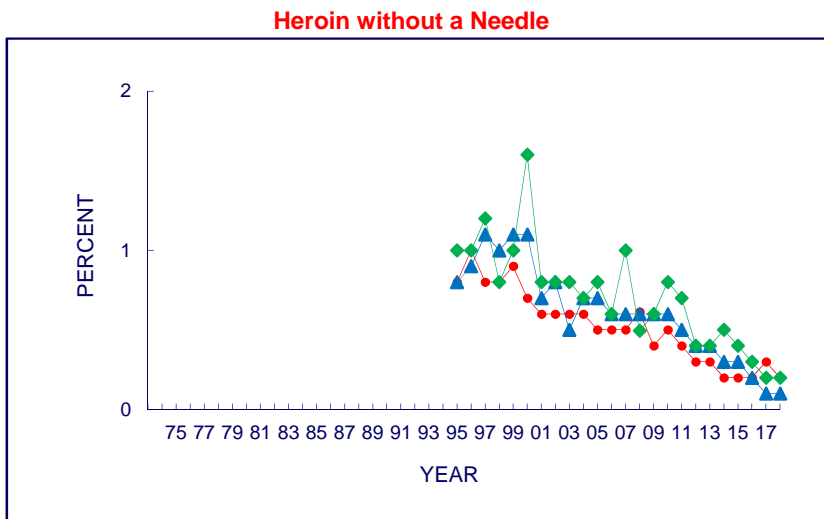
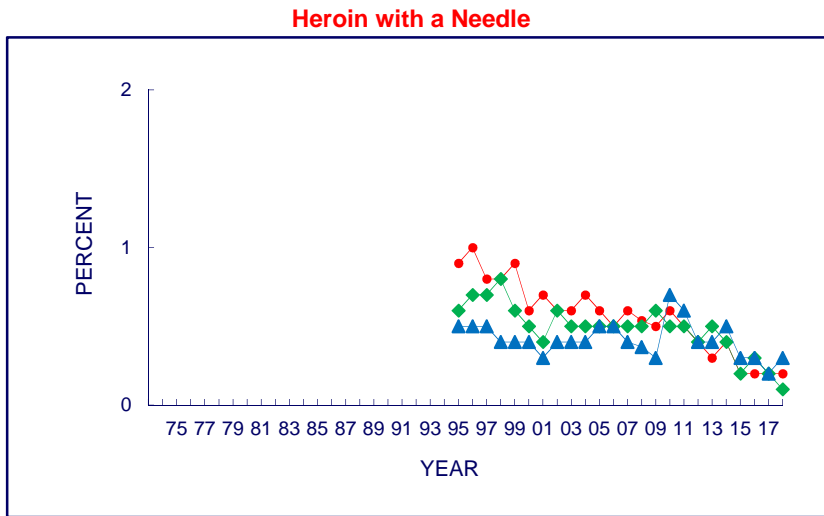
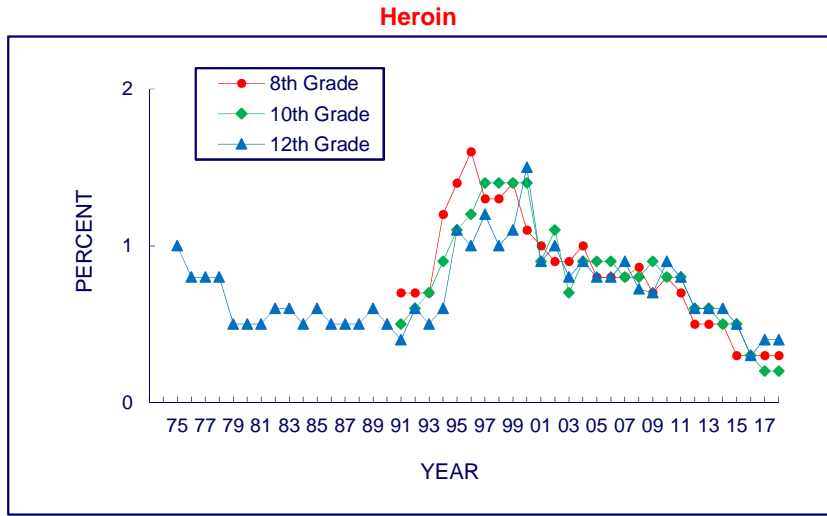
Notes. In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

FIGURE 5-4g
COCAINE, CRACK, AND COCAINE OTHER THAN CRACK
Trends in Annual Prevalence
in Grades 8, 10, and 12



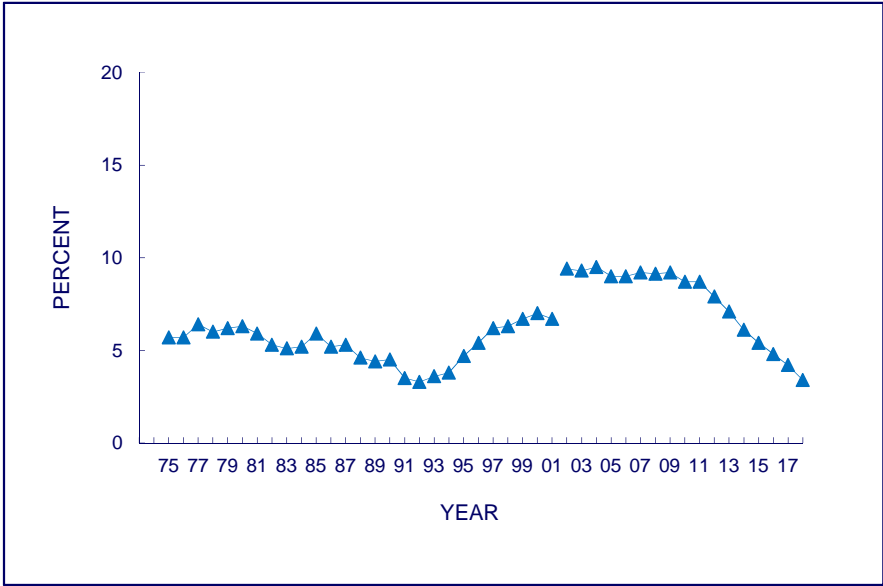
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4h
HEROIN
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

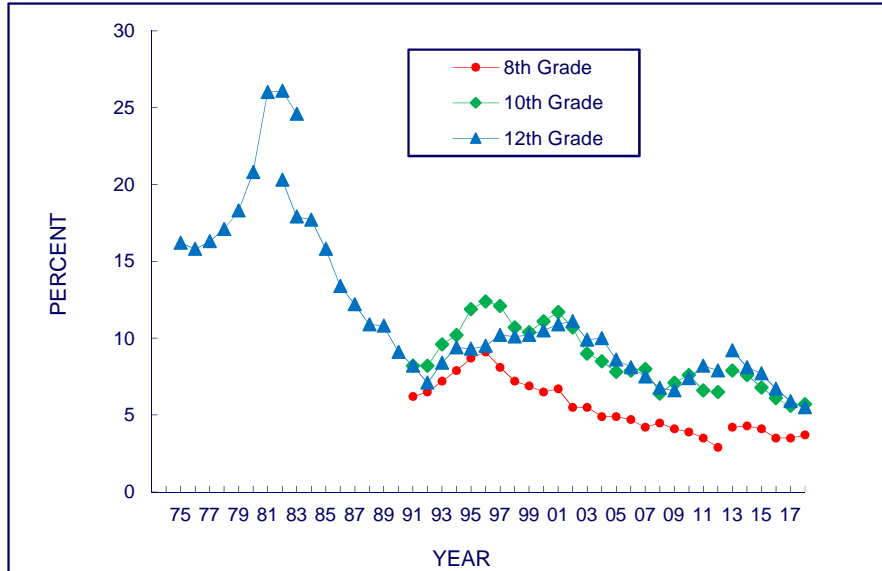
FIGURE 5-4i
NARCOTICS OTHER THAN HEROIN^a
Trends in Annual Prevalence
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aData for 8th and 10th graders are not reported for use of narcotics other than heroin. In 2002, a revised set of questions on other narcotic use was introduced. Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet in the list of examples. From 2002 on, data points are based on the revised question.

FIGURE 5-4j
AMPHETAMINES^a
Trends in Annual Prevalence
in Grades 8, 10, and 12

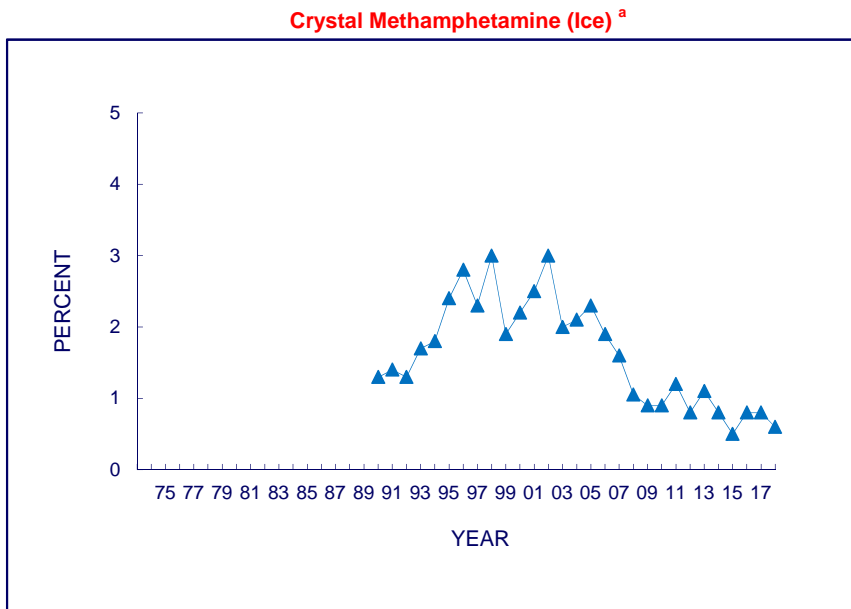
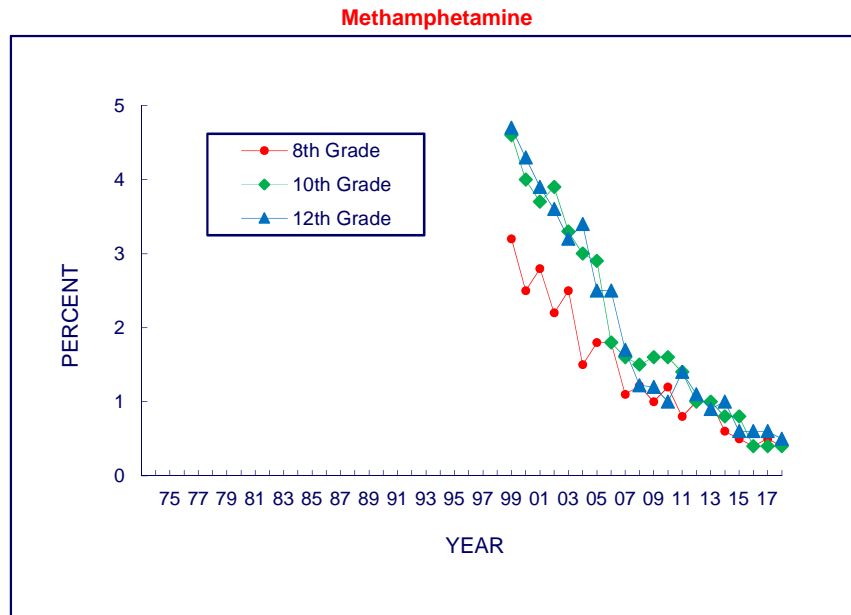


Source. The Monitoring the Future study, the University of Michigan.

^aBeginning in 1982, the lines connect percentages that result if nonprescription stimulants are excluded.

In 2013, the text was changed on some of the questionnaire forms for all three grades, with the remaining forms changed in 2014. Data presented here include only the changed forms.

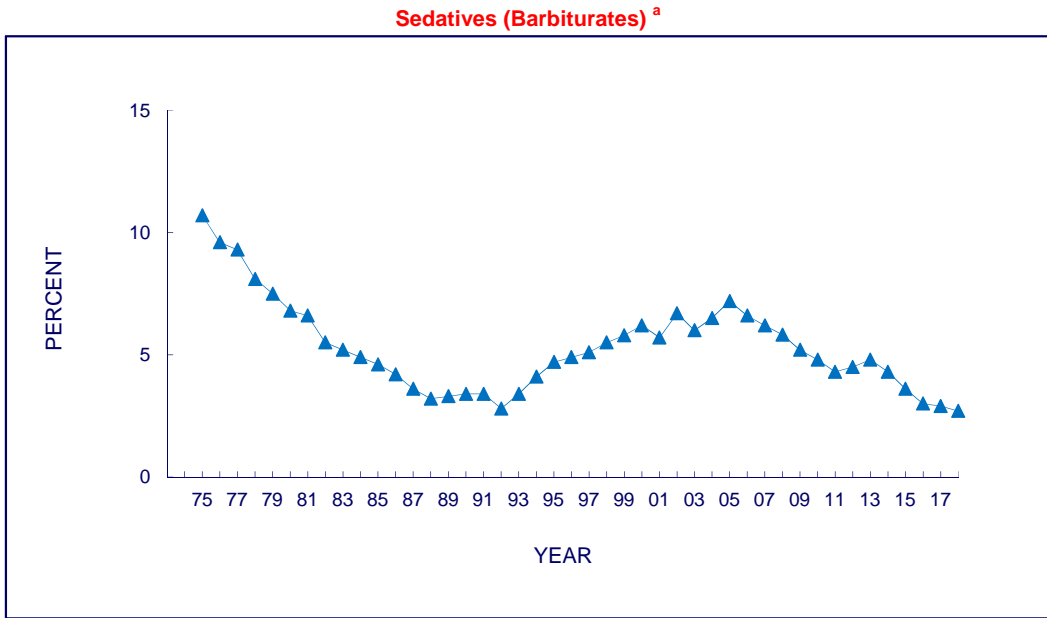
FIGURE 5-4k
METHAMPHETAMINE AND CRYSTAL METHAMPHETAMINE (ICE)
Trends in Annual Prevalence in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

^aEighth and 10th graders are not asked about crystal methamphetamine use.

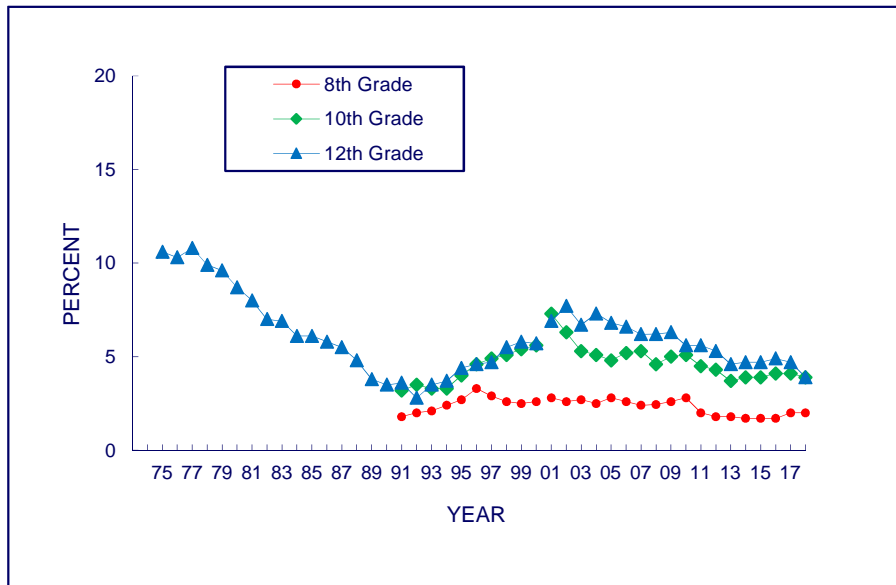
FIGURE 5-41
SEDATIVES (BARBITURATES)
Trends in Annual Prevalence
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aIn 2004 the question text was changed. Goofballs, yellows, reds, blues, and rainbows were deleted from the list of examples. Phenobarbital, Tuinal, and Seconal were added. An examination of the data did not show any effect from the wording change.

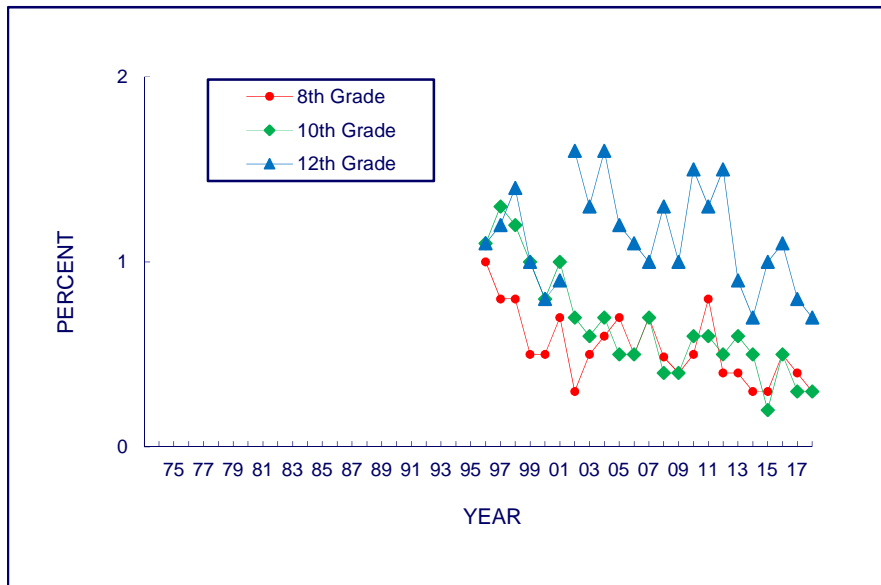
FIGURE 5-4m
TRANQUILIZERS^a
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

^aBeginning in 2001, a revised set of questions on tranquilizer use was introduced in which Xanax replaced Miltown in the list of examples. From 2001 on data points are based on the revised question.

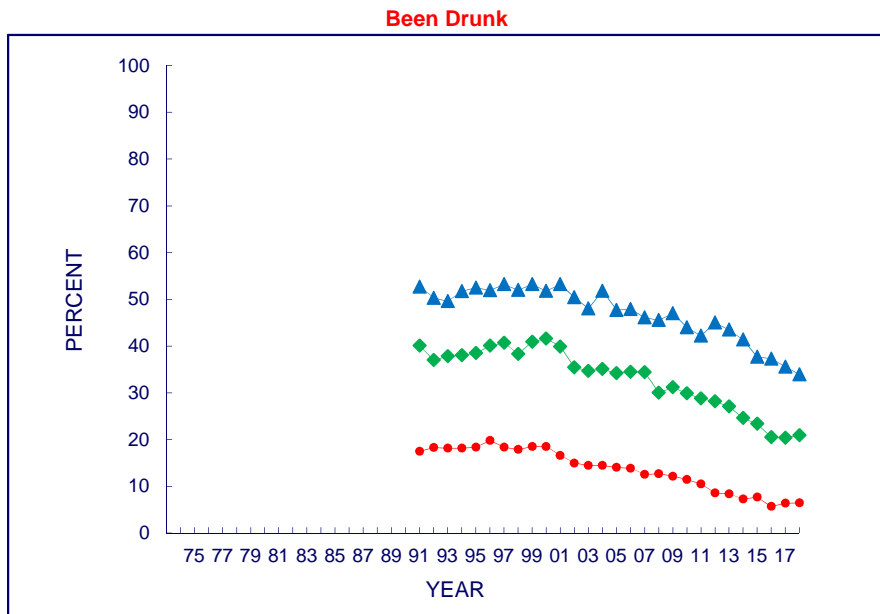
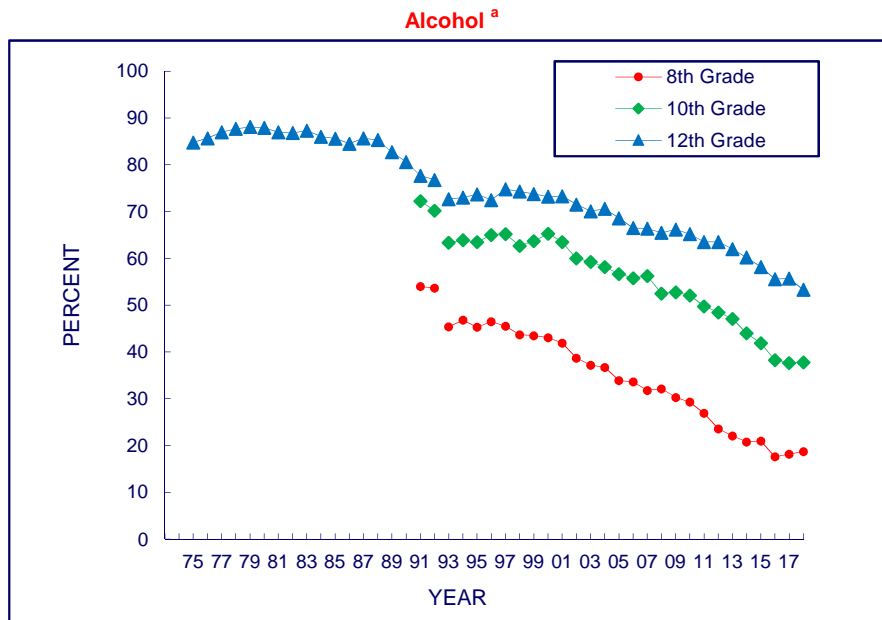
FIGURE 5-4n
ROHYPNOL^a
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

^aFor 12th graders only, Rohypnol data for 2001 are not comparable with data for 2002 due to changes in the questionnaire forms.

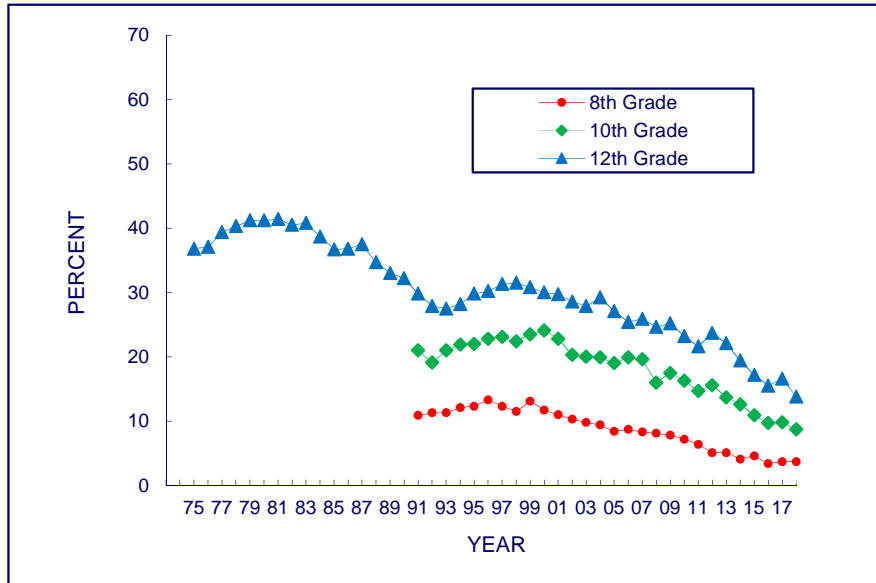
FIGURE 5-4o
ALCOHOL AND BEEN DRUNK
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

^aIn 1993, a revised set of questions on alcohol use was introduced indicating that a drink meant more than a few sips. From 1993 on, data points are based on the revised question.

FIGURE 5-4p
FIVE OR MORE DRINKS IN A ROW
Trends in 2-Week Prevalence
in Grades 8, 10, and 12

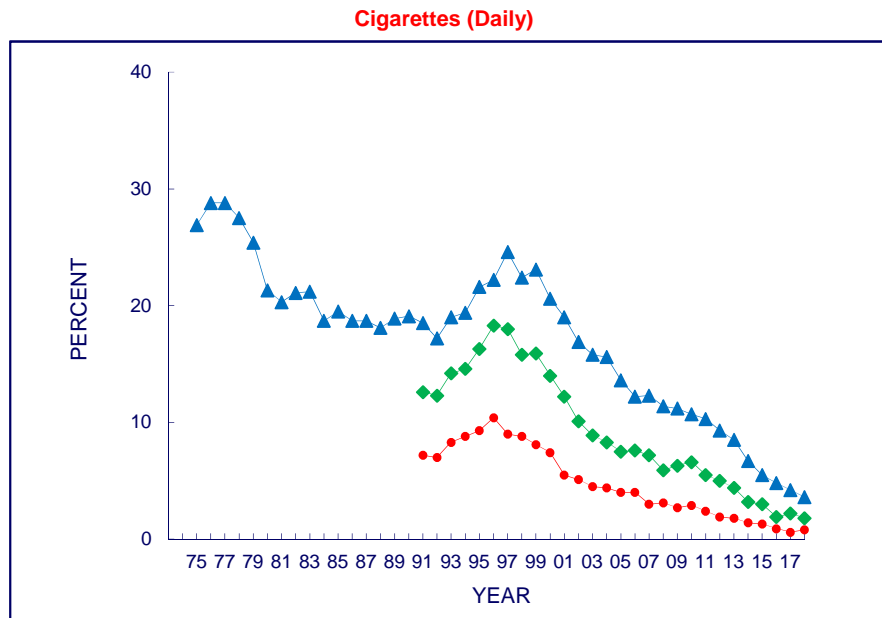
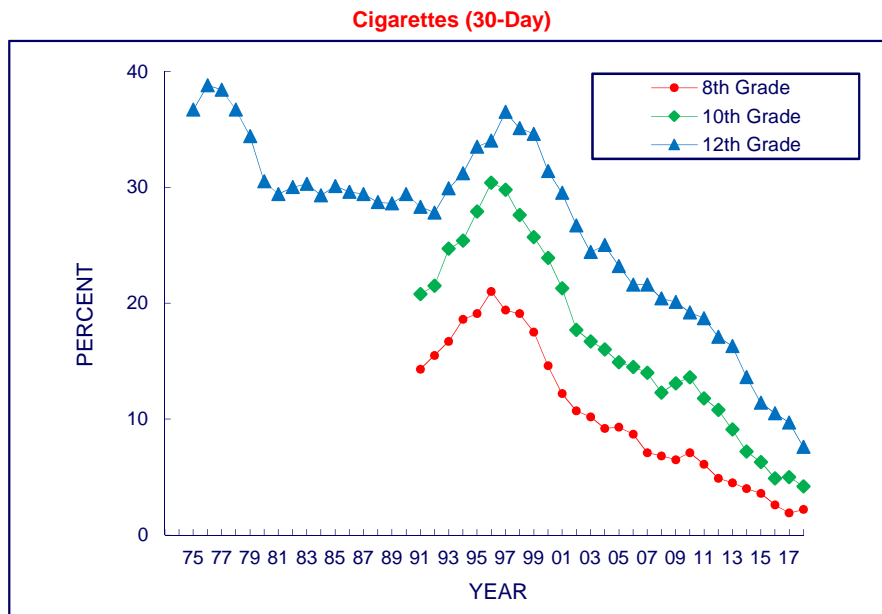


Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4q

CIGARETTES

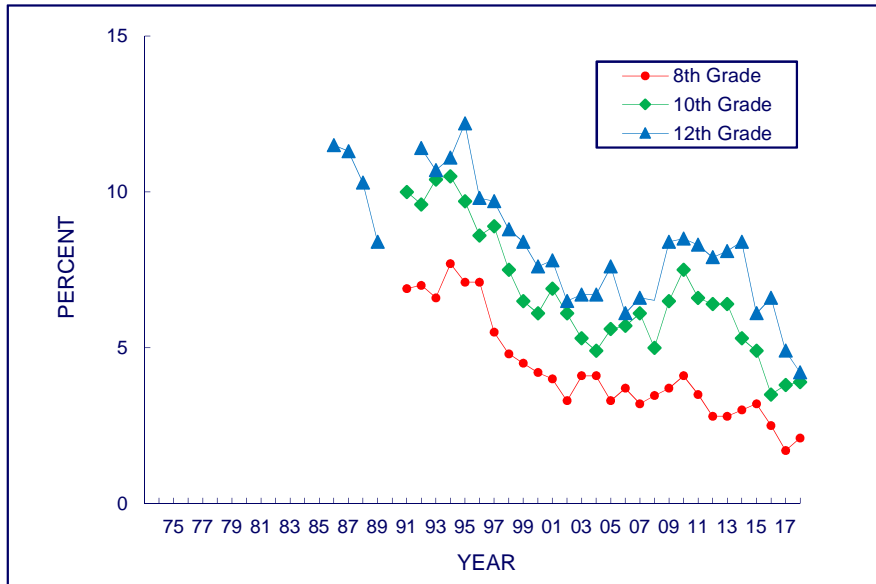
Trends in 30-Day Prevalence and 30-Day Prevalence of Daily Use in Grades 8, 10, and 12



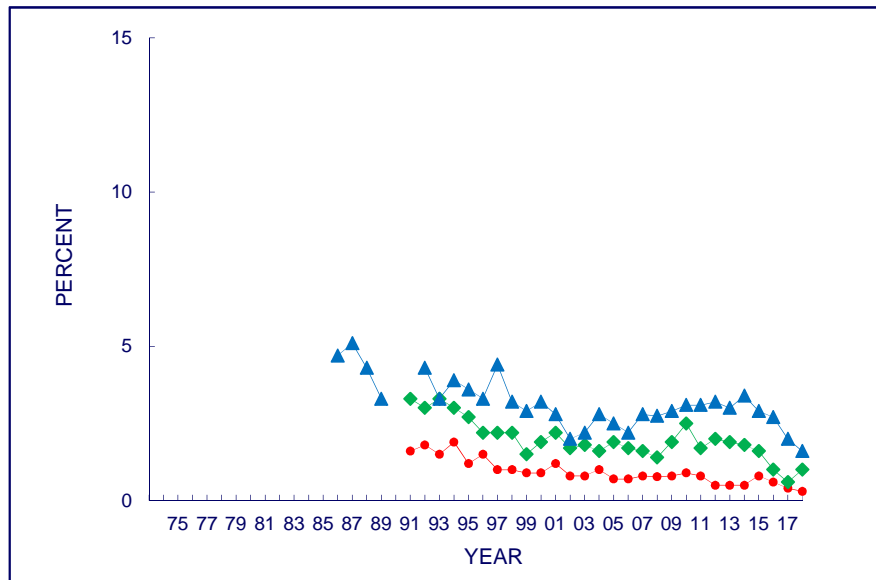
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4r
SMOKELESS TOBACCO
Trends in 30-Day Prevalence and 30-Day Prevalence of
Daily Use in Grades 8, 10, and 12

Smokeless Tobacco (30-Day)

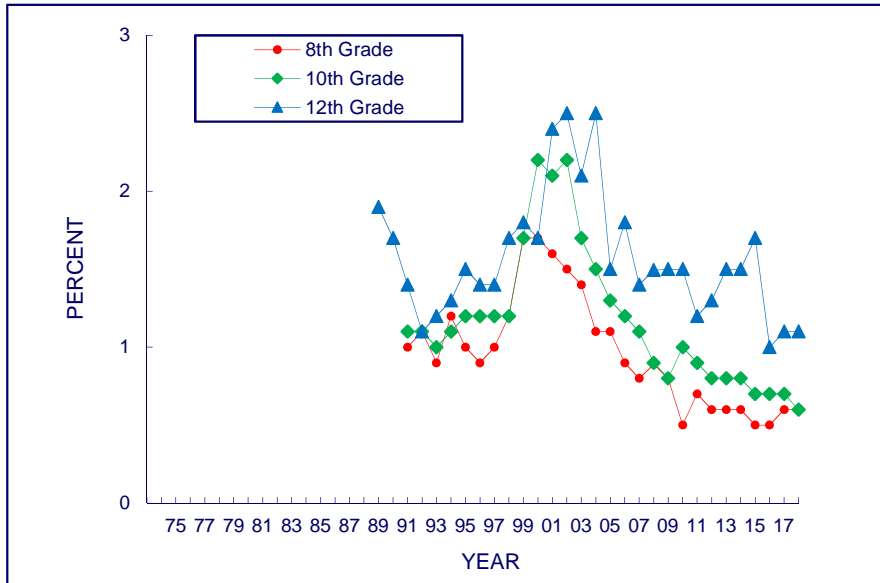


Smokeless Tobacco (Daily)^a



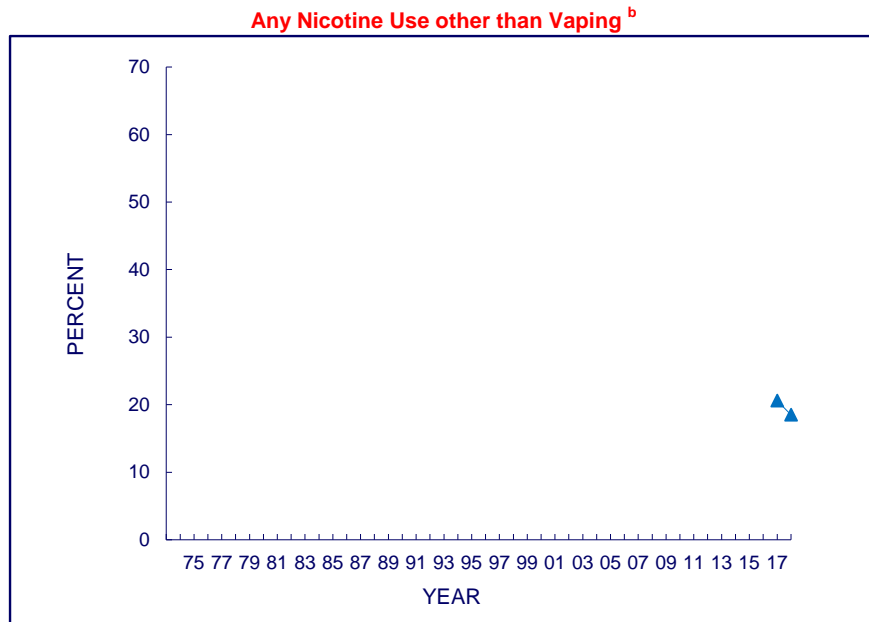
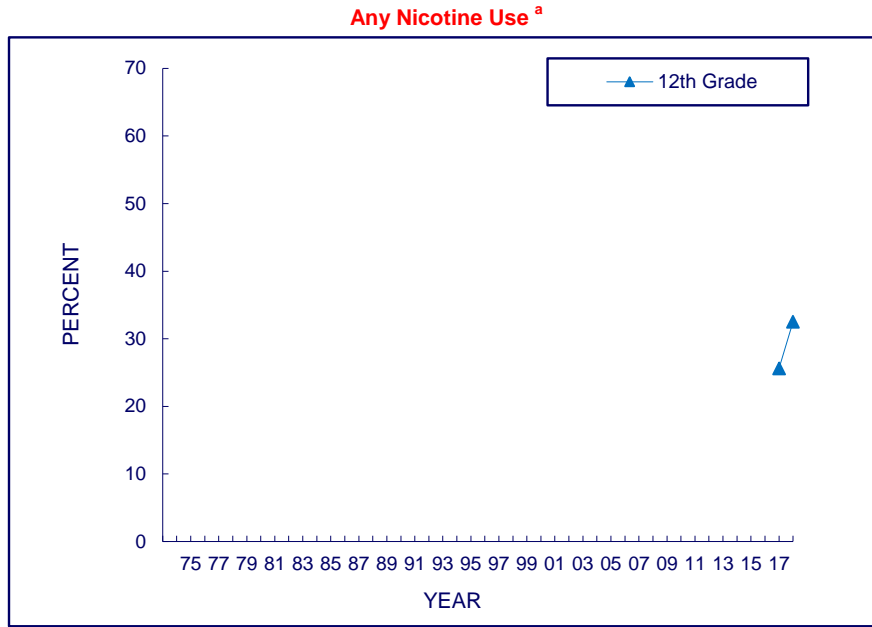
Source. The Monitoring the Future study, the University of Michigan.
^aTwelfth graders: Smokeless tobacco data not available in 1990 or 1991.

FIGURE 5-4s
STERIODS
Trends in Annual Prevalence
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4t
ANY NICOTINE USE AND
ANY NICOTINE USE OTHER THAN VAPING
Trends in 30-Day Prevalence
in Grade 12



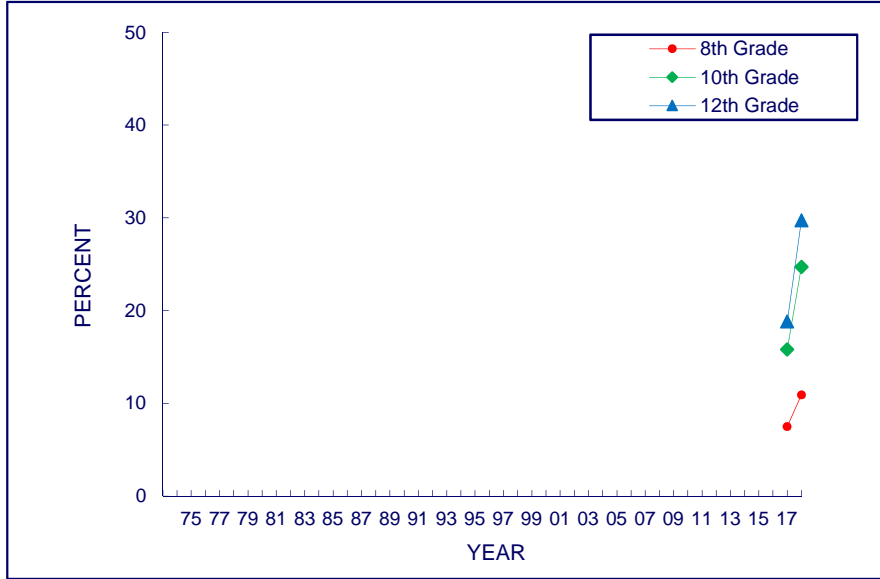
Source. The Monitoring the Future study, the University of Michigan.

^aIncludes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

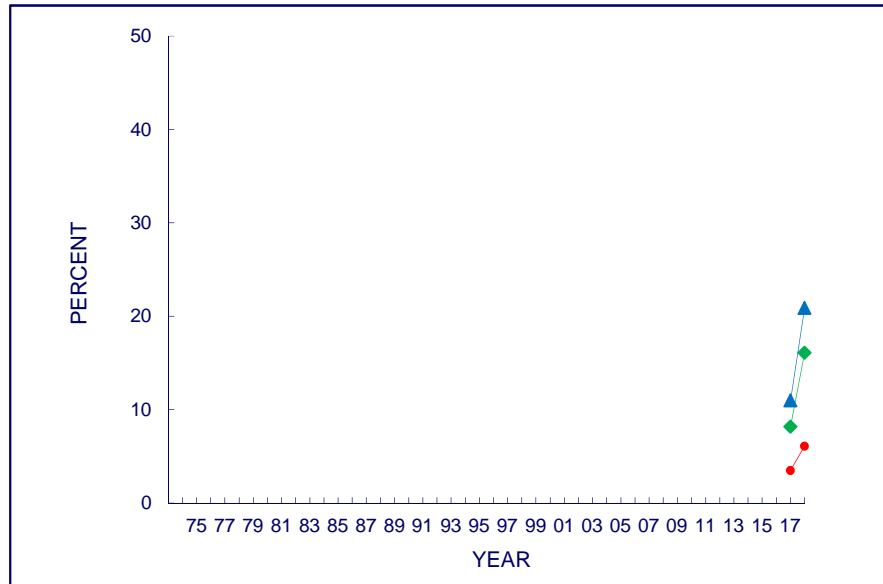
^bIncludes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

FIGURE 5-4u
VAPING NICOTINE
Trends in Annual and 30-Day Prevalence
in Grades 8, 10, and 12

Vaping Nicotine (Annual)



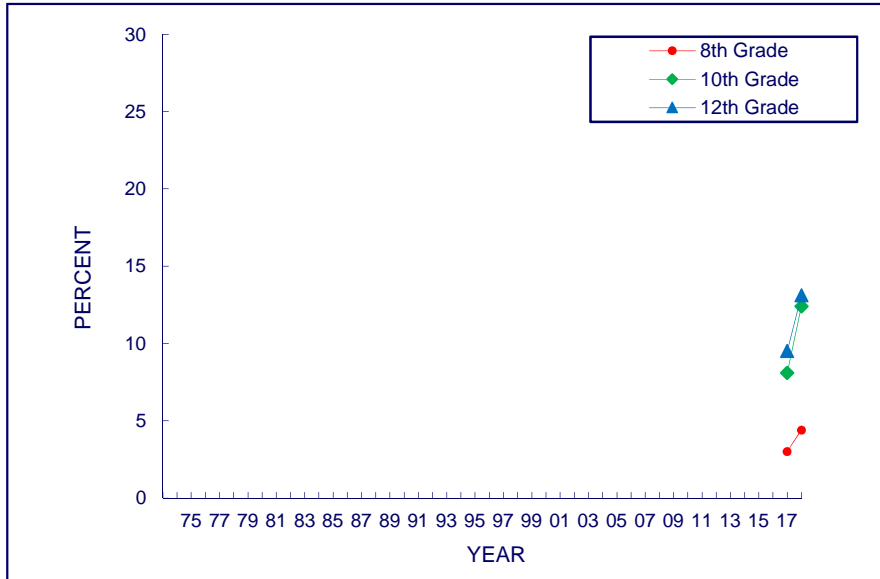
Vaping Nicotine (30-Day)



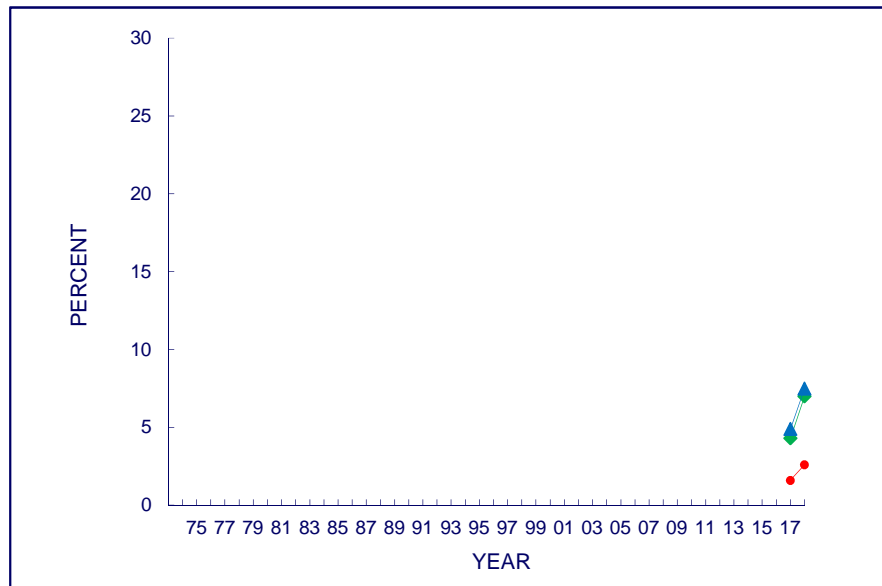
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-4v
VAPING MARIJUANA
Trends in Annual and 30-Day Prevalence
in Grades 8, 10, and 12

Vaping Marijuana (Annual)

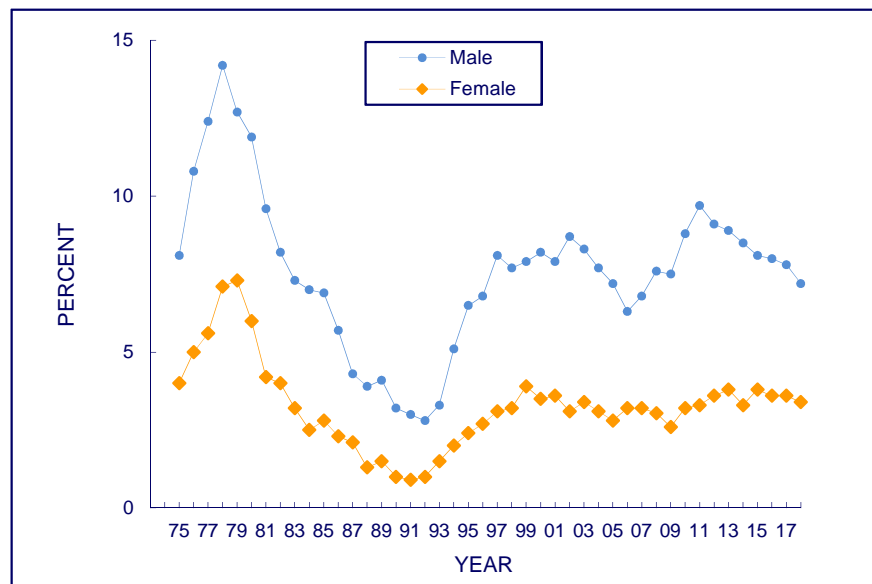
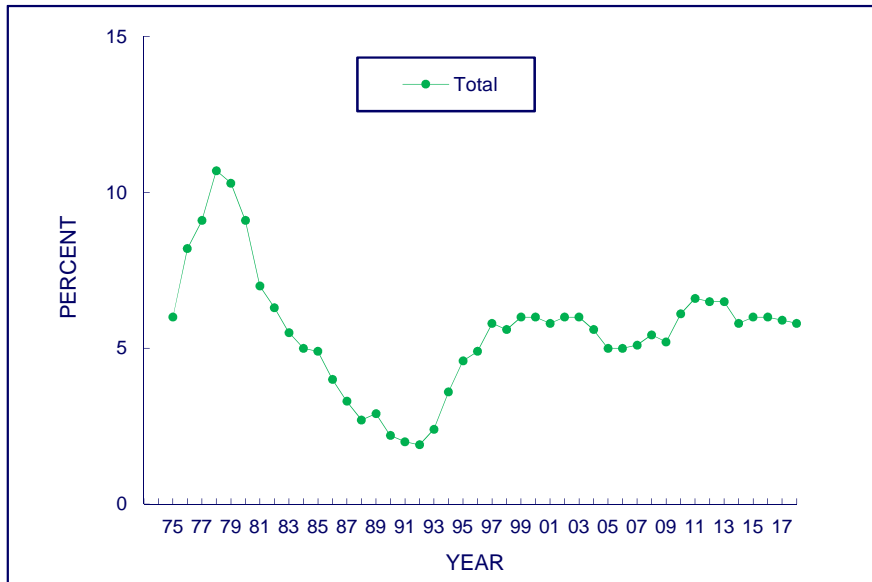


Vaping Marijuana (30-Day)



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-5a
MARIJUANA
Trends in 30-Day Prevalence of Daily Use in Grade 12
by Total and by Gender



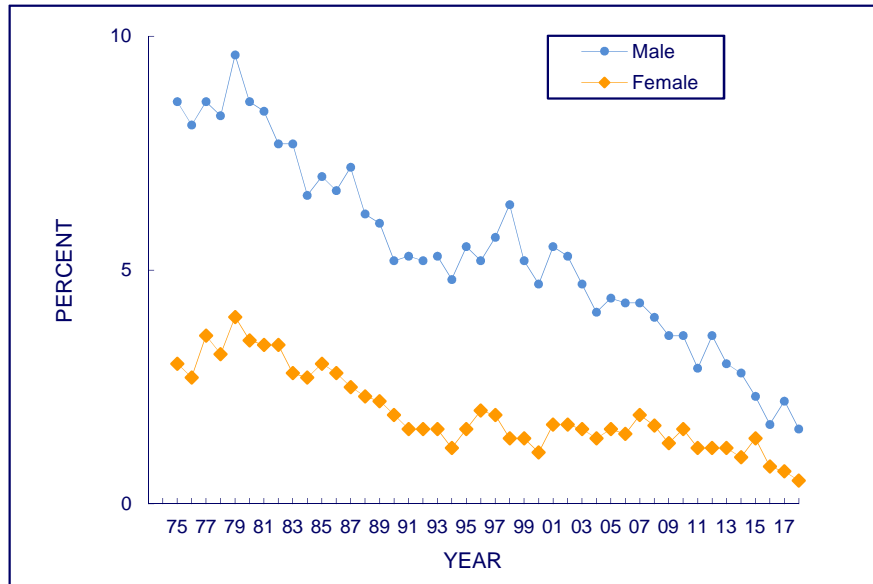
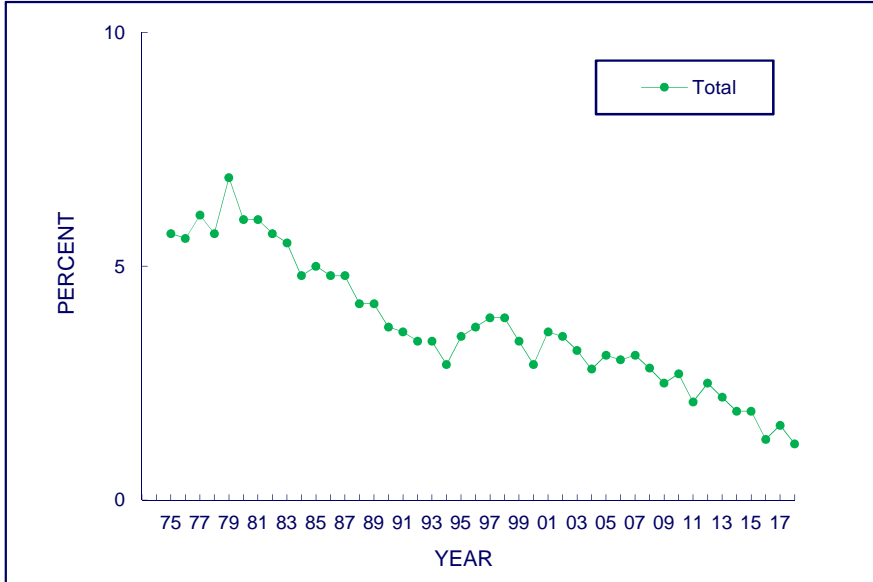
Source. The Monitoring the Future study, the University of Michigan.

Note. Daily use for marijuana is defined as use on 20 or more occasions in the last 30 days.

FIGURE 5-5b

ALCOHOL^a

**Trends in 30-Day Prevalence of Daily Use in Grade 12
by Total and by Gender**

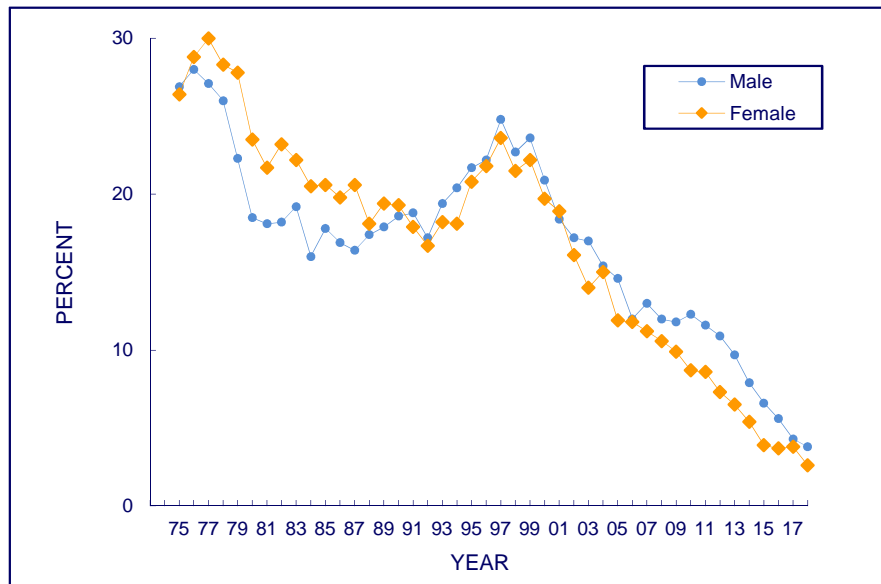
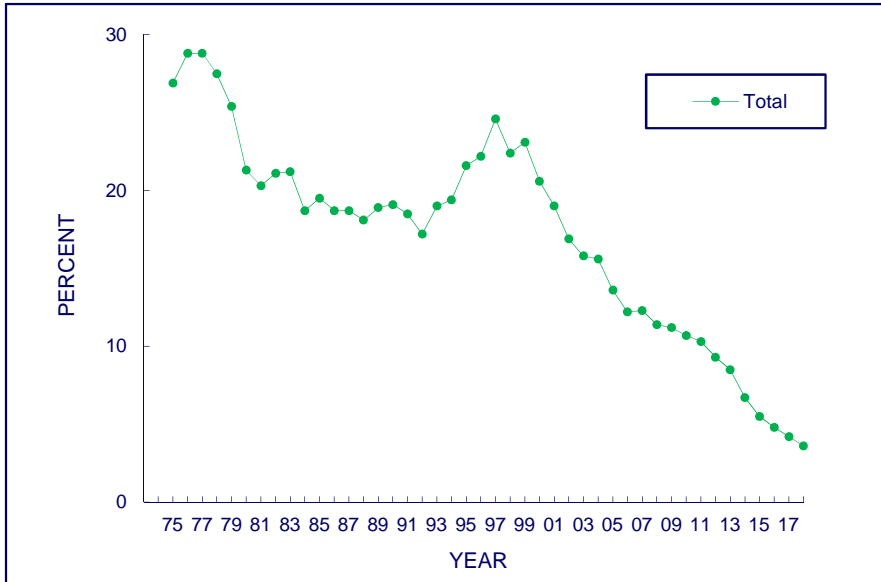


Source. The Monitoring the Future study, the University of Michigan.

Note. Daily use for alcohol is defined as use on 20 or more occasions in the last 30 days.

^aIn 1993, a revised set of questions on alcohol use was introduced indicating that a drink meant more than a few sips. From 1993 on, data points are based on the revised question.

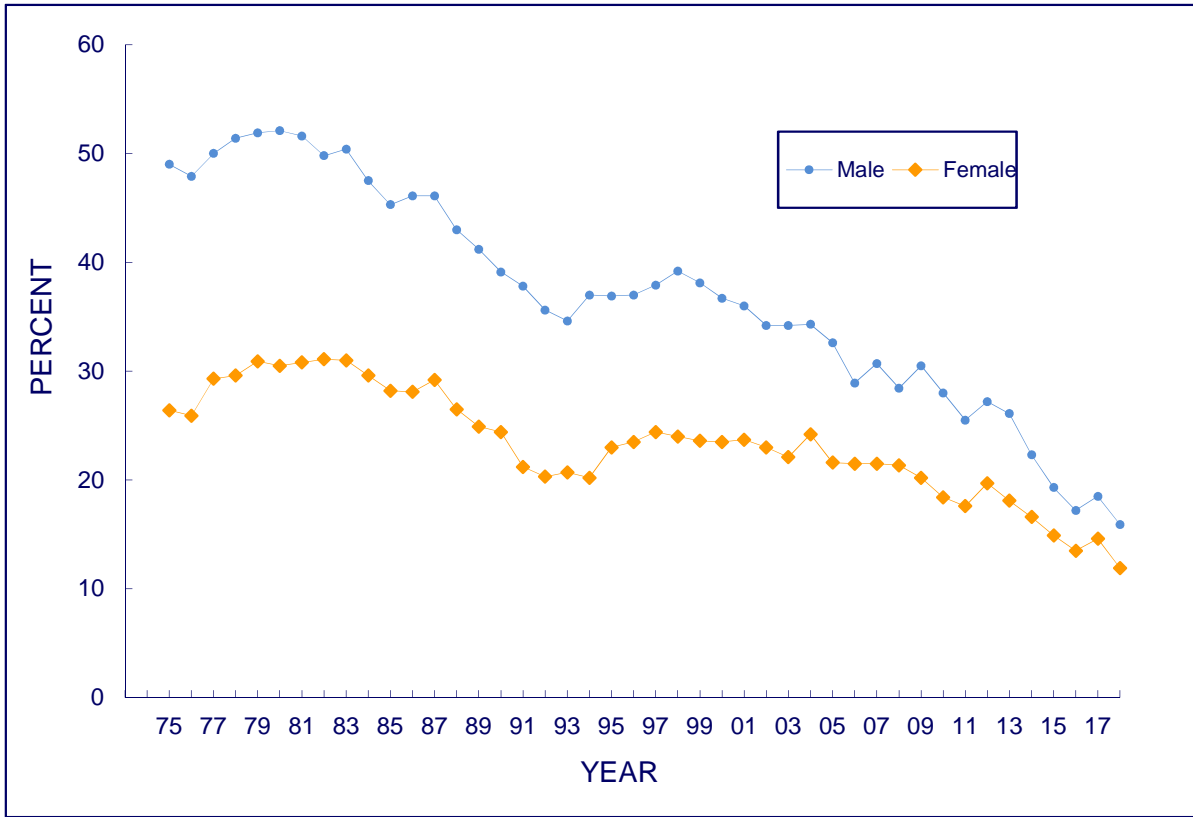
FIGURE 5-5c
CIGARETTES
Trends in 30-Day Prevalence of Daily Use in Grade 12
by Total and by Gender



Source. The Monitoring the Future study, the University of Michigan.

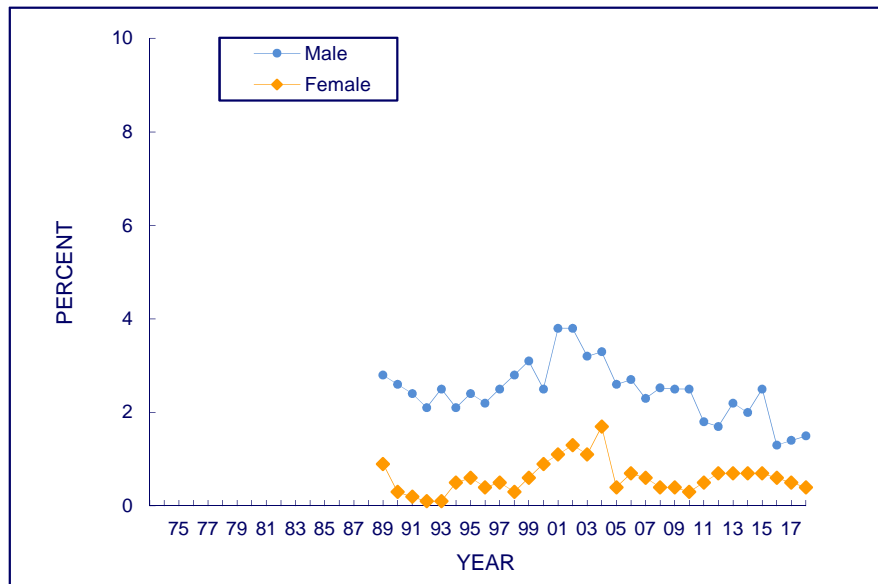
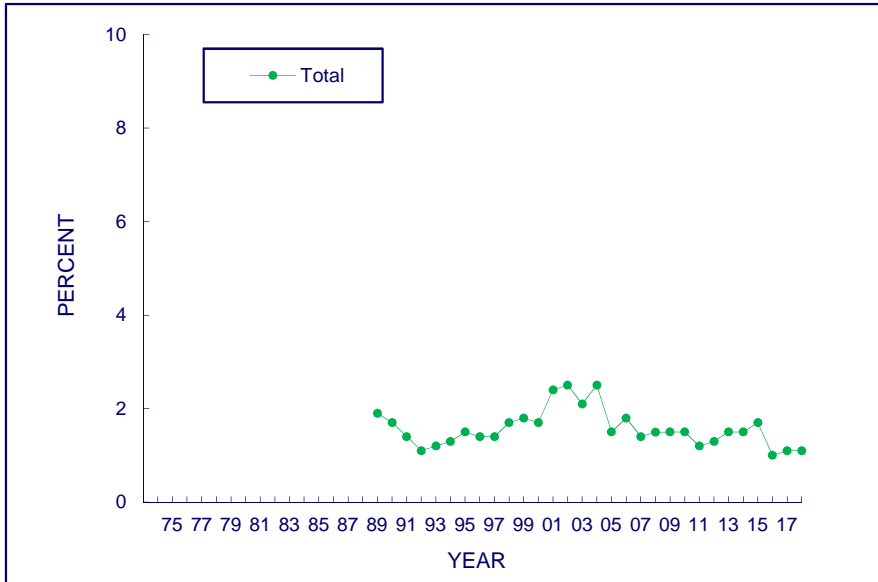
Note. Daily use for cigarettes is defined as smoking one or more cigarettes per day in the last 30 days.

FIGURE 5-6a
ALCOHOL
Trends in 2-Week Prevalence of Heavy Drinking in Grade 12
by Gender



Source. The Monitoring the Future study, the University of Michigan.

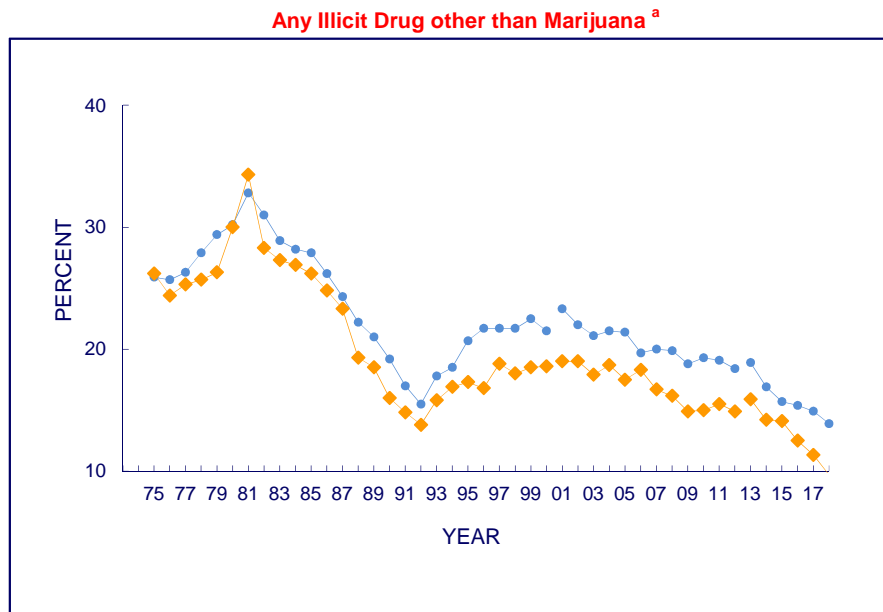
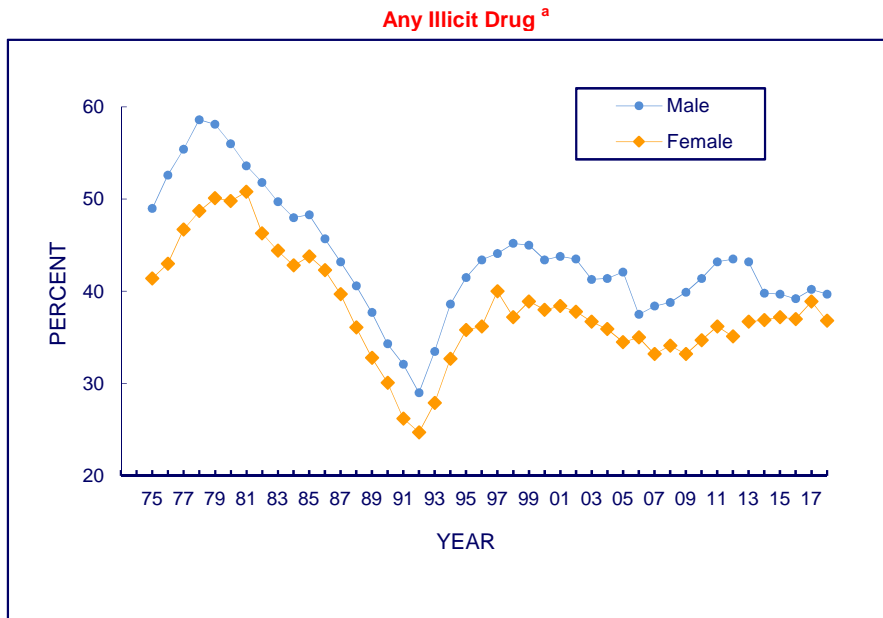
FIGURE 5-6b
STEROIDS
Trends in Annual Prevalence in Grade 12
by Total and by Gender



Source. The Monitoring the Future study, the University of Michigan.

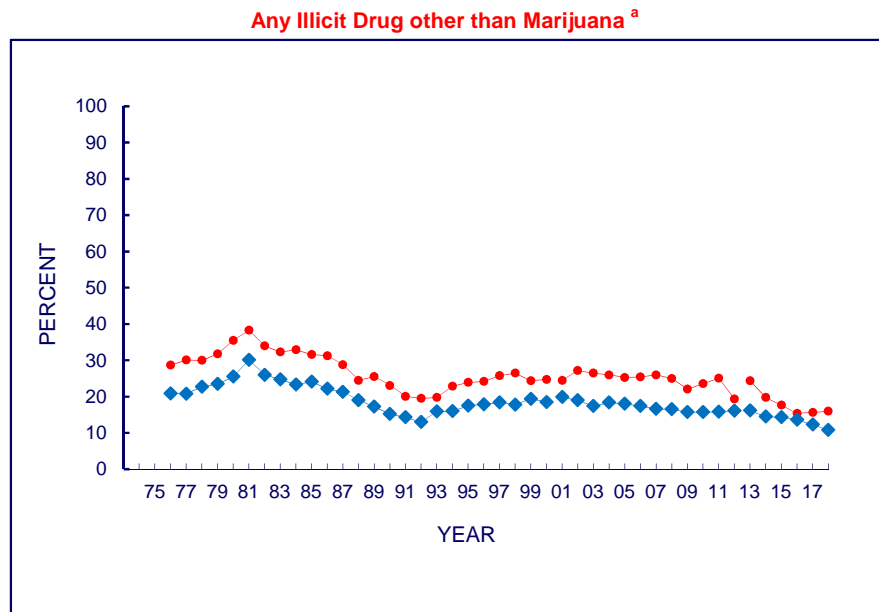
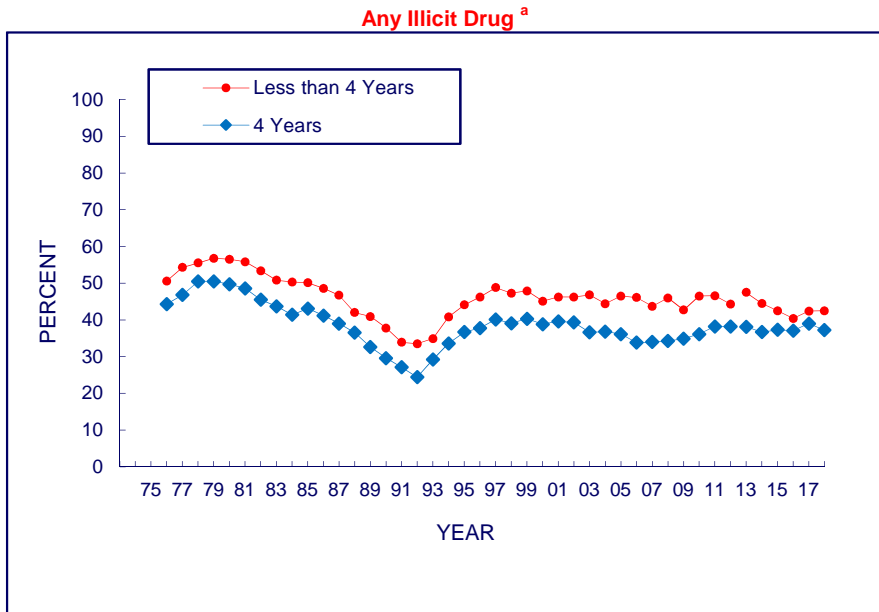
Note. Daily use for marijuana is defined as use on 20 or more occasions in the last 30 days.

FIGURE 5-7
AN ILLICIT DRUG USE INDEX
Trends in Annual Prevalence in Grade 12
by Gender



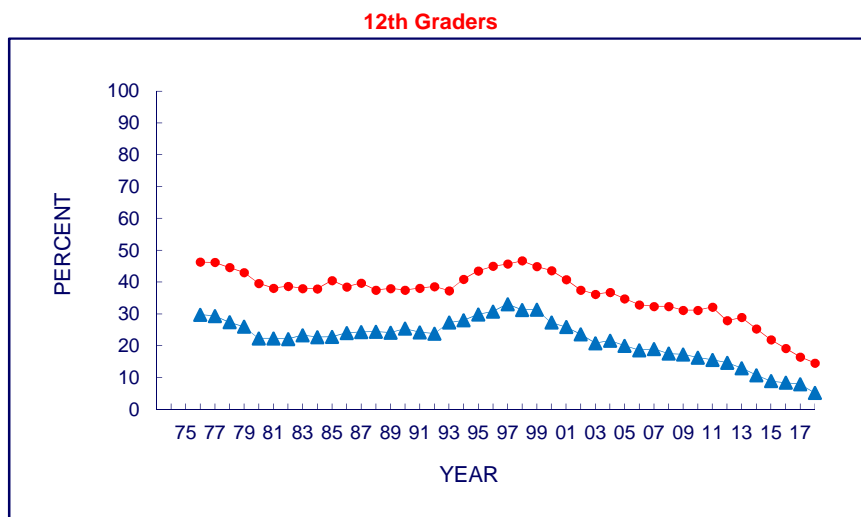
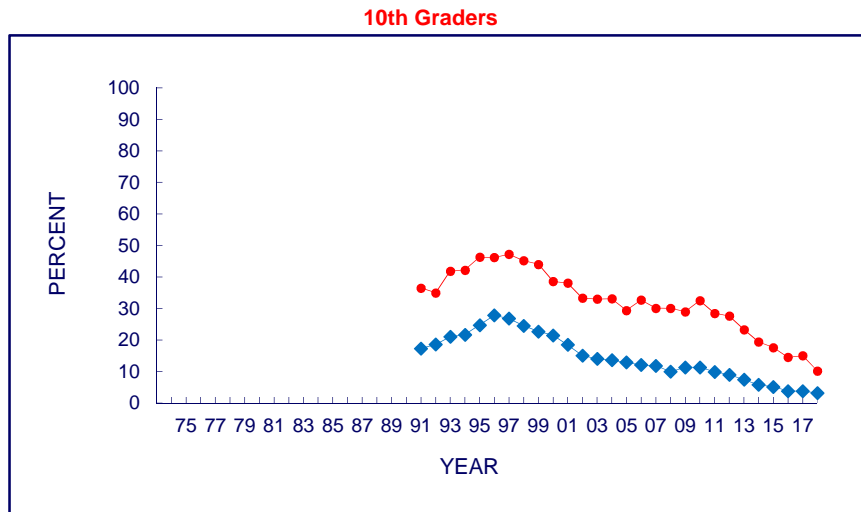
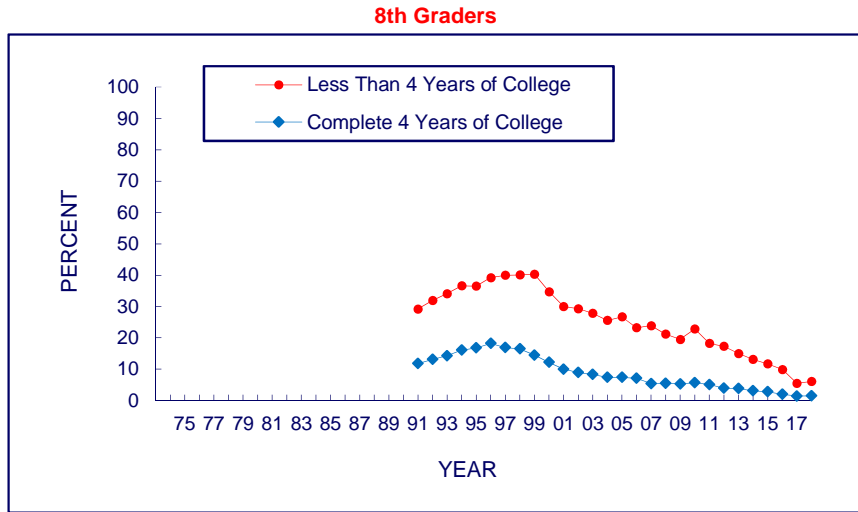
Source. The Monitoring the Future study, the University of Michigan.
^aBeginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are affected by these changes. In 2013, revised sets of questions on amphetamine use were introduced. Any illicit drug and any illicit drug other than marijuana are affected by this change.

FIGURE 5-8
AN ILLICIT DRUG USE INDEX
Trends in Annual Prevalence in Grade 12
by College Plans



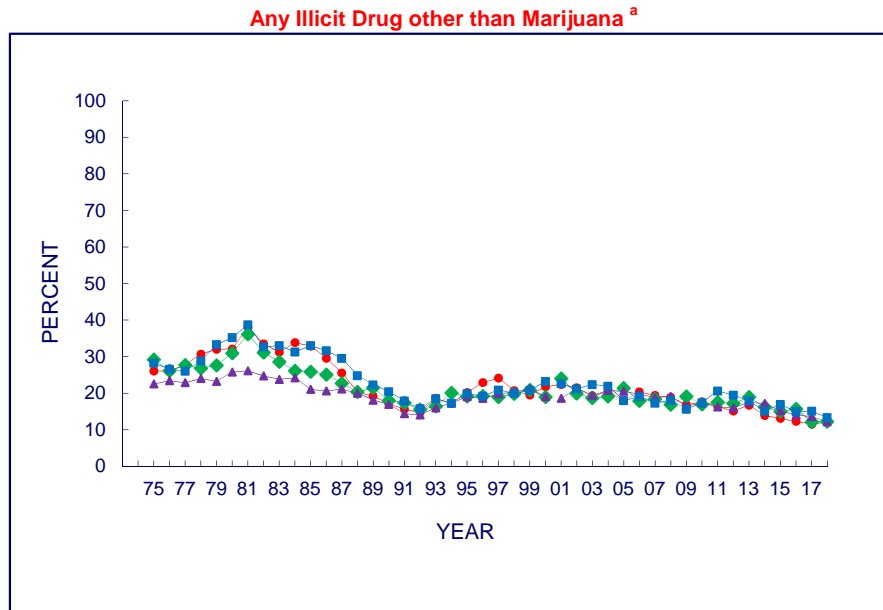
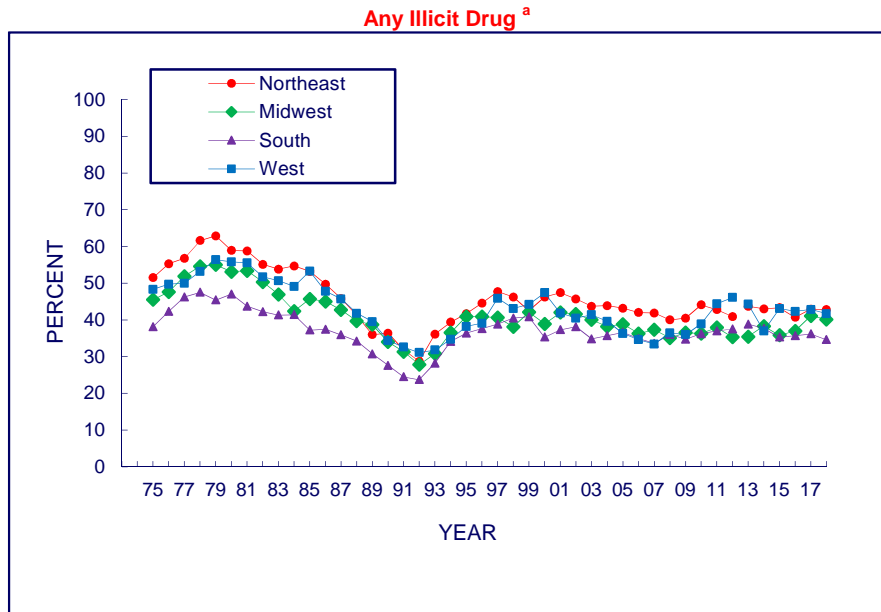
Source. The Monitoring the Future study, the University of Michigan.
^aBeginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are affected by these changes. In 2013, revised sets of questions on amphetamine use were introduced. Any illicit drug and any illicit drug other than marijuana are affected by this change.

FIGURE 5-9
CIGARETTES
Trends in 30-Day Prevalence in Grades 8, 10, and 12
by College Plans



Source. The Monitoring the Future study, the University of Michigan.

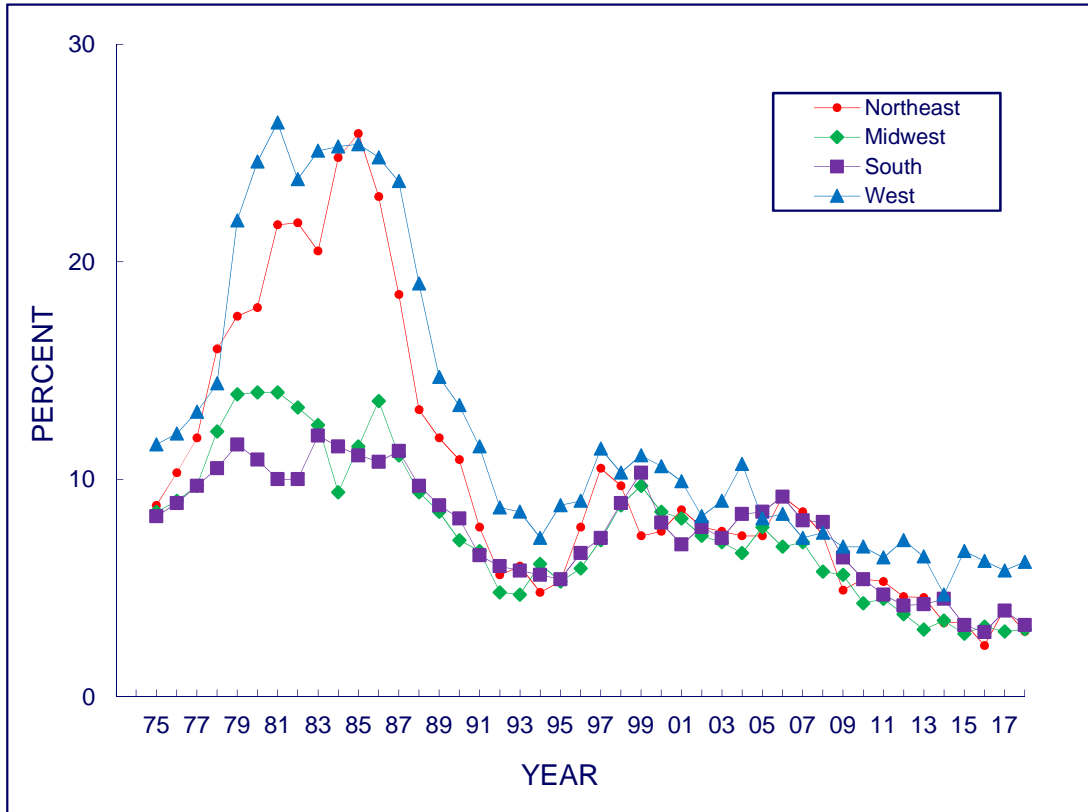
FIGURE 5-10a
AN ILLICIT DRUG USE INDEX
Trends in Annual Prevalence in Grade 12
by Region of the Country



Source. The Monitoring the Future study, the University of Michigan.

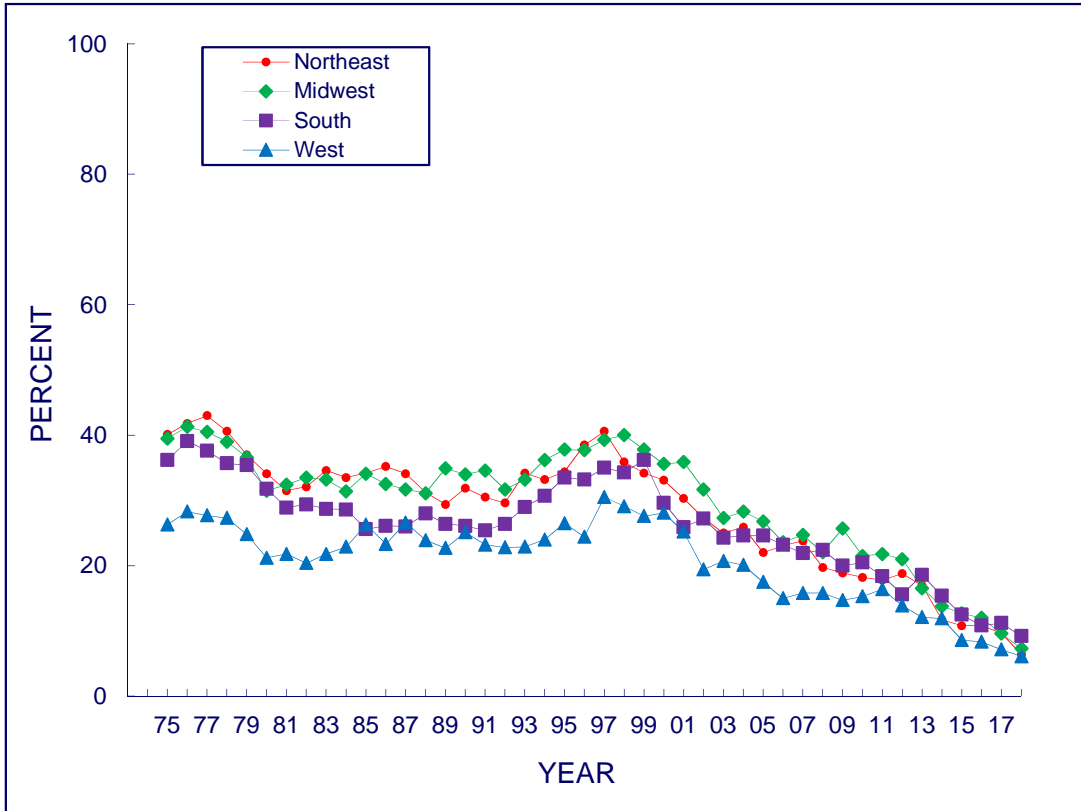
^aBeginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are affected by these changes. In 2013, revised sets of questions on amphetamine use were introduced. Any illicit drug and any illicit drug other than marijuana are affected by this change.

FIGURE 5-10b
COCAINE
Trends in Lifetime Prevalence in Grade 12
by Region of the Country



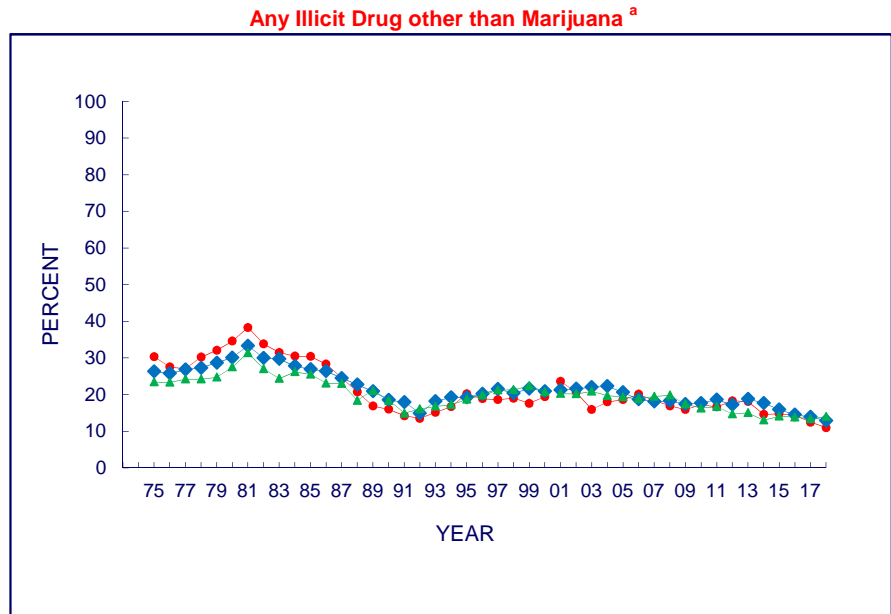
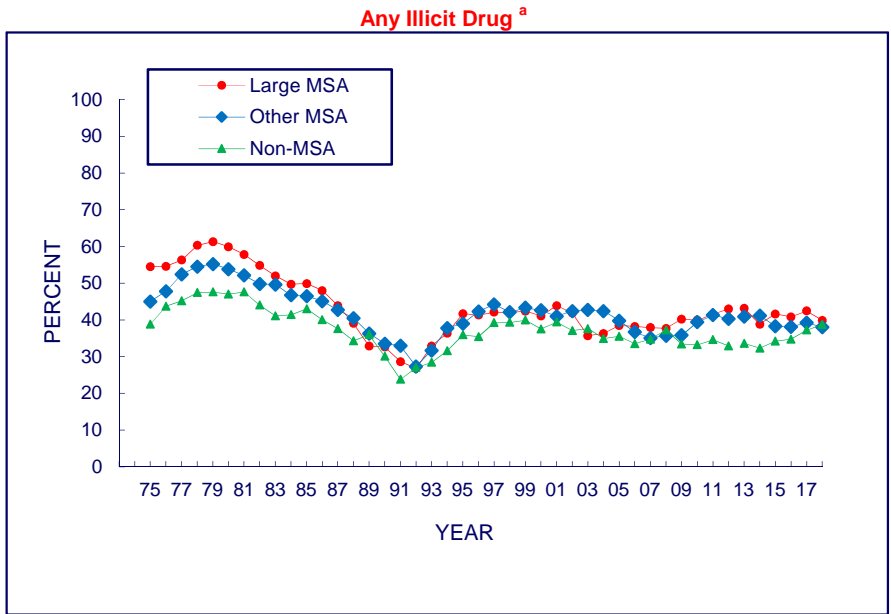
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-10c
CIGARETTES
Trends in 30-Day Prevalence in Grade 12
by Region of the Country



Source. The Monitoring the Future study, the University of Michigan.

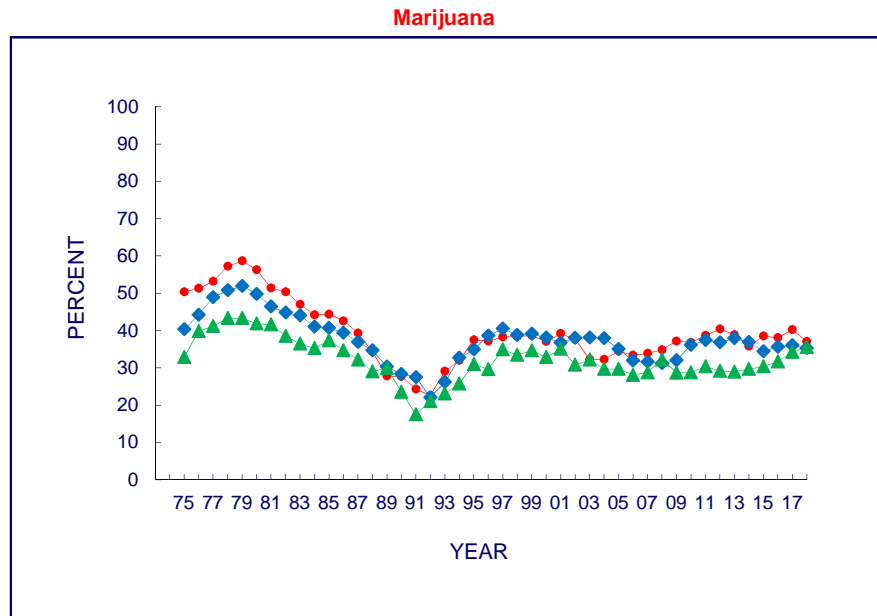
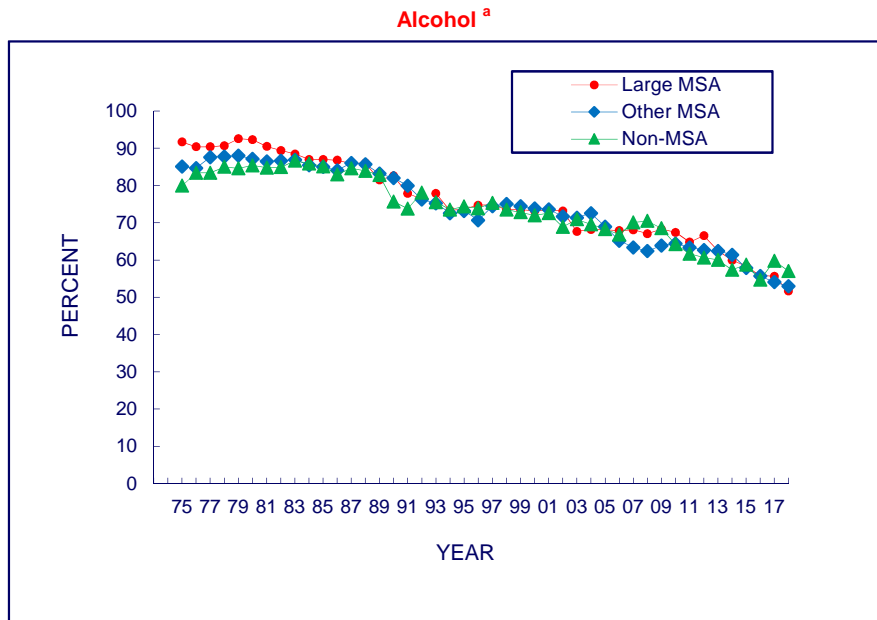
FIGURE 5-11a
AN ILLICIT DRUG USE INDEX
Trends in Annual Prevalence in Grade 12
by Population Density



Source. The Monitoring the Future study, the University of Michigan.

^aBeginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are affected by these changes. In 2013, revised sets of questions on amphetamine use were introduced. Any illicit drug and any illicit drug other than marijuana are affected by this change.

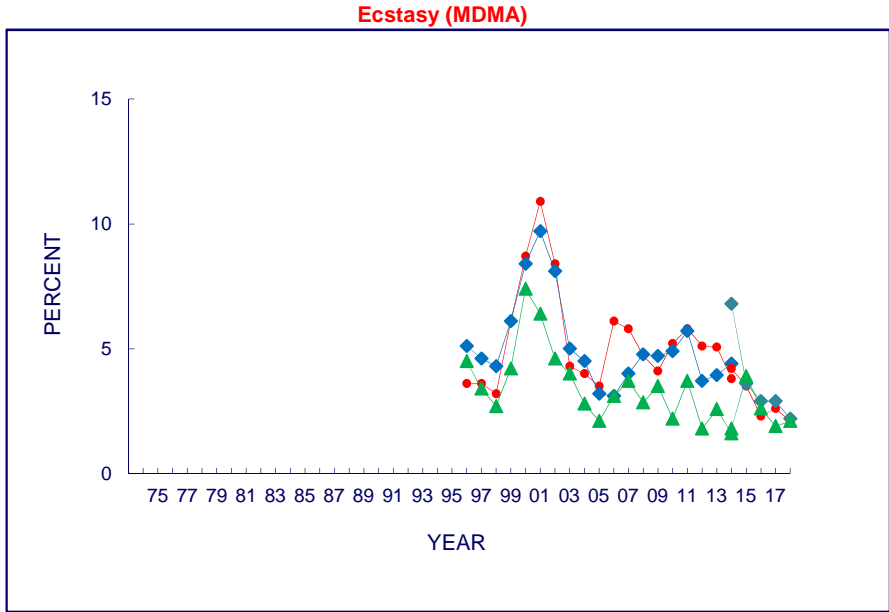
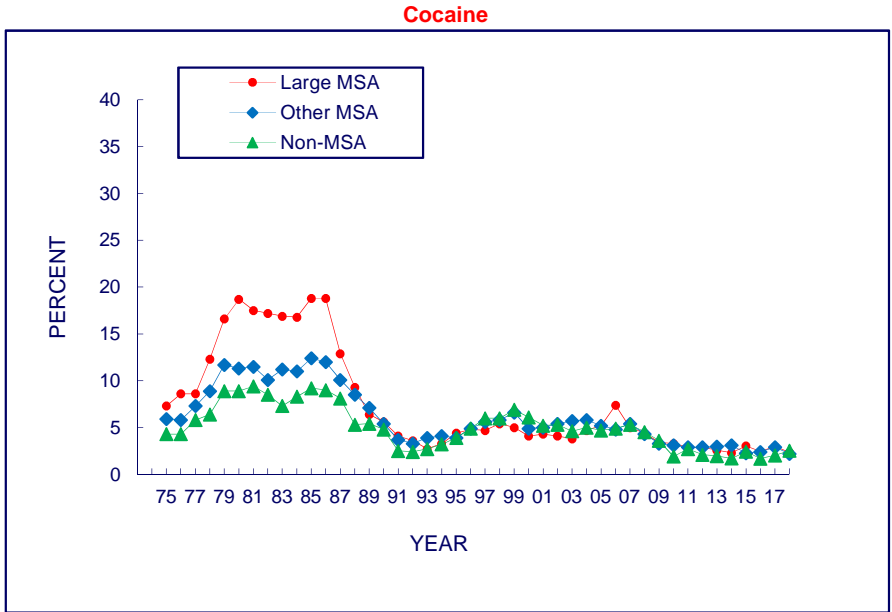
FIGURE 5-11b
ALCOHOL AND MARIJUANA
Trends in Annual Prevalence in Grade 12
by Population Density



Source. The Monitoring the Future study, the University of Michigan.

^aIn 1993, a revised set of questions on alcohol use was introduced indicating that a drink meant more than a few sips. From 1993 on, data points are based on the revised question.

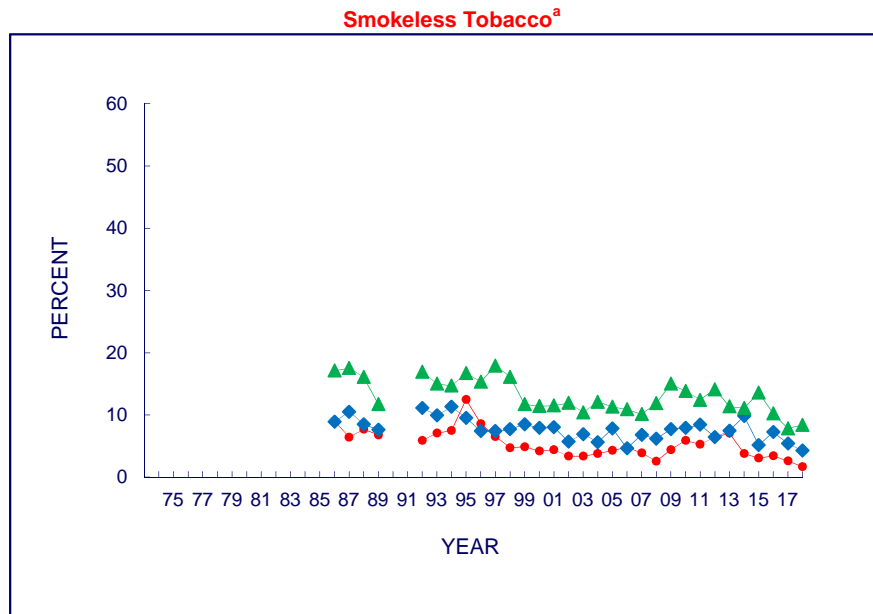
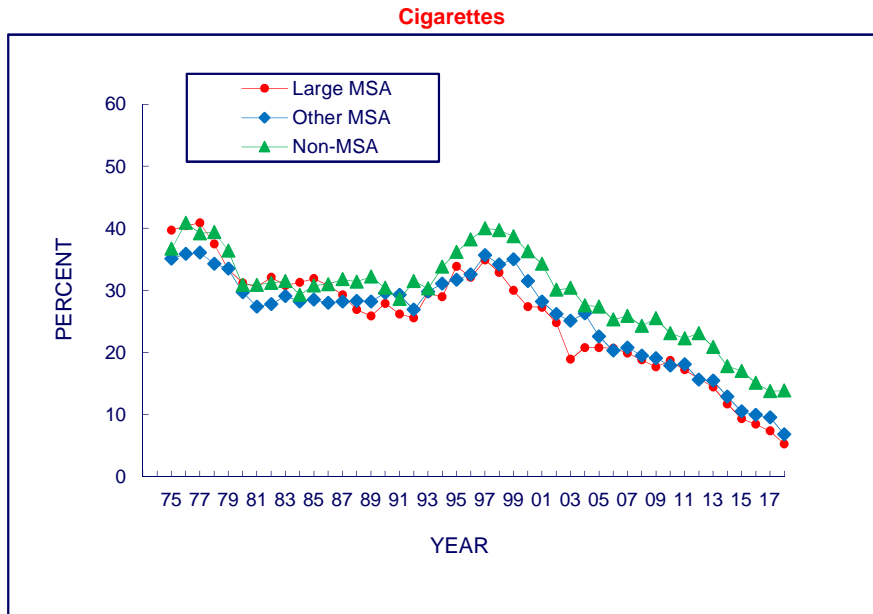
FIGURE 5-11c
COCAINE AND ECSTASY (MDMA)
Trends in Annual Prevalence in Grade 12
by Population Density



Source. The Monitoring the Future study, the University of Michigan.

Notes. In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

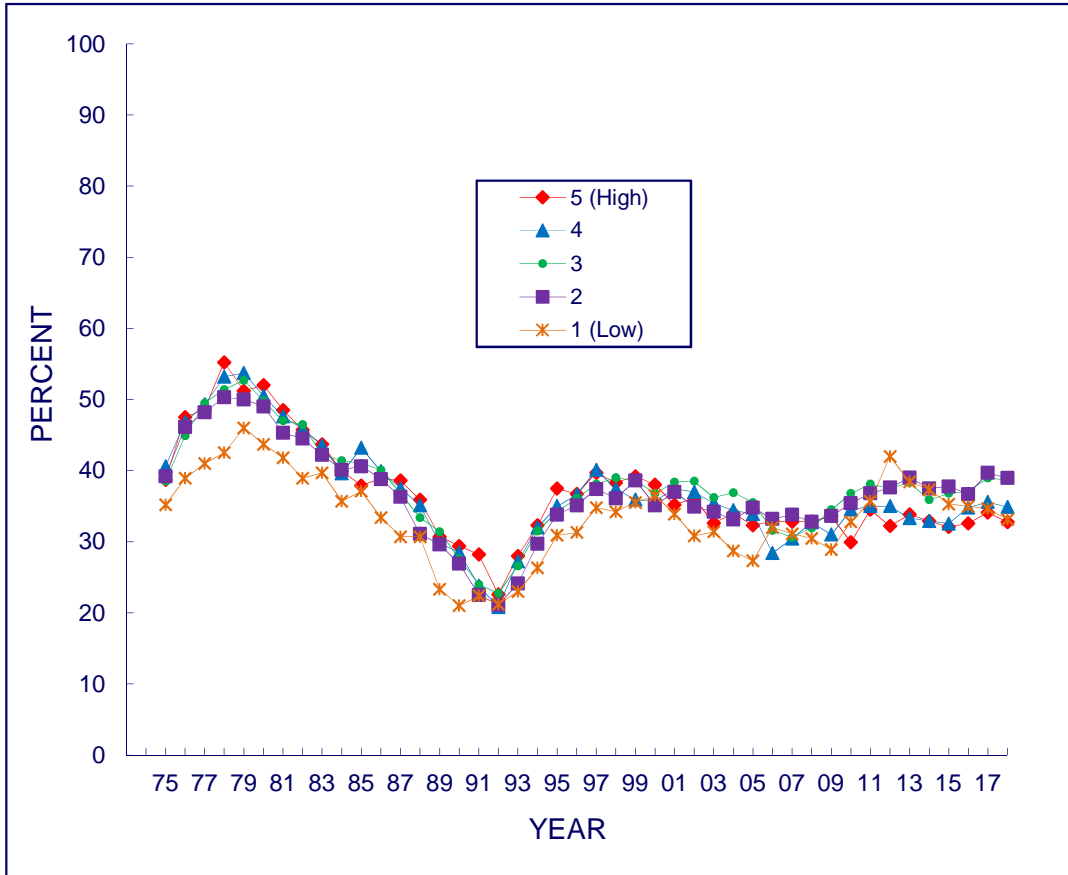
FIGURE 5-11d
CIGARETTES AND SMOKELESS TOBACCO
Trends in 30-Day Prevalence in Grade 12
by Population Density



Source. The Monitoring the Future study, the University of Michigan.

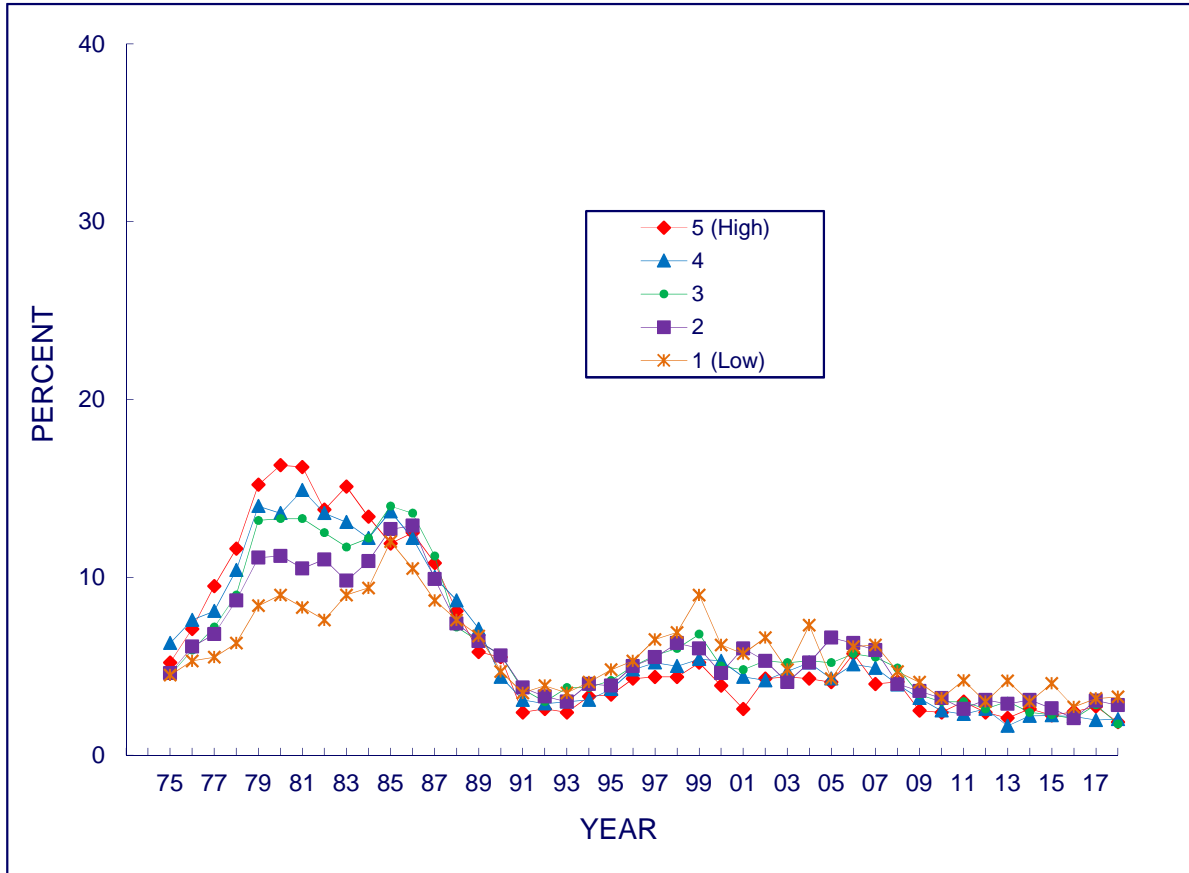
^aThe question on smokeless tobacco was not asked in 1990 or 1991.

FIGURE 5-12a
MARIJUANA
Trends in Annual Prevalence in Grade 12
by Average Education of Parents



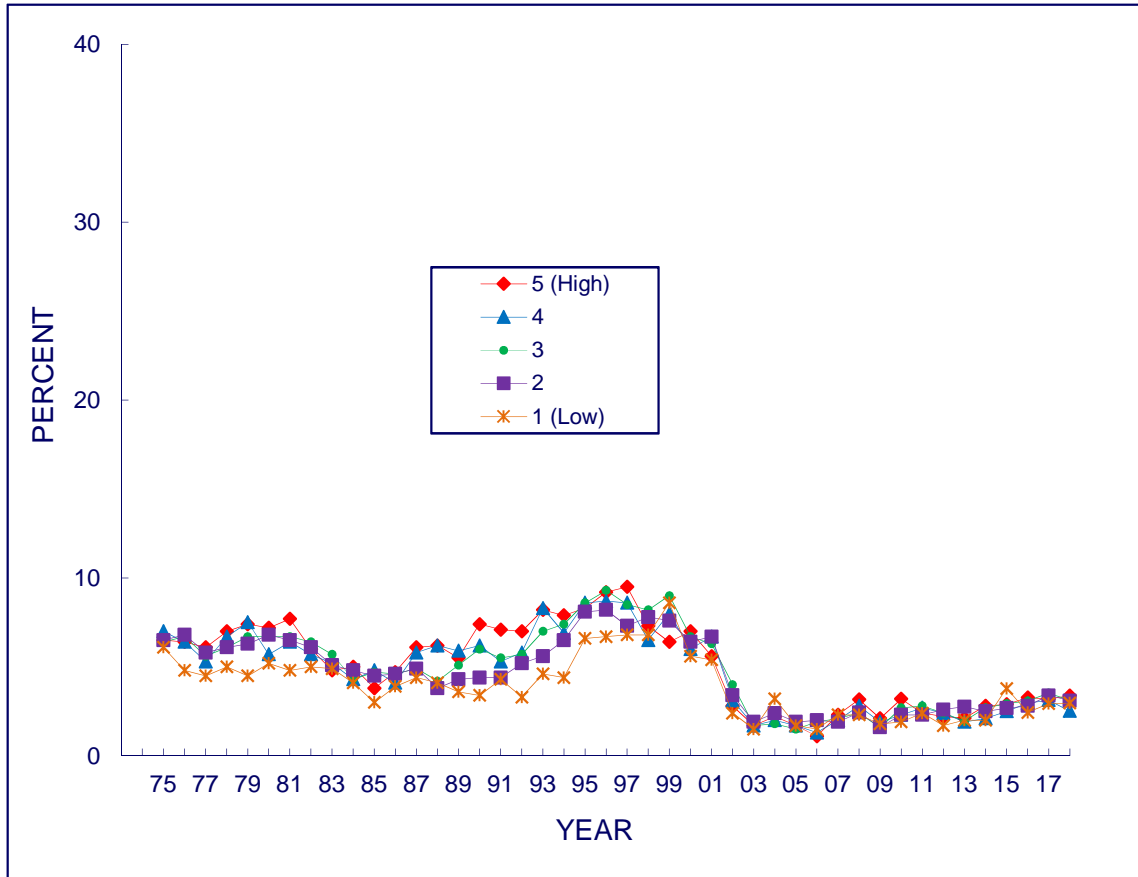
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-12b
COCAINE
Trends in Annual Prevalence in Grade 12
by Average Education of Parents



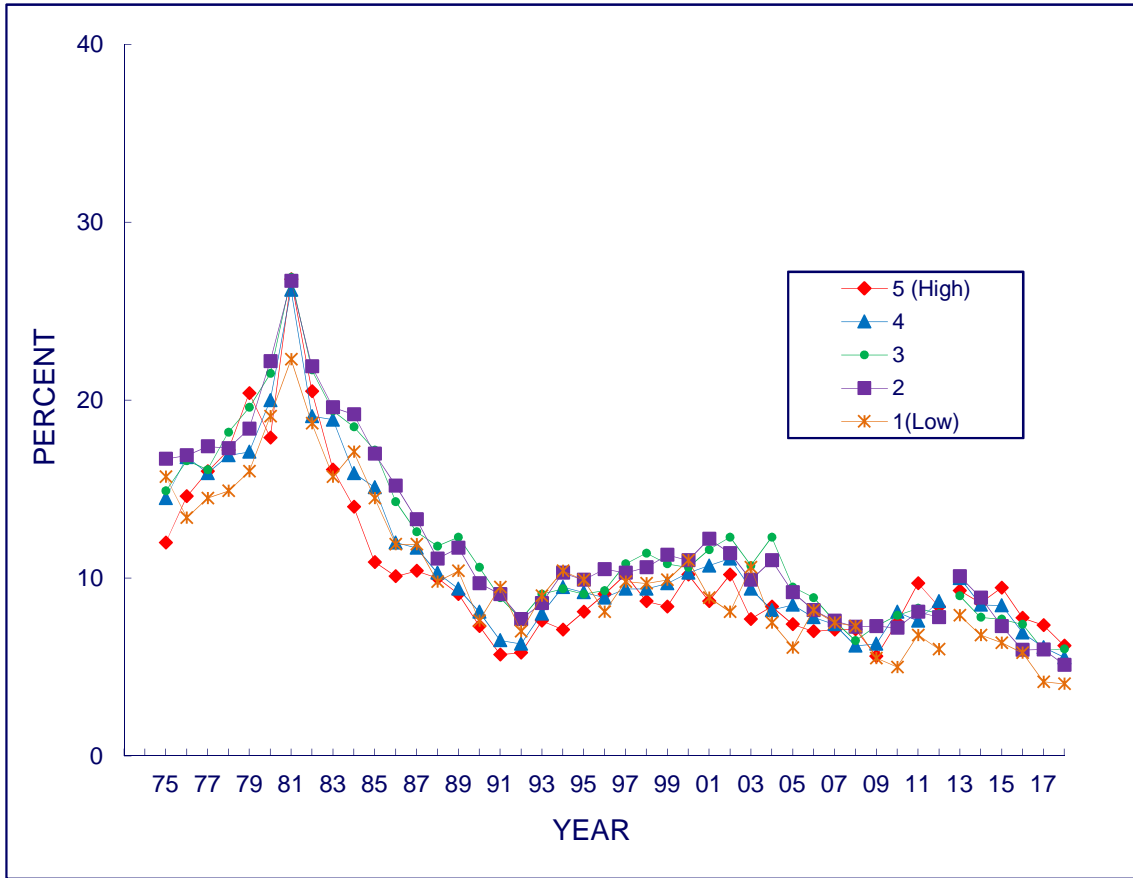
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-12c
LSD
Trends in Annual Prevalence in Grade 12
by Average Education of Parents



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-12d
AMPHETAMINES^a
Trends in Annual Prevalence in Grade 12
by Average Education of Parents

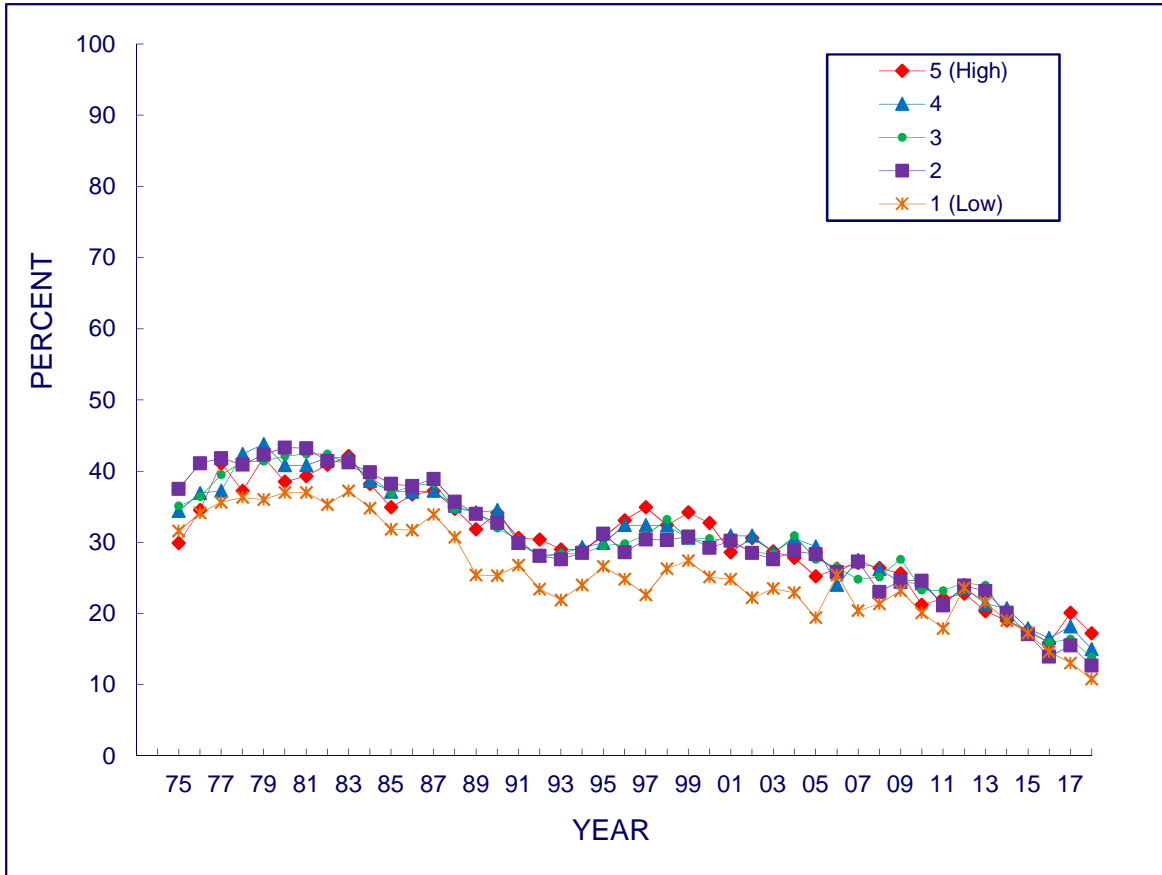


Source. The Monitoring the Future study, the University of Michigan.

Note. Beginning in 1982, the question about stimulant use (i.e., amphetamines) was revised to get respondents to exclude the inappropriate reporting of nonprescription stimulants. The prevalence rate dropped slightly as a result of this methodological change.

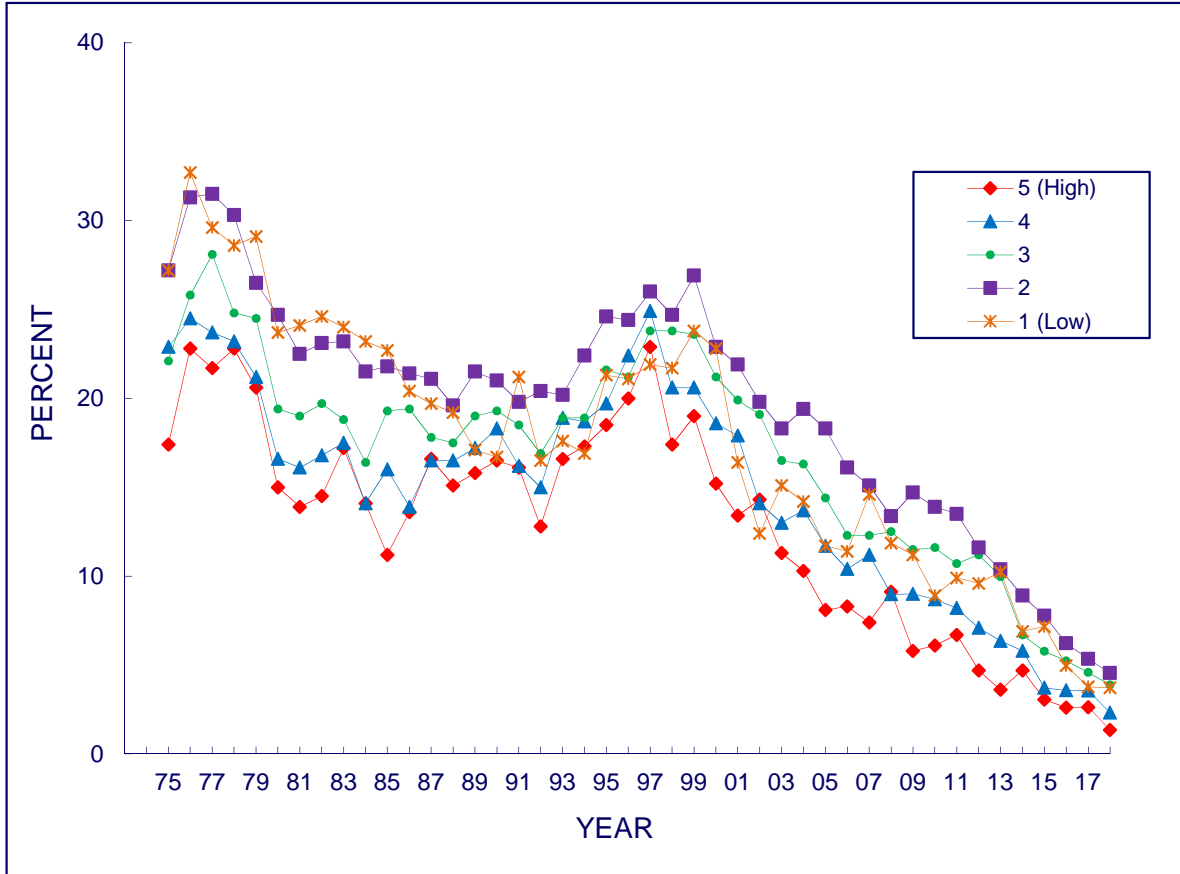
^aIn 2013, the text was changed on some of the questionnaire forms for all three grades, with the remaining forms changed in 2014. Data presented here include only the changed forms.

FIGURE 5-12e
ALCOHOL
Trends in 2-Week Prevalence of
5 or More Drinks in a Row in Grade 12
by Average Education of Parents



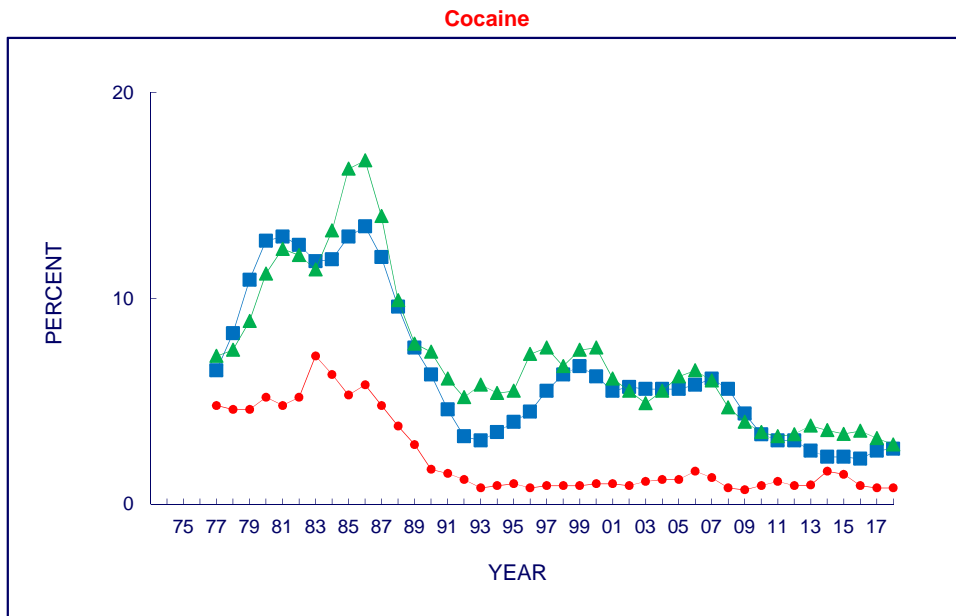
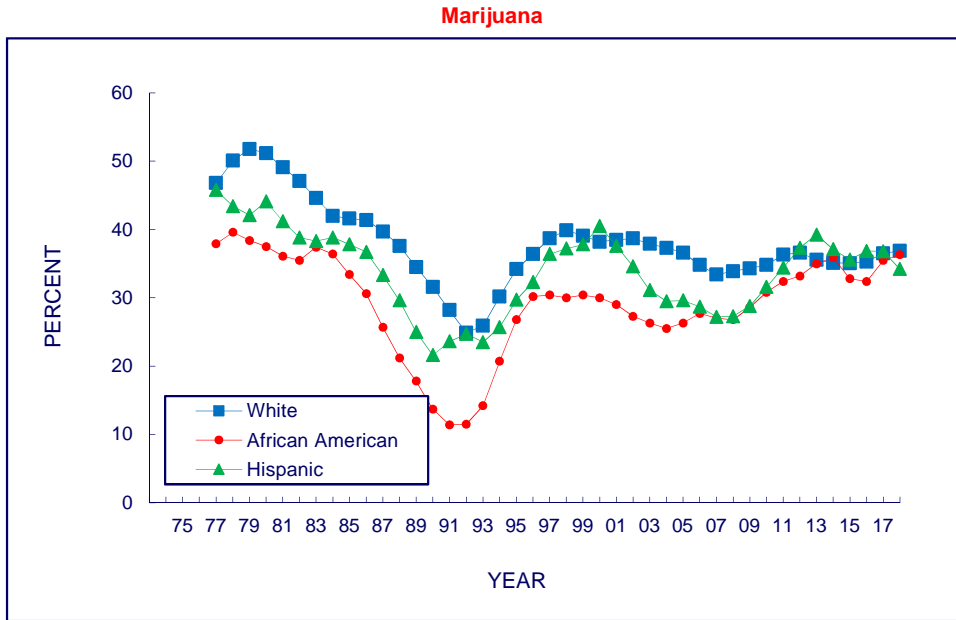
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-12f
CIGARETTES
Trends in Daily Prevalence in Grade 12
by Average Education of Parents



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 5-13a
MARIJUANA AND COCAINE
Trends in Annual Prevalence in Grade 12
by Race/Ethnicity
(Two-year moving average ^a)

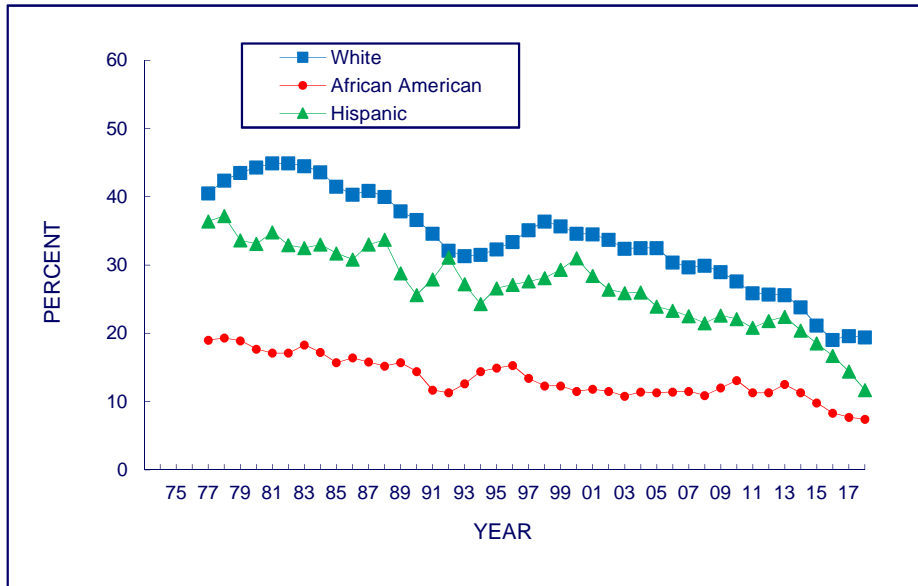


Source. The Monitoring the Future study, the University of Michigan.

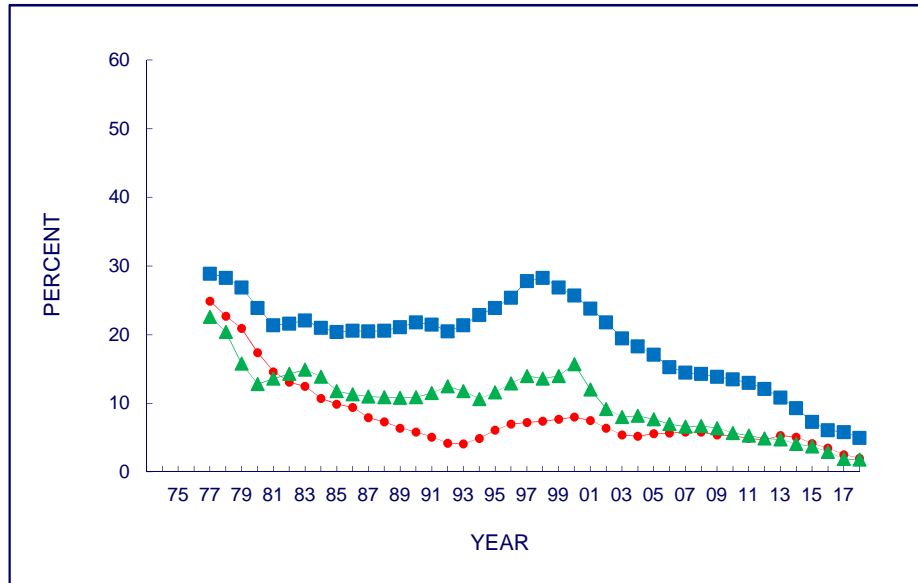
^aEach point plotted here is the mean of the specified year and the previous year.

FIGURE 5-13b
ALCOHOL AND CIGARETTES
Trends in Prevalence in Grade 12
by Race/Ethnicity
(Two-year moving average ^a)

Five or More Drinks in a Row in Last Two Weeks



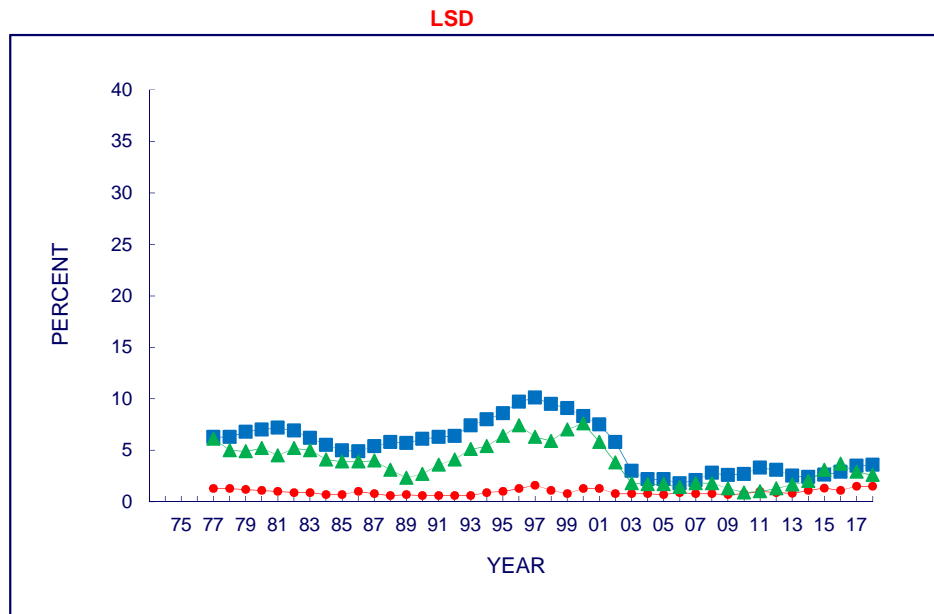
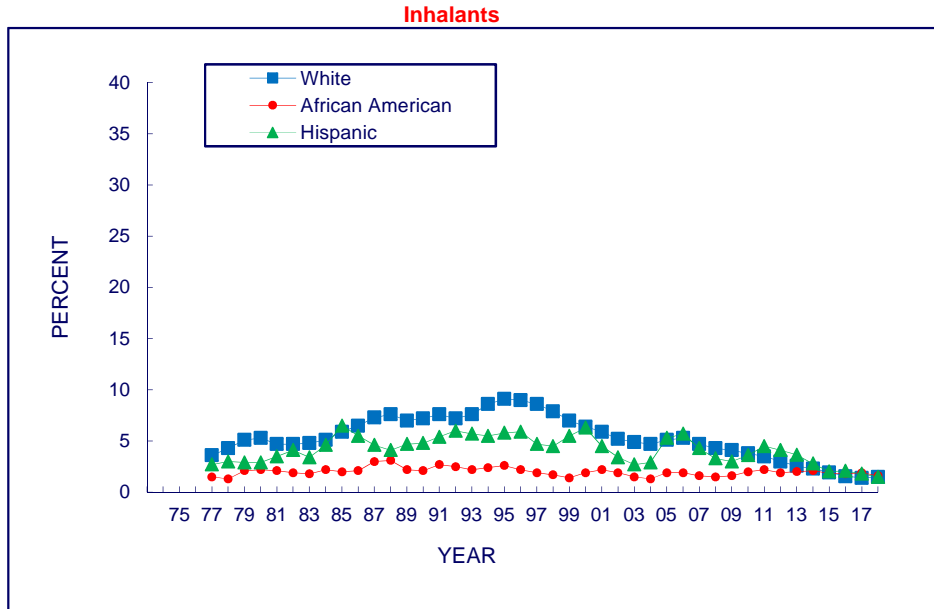
Cigarettes (Daily)



Source. The Monitoring the Future study, the University of Michigan.

^aEach point plotted here is the mean of the specified year and the previous year.

FIGURE 5-13c
INHALANTS AND LSD
Trends in Annual Prevalence in Grade 12
by Race/Ethnicity
(Two-year moving average ^a)



Source. The Monitoring the Future study, the University of Michigan.

^aEach point plotted here is the mean of the specified year and the previous year.

Chapter 6

INITIATION RATES AND TRENDS IN INITIATION RATES

Knowing when young people begin to use various drugs helps us better understand the etiology of substance use and provides a guide to the timing and nature of various interventions, which are likely most effective when administered prior to the grades of peak initiation. We know that grades of peak initiation vary according to drug and tend to progress from drugs perceived as the least risky, deviant, or illegal toward those perceived as more so.

One way to estimate when use of a particular drug is initiated is to ask respondents to self-report when they first used a drug. In the MTF study we ask about initiation in terms of grade levels rather than age, because we believe that adolescents' memories are more likely to be organized in those terms. It also could be argued that social experiences and risk-taking opportunities are organized more by grade than age. Given that each grade level is composed of students who are about the same age, grade can be readily translated into modal ages.

MTF has been collecting grade of initiation data for 12th graders since 1975, and from 8th and 10th graders since 1991. The results reported in this series of monographs provide a retrospective view of trends in lifetime prevalence of use at earlier grade levels. We present a series of tables and figures based on retrospective reports from 8th and 12th graders, and tables only for 10th graders. These retrospective reports provide information on drug use at grade levels not directly surveyed by MTF (i.e., 11th grade, 9th grade, and every grade below 8th).

One would not necessarily expect a particular year's 8th, 10th, and 12th graders to give the same retrospective prevalence level for a drug, even for a given grade, because the three groups differ in a number of important ways:

- The 8th and 10th grade samples include eventual school dropouts, whereas 12th grade samples (who complete the survey late in the school year) include almost none. The lower grades also have lower absentee rates. For any given year, both of these factors should cause the prevalence-of-use levels derived contemporaneously from a particular class cohort of 8th graders to be higher (for any specified grade level up through 8th grade) than the retrospectively reported prevalence rates derived from that same class cohort of young people who are still in school near the end of 10th or 12th grades.
- Because each class cohort experienced 8th grade in a different year, any broad historical or secular trend in the use of a drug could contribute substantially to differences in respondents' reports of their experiences when they were in 8th grade.
- Because 8th, 10th, and 12th graders are in three different class cohorts, any lasting differences among cohorts could contribute to differences in reported use at any specified grade level.

In addition, two types of method artifacts could also explain observed differences:

- Memory errors for early years are more likely to occur for older respondents (who are, of course, further removed in time from the initiation experience). They may forget that an event ever occurred (although this may be unlikely for use of drugs), or they may not accurately remember *when* an event occurred. For example, events may be remembered as having occurred more recently than they actually did – a kind of forward telescoping of the recalled timing of events.¹
- The definition of the eligible event may change as a respondent gets older. Thus, an older student may be less likely to include an occasion of taking a sip from someone’s beer as an alcohol use event, or an older student may be more likely to appropriately exclude an over the counter stimulant when asked about amphetamine use. While we attempt to ask the questions as clearly as possible, some of these drug definitions are fairly subtle and may be more difficult for younger respondents. Indeed, we have omitted from this report 8th and 10th graders’ data on their use of sedatives (barbiturates) and narcotics other than heroin because we judged them to contain erroneous information.²

INCIDENCE OF USE BY GRADE LEVEL

Tables 6-1 through 6-3 provide retrospective initiation levels for various types of drug use as reported by students surveyed in 8th, 10th, and 12th grades. Obviously, the older students have a longer age span over which they can report initiation. Table 6-4 shows the retrospective initiation rates from all three grades separately to allow comparison by grade levels.

The questions from which the data are derived have a common stem: “When (if ever) did you FIRST do each of the following things? Don’t count anything you took because a doctor told you to.” Various drug-using behaviors are asked about, for example, “smoke your first cigarette,” “smoke cigarettes on a daily basis,” “try an alcoholic beverage – more than just a few sips,” etc. The answer alternatives differentiate the grade levels at which first use occurred.

- In general, drug use by the end of 6th grade is very low. Less than 1% of the 2018 respondents from each of the three grades retrospectively reported use of ***hallucinogens, LSD, hallucinogens other than LSD, MDMA (ecstasy, Molly), cocaine in general, crack cocaine, cocaine other than crack, heroin, and tranquilizers***. As reported retrospectively by 12th grade students only, prevalence was also less than 1% by the end of 6th grade for use of ***sedatives (barbiturates), narcotics other than heroin, and steroids***.

¹ See Bachman, J. G., & O’Malley, P. M. (1981). [When four months equal a year: Inconsistencies in students’ reports of drug use](#). *Public Opinion Quarterly*, 45, 536–548; Jabine, T. B., Straf, M. L., Tanur, J. M., & Tourangeau, R. (Eds.). (1984). *Cognitive aspects of survey methodology: Building a bridge between disciplines*. Washington DC: National Academy Press.

² We have found that young adult follow-up surveys of 12th graders yield higher recanting rates for the psychotherapeutic drugs, in contrast to the illegal drugs. We interpret this discrepancy as reflecting, in part, a better understanding of the distinctions between prescription and nonprescription drugs in young adulthood. See Johnston, L. D., & O’Malley, P. M. (1997). [The recanting of earlier reported drug use by young adults](#). In L. Harrison & A. Hughes (Eds.), *The validity of self-reported drug use: Improving the accuracy of survey estimates* (pp. 59–80) (NIDA Research Monograph No. 167). Rockville, MD: National Institute on Drug Abuse.

- As reported by respondents from all three grade levels, *alcohol* is the drug most likely to have been initiated by the end of 6th grade, with *cigarettes* roughly tied with alcohol among 12th graders (Table 6-4).
- Among 8th grade respondents in 2018, 4.1% said they had tried *marijuana* by the end of 6th grade (Table 6-4). In 2018, older respondents gave lower retrospective estimates of their marijuana use by end of 6th grade: 3.0% among 10th graders and 2.0% among 12th graders. As noted at the beginning of this chapter, these differences by grade may reflect a number of factors, including higher levels of marijuana use among 8th grade student who will later drop out of high school.
- ***Daily marijuana use for a month or more*** can begin at quite a young age. Among the 2018 12th graders who reported being daily marijuana users for a month or more at some time in their lives (i.e., 12% of all 12th graders), half of them (or 5.9% of all 12th graders) began that pattern of use *before* 10th grade (Table 6-3). This question is not asked of 8th and 10th graders.
- Patterns of *e-cigarette* initiation reflect their recent and rapid uptake among adolescents. The prevalence of e-cigarettes in 2011 was near zero, whereas in 2018 they were one of the most common forms of substance use among adolescents. The 12th graders of 2018 were in 6th grade in 2012 when e-cigarette use was rare, and accordingly initiation of e-cigarette use by 6th grade for this cohort is near zero (0.7%). The 10th graders of 2018 were in 6th grade in 2014 when e-cigarette prevalence started its increase, which is reflected in the 3.0% level of initiation by 6th grade that is much higher than it had been among the 12th graders. The 8th graders of 2018 were in 6th grade in 2016, after e-cigarette use had risen rapidly, and initiation by 6th grade was 5.4%, behind only alcohol.

Twelfth grade students in future years will have much higher levels of early initiation of e-cigarettes, and consequently a longer history of e-cigarette use. As a result, any influence of e-cigarette use on progression to use of other substances, such as regular cigarettes, is likely to appear stronger in the coming cohorts.

- ***Cigarette*** smoking tends to be initiated particularly early. Based on data from the 2018 8th graders (Table 6-1), their peak years for initiation of cigarette smoking were in the 6th (1.8%) and 7th (3.0%) grades – or modal ages 12 through 13 – but a considerable number initiated smoking even earlier. Indeed, in 2018 2.8% of 8th grade respondents reported having had their first cigarette by the end of 5th grade.

Note that in 2018, 8th graders' reports of smoking initiation by the end of 6th grade were higher (4.6%) than 12th graders' reports of initiation by end of 6th grade (3.6%). Several factors noted earlier in this chapter could contribute to this difference; however, it seems likely that most of the difference occurs because the 8th grade samples include nearly all

those who will eventually drop out, a group that has markedly high levels of cigarette smoking (see Table A-1 in Appendix A).³

- **Smokeless tobacco** use also tends to be initiated early, as Tables 6-1 through 6-3 illustrate, with the highest rates of initiation found in grades 7 through 10. Of the 8th grade respondents in 2018, 2.9% reported trying smokeless tobacco by 6th grade, and another 3.5% by 8th grade (for a total of 6.4%). These rates are based on boys and girls combined – initiation rates are substantially higher among boys.
- **Inhalant** use tends to occur early, according to responses from 8th graders; inhalants have the third highest initiation by 6th grade after alcohol and e-cigarettes; and, based on the responses from 10th graders, most inhalant initiation appears to have occurred by the end of 9th grade.

Of the illicit drugs, inhalants show the largest differences in the incidence rates reported by the three grade levels, although marijuana shows considerable differences as well. Among 2018 respondents, only 0.8% of 12th graders, compared to 5.3% of 8th graders, reported using inhalants by the end of 6th grade. Although any of the explanations offered earlier might help to explain these differences, we believe that early inhalant use may be particularly associated with dropping out of school. Another possible contributor to the differences in rates is that the question differs by grade. For 8th and 10th graders the question asks about when they first “sniff glue, gases or sprays to get high” while for 12th graders when did they first “try inhalants.” (See also Chapter 4 for a discussion of differential reporting of lifetime prevalence of inhalant use by grade.)

- **Amphetamine** use by 6th grade was reported by 1.6% of 8th grade students in 2018. We suspect that many youth who report using amphetamines may be using their own ADHD medications, or those of friends or relatives. If it is their own ADHD medication, then the estimate is higher than the true value due to misreporting, because the text specifically asks for use outside of medical supervision. Estimates of use by 6th grade are four times lower among 12th grade students; we think this is partly because older adolescents are likely better able to understand that the question refers to nonmedical use and answer the question appropriately.
- **Alcohol** use by the end of 6th grade was reported by 10.1% of 8th grade respondents in 2018, but by only 3.4% of 12th grade respondents (Table 6-4). At least two factors as noted earlier may contribute to this difference. One is that students who eventually drop out are much more likely than average to drink at an early age.³ A second one is related to the issue of what is meant by “first use.” The questions for all grades refer specifically to the first use of “an alcoholic beverage – more than just a few sips,” but we believe that the 12th graders are more likely to report only use that is not adult approved, and not count having a small amount (more than a few sips, less than a full drink) with parents or for religious or celebratory purposes. Note that data from the three groups of respondents tend to converge

³ Bachman, J. G., O’Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education–drug use connection: How successes and failures in school relate to adolescent smoking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis Group.

as we ask about lifetime alcohol use by the time they reach higher grade levels (Table 6-4).

For these reasons, we rely more on 12th grade data to examine changes in initiation of alcohol use across age, and these data suggest that the peak years of alcohol initiation are 7th through 11th grades. The first occasion of *drunkenness* is most likely to occur in grades 9 through 11.

- The *illicit drugs other than marijuana* generally do not reach peak initiation rates until the high school years (grades 9 through 11 for most drugs).

TRENDS IN LIFETIME PREVALENCE AT EARLIER GRADE LEVELS

Using the retrospective data provided by members of each 12th grade class concerning their grade of first use, it has been possible to reconstruct lifetime prevalence-of-use trend curves for lower grade levels over many earlier years as the 12th graders passed through those grades prior to their participation in MTF. Obviously, data from school dropouts are not included in these trends. Figures 6-1 through 6-24 present the reconstructed lifetime prevalence curves (reflecting any use in lifetime) for most drugs. Starting with Figure 6-4, retrospective prevalence curves are also presented for 8th graders, who have been included in the annual MTF surveys since 1991. These curves should include data from nearly all eventual dropouts.

When comparing the retrospective prevalence curves for 12th versus 8th grade respondents, the reader should keep in mind that the curves are often plotted on different scales on the vertical axis to improve the clarity of the 8th grade figures, which have lower prevalence levels.

We have chosen to report initiation rates in terms of trends in lifetime prevalence attained by each class of students as they reach different grade levels. Although average age of initiation is another way to discuss this type of data, we think it could be misleading. For example, the average age of initiation could be lower in more recent classes because fewer students are initiating use at later ages (perhaps due to a recent downward secular trend) rather than because more students are starting at younger ages. Yet many readers may interpret a decline in average age of initiation as reflecting a downward shift in the propensity to use at younger ages, independent of any secular trends, and therein lies the potential confusion.

- Based on retrospective data provided by successive 12th grade classes, Figure 6-1 shows trends at each grade level for lifetime use of *any illicit drug*. Very few 12th graders report initiation of drug use by the end of 6th grade, a finding that persists throughout all forty plus years of the study. These results indicate that the vast majority of initiation begins after elementary school.

Grades 7 through 10 are a key developmental period for the initiation of illicit drug use. More than half of 12th graders who report having ever used an illicit drug had done so by the end of 10th grade (see Table 6-3). In 2018 almost half (46%) of the 12th grade students who had ever used cocaine had used by the end of 10th grade (Figure 6-10). Twenty eight percent of the senior class of 2018 had already initiated marijuana use by the end of 10th grade, which is nearly two-thirds of the 44% prevalence it would reach by 12th grade. This

finding is visually depicted in Figure 6-1 by lifetime prevalence levels for successive cohorts of 10th grade students that are higher than half of their lifetime prevalence when they reach 12th grade (two years later). In all years, the Figure shows that as lifetime prevalence in 12th grade has risen and fallen over the last forty years, more than half of it was established by each cohort by the time it had finished 10th grade.

- As we discuss in more detail below, the inclusion of marijuana in the composite measure of “any illicit drug use” has a substantial influence on findings for initiation. Marijuana has high initiation levels in middle school. In contrast, first use of illicit drugs other than marijuana typically occurs in high school (Figure 6-2 and later).
- In all years, more than half of 12th graders who reported using *marijuana* had done so by 10th grade. This is visually depicted in Figure 6-4 by trend lines for 10th grade students that are higher than half the lifetime prevalence for the cohort when it was in 12th grade (2 to 3 years later).

The historical increases and decreases in 12th grade lifetime prevalence of marijuana use are also present in 8th grade. Parallel trends for 8th and 12th grade are seen in the top panel of Figure 6-4, and are present for the near-constant level of lifetime marijuana prevalence since the mid-1990s, the substantial increase during the 1990s relapse, the decline in lifetime prevalence through the 1980s, as well as the increase in the late 1970s. These results indicate that the social influences that lead to changes in adolescent marijuana use extend as far down as 8th grade.

In fact, the historical variation in marijuana observed among 12th grade students is seen as far down as 7th grade, as indicated in the lower panel of Figure 6-4. This panel depicts retrospective reports of 8th graders on their lifetime marijuana use. It shows a marked increase in lifetime marijuana prevalence during the 1990s drug relapse in both 8th grade and 7th grade as well. While there is a slight increase present in 6th grade, prevalence does not rise much above 5% in this grade in any year. Taken as a whole, these results indicate that the behaviors of middle school students may be particularly sensitive to the changing norms and mores about marijuana use in the general population.

- ***Daily marijuana use for a month or more*** consistently shows high levels of incidence in 8th and particularly 9th grade. This is indicated by substantial separation for each of the 8th and 9th grade lines in comparison to the grades below them. Overall levels of this outcome dropped appreciably in the 1980s in all grades above 7th, rose sharply from the early 1990s in those same grades, and then slowly declined in all of those grades since the late 1990s.
- Variation in lifetime prevalence of ***any illicit drug other than marijuana*** over the course of the study has been driven primarily by initiation in high school (Figure 6-2), that is, 9th grade and after. The lifetime prevalence level for 8th grade students is relatively flat over the course of the study, with a slight, overall decline in the past decade. In contrast, the trends for high school students show much more variation, especially before the mid-1990s. The biggest cause of increases in these curves from 1978 to 1981 was the rise in reports of ***amphetamine*** use. As noted earlier, we suspect that at least some of that rise was

an artifact of the improper inclusion by some respondents of nonprescription stimulants (“*look-alikes*” and “*sound-alikes*”). The removal of amphetamines from the drug index (Figure 6-3) results in substantially less variation in lifetime prevalence over the course of the study, although most of the variation that is still present continues to occur in the high school years.

- The majority of 12th grade *inhalant* initiation has taken place by 9th grade. This is depicted in Figure 6-6 by the finding that lifetime prevalence in 9th grade is half or more of the lifetime prevalence for the same cohort in 12th grade (four years later). As a result, lifetime inhalant trends over time in 12th grade are in large part a reflection of initiation trends that took place by 9th grade. This result is consistent with the finding that inhalants are considered a “kids’ drug,” and are the only class of drugs with prevalence of current use that declines markedly with rising grade level (discussed in more detail in Chapters 4 and 5).

The lower panel of Figure 6-6 presents reports from 8th grade students on their past use of inhalants. It shows that their initiation levels are quite high in 7th grade, again pointing to the importance of the middle school years as a key age of initiation for use of inhalants.

Lifetime prevalence levels as reported by 8th grade students are substantially higher than lifetime prevalence levels in 8th grade as reported by 12th grade students. This is, in part, because the surveys of 8th graders include students who will later drop out of school and, consequently, not be included in 12th grade reports of earlier inhalant use.

- Of 12th grade students who have used *hallucinogens* (unadjusted for underreporting of PCP), about half initiated use by 10th grade. This is depicted in Figure 6-7 with a lifetime prevalence level for students in 10th grade that is about half or more than their lifetime prevalence in 12th grade, two years later. Lifetime prevalence of students when in 6th grade is near zero in all forty plus years of the study and for 9th grade students is typically less than 5%. Throughout the life of the study, a substantial jump in lifetime prevalence occurs when students are in 10th and 11th grade, indicating that these are key years of initiation. Since the early 2000s hallucinogen initiation (and therefore use) has been steadily decreasing in all grades. The apparent upturn in the Class of 2001 is an artifact of a change in question wording; when the term “shrooms” (a commonly used term for hallucinogenic mushrooms containing psilocybin) was added to the list of examples in the question about use of *hallucinogens other than LSD*, the absolute level of reported hallucinogen use increased somewhat that year, but thereafter the trend lines continued to show declines.
- The lifetime prevalence trends for *hallucinogens other than LSD* (Figure 6-9) are similar to the ones just discussed for the entire class of hallucinogens. The declines observed for the different grades appear to have begun in the lower grades at an earlier time, suggesting a cohort effect. The lifetime prevalence trends for *LSD* (Figure 6-8) differ in showing a sharp decline in LSD use after 2001 in both the 12th and 8th grade figures, which looks more like a secular trend. This followed a more gradual decline in initiation starting in the mid-1990s.

- Trends in lifetime prevalence of *cocaine* use at various grade levels, as estimated from the retrospective grade of initiation data, are displayed in Figure 6-10. For the 12th grade classes, over half of cocaine initiation takes place in grades 10 through 12. Fluctuations in the use of this drug have been greatest in the high school grades, with very low lifetime prevalence in 6th through 8th grades, and their lifetime prevalence below 5% with little variation even in 9th grade. Initiation has been decreasing since the mid-2000s, as indicated by a declining lifetime prevalence in all grades. The data reported by our 8th grade respondents (bottom panel of Figure 6-10) show a little more variation in 7th and 8th grade, but still show lifetime cocaine prevalence to be below 5% since 1989 for 8th graders.
- Similarly, much of the initiation of *crack cocaine* (Figure 6-11) and *cocaine other than crack* (Figure 6-12) use takes place during the high school years. About half of lifetime prevalence by 12th grade is initiated after 10th grade, a trend most clearly apparent in the early years of the study when the prevalence of crack and cocaine other than crack were highest.
- Among 12th grade students who had used *heroin*, half or more initiated use during the high school years (Figure 6-13). In all years about half of heroin initiation takes place in the two years between 10th and 12th grade, as indicated in the Figure by lifetime prevalence levels in 10th grade at levels about half of what they are for the same cohort in 12th grade (two years later). The lower panel of Figure 6-13 shows that heroin initiation peaked among 7th and 8th graders in the mid- to late-1990s and declined fairly steadily thereafter.
- More than half of lifetime prevalence of *narcotics other than heroin* among 12th grade students had been initiated by 10th grade. This finding is indicated in Figure 6-14 by a lifetime prevalence for 10th grade cohorts that in most years is half or more of what it is for the same cohort when it is in 12th grade (2 years later). This pattern of initiation remained when the question was updated in 2002 to include the additional examples of Vicodin and OxyContin. Rates of initiation for narcotics other than heroin appear to have peaked from the late 1990s to the late 2000s, with somewhat of a cohort effect observable in both the incline and decline stages.
- A little over half of lifetime prevalence of *amphetamines* use in 12th grade was initiated by 10th grade. This finding is indicated in Figure 6-15 by a lifetime prevalence for 10th grade cohorts that in all years is half or more of what it is for the cohort in 12th grade (2 years later). Initiation rates for high school students fell sharply during the 1980s, rose some during the relapse period in the 1990s, leveled in the mid- to late-1990s, and then fell further in the 2000s before leveling. The data from 8th grade respondents (lower panel of Figure 6-15) show a much steeper decline in the initiation rates among 7th and 8th graders after the peak rates in the mid-1990s, with a rebound in initiation in 2014 and 2015 that has since been fading.
- Figure 6-16 shows that most 12th graders who had ever used *sedatives (barbiturates)* had initiated use by 10th grade. This is indicated by lifetime prevalence levels in all years for 10th grade cohort at levels half or more of lifetime prevalence when the cohorts was in 12th grade (two years later). Lifetime prevalence of sedatives shows a substantial jump from 9th

grade to 10th grade, especially in the earlier years of the survey, indicating that the initial years of high school are a period of high risk for the initiation of sedative use. There have been wide fluctuations in initiation rates as Figure 6-16 illustrates, but rather little at grade 8 and below, judging by the retrospective data from 12th graders. Data regarding sedatives (barbiturates) collected directly from 8th graders are not shown because we have questions about their validity.

- Figure 6-17 shows that most 12th graders who had ever used *tranquilizers* had initiated use by 10th grade, a pattern common to prescription drugs. This is indicated by lifetime prevalence levels for 10th grade cohort at levels half or more of lifetime prevalence when the cohorts was in 12th grade (two years later). This pattern of initiation has remained throughout the study, as tranquilizer initiation declined from the 1970s to a nadir in the early 1990s – before the 1990s relapse – and then subsequently increased into the early 2000s. In 2001, when Xanax was added to the list of examples in the question text, reported use of tranquilizers increased in all grades but age of initiation remained higher in the high school grades than the earlier ones. Once again, there has been rather little variation in initiation rates at or below 8th grade, although a slight decline over the course of the study is apparent.
- About half of all 12th graders who have ever used *alcohol* initiated use by 9th grade (Figure 6-18). This is indicated by lifetime prevalence in all years of the study for 9th grade cohorts that are at half or more of the levels when those same cohorts were in 12th grade (three years later). From the early 1970s to mid-1980s, the trends lines were fairly steady in the upper grades and increased modestly in grades 8 through 10. Since the mid-1980s, all grades have shown steady declines. Because the results from the classes of 1993 through 2018 are based on the revised question about alcohol use – which qualifies the question with the phrase “more than just a few sips” – these data are not strictly comparable to earlier trend data. (A break in the trend lines shows the rather modest decline in the initiation rate that this change produced.) The lower panel of Figure 6-18, based on data from 8th grade respondents, also shows a gradual, steady, and substantial decline in lifetime prevalence of use from the late 1980s through 2016 for most grades, with a leveling and slight increase since.
- In 1986, we began asking 12th graders about the first time they drank “enough to feel *drunk* or very high” (Figure 6-19). In all years, the trend lines for being drunk show a substantial gap in lifetime prevalence between 8th and 9th, as well as between 9th and 11th grades. These gaps reflect substantial increases in the initiation of drinking alcohol between 8th and 10th grades and even into 11th grade. In fact, among 12th grade students who had ever been drunk, about half first became drunk between 8th and 10th grade, as indicated by the distance between the 8th and 10th grades encompassing half or more of the total lifetime prevalence recorded at 12th grade (two to four years later). Since the late 1980s the overall trends in initiation for all grades have been downward, with the exception of a short period in the relapse phase of the drug epidemic in the 1990s when initiation rates rose slightly and then leveled.

Until 2017, responses reported by 8th graders reveal a fairly steady decline for 6th, 7th, and 8th grades in lifetime incidence of drunkenness throughout most of the 1990s and into the 2000s. The proportional declines at these younger ages have been sharp, particularly among 7th and 8th graders. In 2017 this trend appeared to have reversed, with a slight upturn in the prevalence of getting drunk that persisted in 2018. This trend warrants close attention in the coming years to determine if it is the start of an increase that could begin to reverse more than two decades of reduction in adolescent alcohol use.

- Of all substances considered in the survey, *cigarette smoking* has one of the lowest ages of initiation (Figure 6-20). The gaps between the trend lines for lifetime smoking in 6th and 8th grade is one of the largest for all drugs, indicating substantial initiation at these ages. Although lifetime prevalence of cigarette smoking has declined very substantially over the course of the study, still 9% of 8th grade students report having smoked a cigarette in 2018. After 8th grade, lifetime prevalence increases by about 3 percentage points at each grade until it reaches a prevalence of 24% among 12th grade students in 2018. The increases in lifetime prevalence across grade levels appear to be somewhat larger in the reports of 8th graders as compared to the reports of 12th graders, likely due to the inclusion of eventual dropouts – a group particularly prone to smoking – among the 8th graders.

The important decline in teen smoking initiation that began in the mid-1990s can be seen in the lower panel of Figure 6-20, based on responses from 8th grade students. This figure also shows evidence of a secular trend, in that the sharp decline since 1996 at 8th grade is not much reflected in the retrospective data for earlier grades until the 8th grade class of 2002. After a sharp drop, the rate of decline in smoking initiation by 8th grade decelerated across about five classes until both the 8th and 12th grade classes of 2011 showed a sharper decline, likely due at least in part to an increase in federal tobacco taxes in 2009. This lower panel shows that the rate of initiation by 8th grade is largely due to increases prior to 7th grade, particularly between 5th and 7th grades. This suggests that late elementary school and early middle school may be strategic times to focus smoking prevention efforts.

- Figure 6-21 presents the lifetime prevalence of cigarette smoking “on a daily basis,” a measure included since the beginning of MTF in 1975. Substantial historical variation in *daily smoking* outcome is seen starting in 7th grade, but for 6th grade students prevalence has remained fairly consistently low (less than 5%) and steady throughout the study. These results suggest that the historical/social influences that alter the prevalence of lifetime daily smoking reach down to about 7th grade. For the past decade, historical change has consisted of a decline in all grades. The decline seen in the early 1970s among younger teens – which was subsequently evident at increasingly higher grades indicative of a cohort effect – may well have reflected the effects of the Federal Communications Commission’s “fairness doctrine,” which had the effect of greatly diminishing cigarette advertising on television for some time, followed by the Congressional ban on all cigarette advertising on television and radio starting in January, 1971. The data from 8th graders in the lower panel show that the transition from smoking to daily smoking is particularly great between 6th and 7th grade, which is when many students transition out of elementary school into middle school or junior high school.

- Initiation of e-cigarettes by 8th grade was reported by more than 15% of 8th graders in 2018, one of the highest rates observed for all substances (Figure 6-22). This high initiation rate is consistent with the large increases in e-cigarette use observed in 2015 and 2018, and indicates that the reach of these products extends down to middle school students. Among 12th graders less than 3% reported initiation by 8th grade; these students were in 8th grade in 2014 when e-cigarette use was much less common and the dramatic increases in prevalence were yet to come.
- Questions about *smokeless tobacco* initiation (Figure 6-23) were first asked of 12th graders in the class of 1986. These prevalence questions were dropped from the 1990 and 1991 surveys of 12th graders, but reinstated in 1992. The 1986–1989 survey questions were located near the end of one questionnaire form; the questions since 1992 have been relocated so they appear early in the form. As a result, estimates based on two versions are not strictly comparable, and it may be misleading, therefore, to connect the two trend lines.

Initiation patterns are similar to those for cigarette smoking (discussed above), with the earliest grades showing both substantial initiation and as well as historical variation in levels of initiation (even in 4th grade), a large jump in lifetime prevalence between 6th and 8th grades during the earlier years of the study, and a substantial decline in initiation in all grades over the course of the study. One important difference between trends in smokeless tobacco and cigarettes is that for all grades the decline in smokeless tobacco paused in the late 2000s. This pause actually turned to a slight upswing beginning in the lower grades around 2005 and continuing through 2010 in 12th grade (again suggesting a cohort effect). Initiation rates have since declined, with the exception of a slight, one-year upsurge present among 9th graders in 2013 that followed the cohort as it aged and has since moved out of the high school years. The introduction of new products and advertising may have played a role in the resurgence in lifetime prevalence seen in the early to mid-2000s.

- Overall lifetime prevalence of *steroid* use has tended to be low, and in 2018 was less than 2% among 12th grade students (Figure 6-24). Levels of use are higher for males, and were particularly high in the late 1990s (for more information on the high levels of use among males see the [MTF paper](#) that presents results by demographic subgroups). With overall, current prevalence levels so low the results are somewhat noisy. One general trend apparent across past years is a substantial jump in initiation at 10th and/or 11th grade, indicating that the high school years are a substantial risk period for initiation of steroids. This was especially true for males in the late 1990s.

Due to low prevalence, questions on grade of initiation for steroids were removed from the survey in 2015 for 8th and 10th grade students. For this information in previous years, see the [2015 version](#) of this volume, which reports on data from 2014 and earlier.

DRUGS NO LONGER ANNUALLY TRACKED FOR INITIATION DUE TO LOW LEVELS OF USE

- The study reported the use of *nitrite* inhalants from its first year in 1975 until 2009, when prevalence fell to such a low level that questions on nitrites were dropped and replaced with questions on other drugs. For a discussion of nitrite initiation, see the [2014 version](#) of this monograph that reports data through 2013.
- Retrospective questions about grade of first use for *PCP* were added in 1980 and discontinued in 2009 because very low prevalence made it strategic for the survey to ask questions about other drugs. For a discussion of initiation trends for this drug see the [2014 version](#) of this volume that reports data through 2013.
- Starting at its beginning in 1975, the study has tracked the initiation of *methaqualone* use (brand name Quaalude). Due to low prevalence, questions on this drug were dropped from the study in 2013 to make space for other questions. A full discussion of initiation trends for this drug is available in the [2014 version](#) of this volume that reports data through 2013.

TABLE 6-1
Incidence of Use of Various Drugs by Grade
for 8th Graders, 2018

(Entries are percentages.)

Grade in which drug was first used:	Marijuana	Inhalants	Hallucinogens	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) ^a	Smokeless Tobacco	E-Cigarettes ^b
4th (or below)	0.9	2.3	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.3	0.7	0.1	3.4	0.6	1.5	0.1	1.1	1.1
5th	0.9	1.3	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	2.6	0.6	1.3	0.1	0.7	1.6
6th	2.3	1.8	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.8	0.3	4.2	1.2	1.8	0.2	1.2	2.8
7th	4.5	2.1	0.5	0.3	0.4	0.5	0.3	0.2	0.3	0.1	2.0	1.2	7.7	3.1	3.0	0.5	2.0	6.2
8th	5.3	1.3	0.9	0.5	0.6	0.7	0.5	0.3	0.5	0.1	2.3	1.8	5.7	3.8	1.5	0.4	1.5	7.2
Never used	86.1	91.3	97.8	98.6	98.5	98.4	98.6	99.1	98.8	99.4	94.1	96.6	76.5	90.8	90.9	98.7	93.6	81.2

Source. The Monitoring the Future study, the University of Michigan.

Notes. All drugs were asked about in all four forms except for the following: hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, smokeless tobacco, and vaping, which were asked about in only two forms; and MDMA which was asked about in only one form. The approximate *N* for all forms was 14,000.

^aData based on the percentage of regular smokers (ever).

^bThe question on initiation of use asks about e-cigarettes specifically. The other use questions in the survey ask about the more general outcome of vaping.

TABLE 6-2
Incidence of Use of Various Drugs by Grade
for 10th Graders, 2018

(Entries are percentages.)

Grade in which drug was first used:	Marijuana	Inhalants	Hallucinogens	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) ^a	Smokeless Tobacco	E-Cigarettes ^b
4th (or below)	0.6	1.7	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.5	0.2	2.4	0.6	1.6	0.2	0.8	0.6
5th	0.7	0.7	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.4	0.4	1.0	0.1	0.3	0.5
6th	1.6	0.7	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.6	0.2	3.2	0.9	1.7	0.2	0.7	1.9
7th	3.6	0.7	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.0	0.6	0.3	5.5	2.0	2.4	0.3	1.3	4.0
8th	6.3	1.1	0.6	0.5	0.3	0.3	0.3	0.2	0.3	0.0	1.0	0.6	9.8	5.2	2.9	0.6	1.6	6.5
9th	12.0	0.8	1.5	0.9	1.2	1.0	1.0	0.3	0.9	0.1	3.1	3.0	14.2	10.4	4.5	1.4	3.6	11.6
10th	7.7	0.6	1.2	0.9	0.8	0.7	0.8	0.2	0.8	0.1	2.6	1.7	6.4	6.7	2.0	0.9	1.7	8.6
Never used	67.4	93.5	96.1	97.2	97.3	97.6	97.4	99.0	97.6	99.6	91.4	94.0	57.0	73.8	84.0	96.3	90.0	66.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. All drugs were asked about in all four forms except for the following: hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, smokeless tobacco, and vaping, which were asked about in only two forms; and MDMA which was asked about in only one form. The approximate *N* for all forms was 14,300.

^aData based on the percentage of regular smokers (ever).

^bThe question on initiation of use asks about e-cigarettes specifically. The other use questions in the survey ask about the more general outcome of vaping.

TABLE 6-3
Incidence of Use of Various Drugs by Grade
for 12th Graders, 2018

(Entries are percentages.)

Grade in which drug was first used:	Any Illicit Drug	Any Illicit Drug other than Marijuana	Marijuana	Marijuana Daily for Month or More	Inhalants	Hallucinogens ^a	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Narcotics other than Crack	Amphetamines other than Heroin	Sedatives (Barbiturates)	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) ^c	Smokeless Tobacco	E-Cigarettes ^e	Steroids
6th (or below)	2.6	1.0	2.0	1.2	0.8	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.1	0.4	0.4	0.4	0.3	3.4	0.7	3.6	0.3	1.4	0.7	0.2
7th–8th ^d	7.6	2.4	6.6	2.5	1.2	0.6	0.5	0.4	0.2	0.3	0.2	0.0	0.1	1.1	0.9	0.9	0.7	9.3	4.9	5.2	0.9	2.1	1.6	0.3
9th	10.7	3.2	9.8	2.2	0.3	0.8	0.6	0.7	0.6	0.7	0.3	0.5	0.2	1.1	2.3	0.4	1.5	12.8	9.1	5.3	0.8	2.4	10.1	0.1
10th	10.0	3.4	9.4	3.2	0.7	1.5	1.1	0.9	0.6	0.6	0.2	0.6	0.1	0.9	1.7	0.9	1.3	12.2	10.0	3.5	0.7	1.6	7.2	0.0
11th	9.3	5.7	8.5	1.9	0.5	2.1	1.7	1.1	1.2	1.2	0.4	1.1	0.2	1.6	2.2	0.9	1.3	12.1	10.9	3.6	0.6	1.5	7.9	0.6
12th	7.5	3.1	7.3	1.3	0.9	1.5	1.2	1.3	1.2	1.0	0.3	0.8	0.1	0.9	1.2	0.8	1.4	8.7	7.3	2.6	0.7	1.1	9.3	0.5
Never used	52.2	81.1	56.4	87.7	95.6	93.4	94.9	95.5	95.9	96.1	98.5	96.7	99.2	94.0	91.4	95.8	93.4	41.5	57.1	76.2	96.1	89.9	63.2	98.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. Percentages are based on two of the six forms ($N =$ approximately 4,400) except for cocaine, crack, and cigarettes, for which percentages are based on three of the six forms ($N =$ approximately 6,700); and inhalants, MDMA, other forms of cocaine, e-cigarettes, and steroids, for which percentages are based on one of the six forms ($N =$ approximately 2,200).

^aUnadjusted for known underreporting of certain drugs. See text for details.

^bBased on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription amphetamines.

^cData based on the percentage of regular smokers (ever).

^dFor 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

^eThe question on initiation of use asks about e-cigarettes specifically. The other use questions in the survey ask about the more general outcome of vaping.

TABLE 6-4
Incidence of Use of Various Drugs: A Comparison of Responses
from 8th, 10th, and 12th Graders, 2018

Grade level of respondents:	Percentage who used by end of 6th grade																		
	Marijuana	Inhalants	Hallucinogens ^a	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines ^b	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) ^c	Smokeless Tobacco	E-Cigarettes ^d	
8th	4.1	5.3	0.8	0.5	0.5	0.4	0.5	0.4	0.4	0.4	1.6	0.4	10.1	2.3	4.6	0.5	2.9	5.4	
10th	3.0	3.2	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	1.2	0.5	7.1	1.9	4.3	0.4	1.8	3.0	
12th	2.0	0.8	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.1	0.4	0.3	3.4	0.7	3.6	0.3	1.4	0.7	
	Percentage who used by end of 8th grade																		
8th	13.9	8.7	2.2	1.4	1.5	1.6	1.4	0.9	1.2	0.6	5.9	3.4	23.5	9.2	9.1	1.3	6.4	18.8	
10th	12.9	5.1	1.2	0.9	0.7	0.7	0.8	0.5	0.7	0.3	2.8	1.3	22.4	9.1	9.6	1.4	4.7	13.5	
12th	8.6	2.0	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.2	1.3	1.0	12.7	5.6	8.8	1.1	3.5	2.3	
	Percentage who used by end of 10th grade																		
10th	32.6	6.5	3.9	2.8	2.7	2.4	2.6	1.0	2.4	0.4	8.6	6.0	43.0	26.2	16.0	3.7	10.0	33.6	
12th	27.8	3.0	3.0	2.2	2.1	1.7	1.7	0.9	1.4	0.4	5.3	3.8	37.7	24.6	17.5	2.6	7.5	19.6	

Source. The Monitoring the Future study, the University of Michigan.

Notes. For 8th and 10th graders, all drugs were asked about in all four forms except for the following: hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, smokeless tobacco, and vaping, which were asked about in only two forms. The approximate *N* for all forms was 14,000 for 8th graders and 14,300 for 10th graders. For 12th graders, percentages are based on two of six forms (*N* = approximately 4,400) except for cocaine, crack, and cigarettes, for which percentages are based on three of six forms (*N* = approximately 6,700); and inhalants, MDMA, other forms of cocaine, and e-cigarettes for which percentages are based on one of six forms (*N* = approximately 2,200).

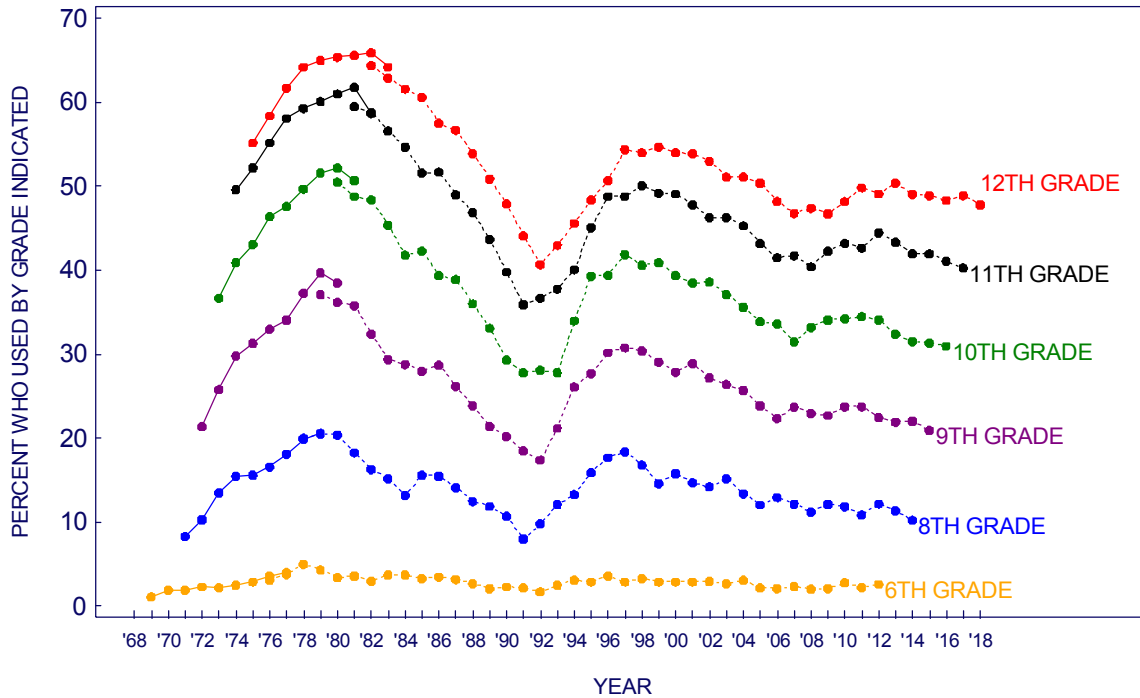
^aUnadjusted for underreporting of certain drugs. See text for details.

^bBased on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription amphetamines.

^cData based on the percentage of regular smokers (ever).

^dThe question on initiation of use asks about e-cigarettes specifically. The other use questions in the survey ask about the more general outcome of vaping.

FIGURE 6-1
Any Illicit Drug
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders

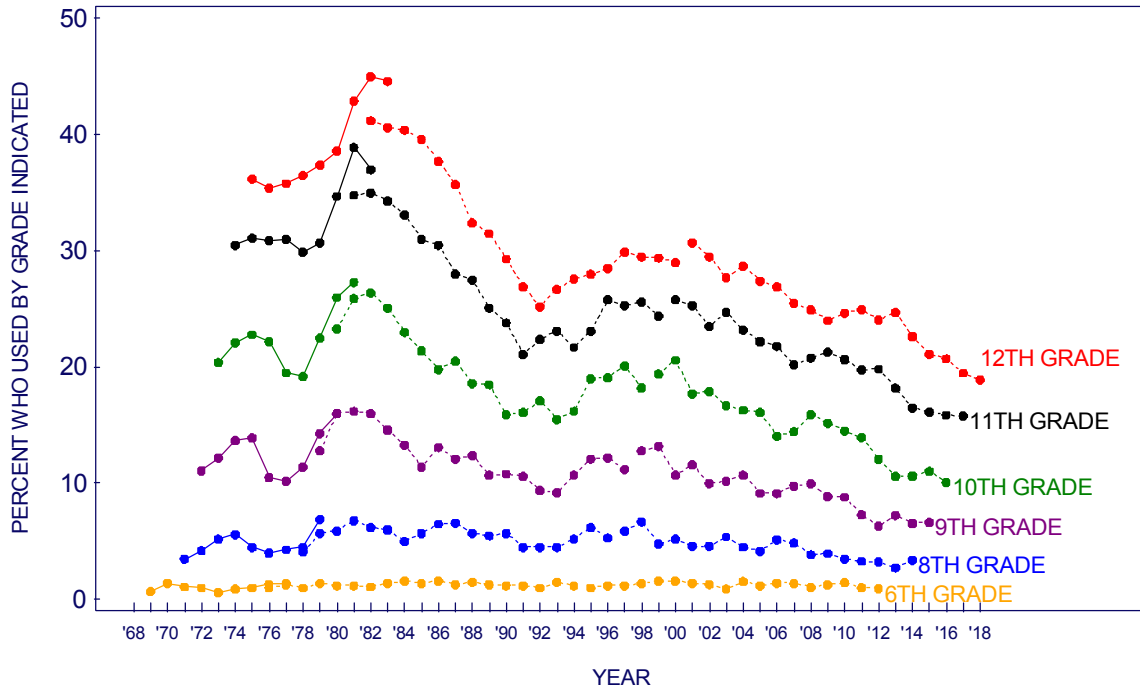


Source. The Monitoring the Future study, the University of Michigan.

Note. The dashed lines connect percentages that result if nonprescription stimulants are excluded.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-2
Any Illicit Drug other than Marijuana
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders



Source. The Monitoring the Future study, the University of Michigan.

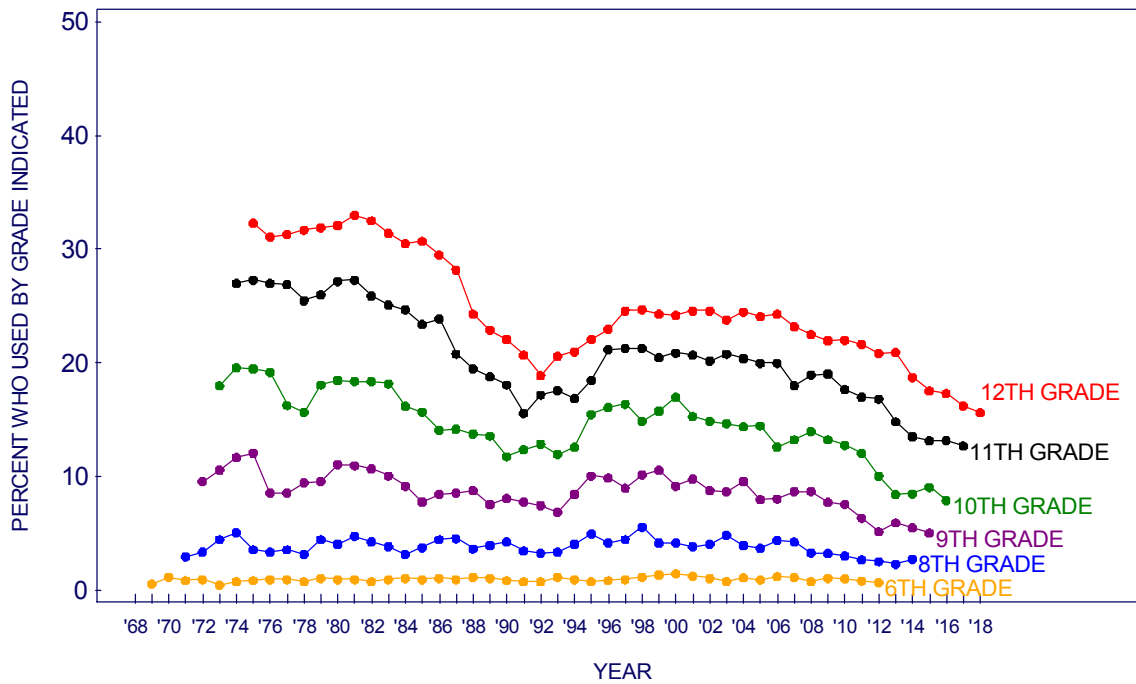
Notes. The dashed lines connect percentages that result if nonprescription stimulants are excluded.

Beginning in 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced.

Data for any illicit drug other than marijuana are affected by these changes. Beginning in 2001, the dashed lines also connect percentages that are based on data from the revised questions.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-3
Any Illicit Drug other than Marijuana or Amphetamines
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders



Source. The Monitoring the Future study, the University of Michigan.

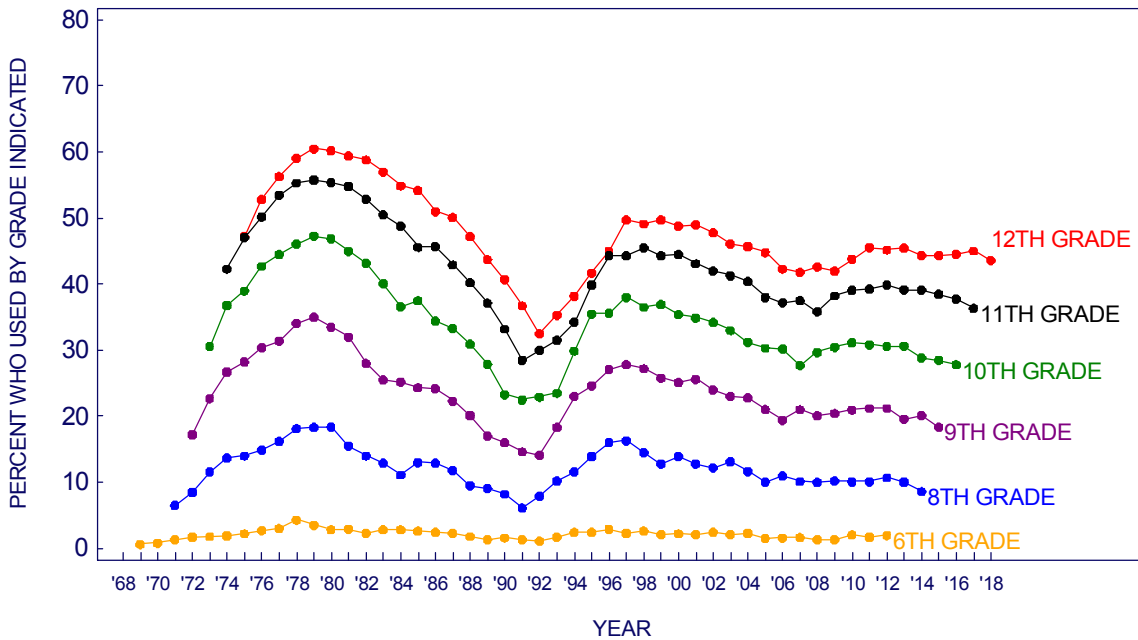
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-4

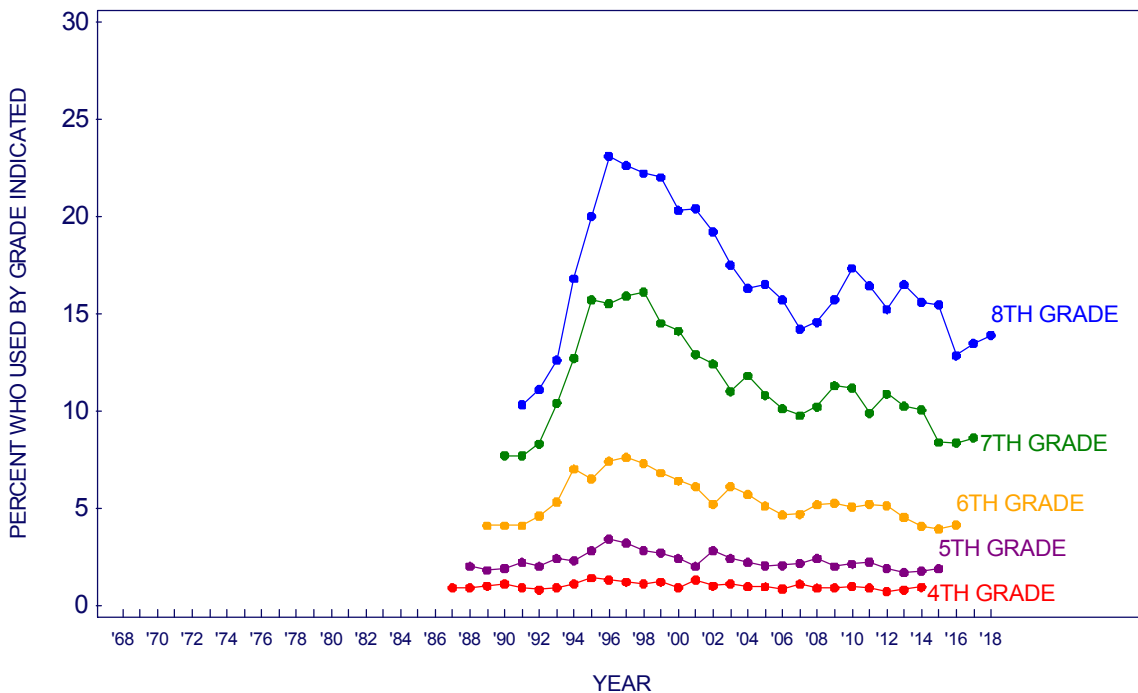
Marijuana

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**

12th Graders

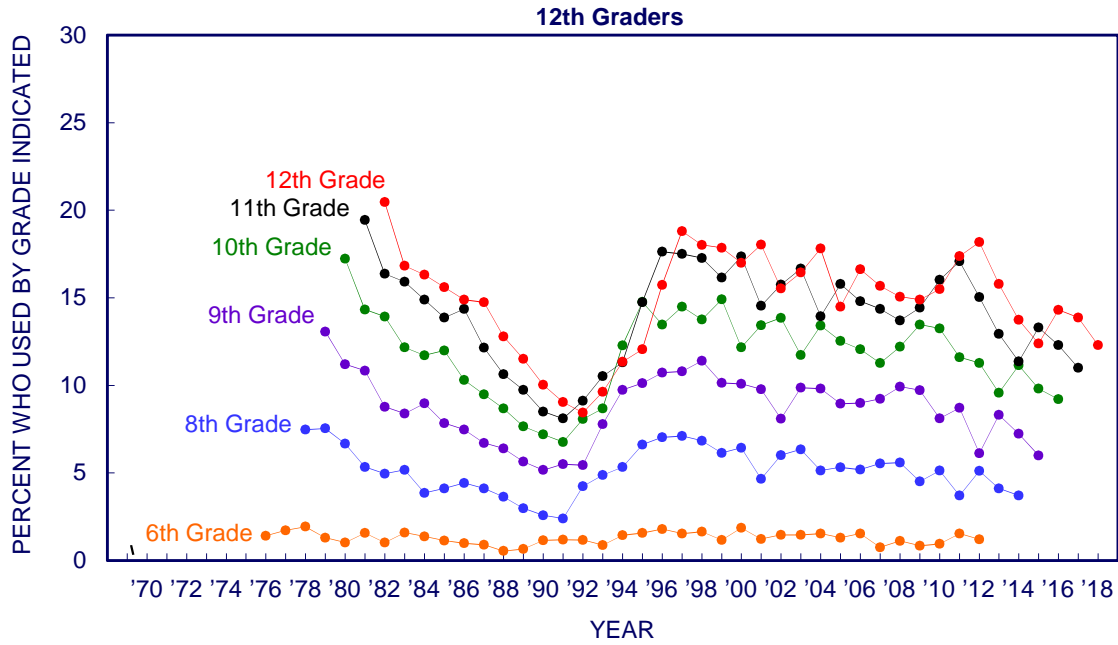


8th Graders



Source. The Monitoring the Future study, the University of Michigan.
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-5
Daily Marijuana Use for a Month or More
Trends in Lifetime Prevalence for Earlier Grade Levels
based on Retrospective Reports from 12th Graders



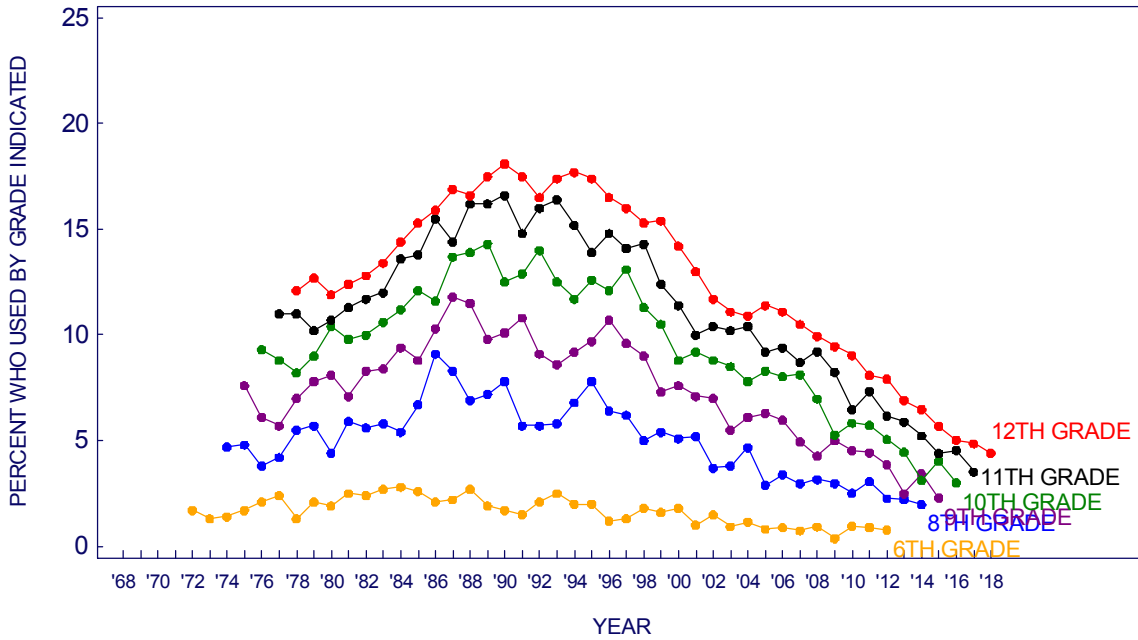
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 6-6

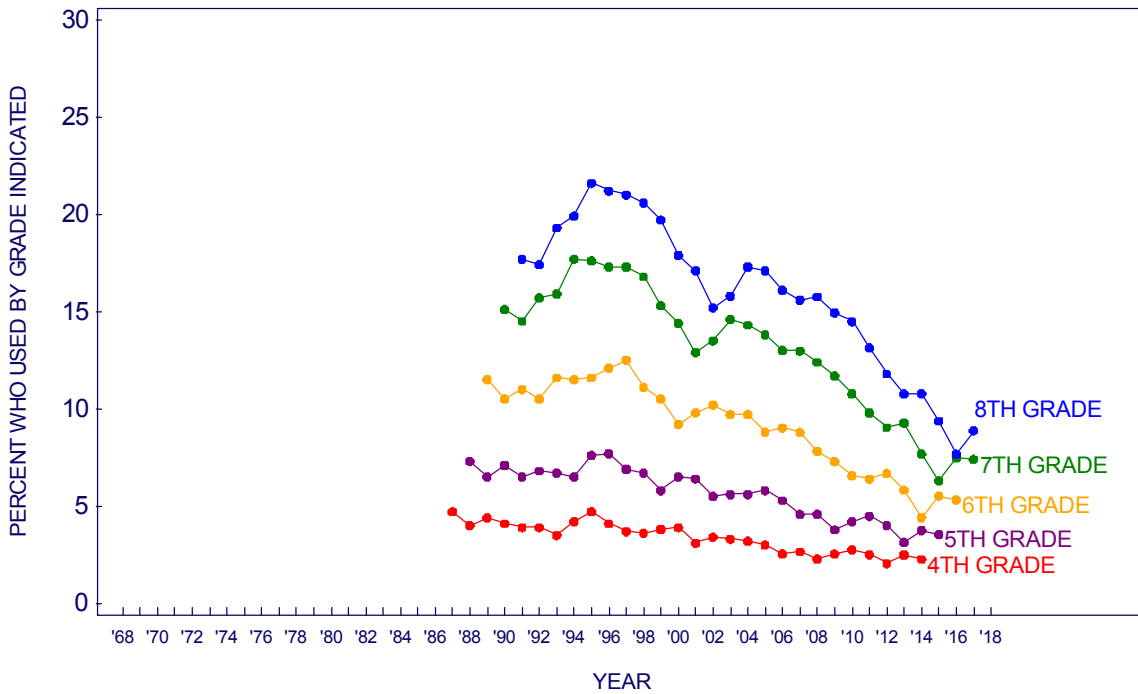
Inhalants

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**

12th Graders



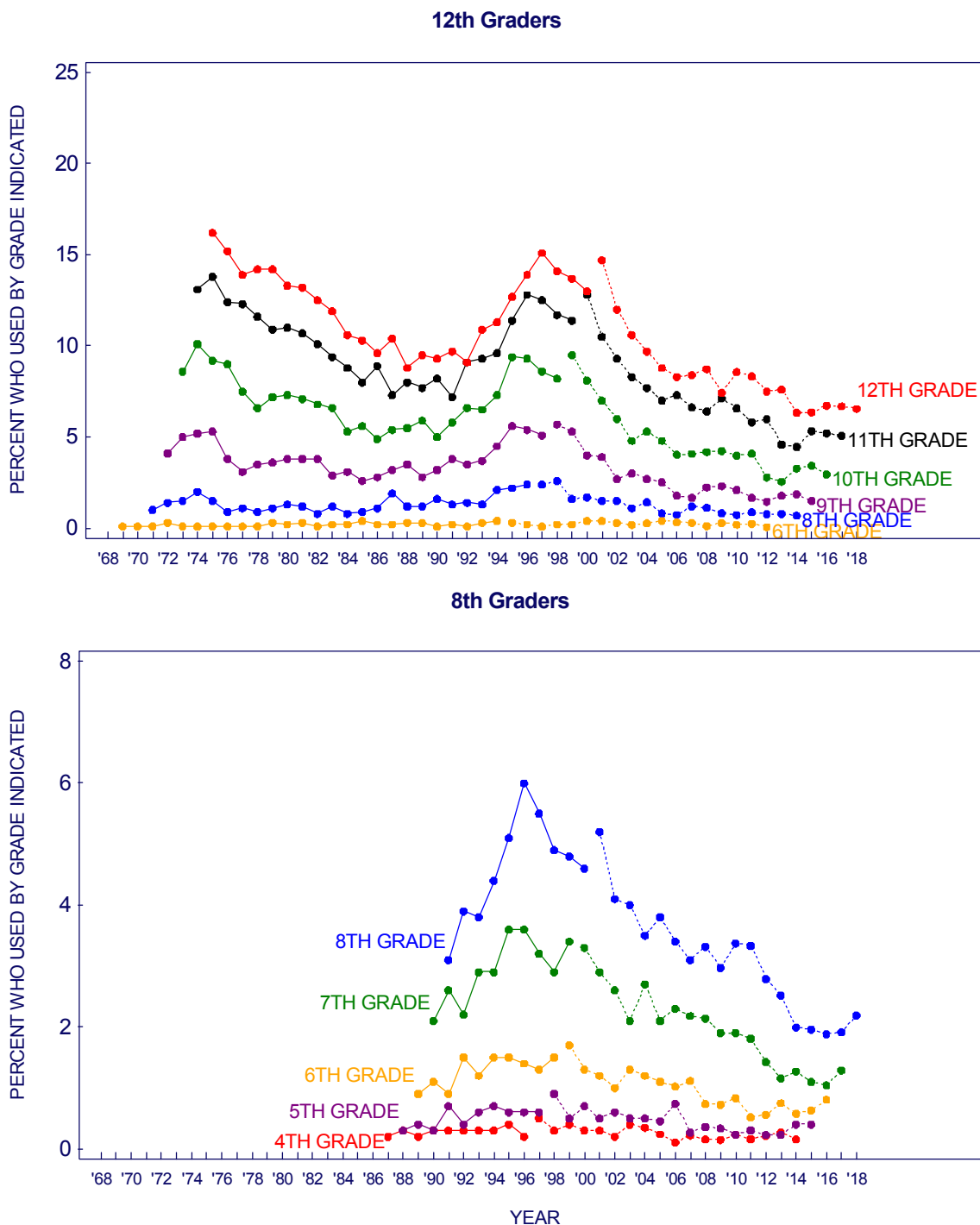
8th Graders



Source. The Monitoring the Future study, the University of Michigan.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-7
Hallucinogens
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.

Notes. Hallucinogens unadjusted for any underreporting of PCP are graphed here.

Beginning in 2001, revised sets of questions on other hallucinogen use were introduced. Data for hallucinogens are affected by these changes. The dashed lines connect percentages that are based on data from the revised questions.

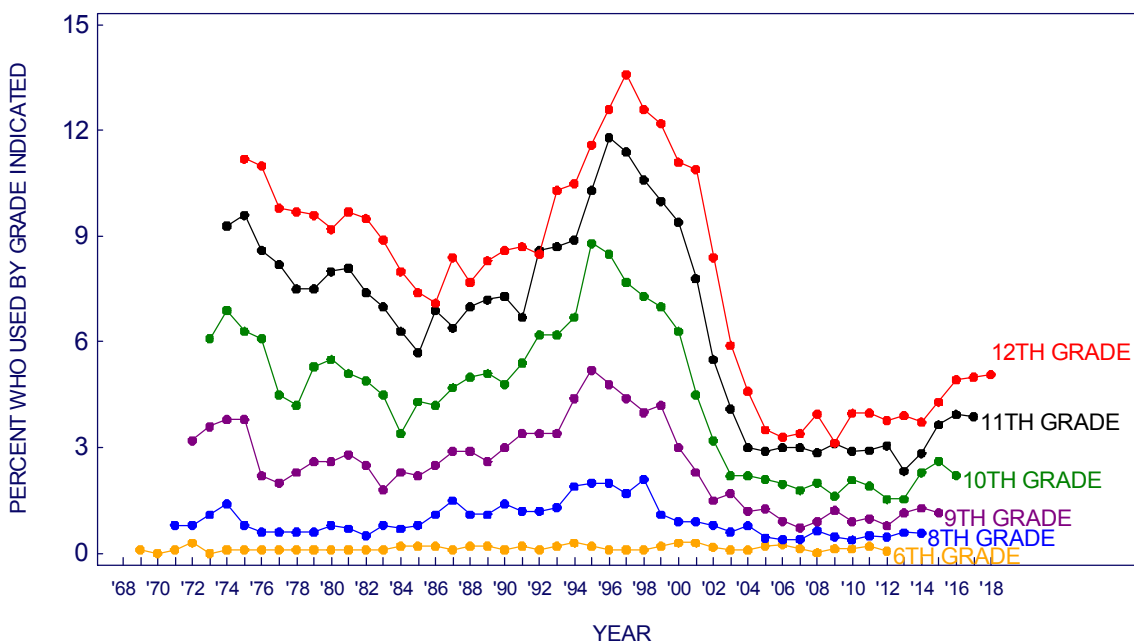
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-8

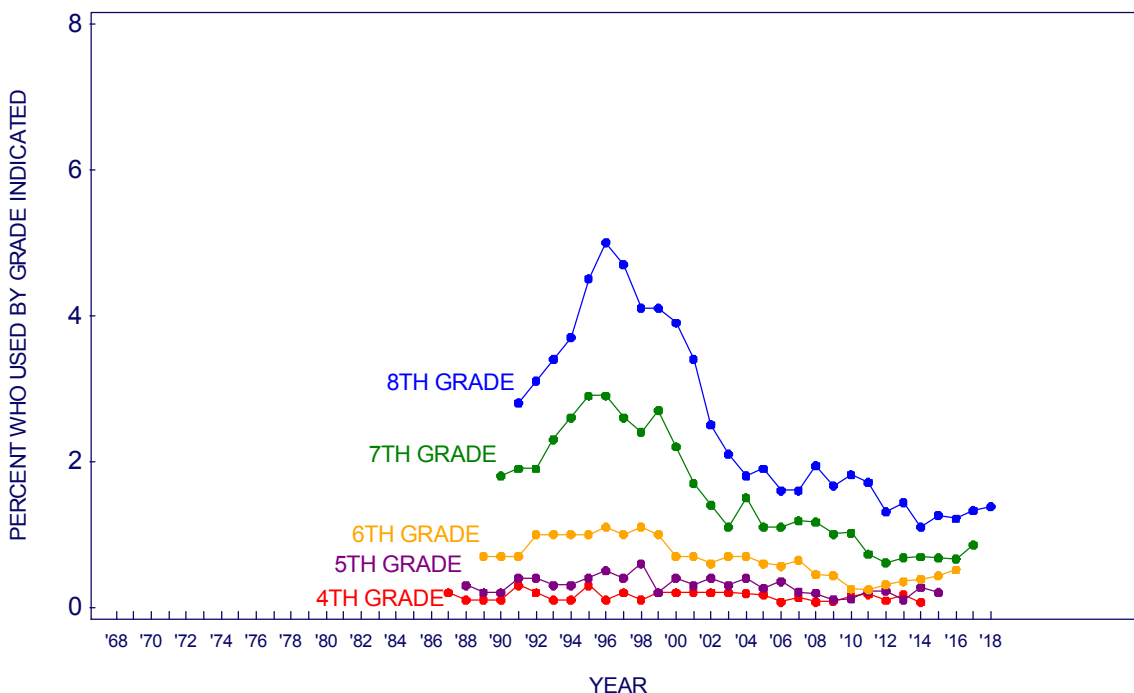
LSD

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**

12th Graders

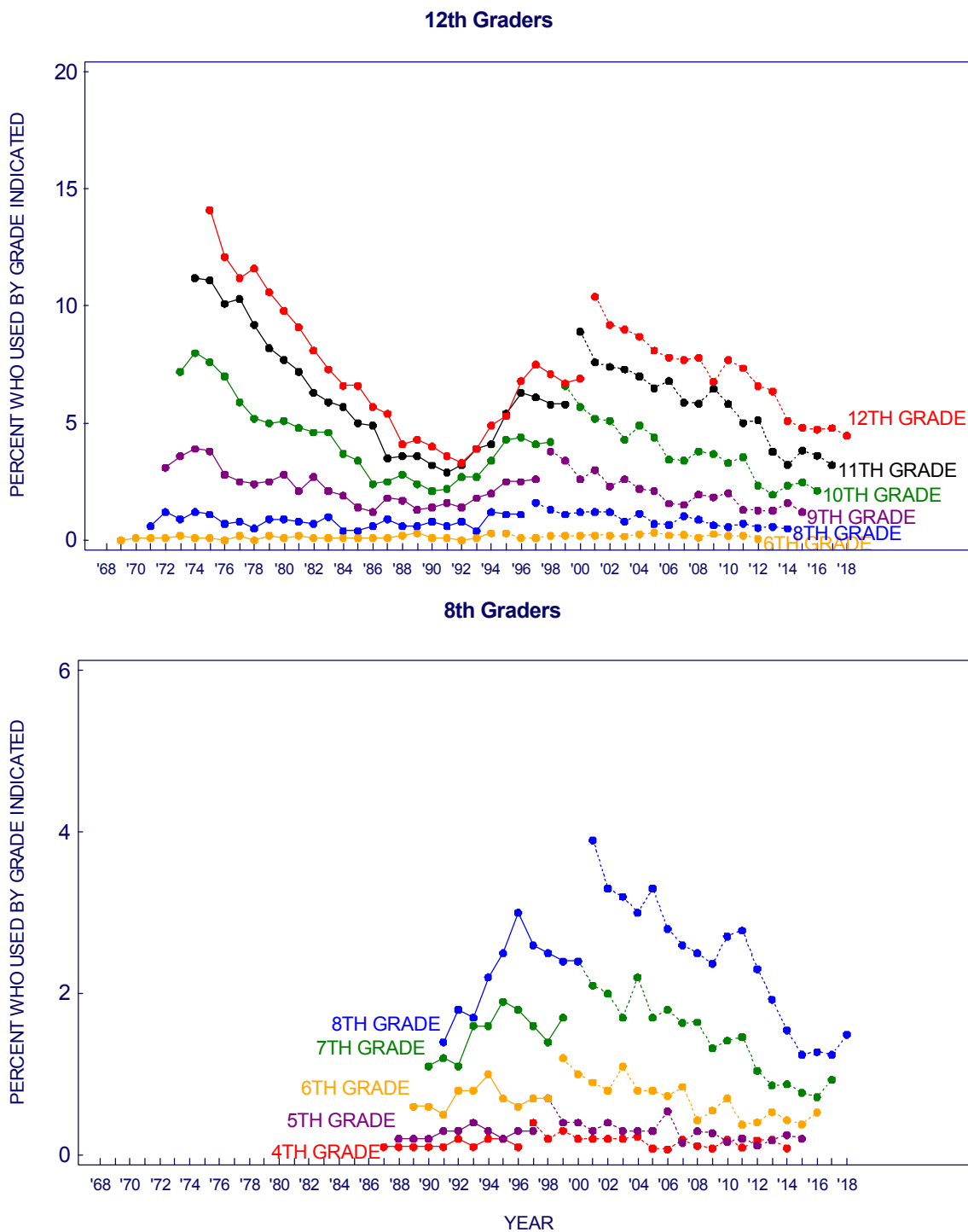


8th Graders



Source. The Monitoring the Future study, the University of Michigan.
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-9
Hallucinogens other than LSD
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.

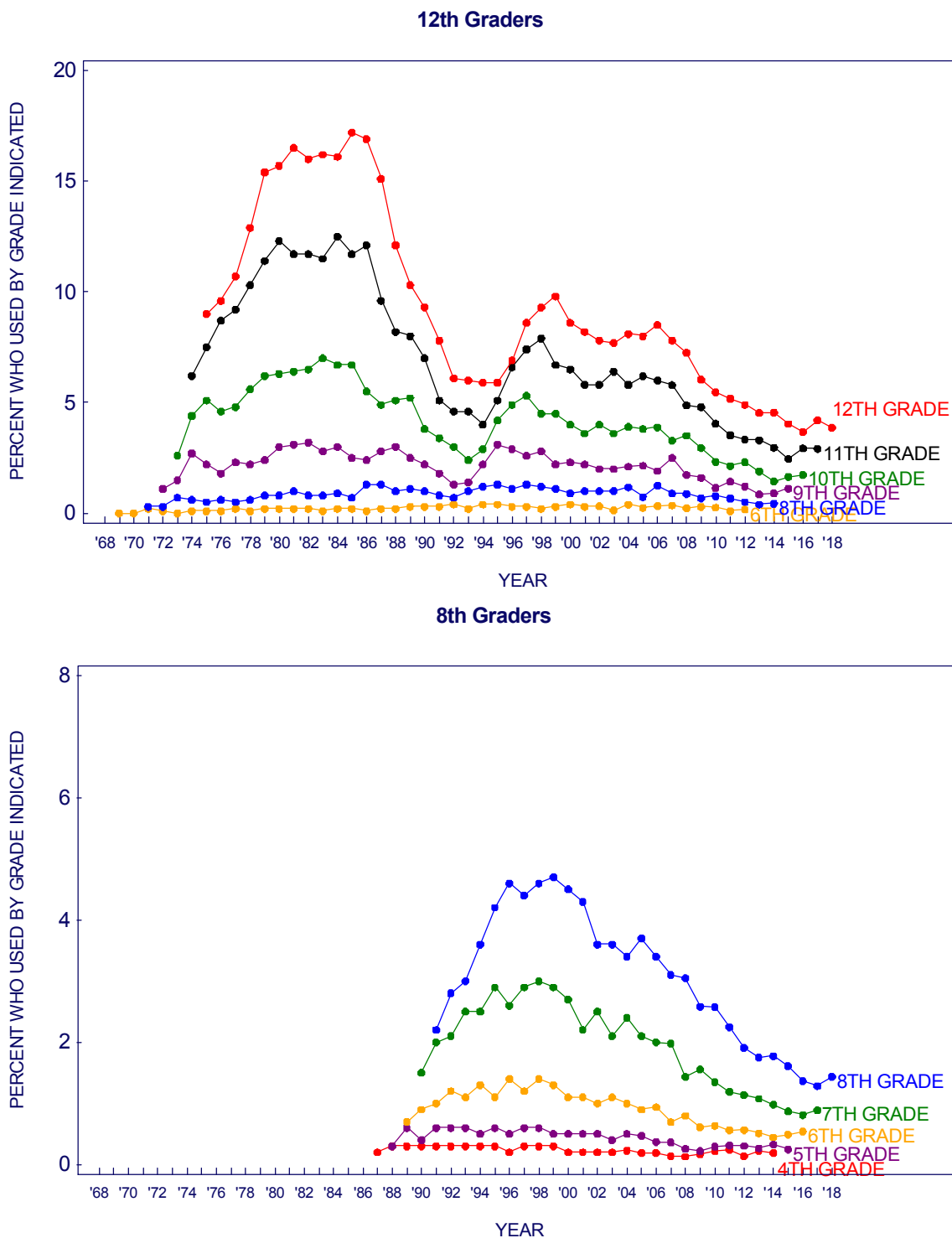
Notes. Beginning in 2001, revised sets of questions on hallucinogens other than LSD were introduced, in which other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. The dashed lines connect percentages based on data from the revised questions.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-10

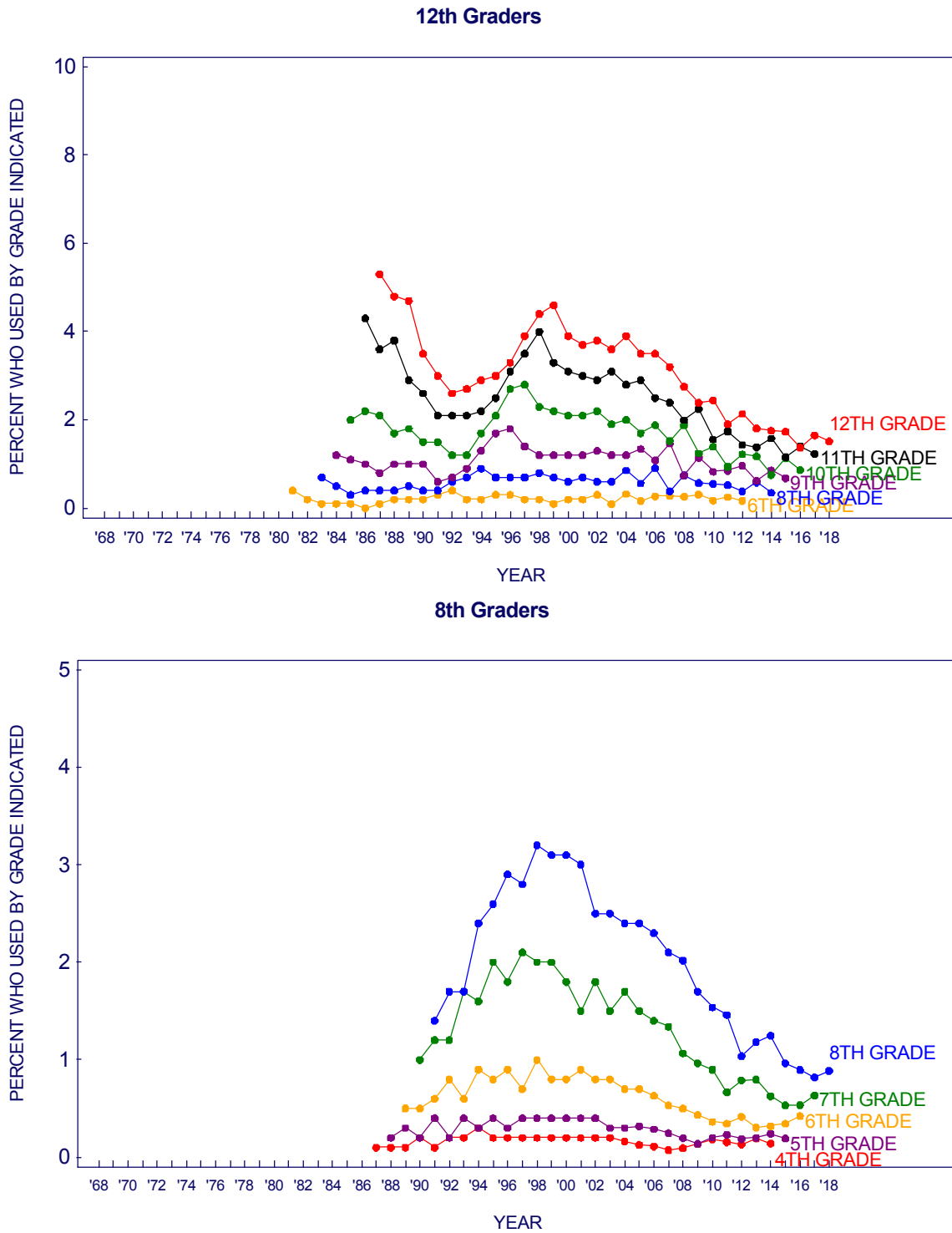
Cocaine

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**



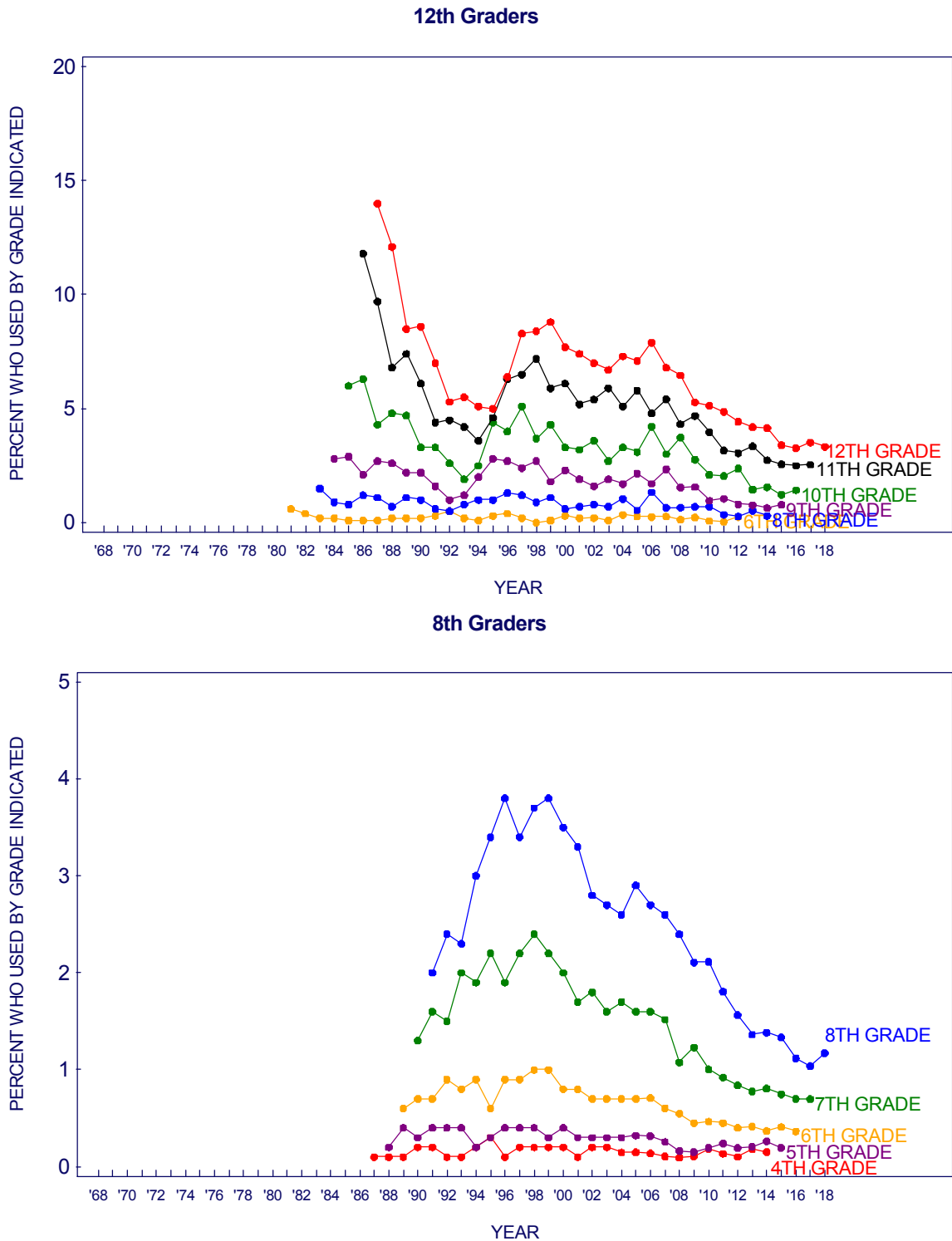
Source. The Monitoring the Future study, the University of Michigan.
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-11
Crack Cocaine
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.
 *For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-12
Other Forms of Cocaine
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



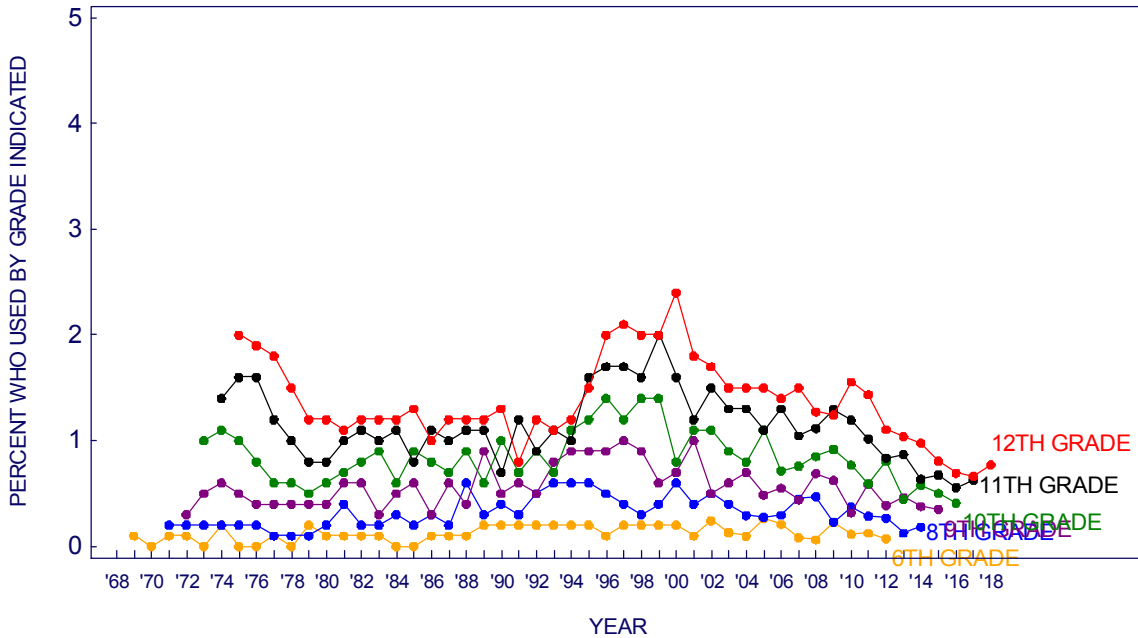
Source. The Monitoring the Future study, the University of Michigan.
 *For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-13

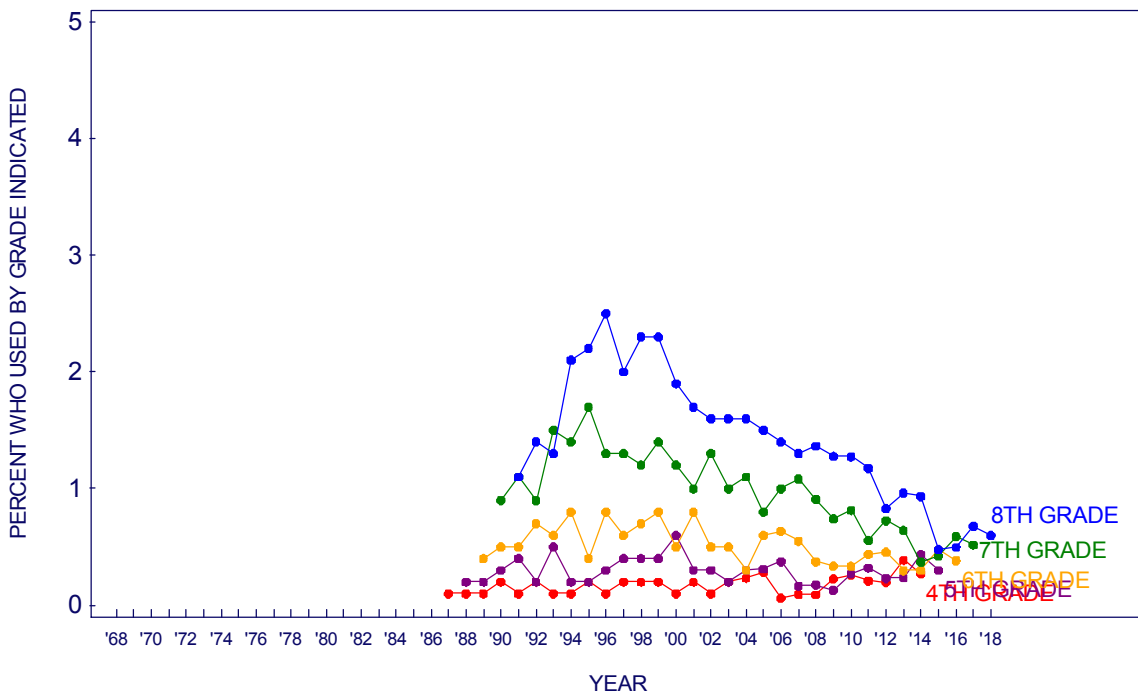
Heroin

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**

12th Graders

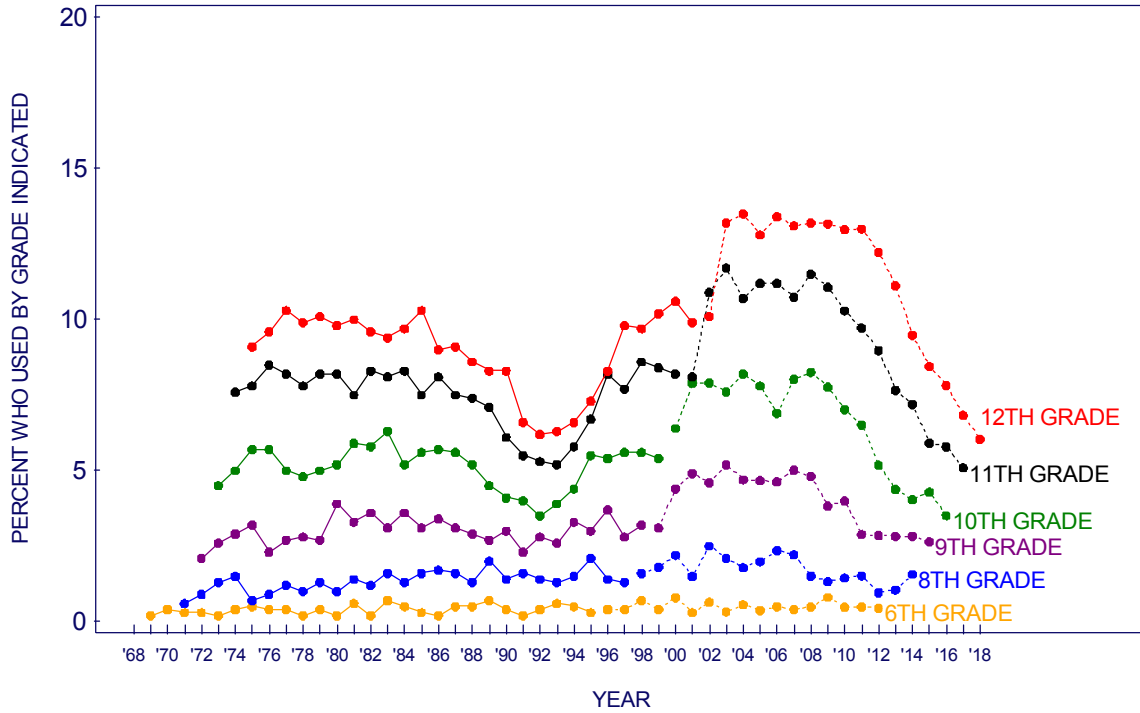


8th Graders



Source. The Monitoring the Future study, the University of Michigan.
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-14
Narcotics other than Heroin
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders

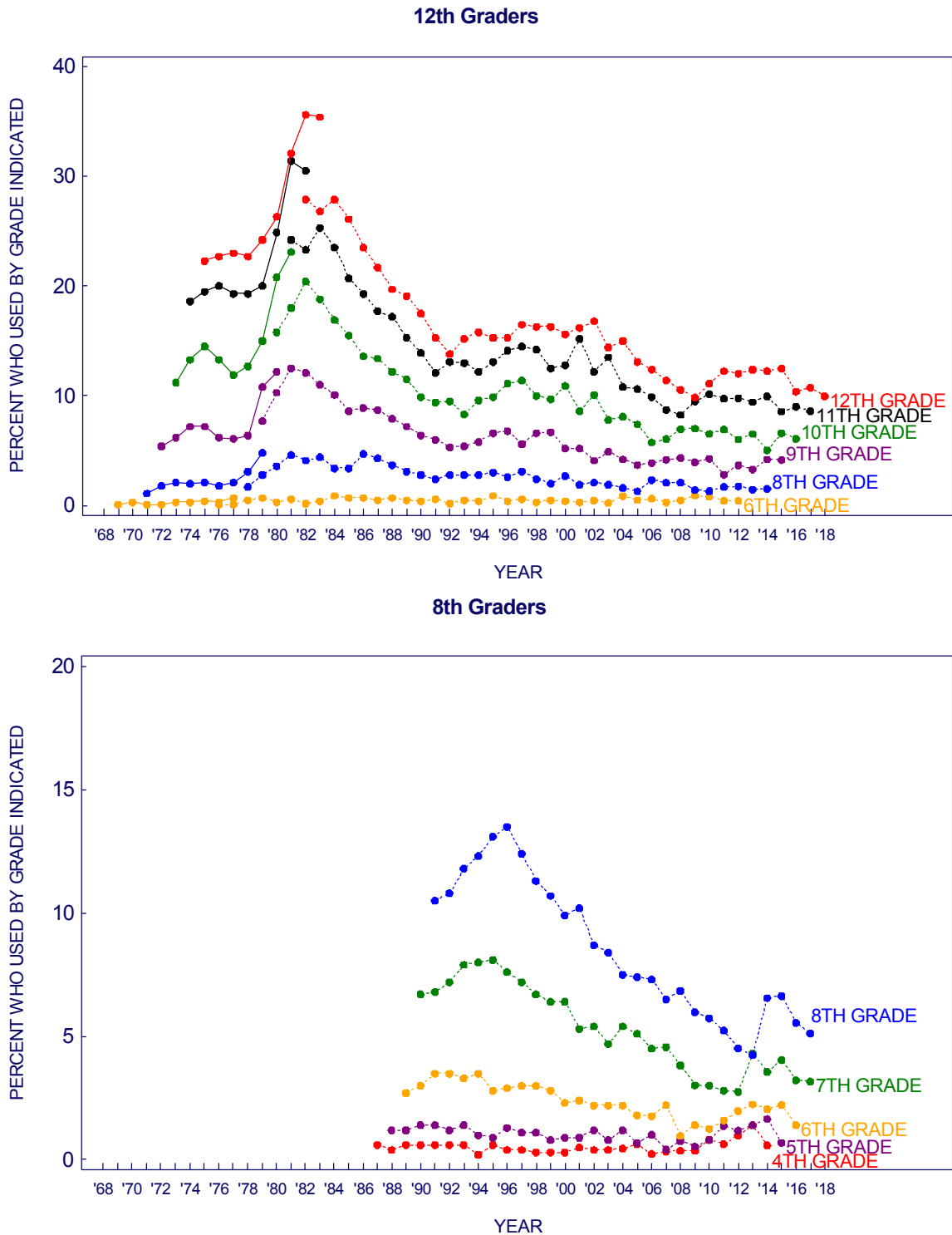


Source. The Monitoring the Future study, the University of Michigan.

Note. Beginning in 2002, a revised set of questions on narcotics other than heroin was introduced. The dashed lines connect percentages that are based on data from the revised questions.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-15
Amphetamines
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders

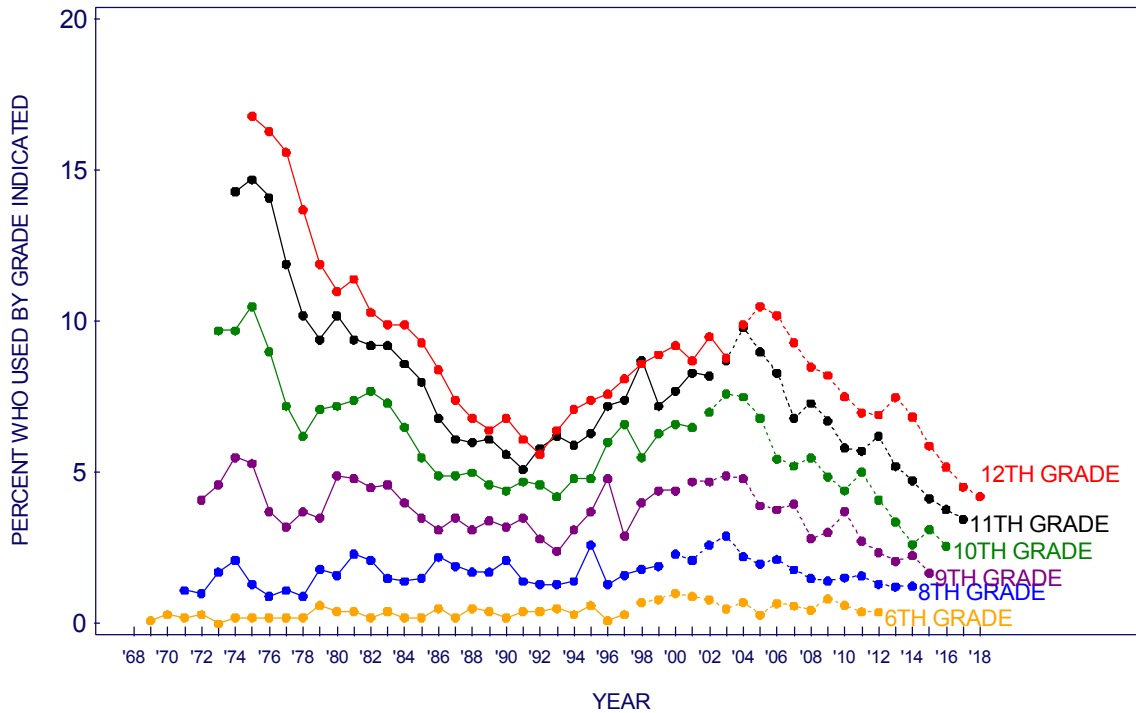


Source. The Monitoring the Future study, the University of Michigan.

Note. The dashed lines connect percentages that result if nonprescription stimulants are excluded.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-16
Sedatives (Barbiturates)
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders

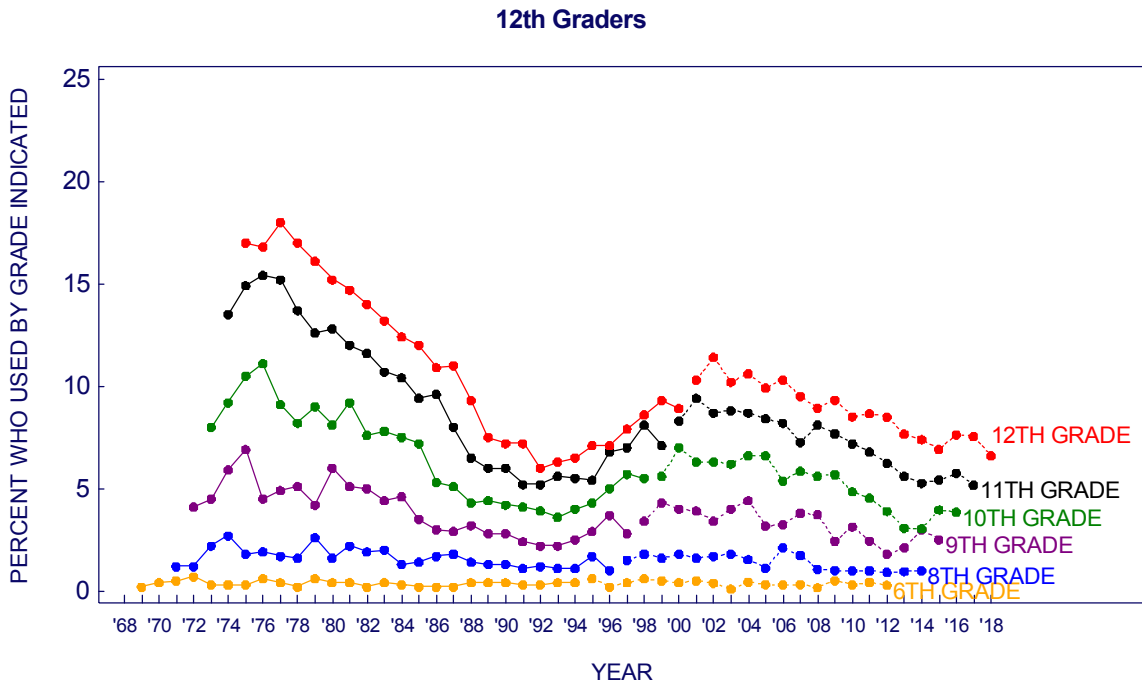


Source. The Monitoring the Future study, the University of Michigan.

Note. Beginning in 2004, a revised set of questions on sedatives (barbiturates) was introduced. The dashed lines connect percentages that are based on data from the revised questions.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-17
Tranquilizers
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.

Note. Beginning in 2001, a revised set of questions on tranquilizer use was introduced, in which Xanax replaced Miltown in the list of examples. The dashed lines connect percentages that are based on data from the revised questions.

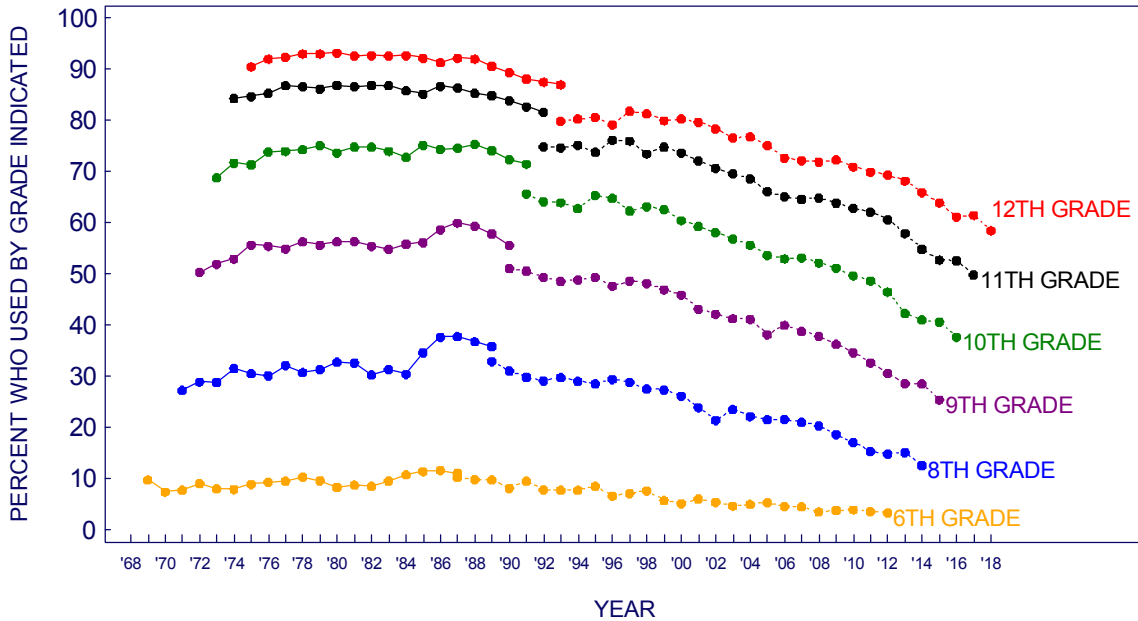
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-18

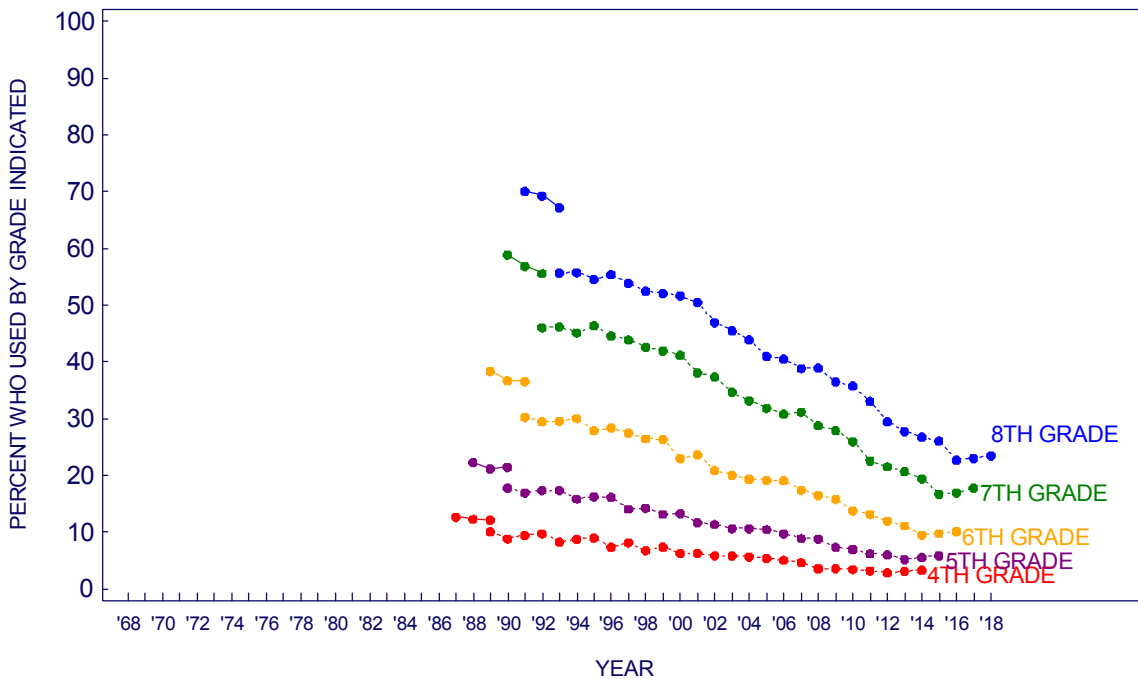
Alcohol

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**

12th Graders



8th Graders



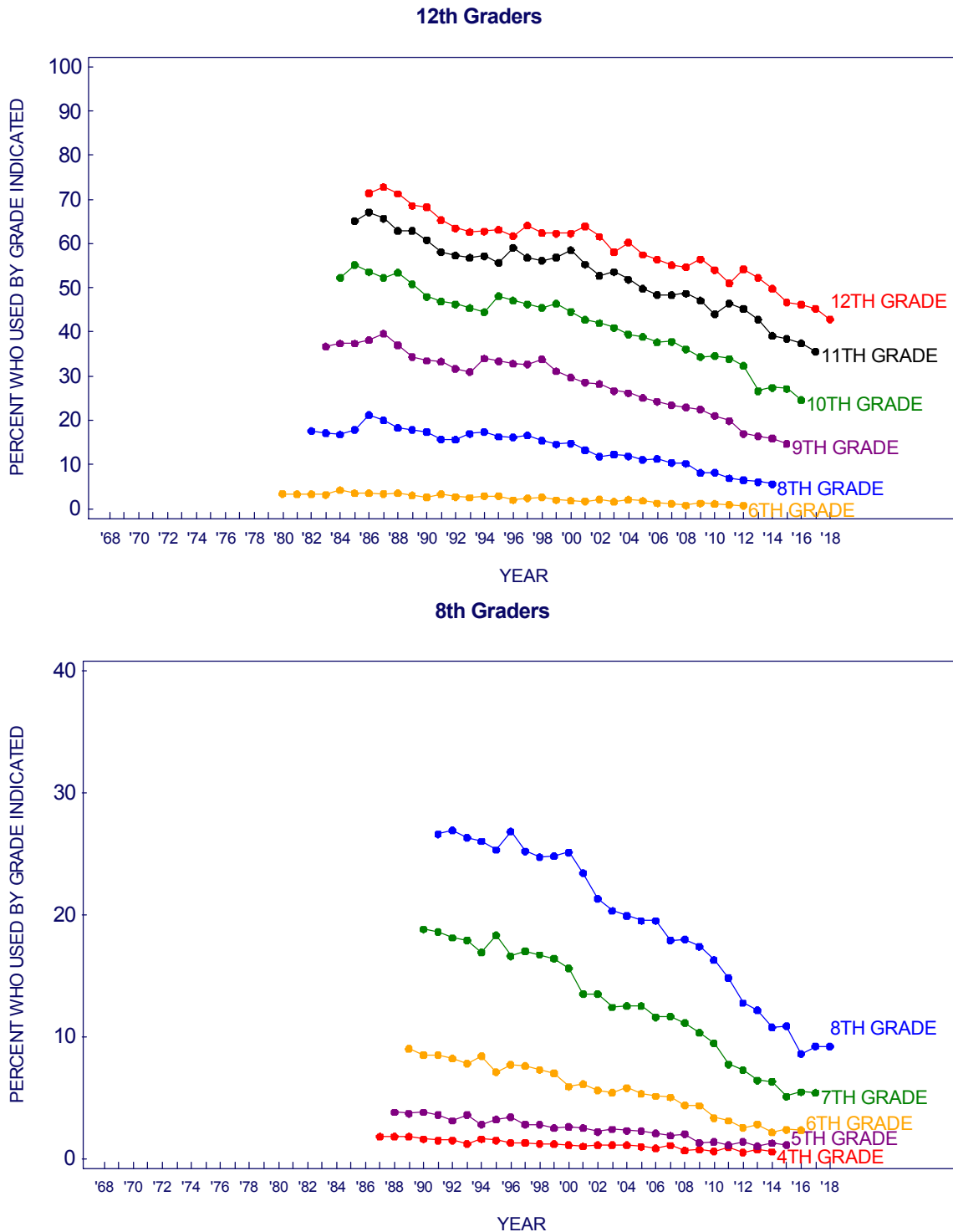
Source. The Monitoring the Future study, the University of Michigan.

Note. Beginning in 1993, a revised set of questions on alcohol use was introduced, in which

respondents were told that an occasion of use meant more than just a few sips. The dashed lines connect percentages that are based on data from the revised questions. See text for details.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-19
Been Drunk
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders

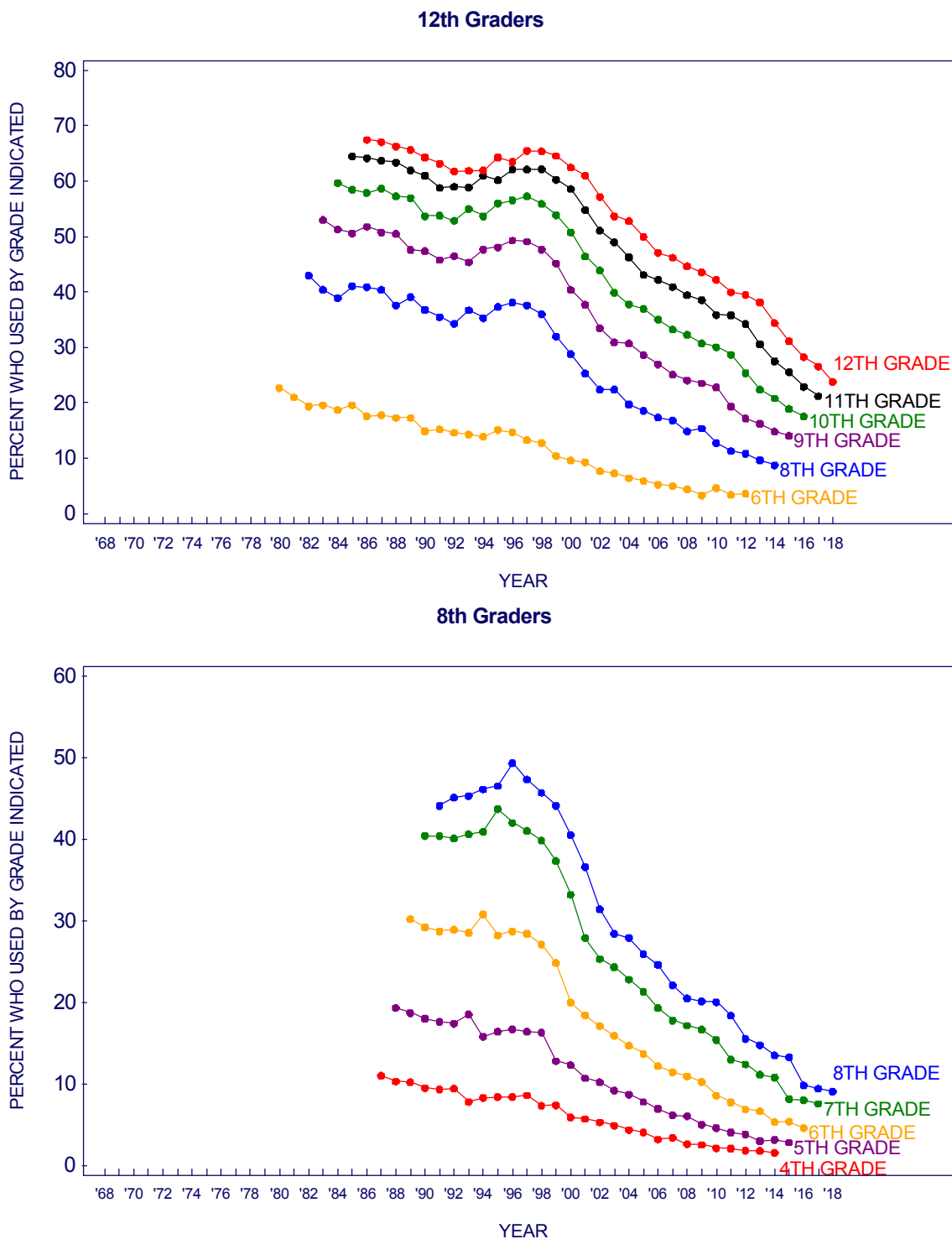


Source. The Monitoring the Future study, the University of Michigan.
 *For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-20

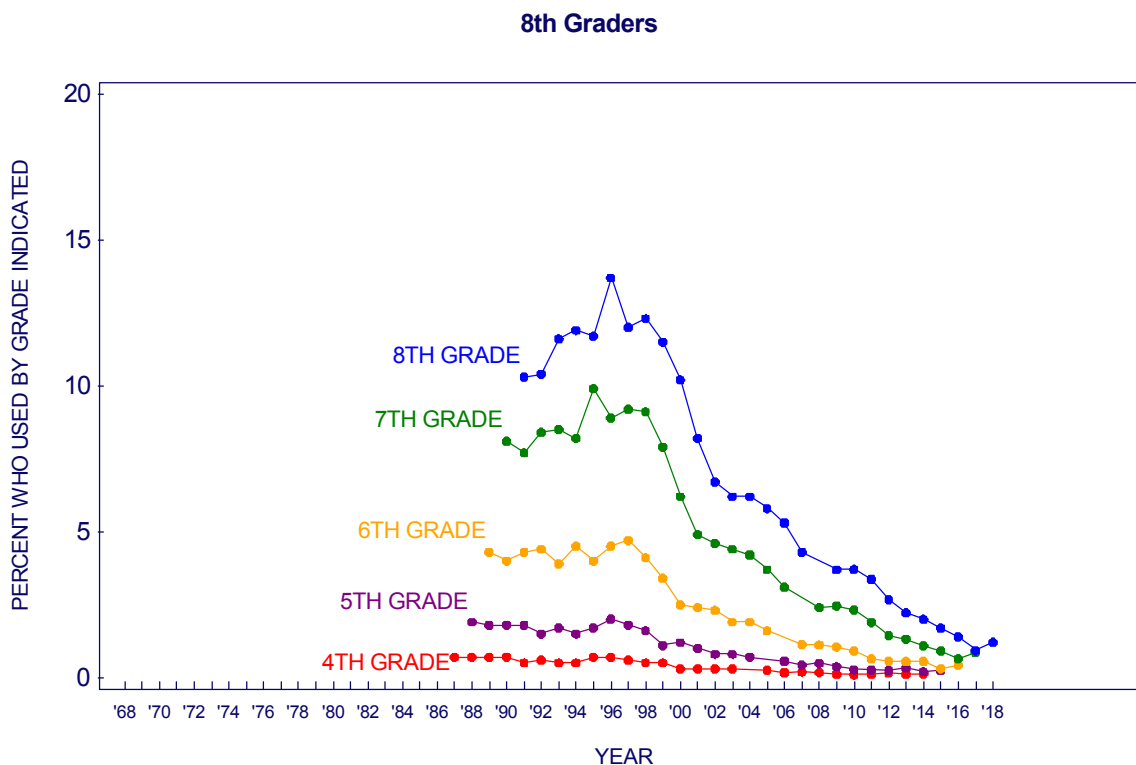
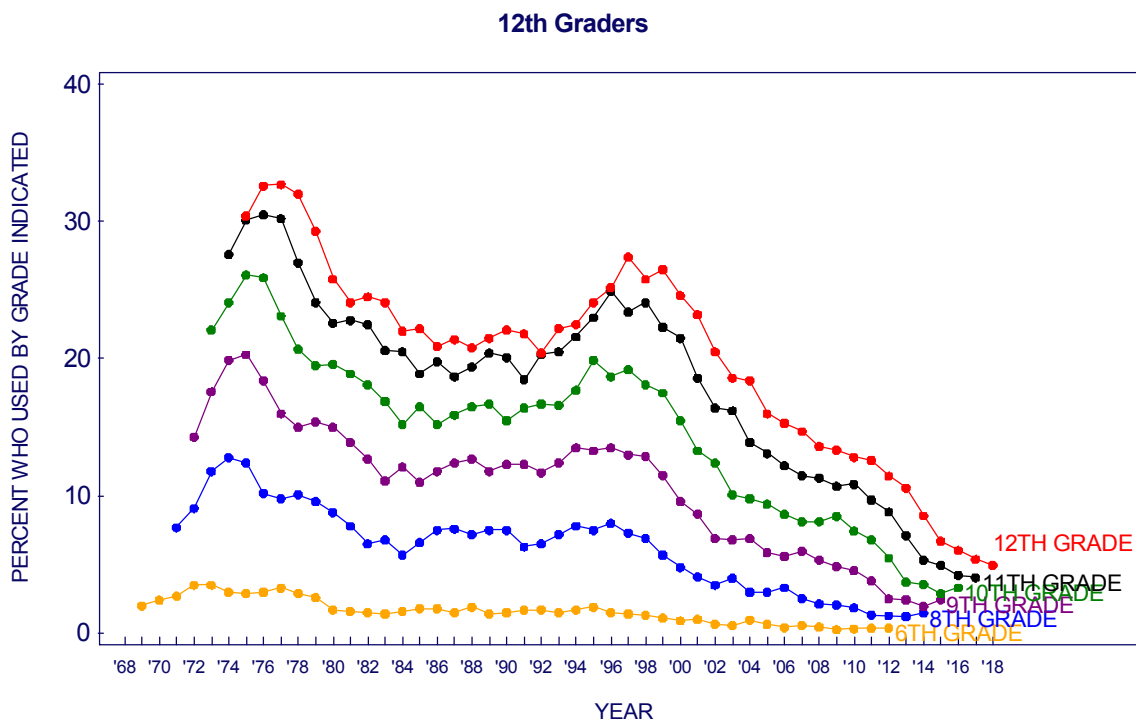
Cigarettes

**Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders**



Source. The Monitoring the Future study, the University of Michigan.
*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

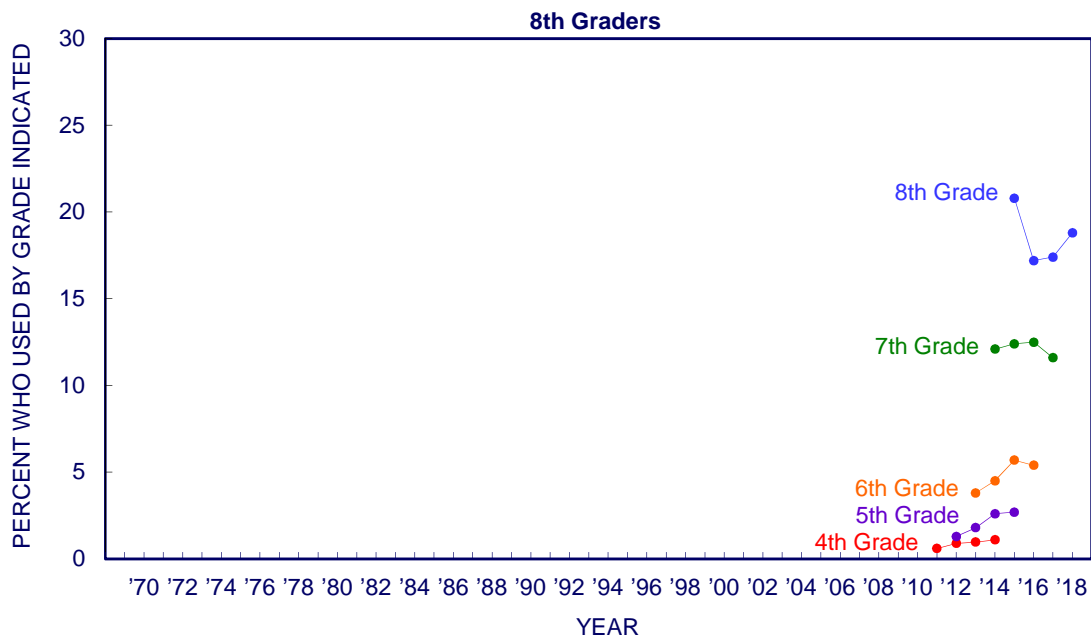
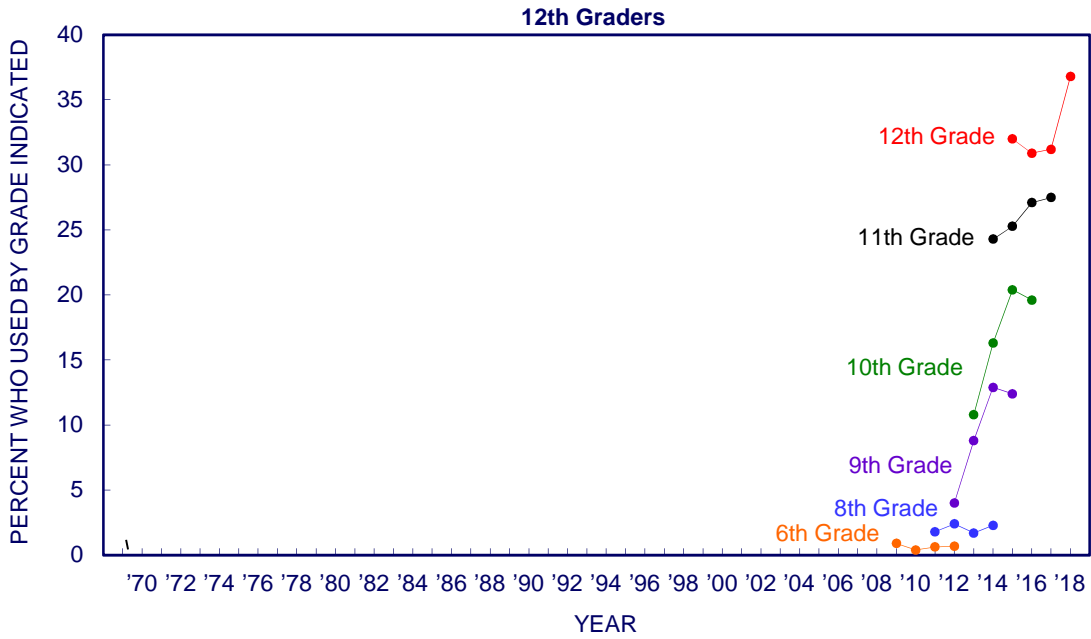
FIGURE 6-21
Cigarette Smoking on a Daily Basis
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.
 *For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

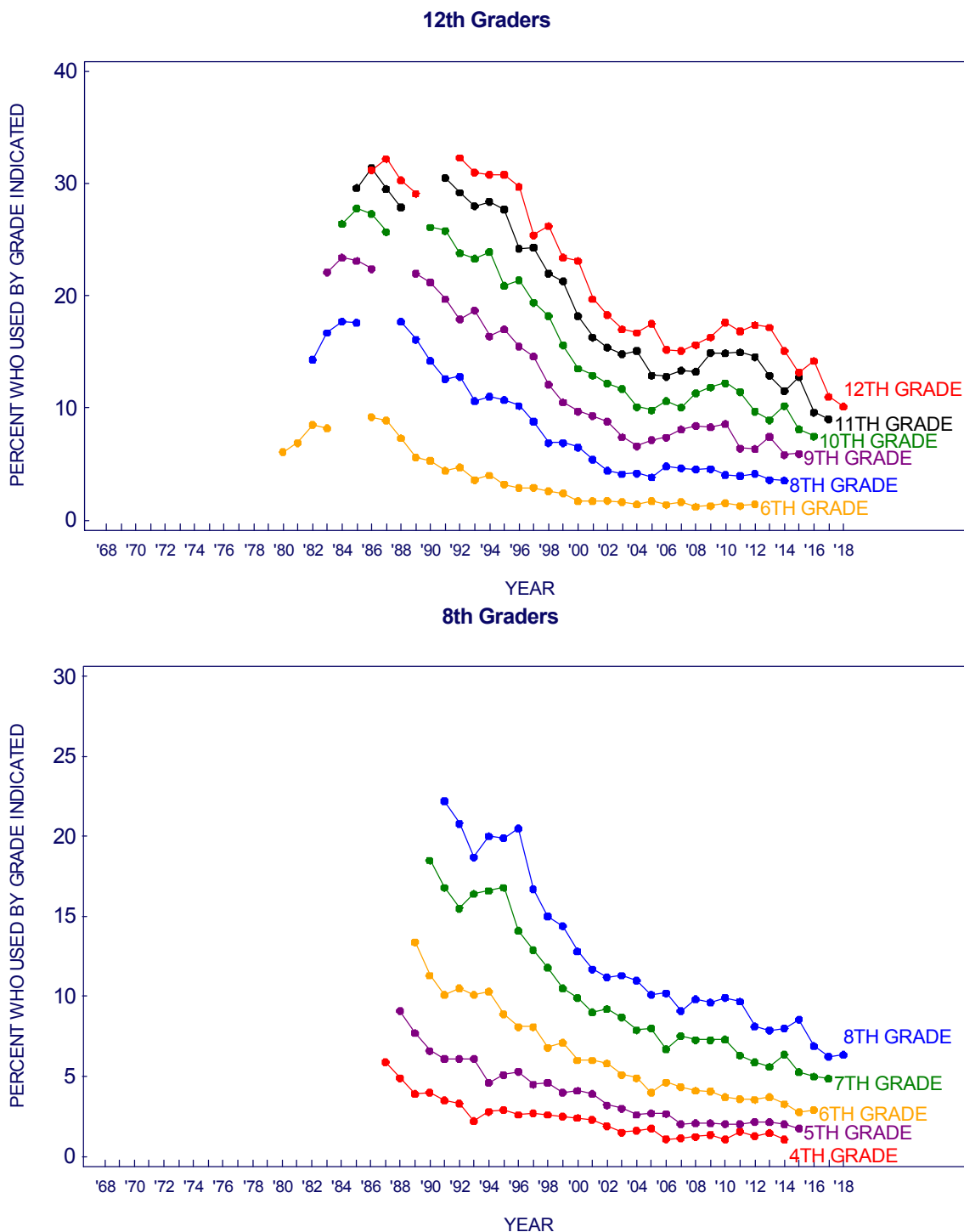
FIGURE 6-22
E-Cigarettes

Trends in Lifetime Prevalence for Earlier Grade Levels
based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 6-23
Smokeless Tobacco
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders

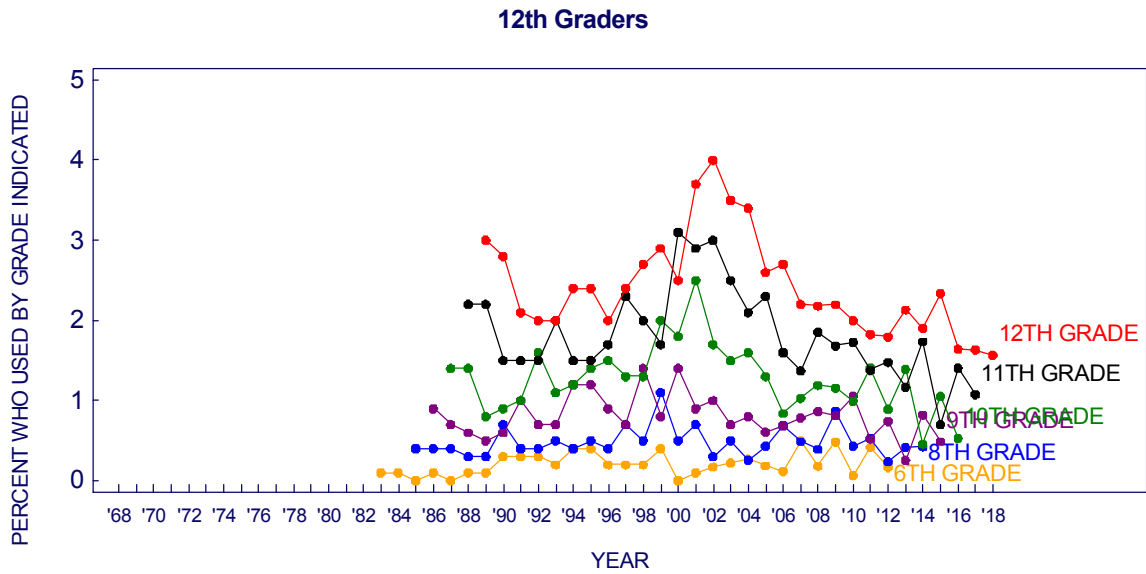


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence of smokeless tobacco was not asked of 12th graders in 1990 and 1991. Prior to 1990, the prevalence question on smokeless tobacco was located near the end of one 12th-grade questionnaire form, whereas after 1991 the question was placed earlier and in a different form. This shift could explain the discontinuity between the corresponding lines for each grade.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-24
Steroids
Trends in Lifetime Prevalence at Earlier Grade Levels*
based on Retrospective Reports from 12th Graders



Source. The Monitoring the Future study, the University of Michigan.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

Chapter 7

DEGREE AND DURATION OF DRUG HIGHS

Among the reasons given by adolescents for using different drugs,^{1,2,3,4} achieving an altered state of consciousness or "getting high" is a central objective for many. MTF assesses the degree or duration of highs experienced by 12th graders, both as trends at the population level and in terms of variation from drug to drug. Measuring these subjective experiences and monitoring changes in them over time, as MTF has done for many years, can be helpful from epidemiological and policy perspectives. Although these data do not address the many qualitative differences in the experience of being high, they provide a useful description of two important dimensions: degree and duration. Twelfth-grade respondents are asked in one of the six questionnaire forms to indicate how high they usually get and how long they usually stay high for each of seven different classes of drugs (in previous years the survey also asked about LSD, but these questions were discontinued in 2015 to make room for other survey questions). The term "high" is not defined for the respondent, but we assume that people interpret it as the degree to which normal cognitive functioning and affective states are altered by taking the drug.

DEGREE AND DURATION OF HIGHS AMONG 12th GRADERS IN 2018

Figure 7-1 shows the proportion of 2018 12th grade users who said that they *usually* get "very," "moderately," "a little," or "not at all" high when they use a given type of drug. The percentages are based on all respondents who reported use of each given drug class in the previous 12 months, and each bar totals to 100%. The order of the drugs from left to right is based on the percentage of users of each drug who reported that they usually get "very" high. The reader is advised to note the sample sizes provided in the tables in this chapter, as these statistics are based on self-reported use in only one of six questionnaire forms. For example, in recent years, only alcohol and marijuana have more than 100 respondents per year (700 or more for marijuana and 1100 or more for alcohol). When percentages are based on limited sample sizes, the fluctuation from year to year due to random sample differences is larger than occurs in most other MTF measures.

Tables 7-1 through 7-8 provide the percentages of recent users giving each answer for each drug. The tables also show what percentage of all 12th graders are reporting getting high to varying degrees from using each drug.

- **Hallucinogens** and **heroin** usually produce the most intense highs. In 2018, a large proportion of users of **hallucinogens other than LSD** (53%) said that they usually get very high. In past years, similarly high levels were reported by users of **LSD**, which was omitted from this portion of the survey beginning in 2015 because of lack of historical variation

¹ Patrick, M. E., Miech, R. A., Carlier, C., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2016). [Self-reported reasons for vaping among 8th, 10th, and 12th graders in the U.S.: Nationally-representative results](#). *Drug and Alcohol Dependence*, 165, 275-278.

² Terry-McElrath, Y. M., O'Malley, P. M., & Johnston, L. D. (2009). [Reasons for drug use among American youth by consumption level, gender, and race/ethnicity: 1976-2005](#). *Journal of Drug Issues*, 39(3), 677-714.

³ Patrick, M. E., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (2011). [Adolescents' reported reasons for alcohol and marijuana use as predictors of substance use and problems in adulthood](#). *Journal of Studies on Alcohol and Drugs*, 72(1), 106-116.

⁴ Johnston, L. D., & O'Malley, P. M. (1986). [Why do the nation's students use drugs and alcohol? Self-reported reasons from nine national surveys](#). *Journal of Drug Issues*, 16, 29-66.

and to make room for questions on other drugs. Similarly, high levels also had been seen among users of *heroin*, which was omitted from this section beginning in 1982 because of the small number of cases available each year.

- *Marijuana* is next in degree of highs produced, as measured by the proportion who reported getting very high (25%).
- *Tranquilizers* follow next in degree of highs produced. The proportion of users reporting that they get very high was 23%, and another 39% reported getting moderately high.
- *Cocaine* ranks fourth in terms of users getting very high, at 15%.
- *Narcotics other than heroin* and then *amphetamines* follow cocaine in terms of the magnitude of the highs reported. Twelve percent of users of narcotics other than heroin reported getting very high and another 47% reported getting moderately high, so narcotics other than heroin ranked fourth for the proportion of users who report getting either moderately or very high. The proportion of 12th grade amphetamine users getting very high was 12%.
- Relatively few of the large proportion of 12th graders who use *alcohol* said that they usually get very high when drinking (10%), although about four in ten (42%) said they usually get moderately or very high. For a given individual, we would expect more variability in the degree of intoxication achieved with alcohol from occasion to occasion than with most other drugs. Therefore, many drinkers probably get very high at least sometimes, even if that is not “usually” the case, which is what the question asks. Certainly the prevalence of binge drinking (having five or more drinks in a row) and self-reported drunkenness would suggest that to be the case.

Figure 7-2 presents data from 12th graders in 2018 on the *duration* of highs usually experienced, as reported by past-year users of each drug class. The drugs are arranged in the same order as in Figure 7-1 on the degree of highs to permit an examination of the correspondence between degree and duration of highs.

- *Hallucinogens other than LSD* topped all other drugs in length of high, as they did for degree of highs obtained. *LSD* tended to rank similarly when it was included on the list in earlier years.
- The duration of highs from *marijuana* is not long compared to the durations of highs from other drugs. About half of marijuana users (48%) said they usually stay high one to two hours. Still, more than one out of three users (37%) reported usually staying high three to six hours, and another 7% usually stayed high for seven hours or more.
- *Cocaine* users have generally reported staying high for shorter periods, despite having more intense highs relative to users of many other drugs. In 2018, 57% reported staying high for one to two hours, 16% for three to six hours, and 3% for seven or more hours. (Note that these results are based on only 49 cases.)

- As shown in Figure 7-2, significant proportions of users of three psychotherapeutic drugs (*tranquilizers*, *amphetamines*, and *narcotics other than heroin*) say that they do not usually get high when using them outside of medical supervision, likely indicating that they are using them to self-medicate. However, at the same time a substantial portion of those 12th grade students who use these drugs outside of medical supervision report staying high for three or more hours (e.g., 63% for tranquilizers, 52% for amphetamines, and 54% for narcotics other than heroin).
- A significant proportion of *alcohol* users also say that they usually do not get high when using alcohol.

In sum, drugs vary considerably in both degree and duration of highs obtained. For many drugs, sizeable proportions of users respond that they usually get high for at least three hours per occasion. And for some drugs – particularly *LSD* and *hallucinogens other than LSD* – appreciable proportions usually stay high for seven hours or more.

TRENDS IN THE DEGREE AND DURATION OF DRUG HIGHS

Since 1975, when the MTF study began, many important shifts have occurred in the degree and duration of highs usually experienced by young people. Only 12th grade students who reported using the drug in question during the prior 12 months answer these questions.

Results for each of the classes of drugs for which degree and duration of highs have been asked are provided in Tables 7-1 through 7-8. Each of these tables presents trends in two ways. First, the results are shown as a percentage of *past-year* users of each drug in order to indicate any changes in the experiences among fairly recent users and to provide some indication of changes in the quantity of the active ingredient consumed by users. Results are also displayed as a percentage of *all* respondents answering that questionnaire form, thereby indicating experiences of drug-induced highs as proportions of the entire population under study.

- The *degree* of highs usually attained by *marijuana* users remains at high levels first established in the early 2000s, and has not shown a consistent increase or decline since then (Table 7-1 and Figure 7-3). The proportion of marijuana users usually getting “moderately” or “very” high has fluctuated around 74% for the last decade and a half, a level higher than any other period covered by the survey. Prior to the early 2000s, the degree of highs obtained by adolescents tracked loosely with overall marijuana prevalence, with degree of highs increasing as prevalence increased and vice-versa. During the 1990s drug relapse, the percentage of 12th grade students getting moderately or very high increased from around 65% at the start of the 1990s to 75% at the end, at a time when marijuana prevalence increased. Previous to the relapse, from the late 1970s through the 1980s, the degree of highs obtained showed an overall decline and leveling, as prevalence declined and leveled during this period.

The trend in *duration* of highs from marijuana use is similar to that for degree. The proportion of users saying they stay high three or more hours was roughly level over the past 16 years, fluctuating around 43%. Prior to the early 2000s, duration of highs tracked

with overall prevalence of use, with increases in both during the 1990s relapse and decreases in both from the late 1970 through the 1980s. The decrease was likely due in part to the increasing number of 12th graders using marijuana and using it lightly, and in part due to a general shift toward less intense use, even within the segment most prone toward marijuana use.⁵ The proportion of users staying high three or more hours reached a low of 35% in 1988, in contrast to a high of 52% at the very start of the survey in 1975. Importantly, duration of highs from marijuana use today are not the highest recorded, a distinction that belongs to the mid-1970s.

Both degree and duration of highs from marijuana track only weakly, if at all, with the substantial increase in THC (tetrahydrocannabinol) content of marijuana over the four decades of the survey. The Marijuana Potency Program, sponsored in part by the National Institute on Drug Abuse (NIDA), has analyzed tens of thousands of cannabis preparations confiscated by U.S. law enforcement. In 1975 the average concentration of THC in seized samples was 0.74%, and steadily climbed thereafter to 2.82% in 1985, 3.75% in 1995, 7.2% in 2005, and nearly 13% in 2013.^{6,7,8,9,10} As shown above, no such 15-fold increase is present in the degree and duration of marijuana highs reported by adolescents. Taken as a whole, these results suggest that adolescent marijuana users titrate their intake to achieve a degree and duration of high that has changed little over the course of the survey in comparison to the substantial changes in marijuana potency over the years.

- For *hallucinogens other than LSD*, 2018 marked the lowest level ever recorded in the percentage of users who reported getting moderately or very high, at 71%. A decline overall in this degree of high is apparent starting around the year 2000 when it was 94%, although year-to-year changes fluctuate considerably due to small sample sizes. Duration of high has also declined; in 2018 79% of users reported staying high three or more hours, compared to 88% in 2000. This decline in duration over the past two decades has also fluctuated considerably year-to-year due to small sample sizes. These declines in both degree and duration correspond with an overall decline in annual prevalence.
- Both degree and duration of highs associated with *cocaine* use in 2018 were at the lowest levels ever recorded by the survey (Table 7-4). Nineteen percent of 12th graders who used cocaine in the last 12 months reported that they stayed high three or more hours. This compares with a level of 45% in 2000. The low level in 2018 should be interpreted with caution because of considerable year-to-year variation due to small sample sizes that result from a prevalence of less than 3% over the past decade. Although the trend is somewhat noisy, duration of cocaine highs shows an overall decline since 2000, as has overall prevalence. About half (49%) of 12th grade students who used cocaine in the last 12 months

⁵ For detailed interpretations of the data for these years, please refer to Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1984). *Drugs and American high school students: 1975-1983* (DHHS Publication No. [ADM] 85-1374). Rockville, MD: National Institute on Drug Abuse, pp. 82-83.

⁶ <https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-addictive>

⁷ ProCon.org. (April 2009). [Average marijuana potency by year, 1975-2003](#).

⁸ Mehmedic, Z., Chandra, S., Slade, D., Denham, H., Foster, S., Patel, A. S., & ElSohly, M. A. (2010). [Potency trends of delta 9-THC and other cannabinoids in confiscated cannabis preparations from 1993 to 2008](#). *Journal of Forensic Sciences*, 55(5), 1209-1217.

⁹ Helleman, C. (2013, August 9). [Is super weed, super bad?](#) CNN.

¹⁰ The Marijuana Potency Program has stopped analyzing samples due to lack of funding, but continues to collect samples that it will analyze if funding is renewed.

reported getting moderately or very high from *cocaine* use in 2018, the lowest level recorded for this measure. Levels of degree for highs from cocaine were also a record low in 2018, which may mark the beginning of a downward trend in this outcome if low levels continue in future years. Previous to the mid-1980s, when cocaine was at its height of popularity, the reported degree of the high from cocaine use was greater, and the duration longer. The degree and duration of highs after the mid-1980s may have decreased as growing concerns about the dangers of cocaine use led the declining numbers of users to become more moderate in their use for fear of it leading to addiction.

- The proportion of 12th grade students reporting that they get very high from the use of *narcotics other than heroin* has typically been between 10% and 20% since 2002, and in 2018 was 12% (Table 7-5). Duration over the same time period has not moved in any consistent direction, and the proportion reporting a high lasting seven hours or more was 6% in 2018. Previously, over a 17- year period from 1975 through 1992, a substantial decline occurred in both the degree and duration of highs. In 1975, 39% of past-year users said they usually got “very high” compared to only 12% in 1992. The proportion usually staying high for seven or more hours dropped from 28% in 1975 to 11% in 1992. This shift was due, in part, to a substantial increase in the proportion of users who said they do not take these drugs “to get high” (4% in 1975, increasing to 28% by 1992). Because the actual prevalence of narcotic use dropped only modestly over that interval, these findings suggest that an increase in use for self-medication may have masked a larger decrease in recreational use than is apparent from the prevalence data. During the 1990s, the percent of users of narcotics other than heroin who said that they “usually don’t get high” declined some (from 39% in 1990 to 23% in 2000), while somewhat more said that they get high for three to six hours (29% in 1990, 43% in 2000).
- Degree and duration of highs from *amphetamines* have tracked closely with trends in overall prevalence, and today both stand at levels in between the lows established in the early 1990s and the highs present at the beginning of the MTF annual surveys in 1975 (Table 7-6).¹¹ The proportion of 12th grade users who reported getting “moderately” or “very” high was about one-third (35%) in 2018. The proportion of users reporting a high lasting seven hours or longer has fluctuated widely around 25% since 2000 (the variability results in part from the small sample sizes of users). As with degree of high, this proportion was lowest in the early 1990s (it was 9.9% in 1993) and highest at the start of the survey (when it was 41%).
- Both degree and duration of highs achieved by *tranquilizer* use are at or near the highest levels recorded by the survey (Table 7-7). In 2018, the percentage who used tranquilizers outside of a doctor’s orders and reported getting moderately or very high tied the record set in 2009, at 62%. This high estimate is likely a result of random sampling fluctuation, given the absence of any strong trend since 2000 and no increase in tranquilizer use over the past ten years. In the past this proportion has varied over time with use levels. It reached

¹¹ In 1982, the questionnaire form containing the questions on degree and duration of highs clarified the amphetamine usage questions in order to eliminate the inappropriate inclusion of nonprescription amphetamines. One might have expected this change to have increased the degree and duration of highs being reported, given that real amphetamines would be expected to have greater psychological impact on average; but the trends still continued downward that year.

a record low of 18% in 1991, when use levels for most drugs were approaching historic lows in the late 1980s. The proportion then increased substantially during the 1990s drug relapse, reaching a level of 59% in 1999. The proportion getting moderately or very high has averaged around 54% since then, with considerable variability from year to year.

Duration has followed a similar trend. The percentage of users who reported getting high for one to six hours reached a low of 38% in 1992 when use was low, and then reached a record high of 80% in 2000 when use levels were peaking. Since then overall use has decreased and the percentage of users reporting getting high for one to six hours has hovered near 60%, with substantial variability in the estimates as a result of small sample sizes for users.

- The proportion of 12th grade users who usually stayed high on *alcohol* for seven hours or more was 6% in 2018, where it has hovered over the past two decades (Table 7-8). The proportion of all 12th grade alcohol users who reported getting very high was 10% in 2018, which is in the middle of the 7% to 13% range seen throughout the life of the study.
- As mentioned previously, given the low prevalence levels, questions on the degree and duration of highs from *LSD* were discontinued in 2015 to make room for other survey questions. No clearly discernible long-term pattern was present in the degree of highs reported by LSD users – substantial proportions of users every year reported intense highs – but the average duration of highs declined considerably since the late 1990s (Table 7-2). After 2001, the prevalence of LSD use declined sharply, which in turn is reflected in the decreased proportion of all respondents saying that they got high at all on LSD. The average duration of LSD highs declined some from the mid-1990s to 2014.

TABLE 7-1
MARIJUANA
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

→
(Years cont.)

<i>When you use marijuana or hashish how high do you usually get? ^a</i>	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<i>% of Recent Users</i>																						
Not at all high	6.9	5.7	7.5	6.3	6.0	6.3	4.9	4.6	6.6	6.8	7.2	5.1	6.8	6.6	7.6	5.8	7.2	7.8	9.0	7.0	8.1	5.7
A little high	22.1	20.9	22.5	20.3	22.5	23.5	29.0	26.3	29.4	29.0	27.2	27.6	29.5	30.2	22.8	23.2	21.6	25.9	19.4	21.7	22.3	17.9
Moderately high	45.5	47.7	43.5	46.8	47.5	47.7	45.7	45.6	41.9	36.9	41.8	43.8	40.9	40.3	44.1	40.8	42.8	39.3	45.9	40.6	40.8	47.5
Very high	25.5	25.7	26.5	26.6	24.0	22.6	20.4	23.5	22.0	27.4	23.8	23.5	22.9	22.9	25.5	30.3	28.4	27.0	25.8	30.7	28.8	28.9
Approximate weighted N =	1,142	1,266	1,448	1,873	1,606	1,495	1,607	1,588	1,366	1,264	1,298	1,177	1,174	1,142	782	694	591	605	669	779	916	788
<i>% of All Respondents</i>																						
No use in last 12 months	60.0	55.5	52.4	49.8	49.4	52.4	53.2	54.7	58.2	59.9	59.0	61.2	63.5	64.9	71.6	72.7	76.2	76.8	74.8	69.6	64.1	66.5
Not at all high	2.8	2.5	3.6	3.2	3.0	3.0	2.3	2.1	2.8	2.7	2.9	2.0	2.5	2.3	2.2	1.6	1.7	1.8	2.3	2.1	2.9	1.9
A little high	8.8	9.3	10.7	10.2	11.4	11.2	13.6	11.9	12.3	11.6	11.2	10.7	10.7	10.6	6.5	6.3	5.1	6.0	4.9	6.6	8.0	6.0
Moderately high	18.2	21.2	20.7	23.5	24.0	22.7	21.4	20.6	17.5	14.8	17.2	17.0	14.9	14.1	12.5	11.1	10.2	9.1	11.6	12.4	14.7	15.9
Very high	10.2	11.4	12.6	13.4	12.2	10.8	9.6	10.6	9.2	11.0	9.8	9.1	8.4	8.1	7.2	8.3	6.7	6.3	6.5	9.3	10.4	9.7
Approximate weighted N =	2,855	2,845	3,042	3,731	3,175	3,143	3,437	3,506	3,268	3,154	3,163	3,033	3,219	3,250	2,755	2,542	2,487	2,614	2,655	2,558	2,549	2,355
 <i>When you use marijuana or hashish how long do you usually stay high? ^a</i>																						
<i>% of Recent Users</i>																						
Usually don't get high	8.5	8.0	9.5	8.0	8.4	8.5	7.6	7.0	9.9	9.6	9.3	8.2	11.1	9.6	10.8	7.8	8.5	9.5	10.9	9.5	8.7	6.4
One to two hours	39.7	43.2	42.6	47.4	48.7	51.7	52.5	53.8	55.6	51.7	52.4	55.0	52.9	56.0	51.9	53.3	49.5	47.2	48.6	47.4	46.0	46.9
Three to six hours	45.4	43.7	42.7	39.0	37.4	35.0	35.7	34.2	30.4	33.1	34.0	32.9	32.2	30.2	33.3	33.1	34.4	37.7	36.8	36.1	37.6	39.3
Seven to 24 hours	5.9	4.9	4.7	5.1	5.0	4.1	4.0	4.5	3.5	5.0	3.9	3.3	3.7	3.8	3.3	5.4	6.9	4.9	3.2	5.5	6.7	6.2
More than 24 hours	0.5	0.2	0.6	0.5	0.5	0.7	0.2	0.5	0.6	0.7	0.4	0.6	0.1	0.4	0.8	0.4	0.8	0.8	0.4	1.4	1.0	1.2
Approximate weighted N =	1,141	1,261	1,449	1,873	1,619	1,500	1,607	1,593	1,357	1,268	1,295	1,176	1,172	1,147	787	694	589	602	666	774	911	789
<i>% of All Respondents</i>																						
No use in last 12 months	60.0	55.5	52.4	49.8	49.2	52.3	53.2	54.6	58.4	59.9	59.0	61.2	63.6	64.8	71.5	72.7	76.3	76.9	74.9	69.7	64.2	66.5
Usually don't get high	3.4	3.6	4.5	4.0	4.3	4.0	3.6	3.2	4.1	3.8	3.8	3.2	4.0	3.4	3.1	2.1	2.0	2.2	2.7	2.9	3.1	2.1
One to two hours	15.9	19.2	20.3	23.8	24.7	24.6	24.5	24.4	23.1	20.7	21.5	21.3	19.3	19.7	14.8	14.6	11.7	10.9	12.2	14.4	16.5	15.7
Three to six hours	18.2	19.4	20.3	19.6	19.0	16.7	16.7	15.5	12.7	13.3	13.9	12.8	11.7	10.7	9.5	9.0	8.1	8.7	9.2	11.0	13.5	13.2
Seven to 24 hours	2.4	2.2	2.2	2.6	2.5	2.0	1.9	2.0	1.4	2.0	1.6	1.3	1.3	1.3	0.9	1.5	1.6	1.1	0.8	1.7	2.4	2.1
More than 24 hours	0.2	0.1	0.3	0.3	0.2	0.3	0.1	0.2	0.3	0.3	0.2	0.2	0.0	0.1	0.2	0.1	0.2	0.2	0.1	0.4	0.4	0.4
Approximate weighted N =	2,853	2,834	3,044	3,731	3,188	3,149	3,437	3,511	3,259	3,158	3,160	3,032	3,218	3,255	2,760	2,542	2,485	2,611	2,652	2,553	2,544	2,356

(Table continued on next page.)

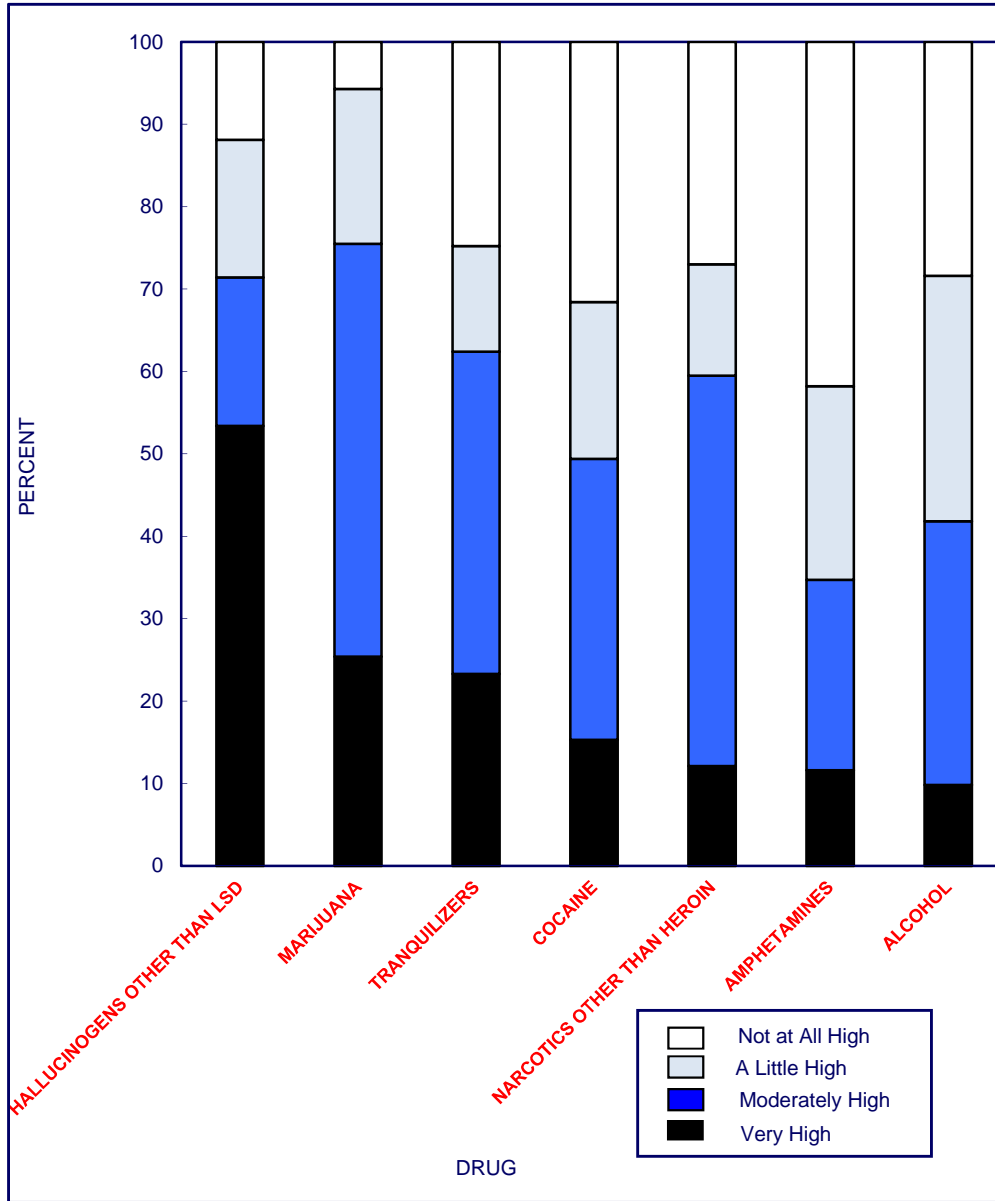
TABLE 7-2
LSD
Trends in Degree and Duration of Feeling High in Grade 12
(Entries are percentages.)

→
(Years cont.)

When you take LSD how high do you usually get? ^a	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
% of Recent Users																						
Not at all high	0.2	1.7	1.6	0.5	2.8	2.0	1.6	2.7	0.0	2.5	1.2	3.3	2.5	1.3	4.9	0.6	4.0	1.7	1.8	1.1	3.0	4.0
A little high	4.8	1.9	7.4	4.9	8.4	5.0	9.6	4.1	4.2	5.6	3.7	4.1	4.3	4.1	6.6	2.0	6.9	2.9	10.8	6.3	7.4	5.2
Moderately high	16.2	22.4	19.3	24.7	14.9	23.4	23.3	26.4	26.9	24.8	16.2	23.3	21.9	20.4	17.4	33.8	23.0	32.4	30.1	29.3	21.7	20.6
Very high	78.8	73.9	71.7	69.9	73.9	69.5	65.5	66.8	68.9	67.1	78.9	69.3	71.4	74.2	71.1	63.6	66.2	63.1	57.4	63.2	67.9	70.2
Approximate weighted N =	213	193	183	223	228	228	236	249	200	168	151	168	192	175	133	138	140	146	209	175	205	184
% of All Respondents																						
No use in last 12 months	92.5	93.6	94.4	93.7	92.9	92.8	93.2	92.9	93.9	94.7	95.3	94.5	94.0	94.6	95.2	94.5	94.4	94.4	92.1	93.1	91.9	92.2
Not at all high	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.0	0.2	0.1	0.1	0.1	0.2	0.3
A little high	0.4	0.1	0.4	0.3	0.6	0.4	0.6	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.1	0.4	0.2	0.8	0.4	0.6	0.4
Moderately high	1.2	1.4	1.1	1.6	1.1	1.7	1.6	1.9	1.6	1.3	0.8	1.3	1.3	1.1	0.8	1.9	1.3	1.8	2.4	2.0	1.8	1.6
Very high	5.9	4.7	4.0	4.4	5.2	5.0	4.4	4.7	4.2	3.5	3.7	3.8	4.3	4.0	3.4	3.5	3.7	3.5	4.5	4.3	5.5	5.5
Approximate weighted N =	2,840	3,016	3,268	3,540	3,228	3,182	3,488	3,506	3,277	3,166	3,179	3,060	3,214	3,271	2,763	2,527	2,494	2,619	2,655	2,547	2,517	2,347
When you take LSD how long do you usually stay high? ^a																						
% of Recent Users																						
Usually don't get high	1.6	2.3	2.5	0.5	3.4	2.3	1.6	1.5	0.0	3.2	1.2	3.3	2.5	1.0	6.1	0.6	3.5	1.7	3.4	0.5	3.8	2.2
One to two hours	1.3	1.7	3.8	3.9	4.0	2.5	5.4	3.6	2.6	2.5	3.3	2.0	4.9	2.0	4.1	6.7	4.5	5.5	3.8	5.7	2.5	5.0
Three to six hours	22.7	30.7	30.5	31.9	33.1	34.6	35.5	30.7	43.6	29.4	32.4	32.8	27.6	28.2	19.2	24.4	16.0	21.4	27.7	20.1	21.1	19.6
Seven to 24 hours	69.8	59.9	59.8	58.5	52.1	55.4	54.6	62.5	49.3	60.9	60.3	59.8	59.4	64.3	65.9	63.1	73.8	66.3	62.3	70.6	67.0	70.0
More than 24 hours	4.6	5.5	3.4	5.3	7.4	5.2	2.9	1.7	4.6	4.0	2.8	2.2	5.6	4.5	4.7	5.2	2.2	5.0	2.9	3.0	5.7	3.3
Approximate weighted N =	215	193	182	224	228	226	236	252	199	168	153	168	191	178	133	137	141	147	205	176	203	186
% of All Respondents																						
No use in last 12 months	92.5	93.6	94.4	93.7	92.9	92.9	93.2	92.8	93.9	94.7	95.2	94.5	94.1	94.6	95.2	94.6	94.4	94.4	92.3	93.1	91.9	92.1
Usually don't get high	0.1	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.3	0.0	0.2	0.1	0.3	0.0	0.3	0.2
One to two hours	0.1	0.1	0.2	0.3	0.3	0.2	0.4	0.3	0.2	0.1	0.2	0.1	0.3	0.1	0.2	0.4	0.3	0.3	0.3	0.4	0.2	0.4
Three to six hours	1.7	2.0	1.7	2.0	2.3	2.5	2.4	2.2	2.6	1.6	1.6	1.8	1.6	1.5	0.9	1.3	0.9	1.2	2.1	1.4	1.7	1.6
Seven to 24 hours	5.2	3.8	3.3	3.7	3.7	3.9	3.7	4.5	3.0	3.2	2.9	3.3	3.5	3.5	3.2	3.4	4.2	3.7	4.8	4.9	5.4	5.6
More than 24 hours	0.3	0.4	0.2	0.3	0.5	0.4	0.2	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.2	0.3	0.1	0.3	0.2	0.2	0.5	0.3
Approximate weighted N =	2,867	3,016	3,250	3,556	3,227	3,180	3,487	3,509	3,276	3,166	3,181	3,060	3,214	3,274	2,763	2,526	2,495	2,619	2,651	2,548	2,515	2,349

(Table continued on next page.)

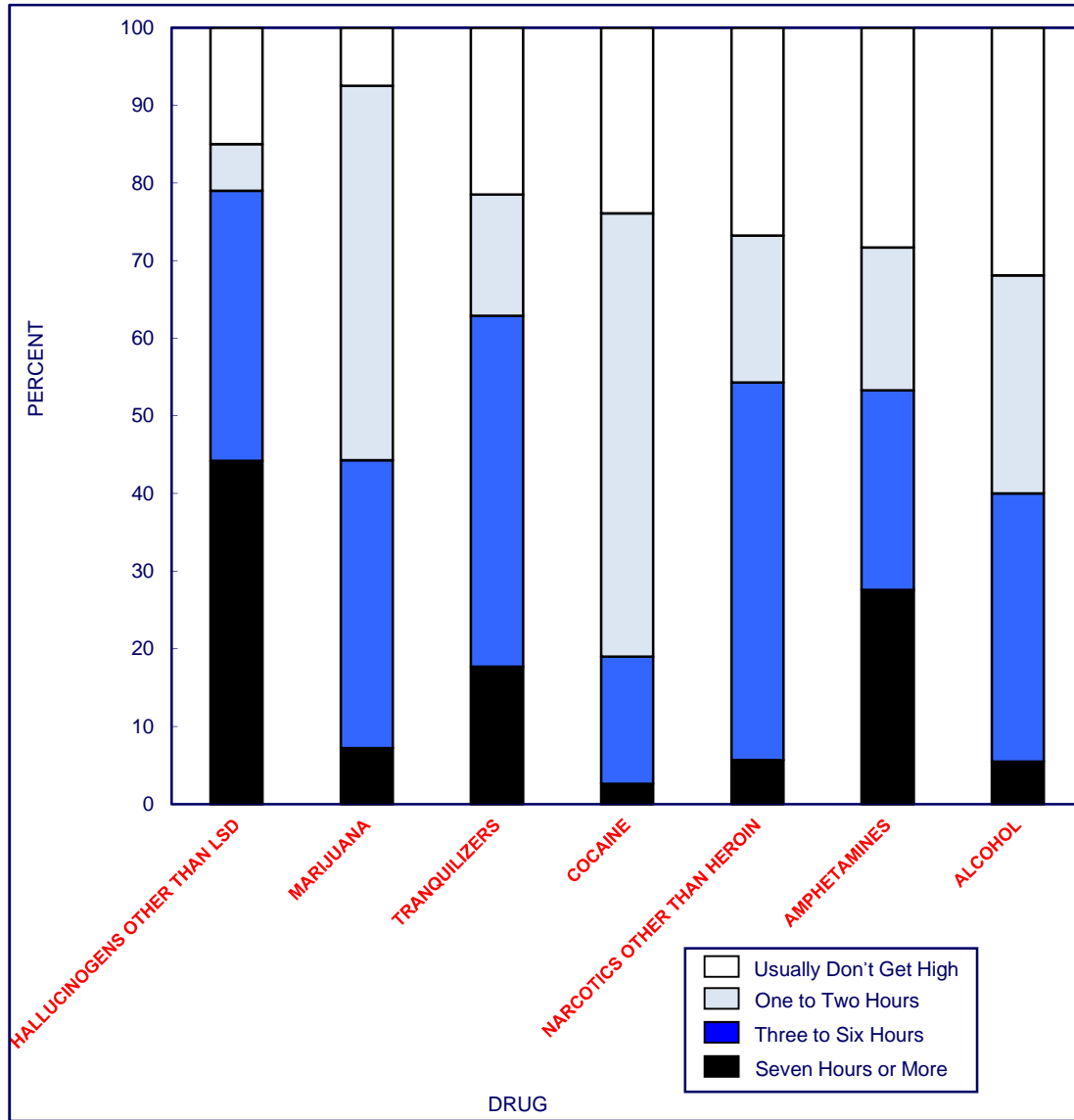
FIGURE 7-1
Degree of Drug Highs Attained by Recent Users
for Various Drugs in Grade 12
2018



Source. The Monitoring the Future study, the University of Michigan.

Note. Data are based on answers from respondents reporting any use of the drug in the prior 12 months. Heroin is not included in this figure because these particular questions are not asked of the small number of heroin users.

FIGURE 7-2
Duration of Drug Highs Attained by Recent Users
for Various Drugs in Grade 12
2018

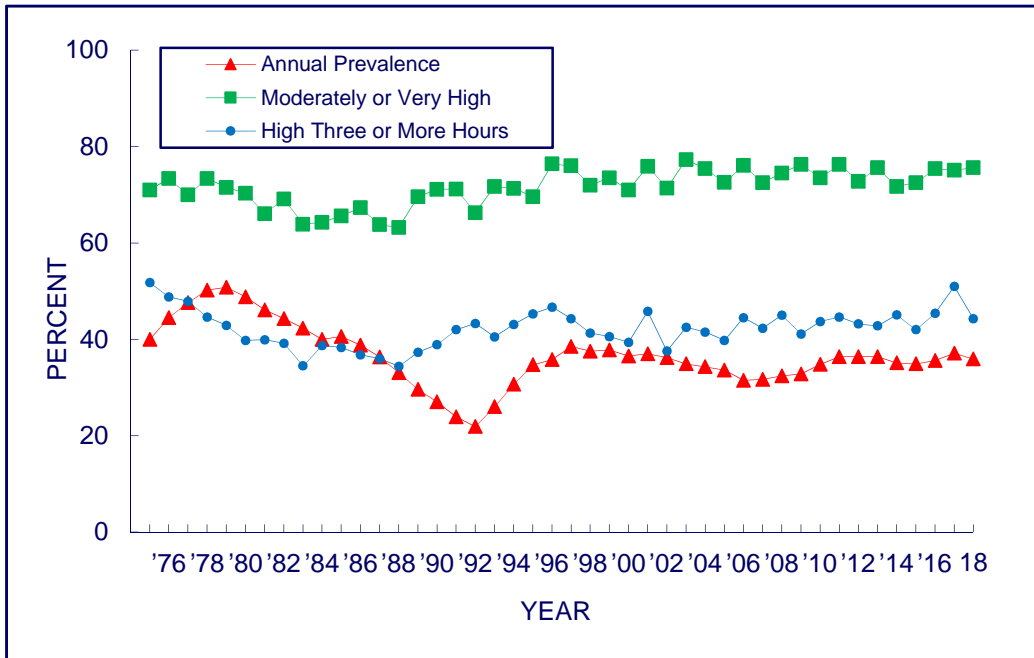


Source. The Monitoring the Future study, the University of Michigan.

Note. Data are based on answers from respondents reporting any use of the drug in the prior 12 months. Heroin is not included in this figure because these particular questions are not asked of the small number of heroin users.

FIGURE 7-3

Marijuana: Trends in Annual Prevalence, Percent of Recent Users Getting Moderately or Very High, and Percent of Recent Users Staying High 3 or More Hours in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

Note. Recent users is defined as respondents reporting any use of marijuana in the prior 12 months.

Chapter 8

ATTITUDES AND BELIEFS ABOUT DRUG USE

Guided by its theoretical framework, MTF measures key factors that have proved to be central to the explanation of historical differences and changes in drug use.¹ These factors include perceived risk of harm and personal disapproval. Indeed, one of MTF's most important theoretical and empirical contributions to the general understanding of young people's drug use has been to demonstrate that changes in beliefs and attitudes about drugs are important determinants of historical trends, both upward and downward, in the use of many drugs.

The cross-time results for three of these important sets of attitude and belief measures are provided in this chapter: (a) 8th, 10th, and 12th grade students' beliefs about how *harmful* the various kinds of drug use are for the user, (b) the degree to which students personally *disapprove* of various kinds of drug use, and (c) 12th graders' attitudes about various forms of *legal prohibitions* to using drugs. In the next chapter, we present results on the closely related topics of parents' and friends' attitudes about drugs, as students perceive them, as well as on various other aspects of the social context, including perceived availability and the extent of the respondent's exposure to people using drugs.

The data presented in this chapter show inverse relationships at the aggregate level between the level of reported use of a drug and the levels of perceived risk and disapproval of using that drug. For example, among 10th and 12th graders, marijuana is the illicit drug with the highest level of use and one of the lowest levels of perceived risk and disapproval. These relationships suggest that individuals who believe that the use of a particular drug involves risk of harm, and/or who disapprove of its use, are less likely to use that drug; indeed, strong correlations also exist at the individual level between use of a drug and attitudes and beliefs about that drug.^{2,3} Students who use a given drug are less likely to disapprove of its use or to see its use as dangerous.

Many attitudes and beliefs about specific drugs have changed dramatically during the life of the study, as have actual drug-using behaviors. Beginning in 1979, scientists, policymakers, and the media gave considerable attention to young people's increasing level of regular marijuana use as reported by this study and to the potential hazards associated with such use. As discussed later in this chapter, 12th graders' attitudes and beliefs about the regular use of marijuana shifted in a more conservative direction after 1979 – a shift that coincided with a reversal in the previous, rapid rise of daily use and that very likely reflected the impact of the increased public attention and a greater focus on adverse consequences. Between 1986 and 1987, a similar and even more dramatic shift occurred for cocaine use and continued for some years. During much of the 1990s, however, there was an important turnaround or “relapse” in these attitudes, accompanied by an increased use of

¹ Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). *The objectives and theoretical foundation of the Monitoring the Future study* (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research, University of Michigan.

² Johnston, L. D. (2003). *Alcohol and illicit drugs: The role of risk perceptions*. In D. Romer (Ed.), *Reducing adolescent risk: Toward an integrated approach* (pp. 56–74). Thousand Oaks, CA: Sage.

³ Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). *Prevalence and attitudes regarding marijuana use among adolescents over the past decade*. *Pediatrics*, 140(6).

numerous illicit drugs, in particular marijuana. In the early 2000s, increased recognition of the hazards of ecstasy use appeared to contribute to a sharp downturn in use of that particular drug, as we had predicted. More recently, perceived risk and disapproval of marijuana have declined dramatically over the past ten years, and are currently at the lowest levels ever recorded by the study in all three grades, as discussed in more detail below.

PERCEIVED HARMFULNESS OF DRUG USE

Beliefs about Harmfulness among 12th Graders

For many drugs, the level of risk attributed to use varies considerably with the intensity of use being considered. Expecting this to be the case, we structured the questions about illicit drugs to differentiate among experimental, occasional, and regular use. (Questions about the harmfulness of alcohol and tobacco use also specify different levels of use appropriate to those substances.) The respondent is asked, “How much do you think people risk harming themselves (physically or in other ways), if they . . .?” The sentence is completed with a number of phrases indicating increasing drug use, such as the series “. . . try marijuana once or twice,” “. . . smoke marijuana occasionally,” and “. . . smoke marijuana regularly.”

Risk from Regular use

- A substantial majority of 12th graders perceive that regular use of illicit drugs entails a great risk of harm for the user. In 2018, as Table 8-3 shows, 81% of 12th graders perceive a great risk of harm from regular use of *heroin*, and from regular use of *crack* (80%), *cocaine* (75%), and *cocaine powder* (78%). More than half (55%) of 12th graders attribute great risk to regular use of *LSD*, and about half (51%) do so for regular use of *amphetamines*. Nearly half of all 12th graders think that regular use of *sedatives (barbiturates)* (45%) involves a great risk of harm to the user. Among the illicit drugs, *marijuana* has the lowest perceived risk, with nearly a quarter (27%) thinking that regular use carries a great risk.
- Three quarters of 12th graders (74%) judge smoking one or more packs of *cigarettes* per day as entailing a great risk of harm for the user in 2018. This level of perceived risk is about the same as the perceived risk level of regular use of cocaine (75%).
- Regular use of *alcohol* is more explicitly defined in several questions providing specificity on the amount and frequency of use. Nearly a quarter of 12th graders (23%) associate great risk of harm with having one or two drinks nearly every day, nearly one half (45%) think there is great risk involved in having five or more drinks once or twice each weekend, and about three fifths (59%) think the user takes a great risk in having four or five drinks nearly every day. Still, it is noteworthy that two out of five (41%) do *not* view having four or five drinks nearly every day as entailing great risk.
- *E-cigarettes* have the lowest levels of perceived risk for regular use, at 18% in 2018 among 12th grade students.
- Over one quarter of 12th grade students (28%) see great risk in *vaping nicotine* regularly. This level is substantially higher than it is for regular use of e-cigarettes, indicating that

many 12th grade students do not associate e-cigarettes with nicotine use. Likely this is because many 12th grade students report that they vape “just flavoring” and not nicotine.⁴

Risk from Experimental use

- Far fewer respondents believe that a person runs a great risk of harm by trying a drug once or twice, which we refer to here as *experimental use*. Still, substantial proportions of 12th graders view even experimenting with most of the illicit drugs as risky. The 2018 percentages associating great risk with experimental use rank as follows:

<i>Crystal methamphetamine (ice)</i>	67%
<i>Heroin without using a needle</i>	63%
<i>Heroin</i>	62%
<i>PCP</i>	52%
<i>Crack</i>	51%
<i>Synthetic stimulants (bath salts)</i>	51%
<i>Steroids</i>	50%
<i>Cocaine</i>	48%
<i>MDMA (ecstasy, Molly)</i>	48%
<i>Cocaine powder</i>	45%
<i>Narcotics other than heroin</i>	43%
<i>Adderall</i>	34%
<i>Synthetic marijuana</i>	30%
<i>Amphetamines</i>	29%
<i>LSD</i>	29%
<i>Sedatives (barbiturates)</i>	26%
<i>Marijuana</i>	12%
<i>Salvia</i>	10%

Note that the prescription-type drugs (e.g. Adderall, amphetamines, sedatives) tend to have lower levels of risk than most of the illicit drugs. That may help explain the relatively high levels of use of the prescription-type drugs. (Perceived risk of tranquilizers, another prescription-type drug, is not asked.)

- Only 12% of 12th graders see experimenting with [marijuana](#) as entailing great risk.
- Just 10% of 12th graders believe there is great risk involved in trying one or two drinks of an [alcoholic beverage](#) (Table 8-3).

Beliefs about Harmfulness among 8th and 10th Graders

An abbreviated set of the same questions on perceived harmfulness has been asked of 8th and 10th graders since they were first surveyed by MTF in 1991. Perceived harmfulness of [inhalant](#) use is not asked of 12th graders, but is included in the 8th and 10th grade questionnaires. Questions about

⁴ Miech, R. A., Patrick M. E., O’Malley, P. M., & Johnston L. D. (2016). [What are kids vaping? Results from a national survey of U.S. adolescents.](#) *Tobacco Control*, 26(4), 386-391.

other drugs have been added to and retained in the 8th and 10th grade questionnaires as their inclusion has been indicated. In general, in 2018, the findings for 8th and 10th graders are similar to those for 12th graders, but some interesting differences emerge:

- The most important difference is observed for [*regular cigarette smoking*](#). Unfortunately, perceived risk is lowest at the ages when initiation is most likely to occur. While three quarters of 12th graders (74%) see great risk in smoking a pack a day or more, slightly fewer 10th graders (70%) and even fewer 8th graders (61%) see this level of risk. The fact that eventual dropouts are included in the lower grades accounts for some of that difference, but given their limited numbers, it is unlikely that dropouts account for all of it. This developmental trend of increasing perceived risk with age for tobacco use is counter to the more general trend of decreasing perceived risk for most substances.
- Relatively few students see great risk in [*smoking one to five cigarettes per day*](#) (41% of 8th graders and 50% of 10th graders). (Twelfth graders are not asked this question.) These low proportions seeing great risk suggest that many students are not taking into account that a relatively light smoker runs a substantial risk of becoming a heavy, dependent user.
- Regular use of [*smokeless tobacco*](#) is viewed as entailing great risk by 34% of 8th graders, 41% of 10th graders, and 40% of 12th graders, meaning that well over half do not see great risk of harm. Again, because this behavior is often initiated at early ages, these figures are disturbingly low.
- As with 12th graders, [*e-cigarettes*](#) have very low levels of perceived risk among 8th and 10th graders. In 2018, 22% of 8th graders and 23% of 10th graders perceived risk of great harm in regular use of e-cigarettes.
- Perceived risk levels of [*vaping nicotine*](#) regularly are 32% and 31% in 8th and 10th grade, respectively. These levels of perceived risk are far below those for regular cigarette use, although they are higher than levels of perceived risk for e-cigarette use generally. Perceived risk levels of vaping nicotine decline at higher grade levels, opposite the pattern for cigarette use.
- Younger students, particularly 8th graders, are more likely than 12th graders to see [*marijuana*](#) use as dangerous. In 2018, 8th graders (32%) were considerably more likely than 12th graders (14%) to see occasional marijuana use as entailing great risk of harm. (Tenth graders fall in between at 21%.)
- Eighth and 10th graders are slightly more likely than 12th graders to see [*weekend binge drinking*](#) as dangerous: 52% for 8th graders, 52% for 10th graders, and 45% for 12th graders in 2018. The younger students are also somewhat more likely than 12th graders to see [*daily drinking*](#) (one or two drinks nearly every day) and experimentation as risky.
- Perceived risk of trying [*MDMA*](#) (ecstasy, Molly) does not systematically vary across the three grades, at 42%, 55%, and 48% in 8th, 10th, and 12th grades, respectively.

- Experimentation with [inhalants](#) is seen as dangerous by relatively low proportions of 8th and 10th graders (30% and 39%, respectively); these younger students are the ones most likely to be using inhalants. (The question about risk of inhalant use is not asked of 12th graders.)
- Despite considerable media coverage of young people having severe, adverse reactions after using what they believed to be [synthetic marijuana](#), relatively few students in 2018 see experimenting with it as dangerous: 22% in 8th grade, 24% in 10th grade, and 30% in grade 12.
- Compared to risk perception of experimentation with synthetic marijuana use, experimentation with [bath salts](#) is seen as risky by higher proportions of students: 30%, 41%, and 51% in grades 8, 10, and 12, respectively. This age trend of increased perceived danger is similar to what is found for tobacco use noted above.

TRENDS IN PERCEIVED HARMFULNESS OF DRUG USE

Trends in Perceived Harmfulness among 12th Graders

Several very important trends in student beliefs about the dangers associated with using various drugs have occurred over the life of the study. (See the upper panels of the “a” versions of Figures 8-1 through 8-3 and Figures 8-7 through 8-13, e.g., Figure 8-1a. See also Table 8-3 for tabular data on 12th graders.) For most of the drugs discussed here, the [Overview of Key Findings](#) monograph for the 2018 survey results has trends in use, risk, disapproval, and perceived availability all graphed on the same page, making it easier to see the connection between use and these other variables.

Perceived Risk and Marijuana Use

Some of the most important trends in perceived risk have involved [marijuana](#) (see Figures 8-1a and 8-4). Currently, the proportion of 12th graders who perceive great risk of harm from regular use is at the lowest level ever recorded by the survey. It stands at 27% and has been in a steady decline for the past decade.

This finding is concerning in light of the fact that declines in perceived risk in the past have predicted future increases in use, a pattern that we interpret as reflecting a causal connection.⁵ The trend line for the *perceived availability* of marijuana is included in Figure 8-4 to show its relative stability (particularly from 1975 to 1992) and, thus, its inability to explain the substantial fluctuations in usage levels over that time period.

⁵ Some time ago we have addressed an alternate hypothesis – that a general shift toward a more conservative lifestyle might have accounted for the shifts in both attitudes and behaviors. The empirical evidence tended to contradict that hypothesis. See Bachman, J. G., Johnston, L. D., O’Malley, P. M., & Humphrey, R. H. (1988). [Explaining the recent decline in marijuana use: Differentiating the effects of perceived risks, disapproval, and general lifestyle factors](#). *Journal of Health and Social Behavior*, 29, 92–112. Johnston also showed that an increasing proportion of the quitters of and abstainers from marijuana use reported concern over the physical and psychological consequences of use as reasons for their non-use. See Johnston, L. D. (1982). [A review and analysis of recent changes in marijuana use by American young people](#). In *Marijuana: The national impact on education* (pp. 8–13). New York: American Council on Marijuana. The role of perceived risk in the period of increased marijuana use in the 1990s is addressed in Bachman, J. G., Johnston, L. D., & O’Malley, P. M. (1998). [Explaining the recent increases in students’ marijuana use: The impacts of perceived risks and disapproval from 1976 through 1996](#). *American Journal of Public Health*, 88, 887–892.

From the beginning of the study in 1975 through 1978, the degree of harmfulness perceived to be associated with all levels of marijuana use declined as use increased sharply (see Figure 8-4). In 1979, for the first time, the proportion of 12th graders seeing risk to the user increased. This increase in perceived risk *preceded* an appreciable downturn in use (which began a year later in 1980) and continued fairly steadily through 1991, as use fell dramatically. However, in 1992 perceived risk began to drop again, which presaged a sharp increase in use beginning in 1993. As Figures 8-1a and 8-4 illustrate, perceived risk continued to drop and use continued to rise until 1997. This clear and consistent concordance in trends supports our contention that changes in beliefs about the harmfulness of marijuana use played a critical role in causing both the downturn and the subsequent upturn in use. In both cases, the reversal in perceived risk preceded the reversal in actual use by a year. This pattern became evident again in 2003, as perceived risk for marijuana increased until 2006 while use declined, and between 2006 and 2012, when perceived risk of regular use declined while use rose a year later.

For two time periods this inverse association did not hold, in part because of a confounding influence of cigarette smoking. Specifically, from 1997 to 2002 and during the current period (since 2011) perceived risk declined but an increase in use did not take place (see Figure 8-4). In both these periods a substantial decline occurred in the percentage of adolescents who had ever smoked a cigarette, from 64% in 1997 to 57% in 2002, and from 40% in 2011 to 24% in 2018. Marijuana use is much higher among youth who have tried a cigarette, in part because these youth have overcome the psychological barriers involved in inhaling smoke into the lungs. As increasing numbers of 12th graders fall into the category of youth who have never smoked a cigarette in their life, they move into a category that has historically had a very low level of marijuana use. If adolescent cigarette smoking had not declined during these periods then we believe the expected increase in marijuana use would likely have been observed; in fact, if cigarette use had not declined since 2011 it is projected marijuana use levels today would be at or near record highs.⁶

What accounts for changes in perceived risk of marijuana use, given the key role this factor plays in marijuana use? In the earlier years of MTF, the largest increase (in absolute terms) in perceived risk occurred for regular marijuana use. The proportion of 12th graders who viewed regular marijuana use as involving a great risk doubled in just seven years from 35% to 70% between 1978 and 1985. Subsequently, the proportion increased more slowly, reaching 79% by 1991. This dramatic change occurred during a period when a substantial amount of scientific and media attention was devoted to the potential dangers of heavy marijuana use. Young people also had ample opportunity for vicarious learning about the effects of heavy use through observation, because such use was widespread among their peers. (In 1978, one in nine 12th graders was an active, daily marijuana user.) Concerns about the harmfulness of occasional and experimental use also increased, and those increases were even larger in proportional terms, though not in absolute terms. For example, the proportion of 12th graders seeing great risk in [*trying marijuana*](#) rose from 8% in 1978 to 27% in 1991, and for [*occasional marijuana use*](#) perceived risk rose from 12% to 41% over the same interval.

⁶ Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). [Prevalence and attitudes regarding marijuana use among adolescent over the past decade](#). *Pediatrics*, 140(6).

There are several possible and interconnected explanations for the turnaround and decline in perceived risk of marijuana use during the early 1990s. First, some of the forces that gave rise to the earlier increases in perceived risk became less influential: (a) because of lower use levels overall, fewer students had opportunities for vicarious learning by observing firsthand the effects of heavy marijuana use among their peers; (b) media coverage of the harmful effects of drug use, as well as of incidents resulting from drug use (particularly marijuana), decreased substantially in the early 1990s (as has been documented by media surveys of national news programs); (c) media coverage of the antidrug advertising campaign of the Partnership for a Drug-Free America also declined appreciably (as documented by both the Partnership and our own data from 12th graders on their levels of recalled exposure to such ads)⁷; (d) congressional funding for drug abuse prevention programs and curricula in the schools was cut appreciably in the early 1990s; and (e) the first Gulf War in 1990-1991 diverted attention from domestic concerns, including drug use, among both policy makers and the media. In addition, forces encouraging use became more visible; in particular, a number of rap, grunge, and rock groups started to sing the praises of using marijuana (and sometimes other drugs), perhaps influencing young people to think that using drugs might not be so dangerous after all. Finally, the drug experiences of many parents may have inhibited them from discussing drugs with their children, and may have caused them uncertainty in knowing how to handle the apparent hypocrisy of telling their children not to do what they themselves had done as teens. We believe that all of these factors may have contributed to the resurgence of marijuana use in the 1990s.

By the mid-1990s, many of these sources of influence had reversed direction, laying the groundwork for an end to the rise in marijuana use (and illicit drug use more generally). First, because there was considerably more use among young people and among many of their public role-model groups, the opportunity for vicarious learning by observing the consequences of use began to increase. And as MTF and other studies began to call the public's attention to the resurgence of the drug epidemic among youth, news stories on the subject increased substantially. Other institutions also changed their ways. The recording industry appeared to be producing fewer pro-drug lyrics and messages, in large part because of growing concern about overdose deaths among their own artists. (A similar dynamic seems to have occurred in the fashion industry with the resulting demise of the "heroin chic.") Various government initiatives to prevent drug use by young people were launched, including the Department of Health and Human Services (DHHS) Secretary's Marijuana Use Prevention Initiative, which was launched at the 1994 annual national press conference reporting the MTF results. Federal funding for drug prevention in schools also increased appreciably.

In addition, parents were repeatedly exhorted to talk to their children about drugs, and it appears from other surveys that more of them did so. In the late 1990s, a federally sponsored media campaign involving paid advertising was initiated. MTF data indicate that the campaign reached increasing numbers of young people over a period of several years.⁸

⁷ Terry-McElrath, Y. M., Emery, S., Szczyepka, G., & Johnston, L. D. (2011). [Potential exposure to anti-drug advertising and drug-related attitudes, beliefs, and behaviors among United States youth, 1995-2006](#). *Addictive Behaviors*, 36, 116-124.

⁸ For example, see Johnston, L. D. (2002, June 19). Written and oral testimony presented at hearings on the National Youth Anti-Drug Media Campaign, held by the Treasury and General Government Subcommittee on Appropriations of the U.S. Senate Appropriations Committee. Published in [The Congressional Record](#).

Since 2012, perceived risk of marijuana use has fallen substantially as the movement to legalize recreational marijuana use has attained both substantial media coverage as well as success in increasing numbers of states. A key message of this movement is that marijuana use is safe and does not pose much danger to health, a message that appears to be gaining traction with today's youth. This recent decline in perceived risk, which in the past has played a substantial role in reversing declines in use, has not yet been accompanied by an increase in marijuana use, in part because of the decline in youth cigarette use (discussed above).

Perceived Risk and Substances Other than Marijuana

- Like marijuana, [cocaine](#) has shown a pattern of closely corresponding trends between perceived risk and actual use among 12th graders (see Figure 8-5). In 2018, the proportion of 12th graders who perceive great risk in trying cocaine once or twice was 48%, about where it has hovered for the past two decades. Use levels have also changed little during this period. The tight, mirror-image correspondence between perceived risk and levels of use is illustrated most clearly in the 1970s and 1980s. First, the percentage who perceived great risk in [trying cocaine](#) once or twice dropped steadily from 43% to 31% between 1975 and 1980, corresponding to a period of rapidly increasing annual prevalence of use. However, rather than reversing sharply, as did perceived risk for marijuana use, perceived risk for experimental cocaine use moved rather little from 1980 to 1986, corresponding to a fairly stable period in actual use. Then, from 1986 to 1987, perceived risk for experimenting with cocaine jumped abruptly from 34% to 48% in a single year, and in that year the first significant decline in use took place. From 1987 to 1990, perceived risk continued to rise sharply as use fell sharply.

Correspondence between perceived risk of trying cocaine and levels of actual use can also be seen in the 1990s, although the changes are smaller. An increase in perceived risk of cocaine use ended in 1991, similar to the trend for marijuana. Perceived risk began to fall in 1992, and a year later actual use began rising among 12th graders (see Figure 8-5). The significant reversal of trends in beliefs set the stage for a resurgence in use, particularly when combined with the fact that the proportions of students using two of the so-called “gateway drugs” – cigarettes and marijuana – had also been rising. From 1992 to 1999, the proportion of 12th graders using cocaine in the prior 12 months rose steadily from 3.1% to 6.2% before decreasing significantly to 5.0% in 2000, with little change for some years after that.

Levels of actual cocaine use track more closely with trends in perceived risk of experimental cocaine use than they with perceived risk of regular cocaine use. As we had predicted earlier, it was not until 12th graders' attitudes about behaviors they saw as relevant to themselves began to change (i.e., attitudes about experimental and occasional cocaine use) that the behaviors also began to shift.^{9,10}

⁹ See Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). [Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use](#). *Journal of Health and Social Behavior*, 31, 173–184. For a discussion of perceived risk in the larger set of factors influencing trends, and for a consideration of the forces likely to influence perceived risk, see Johnston, L. D. (1991). [Toward a theory of drug epidemics](#). In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–131). Hillsdale, NJ: Lawrence Erlbaum.

¹⁰ Our belief in the importance of perceived risk of experimental and occasional cocaine use led us to include in 1986 for the first time the question about the dangers of occasional cocaine use. The very next year proved to have a sharp rise on this measure.

We believe the large changes in both perceived risk of experimental and occasional use as well in changes in actual levels of use from 1986 to 1991 resulted from three factors: (a) the greatly increased media coverage of cocaine use and its dangers that occurred in that interval (particularly in 1986); (b) an increasing number of anti-drug, and specifically, anti-cocaine media campaigns; and (c) the widely publicized 1986 deaths, publicly attributed to cocaine use, of sports stars Len Bias and Don Rogers. The deaths of the sports stars, we believe, helped to bring home the notions, first, that no one – regardless of age or physical condition – is invulnerable to being killed by cocaine, and second, that one does not have to be an addict or regular user to suffer such adverse consequences. In the media coverage that occurred during that period, the addictive potential of cocaine was heavily emphasized.

- Trends in attitudes toward regular use of [crack](#) and [cocaine powder](#) have not varied much since they were first tracked by Monitoring the Future in 1987. The proportion of 12th graders seeing great risk in regular use of crack has been between 80% and 92% in all years of the survey, and for cocaine powder, the proportions have been between 78% and 88%. For occasional and experimental use of both drugs, perceived risk was highest at the start of the 1990s, declined until the mid-2000s, and then turned upward in the following years. In 2018, eight out of nine measures of perceived risk of cocaine use declined, continuing the trend from the previous year when all of them declined (although no changes in any of the two years reached statistical significance). These declines warrant attention in future years to determine if they signal future increases in cocaine use.
- The proportion of 12th grade students perceiving great harm in regular use of [amphetamines](#) remained between 60% and 70% throughout most of the survey, but since 2009 has shown a considerable drop, and was 51% in 2018 (Figure 8-7a). Part of this drop is attributable to a change in question wording that took place in 2011 and is thus a methodological artifact (see Figure 8-7a footnotes for details). The proportion of students perceiving harm in experimental use has also declined since 2011 and in 2018 was 29%, which is the lowest level recorded since the question change in 2011.
- The proportion of 12th graders perceiving harm from regular use of [sedatives \(barbiturates\)](#) has declined overall over the course of the survey (from 69% in 1975 to 45% in 2018), while the proportion perceiving harm from experimental use stayed more steady at between 35% in 1975 and 26% in 2018 (Figure 8-7a). Most of the decline in perceived risk for regular use took place between 1992 and 2002 during, but continuing beyond, the relapse phase in drug use generally.
- [Heroin](#) has consistently been seen as one of the most dangerous drugs – in particular regular heroin use, which no doubt accounts at least in part for the low prevalence levels observed throughout the life of the study. But there has been some variation in levels of perceived risk related to experimental or occasional use (Figure 8-9a). Perceived risk of experimental use declined gradually between 1975 and 1986 (perhaps as the result of generational forgetting of the dangers of heroin), even though use dropped and then stabilized in that interval. There was then an upward shift in perceived risk in 1987 (the same year in which there was a dramatic rise in perceived risk for cocaine) to a new level,

where it held for four years. In 1992 risk dropped to a lower plateau again, a year or two before use started to rise. As perceived risk fell in the early 1990s, heroin use by 12th graders rose, with annual prevalence of use nearly tripling from 0.4% in 1991 to 1.1% by 1995. (Use also rose in the lower grades.) From 1995 through 1998, there was some increase in perceived risk (an increase that was also observed in the lower grades; see Tables 8-1 and 8-2 and Figure 8-9a). Usage levels then generally stabilized. Perhaps not entirely coincidentally, the Partnership for a Drug-Free America launched a media campaign aimed at deglamorizing heroin in 1996. While the target audience was young adults, many secondary school students undoubtedly saw the ads as well. Annual use of heroin by 12th graders decreased from 1.5% in 2000 to 0.8% by 2003 subsequent to the upturn in perceived risk between 1995 and 1998. Neither perceived risk nor use of heroin changed a great deal since. In 2018, 81% of 12th grade students perceived great risk in regular heroin use, which is a lower bound for the range of 80% to 90% where it has fluctuated throughout the study.

- The proportion of 12th graders who see great risk in regular or experimental use of [LSD](#) is now at the lowest level ever recorded by the survey (Figure 8-8a). Perceived risk of regular use has been in a slight but consistent decline since the early 1990s and in 2018 stood at 55%. Perceived risk of experimental use also declined during the 1990s to about 35% in 2000; it remained at that level until about 2014, but has since dropped to the lowest level ever recorded – 29% in 2018. The sharp decline in 12th graders’ perceived risk of LSD use between 1991 and 1997 was particularly noteworthy, confirming our concerns about generational forgetting – that attitudes and beliefs of the newer generation of young people were not influenced by the direct and vicarious learning experiences that helped to make their predecessors more cautious about using LSD (see Figure 8-8a). In the late 1960s and early 1970s, young people became aware of the risks of bad trips, uncontrollable flashbacks, dangerous behaviors under the influence, etc. Since then, those who have come into their teens seem to know much less about those risks.

Despite the fact that perceived risk of LSD use declined some prior to 2001 (while disapproval was fairly steady), use had been falling. Obviously, this decline in use cannot be explained by a change in attitudes, and thus raises the question of whether there was any substitution by another drug. As it happens, another drug popular in the club scene and also used for its hallucinogenic properties, [MDMA](#) (ecstasy, and more recently Molly), had been in ascent and may have had some substitution effect. From 1998 to 2001, MDMA use more than doubled as LSD use was in decline. However, after 2001 both drugs declined, suggesting that there may no longer have been a displacement effect. Indeed, after 2001 there was a sharp decline in availability of LSD, which may well have played a key role in its further sharp drop in use. The historically low levels of perceived risk for LSD reached in recent years suggest that young people today are not well prepared to resist resurgences in the popularity and availability of that drug, should those occur.

- Perceived risk for the use of [MDMA](#) (also known as ecstasy or Molly) was first assessed for 12th graders in 1997 and then assessed for 10th and 8th graders starting in 2001. The proportion of 12th graders who saw potential harm in trying MDMA “once or twice” has been in a long, uneven decline since 2005 and in 2018 it stood at 48%. It is important to

note that the question was updated in 2014 to include the street name “Molly.” While this update precludes direct comparison of risk levels today with those before 2014, it is still informative to compare the direction of change in the measure before and after the update. It appears that the explicit addition of Molly to the question stem increased perceived risk, particularly in the lower grades (see Figure 8-6).

As documented in the next chapter, there was a dramatic rise in the availability of MDMA (ecstasy and, later, Molly) to American teens up to 2001, which may well help to explain its spread (Figure 8-6). Another belief – the perceived benefits of using a drug – is, like perceived risk, almost surely a determinant of use. It seems very likely that there was a change in the perceived benefits of MDMA use; but unfortunately for these purposes, we do not measure this belief. The significant increases in perceived risk (for all three grades) in 2000 through 2003 were encouraging. We stated in the 2001 report in this series that we believed the use of this drug would not decline until more young people came to see its use as dangerous. In 2002, use of MDMA decreased some for all three grades, and in 2003 use decreased significantly for all three grades, presumably driven by the sharp increases in the perceptions of risk already underway.

We believe that the unusually rapid changes in perceptions of risk about MDMA reflect the effects of several factors: much media coverage of adverse events associated with ecstasy use; the substantial efforts of the National Institute on Drug Abuse to gather and disseminate information about the adverse consequences associated with ecstasy use; and efforts by the Partnership for a Drug-Free America and the Office of National Drug Control Policy to discourage ecstasy use through an ad campaign, begun in 2002, that addressed the hazards of use. Despite the dramatic increase in perceived risk up through 2005, the gradual erosion in the level of perceived risk since 2005 raises the possibility that a process of generational forgetting of the hazards of MDMA use had been taking place. Declining levels of perceived risk for MDMA are especially concerning because some manufacturers mix MDMA with dangerous adulterants, such as stimulants found in “bath salts,” as well as cocaine and heroin.¹¹

- The proportion of 12th grade students associating great risk with experimental use of [*crystal methamphetamine \(ice\)*](#) reached the highest level recorded by the survey in 2013, at 72%, and has declined slightly since then, to 67% by 2018 (Table 8-3). This current level of perceived risk is higher than risk of experimental use of any other drug including heroin, which stood at 62%. Consistent with the high levels of perceived risk, levels of use are extremely low, and in 2018 the prevalence of past-year use was 0.6%. A drop in prevalence occurred after increases in perceived risk, consistent with perceived risk being a leading indicator and cause of changes in drug use.
- The proportion of 12th graders who perceived a great risk of harm in trying [*PCP*](#) (phencyclidine) was 52% in 2018, about where it has been since 2010. Actual use has remained low since about 2003, and annual prevalence was 1.1% in 2018.

¹¹ Campo-Flores, A. & Elinson, Z. (September 24, 2013). [Club drug takes deadly toll; billed as pure ecstasy, “Molly” often gets laced with more dangerous substances](#). *The Wall Street Journal*.

- In 2018, 50% of 12th grade students saw a great risk in taking anabolic [steroids](#), near the lowest level recorded since the survey began tracking steroids in 1989. Nevertheless use is low, with a prevalence of 1.1% in 2018 that is near the lowest ever recorded by the survey (the lowest level was 1.0% in 2016). These results suggest that adolescents are not using steroids for reasons other than their perceived harmfulness; availability likely plays a role because in recent years availability is at the lowest levels ever recorded by the survey in all three grades (see Chapter 9). The scheduling of many steroids by the DEA in 1990, with updates in 2004 making their use and possession illegal, has likely contributed both to the decline in perceived availability and in use.

The history of perceived risk of steroids and adolescent use of them bears some resemblance to the situation regarding cocaine use. A noteworthy change in steroids occurred in 1992, when perceived risk rose by five percentage points (from 66% to 71%) among 12th graders. (Similar changes occurred for 8th and 10th graders.) This change suggested that the widely publicized experience of professional football player Lyle Alzado, who died of a brain tumor in 1992 that he believed resulted from his steroid use, had an important effect on young people’s beliefs regarding the harmfulness of this drug. The effect of this “unfortunate role model” was similar to the effect of Len Bias’ death on beliefs about the dangers of cocaine use, except that in Lyle Alzado’s case he intentionally set about making his experience an object lesson for young people.¹² Unfortunately, levels of perceived risk have since declined.

This decline accelerated in 1999, with an unusually sharp drop of six percentage points in 12th graders’ perceived risk of steroid use; this coincided with a slight rise in use among 12th graders and a sharp rise in use among 8th and 10th graders. (Since 1995 perceived risk has been measured only among 12th graders, so their answers serve as the best estimate we have of how this belief was changing among secondary school students more generally. For this reason, we comment in this section on 8th and 10th graders as well as 12th graders.) We believe it likely that a highly visible baseball player (Mark McGwire), whose use of the steroid precursor androstenedione was widely reported in 1998, served unwittingly as a role model that year, this time associating the use of steroids with athletic success and physical prowess. In 2000 there was a continued sharp decline in perceived risk of steroid use among 12th graders. After 2000 perceived risk did not change a great deal until there was a significant drop in 2013, a leveling, and another significant drop in 2017.

A cohort effect is suggested by the pattern of declining steroid use across the grades since 1999; 8th graders were first to show a downturn beginning in about 2001, followed by 10th graders in 2003, and then by 12th graders in about 2005. Those staggered decreases followed somewhat staggered increases in the prior years, though both 8th and 10th graders began to increase in the same year (1999). In 2004 perceived risk began to rise in 12th grade (again, the only grade in which it is measured), and use continued to decline in all grades. Some might ask why use has not increased in the past few years as stories of widespread steroid use in professional baseball have hit the headlines. The answer may lie in the

¹² The July 8, 1991, issue of *Sports Illustrated* magazine had an article by Lyle Alzado entitled “I Lied.” For a discussion of the importance of vicarious learning from unfortunate role models, see Johnston, L. D. (1991). [Toward a theory of drug epidemics](#). In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–131). Hillsdale, NJ: Lawrence Erlbaum.

amount of negative publicity and negative outcomes that have emerged for some of these players. Mark McGwire eventually admitted in 2010 that he had used steroids and that he regretted their use. Baseball player Roger Clemens had denied using steroids, but in 2010 he was indicted by a grand jury, charged with lying to Congress about his use of these drugs. He was tried on six felony counts and, following a long and damaging trial process, was found not guilty.

- The proportion perceiving great risk of harm in having one or two drinks nearly every day was 22.8% in 2018 among 12th graders, about the same level as it had been during the first year of the survey in 1975, when it was 21.5% (Figure 8-11a). In the intervening years it gradually increased to a peak of 33% in 1991, when use of many drugs reached a nadir, and subsequently declined to its level of 22.8% in 2018. The recent decline in perceived risk may have been due in part to publicity about the value of moderate alcohol consumption in protecting against cardiovascular disease.
- The proportion of 12th graders perceiving great risk in having four or five drinks nearly every day was 59.1% in 2018 (Figure 8-11a), close to where it was during the first year of the survey in 1975, when it was 63.5%. It rose to a peak in the early 1990s (of 71%), and subsequently declined to its current level.
- The trend for perceived risk of binge drinking (having five or more drinks in a row in a single occasion) shows an overall increase over the course of the survey to 45% in 2018 from 38% in 1975 (Figure 8-11a). This overall increase consisted of a gradual rise from 1975 to 1992, when risk reached 49%, followed by a slight decline through 1997, to 43%, where it leveled. The increase in perceived risk tended to be followed by some decline in the actual behaviors – while the decrease in perceived risk tended to be followed by some increases in those behaviors – once again suggesting the importance of these beliefs in influencing use, even the use of licit drugs. Actual prevalence of binge drinking declined appreciably between 1981 and 1993, from 41% to 28%, after which it rose slightly during the relapse phase in drug use and reached 32% by 1998. The increase in perceived risk during the 1980s may have been due in large part to the many efforts aimed at discouraging drunk driving – a point discussed in more detail elsewhere.¹³ Since 1998, perceived risk has increased only slightly overall while binge drinking has declined to historic lows in recent years (14% in 2018), suggesting the influence of factors other than perceived risk in recent years.
- Despite all that is known today about the health consequences of cigarette smoking, one fourth (26%) of 12th graders still do not believe that there is a great risk in smoking a pack or more of cigarettes per day (see Figure 8-12a). The number of 12th graders who thought smoking a pack or more a day involved great risk to the user increased from 51% in 1975 to 64% in 1980. This shift corresponded to, and to some degree preceded, the downturn in current smoking found in this age group (compare Figures 5-4q and 8-12a). Between 1980 and 1984, both perceived risk and use leveled. Then, from 1984 to 1993 perceived risk inched up from 64% to 70% while use remained quite stable. Perceived risk then declined

¹³ O'Malley, P. M. & Johnston, L. D. (1999). [Drinking and driving among American high school seniors: 1984–1997](#). *American Journal of Public Health*, 89, 678–684.

a bit in 1994 and 1995 (as it did in the lower grades) and use rose through 1997. Between 1995 and 1998, perceived risk rose about five percentage points, presaging a decline in smoking that began in 1998. Overall, in the 13-year interval between 1984 and 1997, the percentage of 12th graders perceiving great risk in regular smoking rose only about five percentage points, while use rose, not fell, by seven percentage points. Clearly, influences other than perceived risk were at work during this period. Between 1997 and 2006, perceived risk rose by another nine percentage points from 69% to 78%, while use fell by 15 percentage points (from 37% in 1997 to 22% in 2006). Thus, changes in perceived risk may well have contributed to the decline in use during this period. Perceived risk of smoking one or more packs per day among 12th graders has held steady since 2006 and stood at 74% in 2018. In contrast, the 30-day prevalence of use has continued to decline and was at 8% in 2018 – the lowest level in the life of the study. It seems likely that increases in cigarette prices played an important role in the decline during this period, including the increase in the federal tobacco tax passed in 2009.

- Perceived risk in regular use of [smokeless tobacco](#) (see Figure 8-13a) has been at about 43% since 1998 and was at 40% in 2018. It increased from 26% in 1986, when it was first measured, to 39% in 1993. From 1993 to 1995 such concern decreased a bit, declining to 33% by 1995, but then rose again to reach 45% by 2001, with a slight overall decline thereafter. As perceived risk rose, 30-day prevalence of smokeless tobacco use declined appreciably from 12% in 1995 to 7% in 2002. It was at 4% in 2018.

Trends in Perceived Harmfulness among 8th and 10th Graders

The 8th and 10th grade surveys ask about perceived risk for fewer drugs than the 12th grade surveys. (See the lower panels of the “a” versions of Figures 8-1, 8-2, 8-3, 8-8, and 8-11. See also Table 8-3 for the tabular data.)

- For 8th and 10th grade students, the proportion who see great risk in experimental use of [marijuana](#) is at the lowest level ever recorded by the survey, at 20% and 14%, respectively (Tables 8-1 and 8-2, also Figure 8-1a). Most likely, youth throughout the country interpret the recent trends permitting medical marijuana in many states and legalization of recreational marijuana for adult use in some states as signals that the drug is not dangerous and does not pose great risk of harm. Perceived risk has been in a steady decline since the mid-2000s. We had expected that a larger increase in marijuana use would have occurred by now in light of the decrease in perceived risk, but this increase was likely offset as a consequence of the decline in cigarette smoking (discussed above).¹⁴

Before the late 2000s, the trend in perceived risk resembled a U curve, in which it was at its highest level during the first two years when the survey measured it in 1991-92 (40% for 8th graders and 32% for 10th graders), declined during the 1990s relapse, and then rebounded until the mid-2000s. In both 8th and 10th grades, marijuana prevalence followed a mirror image of these trends, with prevalence increasing during the 1990s (when

¹⁴ Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). [Prevalence and attitudes regarding marijuana use among adolescents over the past decade](#). *Pediatrics*, 140(6).

perceived risk decreased), decreasing from the late 1990s through the mid-2000s (when perceived risk increased), and increasing through 2010 (when perceived risk decreased).

Perceived harm of [regular marijuana use](#) follows the same trends, although overall levels of perceived risk are higher. In 2018 the proportions of 8th and 10th graders who saw great risk in regular use of marijuana were at the lowest level ever recorded by the survey – 53% and 38%, respectively.

- The percentage of 8th and 10th grade students perceiving great risk of harm in [experimental cocaine](#) use declined between 1991 and 1995, and has been relatively stable since then. For 8th graders, the percentages were 56% in 1991, 45% in 1995, and 43% in 2018. For 10th graders the corresponding percentages were 59%, 54%, and 53%. (Tables 8-1 and 8-2, and Figure 8-2a) The 1991 levels are the highest ever recorded. Trends in the risk of [occasional cocaine use](#) follow the same pattern, although of course the overall level of perceived risk is higher than for experimental use. Annual prevalence of cocaine use among 8th and 10th grade students has been less than 5% in all years it has been measured, providing little variation for perceived risk to explain; nevertheless, the largest change in perceived risk – the drop through the 1990s – corresponds with an increase in cocaine prevalence in both grades.
- Perceived risk for [LSD](#) use has generally been declining among 8th and 10th graders since it was first measured in 1993 (and among 12th graders since 1991). For example, among 8th graders, the proportion seeing great risk in trying LSD fell by half from 42% in 1993 to 21% in 2018. Use, which had been increasing fairly steadily in all grades through 1996, has shown some appreciable decline in all grades since then (for example, from 3.5% annual prevalence in 1996 to 0.9% in 2018 among 8th graders and from 6.9% to 2.0% among 10th graders). Annual prevalence remains at quite low levels. As we pointed out earlier, the recent drop in LSD use cannot be explained by parallel changes in perceived risk, because perceived risk was itself falling, not rising. As discussed in the next chapter, there has been a decline in the reported availability of LSD since the mid-1990s. Despite the lower levels of use at present, we note that perceived risk for LSD use generally has been dropping in recent years in the lower grades, particularly among 8th graders, likely because they are less aware of the consequences of using this drug – a process we have called “generational forgetting.” This leaves these new cohorts of teens potentially vulnerable to resurgence in LSD use, should the drug become widely available again.
- Questions about the dangers of [inhalant](#) use have been asked only of 8th and 10th graders, where use has tended to be most concentrated (Tables 8-1 and 8-2). In 8th grade perceived risk of trying inhalants is, unfortunately, at the lowest level recorded by the survey. Perceived risk of *regular* inhalant use is at the lowest level recorded by the survey in both grades. A long-term decline has been ongoing since the early 2000s. Prior to the 2000s, levels of perceived risk jumped in 1996, after the Partnership for a Drug-Free America launched a media campaign in 1995 to increase adolescents’ awareness of the dangers associated with inhalant use. The data here are consistent with the notion that their efforts were successful, because the increase in perceived risk occurred during the years of this intervention; most of the other drugs had not yet begun to show an increase in perceived

risk at that point, and actual prevalence of inhalant use declined in all grades. In 2001, perceived risk of inhalant use again jumped significantly in both grades, and use declined some. During the period of declining perceived risk, since 2001, there were some small changes in use, but by 2009 use was very close to 2002 levels. After a decrease in use for both grades after 2011, use is now (in 2018) at or near its lowest level in all three grades. The declines in perceived risk imply that generational forgetting of the dangers of inhalant use may have been taking place, which suggests that it may be time for another advertising and public information campaign on the subject (among other potential interventions) lest there be a rebound in use.

- The proportions of 8th and 10th graders who perceive great risk in having five or more drinks of *alcohol* once or twice each weekend (“weekend binge drinking”) have stayed within the narrow range of 51%-59% in the 28 years they have been measured for both 8th and 10th graders. Proportions dropped from 59% in 1991 to 52% in 1996 for 8th graders, and from 56% in 1992 to 51% in 1996 for 10th graders. During the same interval, self-reported *binge drinking* rose gradually. Since that time, levels of perceived risk have slightly increased and then decreased in both grades, with a peak in 2012 for 8th graders (58%) and a peak in 2008 for 10th grade students (57%), while actual use has steadily declined, quite possibly driven down by other factors in the past few years.
- The proportions of 8th and 10th grade students who see great risk in pack-a-day *cigarette smoking* are at or near the highest levels recorded by the survey, at 61% and 70%, respectively (see Figure 8-11a). After 1995, perceived risk rose in all three grade levels, including significant increases for 8th and 10th graders in 2000. Levels of smoking began to drop in 1997 for grades 8 and 10, and a year later among 12th graders; thus, an increase in perceived risk presaged, and very likely helped to drive, this important decline. Since 2000 perceived risk of smoking has increased somewhat further while actual cigarette use has declined precipitously. The increases in perceived risk since 2000 are not large enough to account for the dramatic decline in cigarette smoking in the following years, suggesting that other forces are at work.

A number of factors in the late 1990s may well have contributed to the decline in teen smoking. A series of public events, such as highly visible lawsuits against the tobacco industry, brought considerable adverse publicity to the product and the industry, eventually leading to the widely publicized Tobacco Master Settlement Agreement in November 1998 between the states’ Attorneys General and the major tobacco companies. Additional deterrents included increased cigarette prices, increased tobacco taxes, substantial tobacco prevention efforts in several large states, a nationwide antismoking ad campaign funded by the American Legacy Foundation (an entity created and funded under the tobacco settlement), the withdrawal of advertising from billboards, and the elimination of the Joe Camel ads.

- The proportions of 8th and 10th grade students who see great risk in regular use of *smokeless tobacco* have hovered around 35% for 8th graders and around 40-43% for 10th graders for the past few years, following a few years of decline in perceived risk.

Level of risk had small, long-term increases in 1995 that lasted for a decade and resulted in increases of about 10 percentage points for 10th graders and 5 percentage points for 8th graders. During the period of substantial increase in perceived risk between 1995 and 2000, a considerable decline in the use of smokeless tobacco took place. The gains in perceived risk lasted through about 2011 before receding and then leveling.

PERSONAL DISAPPROVAL OF DRUG USE

Since the beginning of the MTF study, we have included a set of questions to measure the judgement students attach to various types of drug use among 12th graders. The question wording is, “Do you disapprove of people (who are 18 or older) doing each of the following?” The answer alternatives are “don’t disapprove,” “disapprove,” and “strongly disapprove.” For 8th and 10th grades, a fourth response, “can’t say, drug unfamiliar,” is included, and the parenthetical phrase “who are 18 or older” is omitted from the question stem. Responses of “disapprove” or “strongly disapprove” are combined and reported here as “disapproval.” For 8th and 10th graders, “can’t say, drug unfamiliar” is included in calculating the percentages, so that what is represented (in all three grades) is the proportion of *all* respondents who hold a disapproving attitude. Each question specifies a level of drug involvement, such as “trying marijuana,” “using marijuana occasionally,” or “using marijuana regularly,” similar to the questions about perceived risk.

Extent of Disapproval among 12th Graders

- The vast majority of 12th graders disapprove of *regular use* of any of the illicit drugs (see Table 8-6). Among 12th graders in 2018, 67% disapprove (including strongly disapprove) of *regular [marijuana](#) use* and between 92% and 97% disapprove of regular use of each of the other illicit drugs.
- For each of the drugs included in this set of questions, fewer respondents indicate disapproval of experimental or occasional use than of regular use. However, the differences are not great for the use of illicit drugs other than marijuana, because nearly all 12th graders disapprove of even experimenting with them. For example, the proportions disapproving of experimental use are 95% for [heroin](#), 89% for [cocaine](#), 90% for [crack](#), 87% for [sedatives \(barbiturates\)](#), 87% for [cocaine powder](#), 81% for [LSD](#), and 86% for [MDMA](#) (ecstasy, Molly). The extent of disapproval of illicit drug use by peers is no doubt underestimated by adolescents and, as we have written for some time, the extent of disapproval that actually does exist could be widely publicized and provide the basis for some potentially powerful prevention messages in the form of normative education.¹⁵
- For [marijuana](#), disapproval by 12th graders varies substantially for different usage levels. Four out of ten of all seniors (41%) disapprove of even trying marijuana once or twice, about half (49%) disapprove of its occasional use, and two of three (67%) disapprove of regular use. Looked at another way, one third of 12th graders (33%) say they don’t disapprove of regular marijuana use.

¹⁵ Johnston, L. D. (1991). Contributions of drug epidemiology to the field of drug abuse prevention. In C. Leukefeld & W. Bukoski (Eds.), *Drug abuse prevention research: Methodological issues* (pp. 57–80) (NIDA Research Monograph No. 107). Washington, DC: National Institute on Drug Abuse.

- Smoking a pack (or more) of [cigarettes](#) per day now meets with disapproval by nearly nine out of ten (89%) 12th grade students – a level comparable to the level of disapproval for many of the illicit drugs and actually higher than disapproval of regular marijuana use.
- Having [one or two drinks nearly every day](#) meets with the disapproval of 75% of 12th graders. Curiously, almost the same percentage of 12th graders (76%) disapprove of [weekend binge drinking](#) (five or more drinks once or twice each weekend), despite the fact that twice as many of them see a great risk in weekend binge drinking (45%) than in having one or two drinks nearly every day (23%).

One explanation for these seemingly anomalous findings may be that a greater proportion of this age group are themselves (and have friends who are) weekend binge drinkers rather than moderate daily drinkers. Therefore, some of their disapproval attitudes may be consistent with their own behavior, even though such attitudes are somewhat inconsistent with their beliefs about possible consequences. Perhaps the ubiquitous advertising of alcohol use in partying situations has also managed to increase social acceptability. In any case, this divergence between the perceived risk associated with the two behaviors and the corresponding levels of disapproval helps to illustrate the point that, while perceived risk may influence disapproval (as we have consistently hypothesized), other factors also play a role. As is mentioned above, the [Overview of Key Findings](#) for the 2018 results shows use and disapproval for 12th graders for each drug in graphs on the same page.

Extent of Disapproval among 8th and 10th Graders

- Attitudes about [inhalant](#) use have been asked only of 8th and 10th graders, and in 2018 the great majority (75% and 82%, respectively) said they disapprove of even trying inhalants.
- Currently, the levels of disapproval for trying [crack](#) and [cocaine powder](#) once or twice are similar for all three grades, with between 86% and 90% disapproving (see Tables 8-4 through 8-6).
- [Marijuana](#) use shows the greatest grade-related difference in disapproval – the lower the grade, the higher the level of disapproval. Specifically, in 2018, 65% of the 8th graders said they disapprove of trying marijuana compared to 48% of 10th graders and 41% of 12th graders (see Tables 8-4 through 8-6). There is now considerable evidence that these attitudes do shift with age – that there is an age effect common to all cohorts. For example, the 8th graders of 1991 for the most part constituted the 10th graders of 1993 and the 12th graders of 1995, and their disapproval of trying marijuana fell from 85% in 8th grade in 1991, to 70% by 10th grade (in 1993), and to 57% by 12th grade (in 1995). This age-related drop far exceeds the secular trend at any given grade level, and would likely be even more pronounced were it not for the loss of dropouts between 8th and 12th grades. (It is also possible that, in addition to any age effects, there are also cohort effects – i.e., lasting differences between class cohorts.)

Another possible explanation for this decrease in disapproval with age is that secondary school students' attitudes about use are age-graded – that is, they may disapprove more of an 8th grader using marijuana, less so for a 10th grader, and still less for a 12th grader. The

question stem used at the lower grades does not specify the age of the person about whom they are answering, and the respondents may simply assume that the question is about people their age. The question asked of 12th graders over the years specifies people “who are 18 or older,” and that lower limit corresponds closely to their current age.

- Disapproval of [alcohol](#) use is also somewhat higher at the lower grade levels than among 12th graders. For example, in 2018, 84% of 8th graders and 80% of 10th graders said they disapprove of [weekend binge drinking](#), versus 76% of 12th graders.
- For [cigarette](#) use, the differences between grades are negligible at present: 88% of 8th graders, 89% of 10th graders, and 89% of 12th graders said they disapprove of someone smoking one or more packs per day. Oddly enough, the 8th graders, who are least likely to see regular smoking as dangerous (as summarized earlier in this chapter), are the most likely to disapprove of it. This disparity may help to explain why so many do begin to smoke. In the absence of an underlying belief that smoking really represents a hazard to them, many may not be deterred by the predominant peer norms alone.

TRENDS IN DISAPPROVAL OF DRUG USE

As illustrated in a separate section below, while the perceived risk associated with a drug often reverses course a year *prior* to a change in the actual use of that drug, disapproval tends to move in a way more synchronous with use. In other words, disapproval tends to rise in the same year that use falls, and tends to fall in the same year that use rises. We have hypothesized that this is due in part to both disapproval and use being influenced by perceived risk, for which the inflection point often occurs a year earlier. For the long-term trends in disapproval for 12th grade see the upper panel in the “b” versions of Figures 8-1 through 8-3 and Figures 8-7 through 8-13 (e.g., the upper panel in Figure 8-1b). See also Table 8-6, which provides the underlying tabular data.

Trends in Disapproval among 12th Graders

- In 2018, 12th graders’ disapproval of regular [marijuana](#) use was 67%, which is the second lowest level ever recorded by MTF (the lowest level was set in 2017 at 65%; see Figure 8-1b and Table 8-6). This low disapproval of regular use is consistent with the historically low levels of perceived risk for any marijuana use; together these trends set the stage for a potentially substantial increase in marijuana use in the years to come.

Today’s low levels are similar to those that occurred near the beginning of the MTF study in 1977, when it was 66%. This was undoubtedly a continuation of longer-term trends that began in the late 1960s, as the norms of American young people against illicit drug use seriously eroded. Between 1977 and 1990, however, there was a substantial reversal of that trend as disapproval of regular use increased by 26 percentage points and reached the highest level recorded by the study in the early 1990s. While disapproval increased to this historic high, annual prevalence of marijuana hit a historic low. Since that time disapproval slipped during the 1990s drug relapse, while marijuana prevalence increased. Note that a sharp drop in disapproval is first apparent in 1993, a year *after* perceived risk began to decline. Changes in disapproval paused from 1995 to 2005, as did prevalence, and then disapproval continued its decline until it reached its current level. Trends in disapproval of

occasional and experimental use follow a similar pattern, although at lower levels. It is noteworthy that as perceived risk has fallen sharply in all three grades since the mid-2000s, disapproval of use has fallen much less sharply over the same period, which may play a role in explaining why use has not continued to rise as perceived risk has continued to decline.

- The proportion of 12th graders who disapproved of experimental use of [amphetamines](#) has gradually, but only slightly, increased over the course of the study (see Figure 8-7b and Table 8-6). Overall levels of disapproval have increased from 75% at the start of the study in 1975 to 81% in 2018, with two drops in disapproval along the way at the start of the 1980s and the start of the 1990s. Most of the increase in this measure occurred during the 1980s. Prevalence tracks with these changes in disapproval and decreased or levelled over the course of the survey, with the exception of increases at the start of the 1980s and the start of the 1990s. A revision of the amphetamine question in 2011 that updated the list of examples of specific amphetamines led to a slight, artifactual drop in the disapproval measure that year and thereafter, indicating that levels of disapproval today would be slightly higher were it not for this change. Levels of disapproval of regular use of amphetamines have bumped up against the ceiling of the measure and have been at 92% or higher in all years.
- Disapproval of experimental use of [sedatives \(barbiturates\)](#) is high and stood at 87% in 2018 (Figure 8-7b and Table 8-6). Overall, disapproval has increased over the life of the study from a low of 78% in the first year in 1975, with the one exception of a slight drop during the 1990s drug relapse. As was true of amphetamines, most of the increase in disapproval occurred during the 1980s. Annual prevalence has tracked with these changes and has overall decreased over the course of the survey (including a sharp decline in prevalence in the 1980s), with the exception of an increase during the 1990s drug relapse. Disapproval of *regular use* of sedatives has always been above 93% in all 44 years of the survey.
- The proportion of 12th grade students who disapprove of experimental [cocaine](#) use has hovered at 90% for the past 28 years (Figure 8-2b and Table 8-6). It reached a nadir in the early 1980s, when cocaine use was more popular and experimental use was not considered as dangerous as it is today. This is the same period when prevalence was near its highest levels recorded. There was a sharp rise in disapproval of experimental use between 1986 and 1987, the same interval in which perceived risk rose dramatically (closing the gap between the percent disapproving of experimental use and regular use). This jump in disapproval was accompanied by a sharp drop in use that has persisted ever since. Disapproval of *regular* cocaine use has always been 91% or higher in the 44 years of the survey. Disapproval of [crack cocaine](#) use, whether experimental, occasional, or regular, has always been higher than 85% (see Figure 8-3b), and in 2018 it was 90% or higher for each level of use.

We believe that the parallel or slightly lagged trends between perceived risk and disapproval – particularly for marijuana and cocaine use – are no accident. We have hypothesized for a long time that perceived risk is an important influence on a person’s

level of disapproval of a drug-using behavior, although there are surely other influences as well. As levels of personal disapproval change, these individually held attitudes are communicated among friends and acquaintances, and thus perceived norms change as well (as is illustrated in the next chapter). It is noteworthy that, as the rise in perceived risk for use of most of the illicit drugs began to reverse course after 1991 or 1992, personal disapproval began to drop for use of nearly all of the illicit drugs (see Table 8-6), and it continued to fall for use of many of these substances through 1997. Since 2001, disapproval for a number of drugs has been increasing some. This time lag is consistent with the notion that perceived risk influences disapproval, which, in turn, changes peer norms and use.

- The proportion of 12th grade students who disapprove of trying [*MDMA*](#) (ecstasy, and more recently Molly) was 86% in 2018, about where it was when first included on the survey in 1997, when it was 82% (Table 8-6). In 2014 the question was modified to include “Molly” as an example street name for MDMA, a change that appears to have had only a slight influence on overall levels of disapproval (in 2014 disapproval was 1.8 percentage points lower than the previous year when the question was not yet changed). Since MDMA was first tracked in 1997 disapproval levels gradually increased to a high of 89% in 2006 but then receded to current levels. It is worth noting that in 2002 disapproval increased significantly to 84%, at the same time that use decreased and perceived risk continued its increase. Increases in perceived risk may have contributed to the subsequent increase in personal disapproval, albeit with a fair amount of lag.
- Despite the large changes that were taking place in adult use of cigarettes and presumably in adult attitudes about smoking, young people’s disapproval of [*regular cigarette smoking*](#) (a pack or more per day) changed surprisingly little throughout much of the early and middle life of this study. Current levels in 2018 are at the highest ever recorded by the survey, and 89% of 12th graders disapprove of smoking a pack or more per day (Figure 8-12b). The overall trend has been a very gradual increase from a level of 68% during the first year of the survey in 1975. The one exception is a sustained decline in disapproval during the 1990s drug relapse, from 1992 to 1997. Since 1997 disapproval has increased fairly steadily and prevalence of cigarette smoking has declined. The earlier lack of appreciable change in students’ disapproval of smoking is surprising because many antismoking laws and policies had been enacted during the 1980s and 1990s. Very likely, the tobacco industry’s promotion and advertising efforts helped to account for this lack of change in disapproval, as did the widespread portrayal of smoking by characters – often the lead characters – in movies and on television. But by the mid-to-late 1990s the tobacco industry’s advertising efforts were curtailed and its product received so much adverse publicity that disapproval finally rose substantially.
- There have been some important changes in levels of disapproval related to [*alcohol*](#) use. Figure 8-11b tracks disapproval rates among 12th graders for several different levels of use (upper panel). The proportion of 12th graders who disapprove of the more frequent levels of alcohol use, such as daily drinking (either 4-5 drinks a day or 1-2 drinks per day) has stayed high throughout the surveys. More change is apparent in the episodic drinking levels of (a) five or more drinks once or twice a weekend, and (b) one or two drinks ever. Disapproval of both these levels has increased over the course of the survey with a pause

during the 1990s drug relapse. Corresponding to this trend, prevalence of past-year alcohol use has gradually declined over the course of the survey, with a pause in the decline during the 1990s drug relapse. The prevalence trends track more closely with the disapproval of the episodic alcohol use levels, most likely because they are closer to the levels that adolescents see as relevant to their own alcohol use behaviors.

- With regard to abstinence, the proportions of 12th graders who disapproved of even [*trying one or two drinks of alcohol*](#) have varied between 25% and 31% since 1989. A substantial increase took place between 1981 and 1989, when disapproval gradually increased from a survey-low of 16% in 1981. It seems likely that the increased minimum drinking age in many states between 1981 and 1987 contributed to these changes in attitude about abstinence, because all subsequent senior classes grew up under the higher minimum drinking age.¹⁶ If so, this illustrates the considerable capacity of laws to influence informal norms. It also seems likely that the activities of Mothers Against Drunk Driving (MADD), which peaked in 1984, and of the designated driver effort, which occurred mostly from 1989 to 1992, helped to influence these attitudes.¹⁷ While these ad campaigns dealt specifically with drinking and driving, we believe the negative connotations may well have generalized to heavy drinking under any circumstance, and contributed to the appreciable decline in weekend binge drinking.

Trends in Disapproval among 8th and 10th Graders

The lower panels in most of the ‘b’ figures in this chapter, starting with Figure 8-1b, show trends in disapproval graphically with regard to using each of the individual drugs. Tables 8-4 and 8-5 provide the tabular data for the trends in disapproval by 8th and 10th graders since 1991 (when the survey first started tracking these grades).

- The proportions of 8th and 10th graders who disapprove of experimental [*marijuana*](#) use are at the lowest levels recorded by the survey, at 65% and 48% respectively in 2018 (Figure 8-1b). Disapproval significantly declined in 2018 in 8th grade. As with 12th grade students, levels of disapproval fell during the 1990s relapse, to lows of 68% and 54% in 1997 among 8th and 10th graders, respectively. Thereafter disapproval steadily increased for a decade and then steadily declined in the next decade to return to the low levels set in the late 1990s. In all years 8th grade students report the highest levels of disapproval, followed by 10th graders and then 12th graders. Trends in annual marijuana prevalence track inversely with levels of disapproval (that is, use is higher when disapproval is lower), with use levels lowest among 8th grade students, higher among 10th graders, and highest among 12th graders.
- In 2018 the proportion of 8th grade students who disapprove of experimental use of [*inhalants*](#) significantly declined to the lowest level ever recorded by the survey, at 75% (Table 8-4). However, this disapproval level is still relatively high and only twelve points

¹⁶ O’Malley, P. M. & Wagenaar, A. C. (1991). [Effects of minimum drinking age laws on alcohol use, related behaviors, and traffic crash involvement among American youth: 1976–1987](#). *Journal of Studies on Alcohol*, 52, 478–491.

¹⁷ O’Malley, P. M., & Johnston, L. D. (2013). [Driving after drug or alcohol use by American high school seniors, 2001-2011](#). *American Journal of Public Health*, 102(11), 2027-34. See also O’Malley, P. M., & Johnston, L. D. (1999). [Drinking and driving among U.S. high school seniors, 1984–1997](#). *American Journal of Public Health*, 89, 678–684.

lower than the recorded high of 87% (in 2001). Disapproval levels among 10th grade students have varied little, between 80% and 89%, and in 2018 stood at 82%. Disapproval by 8th graders has fallen somewhat more than by 10th graders, as did their perceived risk for that drug. This would be consistent with a generational forgetting of the dangers of inhalant use.

- The proportions of 8th and 10th grade students who disapprove of experimental [LSD](#) use have hovered over the past decade at levels substantially lower than the levels for 12th grade students (Figure 8-8b and Tables 8-4 and 8-5). In 2018 the disapproval levels for 8th and 10th graders are 56% and 71%, respectively, which are substantially lower than the 81% for 12th graders. In 1991, when disapproval of LSD was first asked for the lower grades, all three grades had about the same levels of disapproval. From 1991 to about 2005 these levels then diverged, declining considerably among 8th graders, declining less among 10th graders, and actually increasing some among 12th graders until recently. Note, however, that the percentages of 8th and 10th graders who respond with “can’t say, drug unfamiliar” increased through 2008 (a finding consistent with the notion that generational forgetting has been occurring); thus the base for disapproval has shrunk, suggesting that the real decline of disapproval among the younger students who know what LSD is, may be less than what appears here for the total samples. Still, the divergence among the three grades in their disapproval of LSD, as can be seen in Figure 8-8b, is noteworthy.
- In 2018, disapproval of [MDMA](#) (ecstasy, Molly) use plateaued after a long, gradual decline that dates back to 2006 in both grades. This decline was interrupted in 2015 by an update in the survey question that introduced “Molly” as an example street name of MDMA, an update that led to a one-year increase in disapproval (Figure 8-10b). Before 2008 disapproval levels steadily fell from the highest levels ever recorded, at 78% (in 2003) for 8th grade students, and 84% (in 2004) for 10th grade students. Overall, trends in disapproval of ecstasy are similar to those for disapproval of LSD, to the extent that disapproval levels were almost equal across the three grades when first measured in all of them (in 2001), and have since diverged considerably, with the disapproval level now lowest in the 8th grade, higher in the 10th grade, and highest in the 12th grade.
- The proportions of 8th and 10th grade students who disapprove of experimental use of [crack](#) and of [cocaine powder](#) have hovered between 84% and 93% over the course of the study (Figure 8-3b and Tables 8-4 and 8-5). Disapproval levels fell somewhat during the 1990s drug relapse, but they have since rebounded and in 2018 stand at or above 86%. The softening in attitudes about using crack and cocaine powder in the early 1990s eventually translated into changes in usage levels. For example, crack use rose from 1991 through 1998 in 8th grade, from 1992 through 1998 in 10th grade, and from 1993 through 1999 in 12th grade. Since those peaks in use, there has been some falloff at all grades in the use of both crack (including a significant drop in crack use among 12th graders in 2011 and among 8th graders in 2012) and powder cocaine. The recent general decline in use of cocaine powder since 1999 occurred without any significant covariation with perceived risk or disapproval. However, the decline in crack use did co-vary with modest increases in perceived risk and disapproval. The lack of covariation with perceived risk until recently suggests the possibility that there was some substitution by another drug occurring. Ecstasy

would seem a possible candidate; however, its use does not co-vary with use of either crack or powder cocaine. One variable that does co-vary strongly is perceived availability of crack or cocaine powder, but that may be due to the fact that as use declines, a given drug becomes less available because there are fewer user peers who might be sources of the drug.

- The proportion of 8th grade students who disapprove of *weekend binge drinking* held steady at 84% in 2018, where it was when first measured in 1991, and it has changed little since then (Figure 8-11b). In 10th grade, the disapproval level continued its gradual ascent after 1996 that has lasted more than two decades and is now at 80%. In general, levels of self-reported binge drinking have moved inversely with disapproval over time.
- Disapproval of *smoking one or more packs of cigarettes per day* is at or near the highest levels ever recorded by the survey, with the proportions disapproving at 88% in 8th grade and 89% in 10th grade (Figure 8-12b). With the exception of a decline in disapproval during the 1990s drug relapse, disapproval has overall increased throughout the life of the survey. During the long period of increasing disapproval since the mid-1990s, and an even longer period of increase in perceived risk, actual smoking levels fell appreciably. These changes in attitudes may well have been brought about by the Tobacco Master Settlement Agreement of 1998, which resulted in extremely adverse publicity for the tobacco industry, the end of the Joe Camel advertising campaign, a prohibition on billboard advertising of cigarettes, and the initiation of antismoking campaigns aimed at youth that continue to this day.

ATTITUDES REGARDING THE LEGALITY OF DRUG USE

At the beginning of the study in 1975, legal restraints on drug use appeared likely to be in a state of flux for some time. Therefore, we decided to measure attitudes about legal sanctions. As it turns out, there have been some dramatic changes in these attitudes as well as in policies, particularly in recent years. Table 8-7 presents a set of questions on this subject, along with the answers provided by each 12th grade class. The set lists a sampling of illicit and licit drugs and asks respondents whether the use of each should be prohibited by law. A distinction was made between use in public and use in private – a distinction that has proven quite important. (These questions have not been asked of 8th and 10th grade respondents.) The answer alternatives are “no,” “yes,” and “not sure.” This section includes marijuana along with the other illicit drugs, and a subsequent section deals specifically with the legal status of marijuana.

Attitudes about Legality of Drug Use among 12th Graders

- In 2018 for the first time in the history of the survey the majority of 12th grade students did not favor legally prohibiting marijuana use in public places. The proportion of 12th graders who favor legally prohibiting marijuana use in public places decreased by 2 percentage points to 48% in 2018, continuing a long decline since 2008, when 70% favored prohibition. The percentage favoring legal prohibitions against use in private was also at a historic low of 22% in 2018, down from 82% in 1990.

- The majority of 12th graders agree that people should be prohibited by law from using *illicit drugs other than marijuana* in public. (The questions specified people age 18 or older; presumably proportions would be even higher for those under 18.) For example, in 2018 the percentages agreeing to prohibition are 60% for [amphetamines](#) or [sedatives \(barbiturates\)](#), 65% for [LSD](#), and 75% for [heroin](#). Even use in private is opposed by substantial proportions; for example, 42% believe that use in private of amphetamines or sedatives (barbiturates) should be illegal, while 44% believe the same for [LSD](#), and 66% believe it about [heroin](#) use.
- In 2018, 38% of 12th graders believe that [cigarette smoking](#) in “certain specified public places” should be prohibited by law. Were the question more specific as to the types of public places in which smoking might be prohibited (e.g., restaurants or hospitals), quite different results might have emerged.
- Less than half (42%) of 12th graders in 2018 think that [getting drunk](#) in public should be prohibited.
- For *all drugs* included in the question, fewer 12th graders believe that use in private settings should be illegal, as compared with use in public settings. This is particularly true for [getting drunk](#) in private (which only 20% think should be illegal vs. 42% for getting drunk in public) and for smoking [marijuana](#) in private (which only 22% think should be illegal vs. 48% for smoking marijuana in public places).

Trends in Attitudes about Legality of Drug Use among 12th Graders

- In 2018 the proportions of 12th grade students agreeing that use of [LSD](#), [heroin](#), and [amphetamines](#) in private should be prohibited by law continued their long declines and were near historic lows (Table 8-7). The decline has been weakest for heroin, which seems to have maintained its reputation as a very dangerous drug, and support for legal prohibitions against its use in private stood at 66% in 2018. Steeper declines have been apparent for LSD and amphetamines.

For all three drugs, the trends for support of legal prohibitions against public use are similar to their trends for private use, although levels of support of legal prohibitions against public use are higher and are 60% or above in all years. Specifically, in 2018 all three drugs – LSD, heroin, and amphetamines – decreased in students’ belief that their use in public places should be prohibited, although the declines were not statistically significant. The trends for all three drugs have generally been downward since 1997-98.

- Support for laws prohibiting consumption of [marijuana](#) in private has been in substantial decline since 1990 and has fallen by more than half from a high of 56% (in 1990) to 22% in 2018, the lowest level ever recorded by the survey. This trend is almost a mirror image of the pattern before 1990, when the proportion who believed private marijuana use should be prohibited more than doubled, from 25% in 1978 to its level of 56% in 1990 – also a dramatic shift.

The trend for prohibition of marijuana use in *public* follows very closely the same overall pattern seen for private use, with support for prohibition of public use running about 30 percentage points higher in every year. In 2018 it was 48%, the lowest level ever recorded by the survey.

- The proportion of 12th graders who said [smoking cigarettes](#) “in certain specified public places” should be prohibited by law was 38% in 2018, a historic low. The proportion has dipped below the 40% level where it had hovered since 2013. In earlier years level of support hovered at around 45% since the 1980s and showed surprisingly little change given the steady decline in smoking prevalence over the course of the survey. Given recent widespread prohibitions of smoking in many public and private places, it is possible that the assumed definition of “certain specified public places” has expanded in the minds of many 12th graders.
- Attitudes about the legality of [drunkenness](#) in public significantly declined in 2018 to 42%, a historic low. In the past decade the percentage of 12th grade students favoring prohibition of public drunkenness had varied within the narrow range of 46% to 50%. This historic low in 2018 joins historic lows in attitudes toward both smoking cigarettes and marijuana use in public, suggesting a growing, general opposition to legal prohibition of public drug use, at least for the most commonly used substances.

For private drunkenness, support for a prohibition ranged from 19% to 23% over the past decade, and in 2018 registered at 20%.

THE LEGAL STATUS OF MARIJUANA

Another set of questions asks with more specificity what legal sanctions, if any, 12th graders think should be attached to the use and sale of marijuana. (These questions have not been asked of 8th and 10th grade respondents.) Respondents are also asked how they would be likely to react to the legalized use and sale of the drug. The answers to such a hypothetical question must be interpreted with considerable caution, of course.

Attitudes and Predicted Responses to Legalization of Marijuana

- Table 8-8 lists the proportions of 12th graders in 2018 who favor various legal consequences for marijuana use. The proportion who believe it should be entirely legal was 48%, near the record high set the previous year of 49%. As the percentage favoring legality increased, the percentage believing marijuana use should be a crime decreased and in 2018 was 11%, the lowest level recorded by the survey, having fallen from a peak of 53% in 1990.
- Asked whether they thought it should be legal to sell marijuana *if* it were legal to use it, about two in three (66%) said “yes,” very near the historic high of 67% set the previous year. However, about 83% of those answering “yes” (55% of all respondents) would permit sale only to adults. A small minority (11%) favored the sale to anyone, regardless of age, while 19% said that sale should not be legal even if use were made legal, and 15% said they “don’t know.” Thus, while the majority subscribe to the idea of legal sale, if use is

allowed, the great majority agree with the notion that sale to underage people should not be legal.

- Most 12th graders felt that they would be little affected personally by the legalization of either the sale or the use of marijuana. Nearly half (45%) of the respondents said that they would not use the drug even if it were legal to buy and use, while others indicated that they would use it about as often as they do now (16%) or less often (1%). Only 9% said they would use it more often than they do at present, while 16% thought they would try it. Another 13% said they did not know how their behavior would be affected if marijuana were legalized. Still, this amounts to 25% of all 12th graders, or about one in four, who thought that they would try marijuana, or that their use would increase, if marijuana were legalized.
- A study of the effects of *decriminalization* by several states during the late 1970s, based on MTF data, found no evidence of any impact on the use of marijuana among young people, nor on attitudes and beliefs concerning its use.¹⁸ However, it should be noted that decriminalization falls well short of the full *legalization* posited in the questions here. Moreover, the situation today is very different from the one in the late 1970s, with more peer disapproval and more rigorous enforcement of drug laws, at least until recently. Some more recent studies suggest that there might be an impact of decriminalization, because “youths living in decriminalized states are significantly more likely to report currently using marijuana.”¹⁹ One study using MTF data shows that prevalence of marijuana use among 12th grade Californian students significantly increased in the two years after decriminalization went into effect in 2011, and youth attitudes also became significantly more permissive.²⁰ As more states approve full legalization of recreational use for adults (as has occurred in California, Massachusetts, Michigan, Nevada, Maine, Colorado, Washington, Oregon, Alaska, Vermont, and Washington, DC), it seems quite possible that attitudes about, and use of, marijuana will change. Declines in perceived risk and disapproval of marijuana would seem the most likely attitudinal changes, and such changes may well lead to increased use among youth.

Trends in Attitudes and Predicted Responses to Legalization of Marijuana

- In 2018 the proportion of 12th graders who favor [legalization](#) of marijuana was 48%, about the same as the record of 49% set in the previous year. Support for legalization has been steadily and rapidly increasing since 2008, when it was near 30%. Prior to 2008, support followed a U-shape curve, in which support levels near 30% were present at the beginning of the survey, in 1975, then dipped by half to a nadir of 15% in 1986-88, only to redouble and return to around 30% by 1995, where it hovered for a decade before rising considerably.

¹⁸ See Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1981). *Marijuana decriminalization: The impact on youth, 1975–1980* (Monitoring the Future Occasional Paper No. 13). Ann Arbor, MI: Institute for Social Research.

¹⁹ Chaloupka, F. J., Pacula, R. L., Farrelly, M. C., Johnston, L. D., O'Malley, P. M., & Bray, J. W. (February 1999). *Do higher cigarette prices encourage youth to use marijuana?* (NBER Working Paper No. 6939). Cambridge, MA: National Bureau of Economic Research.

²⁰ Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2015). *Trends in use of marijuana and attitudes toward marijuana among youth before and after decriminalization: The case of California 2007-2013*. *International Journal of Drug Policy*, 26, 336-344.

- The proportion of 12th grade students who favor treating [*marijuana use as a crime*](#) is at the lowest level ever recorded by the survey (11%), and its trend is a mirror image of the pattern seen for support of marijuana legalization. Back around 1990 as many as 50% thought its use should be a crime.
- Given that the percentage of 12th grade students who support legalization has never exceeded 50% in the 44 years of this study, some of the greater tolerance for marijuana use among adults²¹ apparently develops after the high school years.
- The recent trend toward greater tolerance of marijuana use is also seen in the proportion of 12th grade students who support the [*sale of marijuana*](#) to adults, conditional on its use being legalized. In 2018 this proportion was 55%, the same level as in 2017 and the highest level ever recorded by the study (Table 8-8). In past years, support had reached a nadir of 38% in 1989, and then gradually increased to present levels, with a decade-long plateau between 1995 and 2005.
- It is likely that the growing number of states that have legalized recreational marijuana use for adults plays a role in the increasing tolerance of marijuana use among 12th grade students, who may interpret increasing legalization as a sign that marijuana use is safe and state-sanctioned.
- In 2018, 9% of 12th graders [*predicted they would use marijuana if it were legally available*](#) (Table 8-8). This is the second highest level recorded for this measure, with the record of 10% set last year. The percentage who predicted they would try marijuana if it were legal reached a historic high in 2018, at 16%. The percentage who reported they would not use marijuana even if it were legal significantly declined to 45%, a record low. Previous to 2018 these outcomes had been fairly similar for all graduating classes. The slight shifts that did occur were attributable mostly to the changing proportions of 12th graders who had actually used marijuana.

²¹ Motel, S. (2015, April 14). [6 facts about marijuana](#). Washington, DC: Pew Research Center.

TABLE 8-1
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Try marijuana once or twice ^b	40.4	39.1	36.2	31.6	28.9	27.9	25.3	28.1	28.0	29.0	27.7	28.2	30.2	31.9	31.4
Smoke marijuana occasionally ^b	57.9	56.3	53.8	48.6	45.9	44.3	43.1	45.0	45.7	47.4	46.3	46.0	48.6	50.5	48.9
Smoke marijuana regularly ^b	83.8	82.0	79.6	74.3	73.0	70.9	72.7	73.0	73.3	74.8	72.2	71.7	74.2	76.2	73.9
Try synthetic marijuana once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take synthetic marijuana occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try inhalants once or twice ^d	35.9	37.0	36.5	37.9	36.4	40.8	40.1	38.9	40.8	41.2	45.6	42.8	40.3	38.7	37.5
Take inhalants regularly ^d	65.6	64.4	64.6	65.5	64.8	68.2	68.7	67.2	68.8	69.9	71.6	69.9	67.4	66.4	64.1
Take LSD once or twice ^e	—	—	42.1	38.3	36.7	36.5	37.0	34.9	34.1	34.0	31.6	29.6	27.9	26.8	25.8
Take LSD regularly ^e	—	—	68.3	65.8	64.4	63.6	64.1	59.6	58.8	57.5	52.9	49.3	48.2	45.2	44.0
Try ecstasy (MDMA, Molly) once or twice ^f	—	—	—	—	—	—	—	—	—	—	35.8	38.9	41.9	42.5	40.0
Take ecstasy (MDMA, Molly) occasionally ^f	—	—	—	—	—	—	—	—	—	—	55.5	61.8	65.8	65.1	60.8
Try salvia once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take salvia occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try crack once or twice ^d	62.8	61.2	57.2	54.4	50.8	51.0	49.9	49.3	48.7	48.5	48.6	47.4	48.7	49.0	49.6
Take crack occasionally ^d	82.2	79.6	76.8	74.4	72.1	71.6	71.2	70.6	70.6	70.1	70.0	69.7	70.3	70.4	69.4
Try cocaine powder once or twice ^d	55.5	54.1	50.7	48.4	44.9	45.2	45.0	44.0	43.3	43.3	43.9	43.2	43.7	44.4	44.2
Take cocaine powder occasionally ^d	77.0	74.3	71.8	69.1	66.4	65.7	65.8	65.2	65.4	65.5	65.8	64.9	65.8	66.0	65.3
Try heroin once or twice without using a needle ^g	—	—	—	—	60.1	61.3	63.0	62.8	63.0	62.0	61.1	62.6	62.7	61.6	61.4
Take heroin occasionally without using a needle ^g	—	—	—	—	76.8	76.6	79.2	79.0	78.9	78.6	78.5	78.5	77.8	77.5	76.8
Try OxyContin once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take OxyContin occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Vicodin once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Vicodin occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Adderall occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try bath salts (synthetic stimulants) once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take bath salts (synthetic stimulants) occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try cough/cold medicine once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take cough/cold medicine occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	11.0	12.1	12.4	11.6	11.6	11.8	10.4	12.1	11.6	11.9	12.2	12.5	12.6	13.7	13.9
Take one or two drinks nearly every day ^b	31.8	32.4	32.6	29.9	30.5	28.6	29.1	30.3	29.7	30.4	30.0	29.6	29.9	31.0	31.4
Have five or more drinks once or twice each weekend ^b	59.1	58.0	57.7	54.7	54.1	51.8	55.6	56.0	55.3	55.9	56.1	56.4	56.5	56.9	57.2
Smoke one to five cigarettes per day ^c	—	—	—	—	—	—	—	—	26.9	28.9	30.5	32.8	33.4	37.0	37.5
Smoke one or more packs of cigarettes per day ^g	51.6	50.8	52.7	50.8	49.8	50.4	52.6	54.3	54.8	58.8	57.1	57.5	57.7	62.4	61.5
Use electronic cigarettes (e-cigarettes) regularly ^h	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally ^{cl}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly ^{cl}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smoke little cigars or cigarillos regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly	35.1	35.1	36.9	35.5	33.5	34.0	35.2	36.5	37.1	39.0	38.2	39.4	39.7	41.3	40.8
Take dissolvable tobacco regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take snus regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids ^l	64.2	69.5	70.2	67.6	—	—	—	—	—	—	—	—	—	—	—

Approximate weighted N = 17,400 18,700 18,400 17,400 17,500 17,900 18,800 18,100 16,700 16,700 16,200 15,100 16,500 17,000 16,800

Table continued on next page.

TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk ^a													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Try marijuana once or twice ^b	32.2	32.8	31.1	29.5	29.5	28.2	26.0	24.1	23.0	23.0	22.8	22.0	20.3	-1.7
Smoke marijuana occasionally ^b	48.9	50.2	48.1	44.8	44.1	43.4	41.7	37.2	36.7	36.8	36.8	34.0	32.1	-1.9
Smoke marijuana regularly ^b	73.2	74.3	72.0	69.8	68.0	68.3	66.9	61.0	58.9	58.0	57.5	54.8	52.9	-1.9
Try synthetic marijuana once or twice ^c	—	—	—	—	—	—	24.4	24.2	23.9	26.0	27.5	23.0	22.2	-0.9
Take synthetic marijuana occasionally ^c	—	—	—	—	—	—	36.8	36.2	32.4	33.5	35.4	30.4	28.8	-1.6
Try inhalants once or twice ^d	35.8	35.9	33.9	34.1	35.5	34.7	34.2	33.7	34.5	33.7	32.0	31.5	29.6	-1.9 s
Take inhalants regularly ^d	62.1	61.9	59.2	58.1	60.6	59.0	59.0	56.7	55.3	54.1	52.1	50.0	46.8	-3.3 ss
Take LSD once or twice ^e	23.8	22.8	21.9	21.4	23.6	21.7	19.9	19.6	20.0	22.2	22.6	23.1	20.8	-2.2
Take LSD regularly ^e	40.0	38.5	36.9	37.0	38.6	37.8	35.0	34.5	33.7	37.0	36.8	37.9	36.4	-1.4
Try ecstasy (MDMA, Molly) once or twice ^f	32.8	30.4	28.6	26.0	27.0	25.4	23.6	24.1†	46.1	45.5	42.5	43.3	41.9	-1.4
Take ecstasy (MDMA, Molly) occasionally ^f	52.0	48.6	46.8	43.9	45.0	43.7	41.0	42.1†	59.7	58.5	54.0	54.6	53.6	-1.0
Try salvia once or twice ^c	—	—	—	—	—	—	9.5	8.5	—	—	—	—	—	—
Take salvia occasionally ^c	—	—	—	—	—	—	16.1	14.6	—	—	—	—	—	—
Try crack once or twice ^d	47.6	47.3	47.1	46.6	49.6	48.1	47.0	47.1	48.3	49.6	48.9	49.3	47.7	-1.6
Take crack occasionally ^d	68.7	68.3	67.9	66.6	68.4	67.7	67.8	66.5	65.5	65.7	65.7	66.9	65.3	-1.6
Try cocaine powder once or twice ^d	43.5	43.5	42.7	42.3	45.7	43.3	42.8	43.5	43.9	44.3	44.3	44.5	42.6	-2.0
Take cocaine powder occasionally ^d	64.0	64.2	62.7	62.3	64.2	63.5	63.3	62.7	61.8	61.6	62.4	62.7	61.0	-1.7
Try heroin once or twice without using a needle ^a	60.4	60.3	60.8	60.0	62.3	61.7	59.1	59.8	60.9	61.4	59.2	62.9	59.5	-3.4 s
Take heroin occasionally without using a needle ^a	75.3	76.4	75.5	74.0	76.7	75.9	75.1	73.4	73.2	72.7	70.3	74.7	72.1	-2.6 s
Try OxyContin once or twice ^c	—	—	—	—	—	—	21.9	19.9	22.1	20.2	21.3	21.0	20.8	-0.3
Take OxyContin occasionally ^c	—	—	—	—	—	—	35.3	32.6	34.4	32.5	33.5	32.6	32.5	-0.1
Try Vicodin once or twice ^c	—	—	—	—	—	—	17.5	15.0	18.4	16.9	18.3	17.1	16.1	-1.0
Take Vicodin occasionally ^c	—	—	—	—	—	—	29.4	26.2	28.2	26.7	28.8	26.7	25.9	-0.7
Try Adderall once or twice ^c	—	—	—	—	—	—	17.6	16.5	20.7	19.2	21.4	20.4	20.1	-0.3
Take Adderall occasionally ^c	—	—	—	—	—	—	29.9	28.3	32.5	32.0	35.9	33.8	34.0	+0.2
Try bath salts (synthetic stimulants) once or twice ^c	—	—	—	—	—	—	24.9	39.3	36.8	33.9	31.8	32.0	30.1	-1.9
Take bath salts (synthetic stimulants) occasionally ^c	—	—	—	—	—	—	38.8	51.9	49.1	45.5	42.5	43.1	41.2	-2.0
Try cough/cold medicine once or twice ^c	—	—	—	—	—	—	21.2	20.1	22.9	20.9	23.5	21.2	19.5	-1.7
Take cough/cold medicine occasionally ^c	—	—	—	—	—	—	38.8	37.3	37.9	37.3	38.6	35.2	34.5	-0.6
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	14.2	14.9	13.5	14.4	14.9	14.5	13.9	13.7	14.8	15.3	14.7	14.2	13.6	-0.6
Take one or two drinks nearly every day ^b	31.3	32.6	31.5	31.5	32.3	31.8	31.4	30.6	31.0	30.9	30.7	30.0	28.7	-1.3
Have five or more drinks once or twice each weekend ^b	56.4	57.9	57.0	55.8	57.2	58.4	58.2	55.7	54.3	53.9	53.4	53.7	52.3	-1.4
Smoke one to five cigarettes per day ^c	37.0	38.6	38.6	38.6	38.2	37.4	40.4	42.8	41.9	41.7	43.2	41.9	40.8	-1.1
Smoke one or more packs of cigarettes per day ^g	59.4	61.1	59.8	59.1	60.9	62.5	62.6	62.4	62.1	63.0	61.2	62.1	61.3	-0.8
Use electronic cigarettes (e-cigarettes) regularly ^h	—	—	—	—	—	—	—	—	14.5	18.5	21.3	20.3	22.1	+1.8
Vape an e-liquid with nicotine occasionally ^{c, i}	—	—	—	—	—	—	—	—	—	—	—	18.3	16.9	-1.4
Vape an e-liquid with nicotine regularly ^{c, i}	—	—	—	—	—	—	—	—	—	—	—	32.7	32.4	-0.3
Smoke little cigars or cigarillos regularly ^c	—	—	—	—	—	—	—	—	28.8	31.0	32.5	30.8	30.5	-0.3
Use smokeless tobacco regularly	39.5	41.8	41.0	40.8	41.8	40.8	37.8	36.2	34.5	36.6	35.1	34.8	34.3	-0.5
Take dissolvable tobacco regularly ^c	—	—	—	—	—	—	34.8	32.2	33.5	33.0	34.3	31.9	31.3	-0.6
Take snus regularly ^c	—	—	—	—	—	—	42.2	38.9	38.3	37.7	37.9	36.4	34.2	-2.2
Take steroids ^l	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

Approximate weighted N = 16,500 16,100 15,700 15,000 15,300 16,000 15,100 14,600 14,600 14,400 16,900 15,300 14,000

TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. '—' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. "‡" indicates that the question changed the following year.

^aAnswer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

^bBeginning in 2012 data based on two thirds of N indicated.

^cData based on one third of N indicated.

^dBeginning in 1997, data based on two thirds of N indicated due to changes in questionnaire forms.

^eData based on one of two forms in 1993–1996; N is one half of N indicated. Beginning in 1997, data based on one third of N indicated due to changes in questionnaire forms.

^fBeginning in 2014 data are based on the revised question which included "Molly," N is one third of N indicated in 2014 and two thirds of N indicated in 2015. 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

^gBeginning in 1999, data based on two thirds of N indicated due to changes in questionnaire forms.

^hE-cigarette data based on two thirds of N indicated. Little cigars or cigarillos data based on one third N indicated.

ⁱData based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; N is one half of N indicated.

^jPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

TABLE 8-2
Trends in Harmfulness of Drugs as Perceived by 10th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Try marijuana once or twice ^b	30.0	31.9	29.7	24.4	21.5	20.0	18.8	19.6	19.2	18.5	17.9	19.9	21.1	22.0	22.3
Smoke marijuana occasionally ^b	48.6	48.9	46.1	38.9	35.4	32.8	31.9	32.5	33.5	32.4	31.2	32.0	34.9	36.2	36.6
Smoke marijuana regularly ^b	82.1	81.1	78.5	71.3	67.9	65.9	65.9	65.8	65.9	64.7	62.8	60.8	63.9	65.6	65.5
Try synthetic marijuana once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take synthetic marijuana occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try inhalants once or twice ^d	37.8	38.7	40.9	42.7	41.6	47.2	47.5	45.8	48.2	46.6	49.9	48.7	47.7	46.7	45.7
Take inhalants regularly ^d	69.8	67.9	69.6	71.5	71.8	75.8	74.5	73.3	76.3	75.0	76.4	73.4	72.2	73.0	71.2
Take LSD once or twice ^e	—	—	48.7	46.5	44.7	45.1	44.5	43.5	45.0	43.0	41.3	40.1	40.8	40.6	40.3
Take LSD regularly ^e	—	—	78.9	75.9	75.5	75.3	73.8	72.3	73.9	72.0	68.8	64.9	63.0	63.1	60.8
Try ecstasy (MDMA, Molly) once or twice ^f	—	—	—	—	—	—	—	—	—	—	39.4	43.5	49.7	52.0	51.4
Take ecstasy (MDMA, Molly) occasionally ^f	—	—	—	—	—	—	—	—	—	—	64.8	67.3	71.7	74.6	72.8
Try salvia once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take salvia occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try crack once or twice ^d	70.4	69.6	66.6	64.7	60.9	60.9	59.2	58.0	57.8	56.1	57.1	57.4	57.6	56.7	57.0
Take crack occasionally ^d	87.4	86.4	84.4	83.1	81.2	80.3	78.7	77.5	79.1	76.9	77.3	75.7	76.4	76.7	76.9
Try cocaine powder once or twice ^d	59.1	59.2	57.5	56.4	53.5	53.6	52.2	50.9	51.6	48.8	50.6	51.3	51.8	50.7	51.3
Take cocaine powder occasionally ^d	82.2	80.1	79.1	77.8	75.6	75.0	73.9	71.8	73.6	70.9	72.3	71.0	71.4	72.2	72.4
Try heroin once or twice without using a needle ^e	—	—	—	—	70.7	72.1	73.1	71.7	73.7	71.7	72.0	72.2	70.6	72.0	72.4
Take heroin occasionally without using a needle ^e	—	—	—	—	85.1	85.8	86.5	84.9	86.5	85.2	85.4	83.4	83.5	85.4	85.2
Try OxyContin once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take OxyContin occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Vicodin once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Vicodin occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Adderall occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try bath salts (synthetic stimulants) once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take bath salts (synthetic stimulants) occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try cough/cold medicine once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take cough/cold medicine occasionally ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	9.0	10.1	10.9	9.4	9.3	8.9	9.0	10.1	10.5	9.6	9.8	11.5	11.5	10.8	11.5
Take one or two drinks nearly every day ^b	36.1	36.8	35.9	32.5	31.7	31.2	31.8	31.9	32.9	32.3	31.5	31.0	30.9	31.3	32.6
Have five or more drinks once or twice each weekend ^b	54.7	55.9	54.9	52.9	52.0	50.9	51.8	52.5	51.9	51.0	50.7	51.7	51.6	51.7	53.3
Smoke one to five cigarettes per day ^c	—	—	—	—	—	—	—	—	28.4	30.2	32.4	35.1	38.1	39.7	41.0
Smoke one or more packs of cigarettes per day ^a	60.3	59.3	60.7	59.0	57.0	57.9	59.9	61.9	62.7	65.9	64.7	64.3	65.7	68.4	68.1
Use electronic cigarettes (e-cigarettes) regularly ^h	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally ^{cj}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly ^{ci}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smoke little cigars or cigarillos regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly	40.3	39.6	44.2	42.2	38.2	41.0	42.2	42.8	44.2	46.7	46.2	46.9	48.0	47.8	46.1
Take dissolvable tobacco regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take snus regularly ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids ⁱ	67.1	72.7	73.4	72.5	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

Approximate weighted N = 14,700 14,800 15,300 15,900 17,000 15,700 15,600 15,000 13,600 14,300 14,000 14,300 15,800 16,400 16,200

TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

<i>How much do you think people risk harming themselves (physically or in other ways), if they . . .</i>	Percentage saying great risk ^a													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Try marijuana once or twice ^b	22.2	22.2	23.1	20.5	19.9	19.3	17.2	15.7	15.2	15.8	16.4	14.8	13.9	-0.8
Smoke marijuana occasionally ^b	35.6	36.0	37.0	32.9	30.9	30.1	26.8	25.1	23.9	24.7	24.4	21.9	21.4	-0.5
Smoke marijuana regularly ^b	64.9	64.5	64.8	59.5	57.2	55.2	50.9	46.5	45.4	43.2	44.0	40.6	38.1	-2.5
Try synthetic marijuana once or twice ^c	—	—	—	—	—	—	24.6	24.1	25.0	26.3	26.8	25.1	24.3	-0.9
Take synthetic marijuana occasionally ^c	—	—	—	—	—	—	34.9	32.8	30.7	31.7	31.8	29.2	28.8	-0.4
Try inhalants once or twice ^d	43.9	43.0	41.2	42.0	42.5	42.4	42.4	43.0	43.1	43.1	40.7	37.9	38.6	+0.7
Take inhalants regularly ^d	70.2	68.6	66.8	66.8	67.1	66.2	66.1	65.9	64.7	63.1	59.7	57.7	57.6	-0.1
Take LSD once or twice ^e	38.8	35.4	34.6	34.9	33.9	34.2	34.7	34.7	34.5	36.4	34.4	31.6	33.8	+2.1
Take LSD regularly ^e	60.7	56.8	55.7	56.7	56.1	54.9	56.4	55.9	54.8	58.3	55.2	53.0	54.1	+1.1
Try ecstasy (MDMA, Molly) once or twice ^f	48.4	45.3	43.2	38.9	36.3	37.2	36.2	36.0†	53.2	54.8	54.2	55.4	54.5	-0.9
Take ecstasy (MDMA, Molly) occasionally ^f	71.3	68.2	66.4	62.1	59.2	60.8	59.8	58.6‡	69.0	70.1	69.3	68.6	67.6	-1.0
Try salvia once or twice ^c	—	—	—	—	—	—	12.2	10.7	—	—	—	—	—	—
Take salvia occasionally ^c	—	—	—	—	—	—	20.3	17.1	—	—	—	—	—	—
Try crack once or twice ^d	56.6	56.4	56.5	57.7	58.1	59.5	59.0	60.2	61.4	62.5	61.3	60.7	60.4	-0.2
Take crack occasionally ^d	76.2	76.0	76.5	75.9	76.2	76.5	76.7	77.8	76.4	77.5	75.2	75.1	75.0	-0.1
Try cocaine powder once or twice ^d	50.2	49.5	49.8	50.8	52.9	53.0	53.4	54.5	54.1	54.8	54.6	52.5	52.6	+0.1
Take cocaine powder occasionally ^d	71.3	70.9	71.1	71.0	72.2	72.0	72.6	72.8	71.7	72.6	70.9	70.4	70.2	-0.2
Try heroin once or twice without using a needle ^e	70.0	70.5	70.8	72.2	73.0	72.9	72.6	73.2	72.6	74.1	73.3	72.2	71.4	-0.9
Take heroin occasionally without using a needle ^e	83.6	84.2	83.1	83.3	84.8	83.4	84.4	84.0	82.5	83.3	82.2	81.4	81.0	-0.4
Try OxyContin once or twice ^c	—	—	—	—	—	—	30.9	29.4	29.7	29.9	28.7	27.8	29.6	+1.8
Take OxyContin occasionally ^c	—	—	—	—	—	—	48.3	44.7	44.4	43.7	41.4	41.3	43.9	+2.6
Try Vicodin once or twice ^c	—	—	—	—	—	—	23.2	21.0	22.5	24.1	21.8	22.1	23.2	+1.1
Take Vicodin occasionally ^c	—	—	—	—	—	—	40.3	36.0	36.4	35.4	32.6	32.0	34.8	+2.9 s
Try Adderall once or twice ^c	—	—	—	—	—	—	19.7	17.6	22.2	22.9	22.5	21.6	23.2	+1.6
Take Adderall occasionally ^c	—	—	—	—	—	—	34.3	30.5	37.0	37.0	35.8	36.4	39.8	+3.4 s
Try bath salts (synthetic stimulants) once or twice ^c	—	—	—	—	—	—	32.3	50.1	49.6	49.1	42.7	42.5	41.1	-1.4
Take bath salts (synthetic stimulants) occasionally ^c	—	—	—	—	—	—	44.9	61.8	61.1	60.4	53.0	51.5	51.4	-0.1
Try cough/cold medicine once or twice ^c	—	—	—	—	—	—	23.6	21.6	22.9	24.0	24.0	21.8	22.1	+0.4
Take cough/cold medicine occasionally ^c	—	—	—	—	—	—	40.4	37.3	38.3	38.2	37.6	36.4	37.2	+0.8
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	11.1	11.6	12.6	11.9	11.9	12.3	11.3	11.3	11.6	12.4	13.3	12.5	13.0	+0.5
Take one or two drinks nearly every day ^b	31.7	33.3	35.0	33.8	33.1	32.9	31.8	30.6	31.3	31.2	32.2	30.9	30.3	-0.6
Have five or more drinks once or twice each weekend ^b	52.4	54.1	56.6	54.2	54.6	55.5	52.8	52.3	54.0	54.5	54.5	52.0	51.8	-0.1
Smoke one to five cigarettes per day ^c	41.3	41.7	43.5	42.8	41.4	44.8	49.1	47.7	52.0	52.9	53.0	50.0	49.9	0.0
Smoke one or more packs of cigarettes per day ^g	67.7	68.2	69.1	67.3	67.2	69.8	71.6	70.8	72.0	72.9	71.5	69.8	69.6	-0.2
Use electronic cigarettes (e-cigarettes) regularly ^h	—	—	—	—	—	—	—	—	14.1	17.0	19.1	19.4	22.8	+3.4 ss
Vape an e-liquid with nicotine occasionally ^{cj}	—	—	—	—	—	—	—	—	—	—	—	17.0	17.9	+1.0
Vape an e-liquid with nicotine regularly ^{cj}	—	—	—	—	—	—	—	—	—	—	—	30.0	31.3	+1.3
Smoke little cigars or cigarillos regularly ^c	—	—	—	—	—	—	—	—	31.0	34.9	35.3	34.0	34.9	+0.9
Use smokeless tobacco regularly	45.9	46.7	48.0	44.7	43.7	45.7	42.9	40.0	39.9	42.5	43.0	40.7	41.0	+0.3
Take dissolvable tobacco regularly ^c	—	—	—	—	—	—	33.3	31.3	32.0	35.6	34.2	32.7	33.2	+0.6
Take snus regularly ^c	—	—	—	—	—	—	41.0	38.9	38.8	41.8	39.9	38.1	39.8	+1.7
Take steroids ⁱ	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

Approximate weighted N = 16,200 16,100 15,100 15,900 15,200 14,900 15,000 12,900 13,000 15,600 14,700 13,500 14,300

TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. '—' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. '†' indicates that the question changed the following year.

^aAnswer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar

^bBeginning in 2012 data based on two thirds of N indicated.

^cData based on one third of N indicated.

^dBeginning in 1997, data based on two thirds of N indicated due to changes in questionnaire forms.

^eData based on one of two forms in 1993–1996; N is one half of N indicated. Beginning in 1997, data based on one third of N indicated due to changes in questionnaire forms.

^fBeginning in 2014 data are based on the revised question which included "Molly," N is one third of N indicated in 2014 and two thirds of N indicated in 2015. 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

^gBeginning in 1999, data based on two thirds of N indicated due to changes in questionnaire forms.

^hE-cigarette data based on two thirds of N indicated. Little cigars or cigarillos data based on one third N indicated.

ⁱData based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; N is one half of N indicated.

^jPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

TABLE 8-3
Trends in **Harmfulness** of Drugs as Perceived by **12th Graders**

	Percentage saying great risk ^a																
<i>How much do you think people risk harming themselves (physically or in other ways), if they . . .</i>	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
Try marijuana once or twice	15.1	11.4	9.5	8.1	9.4	10.0	13.0	11.5	12.7	14.7	14.8	15.1	18.4	19.0	23.6	23.1	
Smoke marijuana occasionally	18.1	15.0	13.4	12.4	13.5	14.7	19.1	18.3	20.6	22.6	24.5	25.0	30.4	31.7	36.5	36.9	
Smoke marijuana regularly	43.3	38.6	36.4	34.9	42.0	50.4	57.6	60.4	62.8	66.9	70.4	71.3	73.5	77.0	77.5	77.8	
Try synthetic marijuana once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take synthetic marijuana occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try LSD once or twice	49.4	45.7	43.2	42.7	41.6	43.9	45.5	44.9	44.7	45.4	43.5	42.0	44.9	45.7	46.0	44.7	
Take LSD regularly	81.4	80.8	79.1	81.1	82.4	83.0	83.5	83.5	83.2	83.8	82.9	82.6	83.8	84.2	84.3	84.5	
Try PCP once or twice	—	—	—	—	—	—	—	—	—	—	—	—	55.6	58.8	56.6	55.2	
Try ecstasy (MDMA, Molly) once or twice ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try salvia once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take salvia occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try cocaine once or twice	42.6	39.1	35.6	33.2	31.5	31.3	32.1	32.8	33.0	35.7	34.0	33.5	47.9	51.2	54.9	59.4	
Take cocaine occasionally	—	—	—	—	—	—	—	—	—	—	—	54.2	66.8	69.2	71.8	73.9	
Take cocaine regularly	73.1	72.3	68.2	68.2	69.5	69.2	71.2	73.0	74.3	78.8	79.0	82.2	88.5	89.2	90.2	91.1	
Try crack once or twice	—	—	—	—	—	—	—	—	—	—	—	—	57.0	62.1	62.9	64.3	
Take crack occasionally	—	—	—	—	—	—	—	—	—	—	—	—	70.4	73.2	75.3	80.4	
Take crack regularly	—	—	—	—	—	—	—	—	—	—	—	—	84.6	84.8	85.6	91.6	
Try cocaine powder once or twice	—	—	—	—	—	—	—	—	—	—	—	—	45.3	51.7	53.8	53.9	
Take cocaine powder occasionally	—	—	—	—	—	—	—	—	—	—	—	—	56.8	61.9	65.8	71.1	
Take cocaine powder regularly	—	—	—	—	—	—	—	—	—	—	—	—	81.4	82.9	83.9	90.2	
Try heroin once or twice	60.1	58.9	55.8	52.9	50.4	52.1	52.9	51.1	50.8	49.8	47.3	45.8	53.6	54.0	53.8	55.4	
Take heroin occasionally	75.6	75.6	71.9	71.4	70.9	70.9	72.2	69.8	71.8	70.7	69.8	68.2	74.6	73.8	75.5	76.6	
Take heroin regularly	87.2	88.6	86.1	86.6	87.5	86.2	87.5	86.0	86.1	87.2	86.0	87.1	88.7	88.8	89.5	90.2	
Try heroin once or twice without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take heroin occasionally without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take any narcotic other than heroin occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take any narcotic other than heroin regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try amphetamines once or twice ^d	35.4	33.4	30.8	29.9	29.7	29.7	26.4	25.3	24.7	25.4	25.2	25.1	29.1	29.6	32.8	32.2	
Take amphetamines regularly ^d	69.0	67.3	66.6	67.1	69.9	69.1	66.1	64.7	64.8	67.1	67.2	67.3	69.4	69.8	71.2	71.2	
Try Adderall once or twice ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try Adderall occasionally ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try crystal methamphetamine (ice) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try bath salts (synthetic stimulants) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take bath salts (synthetic stimulants) occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try sedatives (barbiturates) once or twice ^f	34.8	32.5	31.2	31.3	30.7	30.9	28.4	27.5	27.0	27.4	26.1	25.4	30.9	29.7	32.2	32.4	
Take sedatives (barbiturates) regularly ^f	69.1	67.7	68.6	68.4	71.6	72.2	69.9	67.6	67.7	68.5	68.3	67.2	69.4	69.6	70.5	70.2	
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	5.3	4.8	4.1	3.4	4.1	3.8	4.6	3.5	4.2	4.6	5.0	4.6	6.2	6.0	6.0	8.3	
Take one or two drinks nearly every day	21.5	21.2	18.5	19.6	22.6	20.3	21.6	21.6	21.6	23.0	24.4	25.1	26.2	27.3	28.5	31.3	
Take four or five drinks nearly every day	63.5	61.0	62.9	63.1	66.2	65.7	64.5	65.5	66.8	68.4	69.8	66.5	69.7	68.5	69.8	70.9	
Have five or more drinks once or twice each weekend	37.8	37.0	34.7	34.5	34.9	35.9	36.3	36.0	38.6	41.7	43.0	39.1	41.9	42.6	44.0	47.1	
Smoke one or more packs of cigarettes per day	51.3	56.4	58.4	59.0	63.0	63.7	63.3	60.5	61.2	63.8	66.5	66.0	68.6	68.0	67.2	68.2	
Use electronic cigarettes (e-cigarettes) regularly ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine occasionally ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine regularly ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Smoke little cigars or cigarillos regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Use smokeless tobacco regularly	—	—	—	—	—	—	—	—	—	—	—	25.8	30.0	33.2	32.9	34.2	
Take steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.8	69.9	
<i>Approximate weighted N =</i> 2,804 2,918 3,052 3,770 3,250 3,234 3,604 3,557 3,305 3,262 3,250 3,020 3,315 3,276 2,796 2,553																	

Table continued on next page.

TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

	Percentage saying great risk ^a															
<i>How much do you think people risk harming themselves (physically or in other ways), if they . . .</i>	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Try marijuana once or twice	27.1	24.5	21.9	19.5	16.3	15.6	14.9	16.7	15.7	13.7	15.3	16.1	16.1	15.9	16.1	
Smoke marijuana occasionally	40.6	39.6	35.6	30.1	25.6	25.9	24.7	24.4	23.9	23.4	23.5	23.2	26.6	25.4	25.8	
Smoke marijuana regularly	78.6	76.5	72.5	65.0	60.8	59.9	58.1	58.5	57.4	58.3	57.4	53.0	54.9	54.6	58.0	
Try synthetic marijuana once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take synthetic marijuana occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try LSD once or twice	46.6	42.3	39.5	38.8	36.4	36.2	34.7	37.4	34.9	34.3	33.2	36.7	36.2	36.2	36.5	
Take LSD regularly	84.3	81.8	79.4	79.1	78.1	77.8	76.6	76.5	76.1	75.9	74.1	73.9	72.3	70.2	69.9	
Try PCP once or twice	51.7	54.8	50.8	51.5	49.1	51.0	48.8	46.8	44.8	45.0	46.2	48.3	45.2	47.1	46.6	
Try ecstasy (MDMA, Molly) once or twice ^b	—	—	—	—	—	—	33.8	34.5	35.0	37.9	45.7	52.2	56.3	57.7	60.1	
Try salvia once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take salvia occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try cocaine once or twice	59.4	56.8	57.6	57.2	53.7	54.2	53.6	54.6	52.1	51.1	50.7	51.2	51.0	50.7	50.5	
Take cocaine occasionally	75.5	75.1	73.3	73.7	70.8	72.1	72.4	70.1	70.1	69.5	69.9	68.3	69.1	67.2	66.7	
Take cocaine regularly	90.4	90.2	90.1	89.3	87.9	88.3	87.1	86.3	85.8	86.2	84.1	84.5	83.0	82.2	82.8	
Try crack once or twice	60.6	62.4	57.6	58.4	54.6	56.0	54.0	52.2	48.2	48.4	49.4	50.8	47.3	47.8	48.4	
Take crack occasionally	76.5	76.3	73.9	73.8	72.8	71.4	70.3	68.7	67.3	65.8	65.4	65.6	64.0	64.5	63.8	
Take crack regularly	90.1	89.3	87.5	89.6	88.6	88.0	86.2	85.3	85.4	85.3	85.8	84.1	83.2	83.5	83.3	
Try cocaine powder once or twice	53.6	57.1	53.2	55.4	52.0	53.2	51.4	48.5	46.1	47.0	49.0	49.5	46.2	45.4	46.2	
Take cocaine powder occasionally	69.8	70.8	68.6	70.6	69.1	68.8	67.7	65.4	64.2	64.7	63.2	64.4	61.4	61.6	60.8	
Take cocaine powder regularly	88.9	88.4	87.0	88.6	87.8	86.8	86.0	84.1	84.6	85.5	84.4	84.2	82.3	81.7	82.7	
Try heroin once or twice	55.2	50.9	50.7	52.8	50.9	52.5	56.7	57.8	56.0	54.2	55.6	56.0	58.0	56.6	55.2	
Take heroin occasionally	74.9	74.2	72.0	72.1	71.0	74.8	76.3	76.9	77.3	74.6	75.9	76.6	78.5	75.7	76.0	
Take heroin regularly	89.6	89.2	88.3	88.0	87.2	89.5	88.9	89.1	89.9	89.2	88.3	88.5	89.3	86.8	87.5	
Try heroin once or twice without using a needle	—	—	—	—	55.6	58.6	60.5	59.6	58.5	61.6	60.7	60.6	58.9	61.2	60.5	
Take heroin occasionally without using a needle	—	—	—	—	71.2	71.0	74.3	73.4	73.6	74.7	74.4	74.7	73.0	76.1	73.3	
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take any narcotic other than heroin occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take any narcotic other than heroin regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try amphetamines once or twice ^d	36.3	32.6	31.3	31.4	28.8	30.8	31.0	35.3	32.2	32.6	34.7	34.4	36.8	35.7	37.7	
Take amphetamines regularly ^d	74.1	72.4	69.9	67.0	65.9	66.8	66.0	67.7	66.4	66.3	67.1	64.8	65.6	63.9	67.1	
Try Adderall once or twice ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try Adderall occasionally ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try crystal methamphetamine (ice) once or twice	61.6	61.9	57.5	58.3	54.4	55.3	54.4	52.7	51.2	51.3	52.7	53.8	51.2	52.4	54.6	
Try bath salts (synthetic stimulants) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Take bath salts (synthetic stimulants) occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Try sedatives (barbiturates) once or twice ^f	35.1	32.2	29.2	29.9	26.3	29.1	26.9	29.0	26.1	25.0	25.7	26.2	27.9†	24.9	24.7	
Take sedatives (barbiturates) regularly ^f	70.5	70.2	66.1	63.3	61.6	60.4	56.8	56.3	54.1	52.3	50.3	49.3	49.6†	54.0	54.1	
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	9.1	8.6	8.2	7.6	5.9	7.3	6.7	8.0	8.3	6.4	8.7	7.6	8.4	8.6	8.5	
Take one or two drinks nearly every day	32.7	30.6	28.2	27.0	24.8	25.1	24.8	24.3	21.8	21.7	23.4	21.0	20.1	23.0	23.7	
Take four or five drinks nearly every day	69.5	70.5	67.8	66.2	62.8	65.6	63.0	62.1	61.1	59.9	60.7	58.8	57.8	59.2	61.8	
Have five or more drinks once or twice each weekend	48.6	49.0	48.3	46.5	45.2	49.5	43.0	42.8	43.1	42.7	43.6	42.2	43.5	43.6	45.0	
Smoke one or more packs of cigarettes per day	69.4	69.2	69.5	67.6	65.6	68.2	68.7	70.8	70.8	73.1	73.3	74.2	72.1	74.0	76.5	
Use electronic cigarettes (e-cigarettes) regularly ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine occasionally ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine regularly ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Smoke little cigars or cigarillos regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Use smokeless tobacco regularly	37.4	35.5	38.9	36.6	33.2	37.4	38.6	40.9	41.1	42.2	45.4	42.6	43.3	45.0	43.6	
Take steroids	65.6	70.7	69.1	66.1	66.4	67.6	67.2	68.1	62.1	57.9	58.9	57.1	55.0	55.7	56.8	
<i>Approximate weighted N =</i>	2,549	2,684	2,759	2,591	2,603	2,449	2,579	2,564	2,306	2,130	2,173	2,198	2,466	2,491	2,512	

Table continued on next page.

TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk ^a														2017 – 2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Try marijuana once or twice	17.8	18.6	17.4	18.5	17.1	15.6	14.8	14.5	12.5	12.3	12.9	11.9	12.1	+0.2	
Smoke marijuana occasionally	25.9	27.1	25.8	27.4	24.5	22.7	20.6	19.5	16.4	15.8	17.1	14.1	14.3	+0.1	
Smoke marijuana regularly	57.9	54.8	51.7	52.4	46.8	45.7	44.1	39.5	36.1	31.9	31.1	29.0	26.7	-2.2	
Try synthetic marijuana once or twice	—	—	—	—	—	—	23.5	25.9	32.5	33.0	35.6	33.0	30.4	-2.6	
Take synthetic marijuana occasionally	—	—	—	—	—	—	32.7	36.2	39.4	40.9	43.9	40.0	37.1	-2.9	
Try LSD once or twice	36.1	37.0	33.9	37.1	35.6	34.7	33.1	34.9	35.5	33.2	31.7	30.0	29.0	-1.0	
Take LSD regularly	69.3	67.3	63.6	67.8	65.3	65.5	66.8	66.8	62.7	60.7	58.2	56.1	55.2	-0.9	
Try PCP once or twice	47.0	48.0	47.4	49.7	52.4	53.9	51.6	53.9	53.8	54.4	55.1	53.6	51.7	-1.9	
Try ecstasy (MDMA, Molly) once or twice ^b	59.3	58.1	57.0	53.3	50.6	49.0	49.4	47.5	47.8	49.5	48.8	49.1	48.2	-0.9	
Try salvia once or twice ^c	—	—	—	—	39.8	36.7	13.8	12.9	14.1	13.1	13.0	10.2	9.8	-0.5	
Take salvia occasionally	—	—	—	—	—	—	23.1	21.3	20.0	17.6	16.3	13.8	12.0	-1.9	
Try cocaine once or twice	52.5	51.3	50.3	53.1	52.8	54.0	51.6	54.4	53.7	51.1	52.7	49.5	47.9	-1.6	
Take cocaine occasionally	69.8	68.8	67.1	71.4	67.8	69.7	69.0	70.2	68.1	66.3	68.6	64.6	62.1	-2.5	
Take cocaine regularly	84.6	83.3	80.7	84.4	81.7	83.8	82.6	83.3	80.6	79.1	78.3	74.9	75.2	+0.3	
Try crack once or twice	47.8	47.3	47.5	48.4	50.2	51.7	52.0	55.6	54.5	53.6	53.9	51.6	51.3	-0.2	
Take crack occasionally	64.8	63.6	65.2	64.7	64.3	66.2	66.5	69.5	68.5	67.8	66.2	65.3	64.4	-0.9	
Take crack regularly	82.8	82.6	83.4	84.0	83.8	83.9	84.0	85.4	82.0	81.2	81.9	79.8	79.8	0.0	
Try cocaine powder once or twice	45.8	45.1	45.1	46.5	48.2	48.0	48.1	49.9	49.9	49.0	49.3	45.1	44.9	-0.2	
Take cocaine powder occasionally	61.9	59.9	61.6	62.6	62.6	64.2	62.6	65.4	64.8	62.8	62.9	60.1	59.8	-0.3	
Take cocaine powder regularly	82.1	81.5	82.5	83.4	81.8	83.3	83.3	83.9	81.5	80.1	80.7	78.8	77.6	-1.2	
Try heroin once or twice	59.1	58.4	55.5	59.3	58.3	59.1	59.4	61.7	62.8	64.0	64.5	63.0	61.8	-1.2	
Take heroin occasionally	79.1	76.2	75.3	79.7	74.8	77.2	78.0	78.2	77.9	78.0	78.7	74.6	75.0	+0.3	
Take heroin regularly	89.7	87.8	86.4	89.9	85.5	87.9	88.6	87.6	85.7	84.8	85.4	83.3	81.4	-1.8	
Try heroin once or twice without using a needle	62.6	60.2	60.8	61.5	63.8	61.1	63.3	64.5	65.3	62.5	66.1	64.6	63.1	-1.5	
Take heroin occasionally without using a needle	76.2	73.9	73.2	74.8	76.2	74.7	76.1	76.4	73.6	71.1	74.6	72.7	69.6	-3.1	
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	—	—	40.4	39.9	38.4	43.1	42.7	44.1	43.6	42.0	43.2	+1.1	
Take any narcotic other than heroin occasionally	—	—	—	—	54.3	54.8	53.8	57.3	59.0	58.5	55.7	55.5	56.7	+1.2	
Take any narcotic other than heroin regularly	—	—	—	—	74.9	75.5	73.9	75.8	72.7	73.9	72.4	70.8	71.6	+0.8	
Try amphetamines once or twice ^d	39.5	41.3	39.2	41.9	40.6	34.8	34.3	36.3	34.1	34.0	31.1	31.9	29.2	-2.7	
Take amphetamines regularly ^d	68.1	68.1	65.4	69.0	63.6	58.7	60.0	59.5	55.1	54.3	51.3	50.0	51.1	+1.1	
Try Adderall once or twice ^e	—	—	—	—	33.3	31.2	27.2	31.8	33.6	34.3	32.5	32.0	34.0	+2.0	
Try Adderall occasionally ^e	—	—	—	—	41.6	40.8	35.3	38.8	41.5	41.6	40.9	40.6	40.1	-0.5	
Try crystal methamphetamine (ice) once or twice	59.1	60.2	62.2	63.4	64.9	66.5	67.8	72.2	70.2	70.0	70.0	69.3	67.1	-2.2	
Try bath salts (synthetic stimulants) once or twice	—	—	—	—	—	—	33.2	59.5	59.2	57.5	54.9	51.3	50.7	-0.6	
Take bath salts (synthetic stimulants) occasionally	—	—	—	—	—	—	45.0	69.9	68.8	67.4	64.2	61.5	60.7	-0.9	
Try sedatives (barbiturates) once or twice ^f	28.0	27.9	25.9	29.6	28.0	27.8	27.8	29.4	29.6	28.9	27.4	26.9	26.3	-0.6	
Take sedatives (barbiturates) regularly ^f	56.8	55.1	50.2	54.7	52.1	52.4	53.9	53.3	50.5	50.6	47.0	44.0	45.1	+1.1	
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	9.3	10.5	10.0	9.4	10.8	9.4	8.7	9.9	8.6	10.3	9.5	9.3	10.2	+0.9	
Take one or two drinks nearly every day	25.3	25.1	24.2	23.7	25.4	24.6	23.7	23.1	21.1	21.5	21.6	21.6	22.8	+1.2	
Take four or five drinks nearly every day	63.4	61.8	60.8	62.4	61.1	62.3	63.6	62.4	61.2	59.1	59.1	58.7	59.1	+0.4	
Have five or more drinks once or twice each weekend	47.6	45.8	46.3	48.0	46.3	47.6	48.8	45.8	45.4	46.9	48.4	45.7	44.7	-0.9	
Smoke one or more packs of cigarettes per day	77.6	77.3	74.0	74.9	75.0	77.7	78.2	78.2	78.0	75.9	76.5	74.9	73.9	-1.1	
Use electronic cigarettes (e-cigarettes) regularly ^g	—	—	—	—	—	—	—	—	14.2	16.2	18.2	16.1	18.0	+2.0	
Vape an e-liquid with nicotine occasionally ^g	—	—	—	—	—	—	—	—	—	—	—	16.4	15.8	-0.6	
Vape an e-liquid with nicotine regularly ^g	—	—	—	—	—	—	—	—	—	—	—	27.0	27.7	+0.7	
Smoke little cigars or cigarillos regularly	—	—	—	—	—	—	—	—	38.3	39.7	39.5	38.2	42.5	+4.4 s	
Use smokeless tobacco regularly	45.9	44.0	42.9	40.8	41.2	42.6	44.3	41.6	40.7	38.5	38.1	38.4	40.2	+1.8	
Take steroids	60.2	57.4	60.8	60.2	59.2	61.1	58.6	54.2	54.6	54.4	54.5	49.1	50.1	+1.0	
Approximate weighted N =	2,407	2,450	2,389	2,290	2,440	2,408	2,331	2,098	2,067	2,174	1,988	1,919	1,976		

Table continued on next page.

TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

^bBeginning in 2014 data are based on the revised question which included "Molly." 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

^cIn 2011 the question on perceived risk of using salvia once or twice appeared at the end of a form. In 2012 the question was moved to an earlier section of the same form. A question on perceived risk of using salvia occasionally was also added following the question on perceived risk of trying salvia once or twice. These changes likely explain the discontinuity in the 2012 results.

^dIn 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

^eIn 2014 "(without a doctor's orders)" added to the questions on perceived risk of using Adderall.

^fIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

^gBased on two of six forms; N is two times the N indicated.

TABLE 8-4
Trends in Disapproval of Drug Use in Grade 8

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Try marijuana once or twice ^b	84.6	82.1	79.2	72.9	70.7	67.5	67.6	69.0	70.7	72.5	72.4	73.3	73.8	75.9	75.3
Smoke marijuana occasionally ^b	89.5	88.1	85.7	80.9	79.7	76.5	78.1	78.4	79.3	80.6	80.6	80.9	81.5	83.1	82.4
Smoke marijuana regularly ^b	92.1	90.8	88.9	85.3	85.1	82.8	84.6	84.5	84.5	85.3	84.5	85.3	85.7	86.8	86.3
Try inhalants once or twice ^c	84.9	84.0	82.5	81.6	81.8	82.9	84.1	83.0	85.2	85.4	86.6	86.1	85.1	85.1	84.6
Take inhalants regularly ^c	90.6	90.0	88.9	88.1	88.8	89.3	90.3	89.5	90.3	90.2	90.5	90.4	89.8	90.1	89.8
Take LSD once or twice ^d	—	—	77.1	75.2	71.6	70.9	72.1	69.1	69.4	66.7	64.6	62.6	61.0	58.1	58.5
Take LSD regularly ^d	—	—	79.8	78.4	75.8	75.3	76.3	72.5	72.5	69.3	67.0	65.5	63.5	60.5	60.7
Try ecstasy (MDMA, Molly) once or twice ^e	—	—	—	—	—	—	—	—	—	—	69.0	74.3	77.7	76.3	75.0
Take ecstasy (MDMA, Molly) occasionally ^e	—	—	—	—	—	—	—	—	—	—	73.6	78.6	81.3	79.4	77.9
Try crack once or twice ^c	91.7	90.7	89.1	86.9	85.9	85.0	85.7	85.4	86.0	85.4	86.0	86.2	86.4	87.4	87.6
Take crack occasionally ^c	93.3	92.5	91.7	89.9	89.8	89.3	90.3	89.5	89.9	88.8	89.8	89.6	89.8	90.3	90.5
Try cocaine powder once or twice ^c	91.2	89.6	88.5	86.1	85.3	83.9	85.1	84.5	85.2	84.8	85.6	85.8	85.6	86.8	87.0
Take cocaine powder occasionally ^c	93.1	92.4	91.6	89.7	89.7	88.7	90.1	89.3	89.9	88.8	89.6	89.9	89.8	90.3	90.7
Try heroin once or twice without using a needle ^d	—	—	—	—	85.8	85.0	87.7	87.3	88.0	87.2	87.2	87.8	86.9	86.6	86.9
Take heroin occasionally without using a needle ^d	—	—	—	—	88.5	87.7	90.1	89.7	90.2	88.9	88.9	89.6	89.0	88.6	88.5
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	51.7	52.2	50.9	47.8	48.0	45.5	45.7	47.5	48.3	48.7	49.8	51.1	49.7	51.1	51.2
Take one or two drinks nearly every day ^b	82.2	81.0	79.6	76.7	75.9	74.1	76.6	76.9	77.0	77.8	77.4	78.3	77.1	78.6	78.7
Have five or more drinks once or twice each weekend ^b	85.2	83.9	83.3	80.7	80.7	79.1	81.3	81.0	80.3	81.2	81.6	81.9	81.9	82.3	82.9
Smoke one to five cigarettes per day ^e	—	—	—	—	—	—	—	—	75.1	79.1	80.4	81.1	81.4	83.1	82.9
Smoke one or more packs of cigarettes per day ^f	82.8	82.3	80.6	78.4	78.6	77.3	80.3	80.0	81.4	81.9	83.5	84.6	84.6	85.7	85.3
Use electronic cigarettes (e-cigarettes) regularly ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly ^b	79.1	77.2	77.1	75.1	74.0	74.1	76.5	76.3	78.0	79.2	79.4	80.6	80.7	81.0	82.0
Take steroids ^g	89.8	90.3	89.9	87.9	—	—	—	—	—	—	—	—	—	—	—

Approximate weighted N = 17,400 18,500 18,400 17,400 17,600 18,000 18,800 18,100 16,700 16,700 16,200 15,100 16,500 17,000 16,800

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TABLE 8-4 (cont.)
Trends in Disapproval of Drug Use in Grade 8

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove ^a													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Try marijuana once or twice ^b	76.0	78.7	76.6	75.3	73.5	74.4	75.1	72.0	70.5	70.3	70.1	67.3	64.5	-2.8 s
Smoke marijuana occasionally ^b	82.2	84.5	82.6	81.9	79.9	81.1	81.6	78.8	77.7	77.5	77.5	75.5	73.1	-2.3 s
Smoke marijuana regularly ^b	86.1	87.7	86.8	85.9	84.3	85.7	85.6	83.8	82.2	82.2	82.3	81.2	79.3	-1.9
Try inhalants once or twice ^c	83.4	84.1	82.3	83.1	83.1	82.9	83.1	81.6	80.7	80.6	78.3	77.4	75.0	-2.4 s
Take inhalants regularly ^c	89.0	89.5	88.5	88.4	88.9	88.5	88.6	86.8	85.5	85.4	83.3	82.8	81.3	-1.5
Take LSD once or twice ^d	53.9	53.5	52.6	53.2	53.7	55.4	51.8	52.0	52.8	56.0	55.2	56.1	55.9	-0.1
Take LSD regularly ^d	55.8	55.6	54.7	55.7	55.8	57.6	54.1	53.6	54.8	58.1	57.6	58.2	59.4	+1.2
Try ecstasy (MDMA, Molly) once or twice ^e	66.7	65.7	63.5	62.3	62.4	64.2	60.2	60.9	61.0†	68.2	64.8	63.0	63.7	+0.8
Take ecstasy (MDMA, Molly) occasionally ^e	69.8	68.3	66.5	65.7	65.9	67.5	63.2	63.4	64.1‡	71.7	67.5	65.8	67.1	+1.3
Try crack once or twice ^c	87.2	88.6	87.2	88.4	89.1	88.5	89.0	88.1	88.0	87.5	87.0	87.5	86.1	-1.5
Take crack occasionally ^c	90.0	91.2	90.3	91.0	91.5	91.0	91.2	90.3	89.8	89.8	88.8	89.6	88.4	-1.2
Try cocaine powder once or twice ^c	86.5	88.2	86.8	88.1	88.4	88.3	88.6	88.0	87.7	87.5	86.8	86.8	85.6	-1.2
Take cocaine powder occasionally ^c	90.2	91.0	90.1	90.7	91.4	91.3	91.5	90.6	90.1	90.1	89.3	90.0	88.9	-1.1
Try heroin once or twice without using a needle ^d	87.2	88.4	86.9	88.6	89.5	87.5	86.8	87.2	87.1	87.1	85.6	87.9	85.5	-2.5 s
Take heroin occasionally without using a needle ^d	88.5	89.7	88.2	90.1	90.6	89.0	87.7	88.2	88.1	88.0	86.7	88.7	86.8	-1.9
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	51.3	54.0	52.5	52.7	54.2	54.0	54.1	53.3	53.3	53.7	52.6	51.0	47.4	-3.6 ss
Take one or two drinks nearly every day ^b	78.7	80.4	79.2	78.5	79.5	80.7	81.3	80.2	79.6	79.7	79.1	79.5	77.9	-1.6
Have five or more drinks once or twice each weekend ^b	82.0	83.8	83.2	83.2	83.6	84.8	86.0	85.0	84.9	85.4	84.9	84.7	83.7	-1.0
Smoke one to five cigarettes per day ^e	83.5	85.3	85.0	83.6	84.7	86.8	—	—	—	—	—	—	—	—
Smoke one or more packs of cigarettes per day ^f	85.6	87.0	86.7	87.1	87.0	88.0	88.8	88.0	87.5	88.8	88.1	88.8	87.6	-1.1
Use electronic cigarettes (e-cigarettes) regularly ^e	—	—	—	—	—	—	—	—	58.4	65.0	66.6	—	—	—
Vape an e-liquid with nicotine occasionally ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	63.2	60.8	-2.4
Vape an e-liquid with nicotine regularly ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	69.9	68.9	-0.9
Use smokeless tobacco regularly ^b	81.0	82.3	82.1	81.5	81.2	82.6	82.7	81.5	80.2	82.5	81.1	81.3	79.9	-1.5
Take steroids ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Approximate weighted N = 16,500 16,100 15,700 15,000 15,300 16,000 15,100 14,600 14,600 14,400 16,900 15,300 14,000

(Table continued on next page.)

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TABLE 8-4 (cont.)
Trends in Disapproval of Drug Use in Grade 8

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. ' † ' indicates that the question changed the following year.

^aAnswer alternatives were: (1) Don't disapprove, (2) Disapprove, (3) Strongly disapprove, and (4) Can't say, drug unfamiliar. Percentages are shown for categories (2) and (3) combined.

^bBeginning in 2012, data based on two thirds of N indicated.

^cBeginning in 1997, data based on two thirds of N indicated due to changes in questionnaire forms.

^dData based on one of two forms in 1993–1996; N is one half of N indicated. Beginning in 1997, data based on one third of N indicated due to changes in questionnaire forms.

^eData based on one third of N indicated. For MDMA "Molly" was added to the question text in 2015; 2014 and 2015 data are not comparable due to this change.

^fBeginning in 1999, data based on two thirds of N indicated due to changes in questionnaire forms.

^gData based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; N is one half of N indicated.

^hPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

TABLE 8-5
Trends in Disapproval of Drug Use in Grade 10

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove ^a															
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Try marijuana once or twice ^b	74.6	74.8	70.3	62.4	59.8	55.5	54.1	56.0	56.2	54.9	54.8	57.8	58.1	60.4	61.3	
Smoke marijuana occasionally ^b	83.7	83.6	79.4	72.3	70.0	66.9	66.2	67.3	68.2	67.2	66.2	68.3	68.4	70.8	71.9	
Smoke marijuana regularly ^b	90.4	90.0	87.4	82.2	81.1	79.7	79.7	80.1	79.8	79.1	78.0	78.6	78.8	81.3	82.0	
Try inhalants once or twice ^c	85.2	85.6	84.8	84.9	84.5	86.0	86.9	85.6	88.4	87.5	87.8	88.6	87.7	88.5	88.1	
Take inhalants regularly ^c	91.0	91.5	90.9	91.0	90.9	91.7	91.7	91.1	92.4	91.8	91.3	91.8	91.0	92.3	91.9	
Take LSD once or twice ^d	—	—	82.1	79.3	77.9	76.8	76.6	76.7	77.8	77.0	75.4	74.6	74.4	72.4	71.8	
Take LSD regularly ^d	—	—	86.8	85.6	84.8	84.5	83.4	82.9	84.3	82.1	80.8	79.4	77.6	75.9	75.0	
Try ecstasy (MDMA, Molly) once or twice ^e	—	—	—	—	—	—	—	—	—	—	72.6	77.4	81.0	83.7	83.1	
Take ecstasy (MDMA, Molly) occasionally ^e	—	—	—	—	—	—	—	—	—	—	81.0	84.6	86.3	88.0	87.4	
Try crack once or twice ^c	92.5	92.5	91.4	89.9	88.7	88.2	87.4	87.1	87.8	87.1	86.9	88.0	87.6	88.6	88.8	
Take crack occasionally ^c	94.3	94.4	93.6	92.5	91.7	91.9	91.0	90.6	91.5	90.9	90.6	91.0	91.0	91.8	91.8	
Try cocaine powder once or twice ^c	90.8	91.1	90.0	88.1	86.8	86.1	85.1	84.9	86.0	84.8	85.3	86.4	85.9	86.8	86.9	
Take cocaine powder occasionally ^c	94.0	94.0	93.2	92.1	91.4	91.1	90.4	89.7	90.7	89.9	90.2	89.9	90.4	91.2	91.2	
Try heroin once or twice without using a needle ^d	—	—	—	—	89.7	89.5	89.1	88.6	90.1	90.1	89.1	89.2	89.3	90.1	90.3	
Take heroin occasionally without using a needle ^d	—	—	—	—	91.6	91.7	91.4	90.5	91.8	92.3	90.8	90.7	90.6	91.8	92.0	
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	37.6	39.9	38.5	36.5	36.1	34.2	33.7	34.7	35.1	33.4	34.7	37.7	36.8	37.6	38.5	
Take one or two drinks nearly every day ^b	81.7	81.7	78.6	75.2	75.4	73.8	75.4	74.6	75.4	73.8	73.8	74.9	74.2	75.1	76.9	
Have five or more drinks once or twice each weekend ^b	76.7	77.6	74.7	72.3	72.2	70.7	70.2	70.5	69.9	68.2	69.2	71.5	71.6	71.8	73.7	
Smoke one to five cigarettes per day ^e	—	—	—	—	—	—	—	—	67.8	69.1	71.2	74.3	76.2	77.5	79.3	
Smoke one or more packs of cigarettes per day ^f	79.4	77.8	76.5	73.9	73.2	71.6	73.8	75.3	76.1	76.7	78.2	80.6	81.4	82.7	84.3	
Use electronic cigarettes (e-cigarettes) regularly ^e	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine occasionally ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Vape an e-liquid with nicotine regularly ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Use smokeless tobacco regularly ^b	75.4	74.6	73.8	71.2	71.0	71.0	72.3	73.2	75.1	75.8	76.1	78.7	79.4	80.2	80.5	
Take steroids ^g	90.0	91.0	91.2	90.8	—	—	—	—	—	—	—	—	—	—	—	
Approximate weighted N = 14,800 14,800 15,300 15,900 17,000 15,700 15,600 15,000 13,600 14,300 14,000 14,300 15,800 16,400 16,200																

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TABLE 8-5 (cont.)
Trends in Disapproval of Drug Use in Grade 10

<i>Do you disapprove of people who . . .</i>	Percentage who disapprove or strongly disapprove ^a													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Try marijuana once or twice ^b	62.5	63.9	64.5	60.1	59.2	58.5	56.2	53.2	53.8	52.7	52.6	48.1	47.9	-0.2
Smoke marijuana occasionally ^b	72.6	73.3	73.6	69.2	68.0	67.9	65.7	62.1	62.9	62.6	61.9	58.1	57.4	-0.7
Smoke marijuana regularly ^b	82.5	82.4	83.0	79.9	78.7	78.8	77.3	73.8	74.6	74.3	73.5	70.2	69.7	-0.5
Try inhalants once or twice ^c	88.1	87.6	87.1	87.0	86.5	86.9	85.7	86.1	85.9	84.1	83.3	80.7	81.8	+1.1
Take inhalants regularly ^c	92.2	91.8	91.6	91.1	90.8	90.9	90.0	89.7	89.7	88.3	87.1	85.4	86.9	+1.5
Take LSD once or twice ^d	71.2	67.7	66.3	67.8	68.2	68.5	68.3	69.1	67.8	70.3	69.5	66.9	70.5	+3.6 s
Take LSD regularly ^d	74.9	71.5	69.8	72.2	72.9	72.5	73.0	74.2	73.3	76.5	74.9	74.5	76.5	+2.0
Try ecstasy (MDMA, Molly) once or twice ^e	81.6	80.0	78.1	76.5	75.5	76.1	75.3	75.4	74.4†	78.0	76.8	74.7	75.3	+0.6
Take ecstasy (MDMA, Molly) occasionally ^e	86.0	84.3	83.0	81.3	81.3	82.2	81.2	81.3	80.4†	84.0	81.7	80.0	79.5	-0.6
Try crack once or twice ^c	89.5	89.5	90.8	90.4	90.3	90.9	91.0	90.6	90.6	90.1	89.7	88.4	89.5	+1.1
Take crack occasionally ^c	92.0	92.7	92.9	92.8	92.4	93.0	93.0	92.4	92.4	92.1	91.1	90.0	91.2	+1.1
Try cocaine powder once or twice ^c	87.3	87.7	88.6	88.4	89.0	89.4	89.3	88.7	88.9	87.9	87.9	86.1	87.6	+1.6 s
Take cocaine powder occasionally ^c	91.4	92.0	92.1	92.1	92.2	92.5	92.4	91.8	91.9	91.8	90.8	89.9	90.9	+1.0
Try heroin once or twice without using a needle ^d	91.1	90.7	91.4	91.6	91.4	91.6	91.9	91.3	91.9	91.7	90.2	89.7	90.6	+0.9
Take heroin occasionally without using a needle ^d	92.5	92.5	92.5	93.0	92.4	92.4	92.9	92.3	92.7	92.7	90.9	90.5	91.2	+0.7
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) ^b	37.8	39.5	41.8	39.7	40.3	41.5	39.6	38.5	40.7	40.0	41.8	39.3	39.6	+0.3
Take one or two drinks nearly every day ^b	76.4	77.1	79.1	77.6	77.6	80.0	78.0	77.1	77.9	78.2	78.6	77.7	77.9	+0.2
Have five or more drinks once or twice each weekend ^b	72.9	74.1	77.2	75.1	75.9	77.3	77.5	77.8	79.5	79.6	80.8	80.1	80.4	+0.3
Smoke one to five cigarettes per day ^e	80.2	79.7	82.5	80.0	80.6	82.1	—	—	—	—	—	—	—	—
Smoke one or more packs of cigarettes per day ^f	83.2	84.7	85.2	84.5	83.9	85.8	86.0	86.1	88.0	88.3	88.5	87.8	88.5	+0.7
Use electronic cigarettes (e-cigarettes) regularly ^e	—	—	—	—	—	—	—	—	54.6	59.9	65.0	—	—	—
Vape an e-liquid with nicotine occasionally ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	59.3	58.0	-1.3
Vape an e-liquid with nicotine regularly ^{e,h}	—	—	—	—	—	—	—	—	—	—	—	68.3	67.8	-0.5
Use smokeless tobacco regularly ^b	80.5	80.9	81.8	79.5	78.5	79.5	79.5	77.7	78.7	80.1	81.2	80.7	80.7	0.0
Take steroids ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Approximate weighted N =</i> 16,200 16,100 15,100 15,900 15,200 14,900 15,000 12,900 13,000 15,600 14,700 13,500 14,300														

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TABLE 8-5 (cont.)
Trends in Disapproval of Drug Use in Grade 10

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. '—' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. '‡' indicates that the question changed the following year.

^aAnswer alternatives were: (1) Don't disapprove, (2) Disapprove, (3) Strongly disapprove, and (4) Can't say, drug unfamiliar. Percentages are shown for categories (2) and (3) combined.

^bBeginning in 2012, data based on two thirds of N indicated.

^cBeginning in 1997, data based on two thirds of N indicated due to changes in questionnaire forms.

^dData based on one of two forms in 1993–1996; N is one half of N indicated. Beginning in 1997, data based on one third of N indicated due to changes in questionnaire forms.

^eData based on one third of N indicated. For MDMA "Molly" was added to the question text in 2015; 2014 and 2015 data are not comparable due to this change.

^fBeginning in 1999, data based on two thirds of N indicated due to changes in questionnaire forms.

^gData based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; N is one half of N indicated.

^hPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

TABLE 8-6
Trends in Disapproval of Drug Use in Grade 12

Percentage who disapprove or strongly disapprove^b

<i>Do you disapprove of people (who are 18 or older) doing each of the following?^a</i>	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Trying marijuana once or twice	47.0	38.4	33.4	33.4	34.2	39.0	40.0	45.5	46.3	49.3	51.4	54.6	56.6	60.8	64.6	67.8
Smoking marijuana occasionally	54.8	47.8	44.3	43.5	45.3	49.7	52.6	59.1	60.7	63.5	65.8	69.0	71.6	74.0	77.2	80.5
Smoking marijuana regularly	71.9	69.5	65.5	67.5	69.2	74.6	77.4	80.6	82.5	84.7	85.5	86.6	89.2	89.3	89.8	91.0
Trying LSD once or twice	82.8	84.6	83.9	85.4	86.6	87.3	86.4	88.8	89.1	88.9	89.5	89.2	91.6	89.8	89.7	89.8
Taking LSD regularly	94.1	95.3	95.8	96.4	96.9	96.7	96.8	96.7	97.0	96.8	97.0	96.6	97.8	96.4	96.4	96.3
Trying ecstasy (MDMA, Molly) once or twice ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trying cocaine once or twice	81.3	82.4	79.1	77.0	74.7	76.3	74.6	76.6	77.0	79.7	79.3	80.2	87.3	89.1	90.5	91.5
Taking cocaine regularly	93.3	93.9	92.1	91.9	90.8	91.1	90.7	91.5	93.2	94.5	93.8	94.3	96.7	96.2	96.4	96.7
Trying crack once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92.3
Taking crack occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.3
Taking crack regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.9
Trying cocaine powder once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	87.9
Taking cocaine powder occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92.1
Taking cocaine powder regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	93.7
Trying heroin once or twice	91.5	92.6	92.5	92.0	93.4	93.5	93.5	94.6	94.3	94.0	94.0	93.3	96.2	95.0	95.4	95.1
Taking heroin occasionally	94.8	96.0	96.0	96.4	96.8	96.7	97.2	96.9	96.9	97.1	96.8	96.6	97.9	96.9	97.2	96.7
Taking heroin regularly	96.7	97.5	97.2	97.8	97.9	97.6	97.8	97.5	97.7	98.0	97.6	97.6	98.1	97.2	97.4	97.5
Trying heroin once or twice without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking heroin occasionally without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trying amphetamines once or twice ^d	74.8	75.1	74.2	74.8	75.1	75.4	71.1	72.6	72.3	72.8	74.9	76.5	80.7	82.5	83.3	85.3
Taking amphetamines regularly ^d	92.1	92.8	92.5	93.5	94.4	93.0	91.7	92.0	92.6	93.6	93.3	93.5	95.4	94.2	94.2	95.5
Trying sedatives (barbiturates) once or twice ^e	77.7	81.3	81.1	82.4	84.0	83.9	82.4	84.4	83.1	84.1	84.9	86.8	89.6	89.4	89.3	90.5
Taking sedatives (barbiturates) regularly ^e	93.3	93.6	93.0	94.3	95.2	95.4	94.2	94.4	95.1	95.1	95.5	94.9	96.4	95.3	95.3	96.4
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	21.6	18.2	15.6	15.6	15.8	16.0	17.2	18.2	18.4	17.4	20.3	20.9	21.4	22.6	27.3	29.4
Taking one or two drinks nearly every day	67.6	68.9	66.8	67.7	68.3	69.0	69.1	69.9	68.9	72.9	70.9	72.8	74.2	75.0	76.5	77.9
Taking four or five drinks nearly every day	88.7	90.7	88.4	90.2	91.7	90.8	91.8	90.9	90.0	91.0	92.0	91.4	92.2	92.8	91.6	91.9
Having five or more drinks once or twice each weekend	60.3	58.6	57.4	56.2	56.7	55.6	55.5	58.8	56.6	59.6	60.4	62.4	62.0	65.3	66.5	68.9
Smoking one or more packs of cigarettes per day	67.5	65.9	66.4	67.0	70.3	70.8	69.9	69.4	70.8	73.0	72.3	75.4	74.3	73.1	72.4	72.8
Vape an e-liquid with nicotine occasionally ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	90.8
<i>Approximate weighted N =</i>	2,677	2,957	3,085	3,686	3,221	3,261	3,610	3,651	3,341	3,254	3,265	3,113	3,302	3,311	2,799	2,566

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TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Percentage who disapprove or strongly disapprove^b

Do you disapprove of people (who are 18 or older) doing each of the following?^a

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Trying marijuana once or twice	68.7	69.9	63.3	57.6	56.7	52.5	51.0	51.6	48.8	52.5	49.1	51.6	53.4	52.7	55.0
Smoking marijuana occasionally	79.4	79.7	75.5	68.9	66.7	62.9	63.2	64.4	62.5	65.8	63.2	63.4	64.2	65.4	67.8
Smoking marijuana regularly	89.3	90.1	87.6	82.3	81.9	80.0	78.8	81.2	78.6	79.7	79.3	78.3	78.7	80.7	82.0
Trying LSD once or twice	90.1	88.1	85.9	82.5	81.1	79.6	80.5	82.1	83.0	82.4	81.8	84.6	85.5	87.9	87.9
Taking LSD regularly	96.4	95.5	95.8	94.3	92.5	93.2	92.9	93.5	94.3	94.2	94.0	94.0	94.4	94.6	95.6
Trying ecstasy (MDMA, Molly) once or twice ^c	—	—	—	—	—	—	82.2	82.5	82.1	81.0	79.5	83.6	84.7	87.7	88.4
Trying cocaine once or twice	93.6	93.0	92.7	91.6	90.3	90.0	88.0	89.5	89.1	88.2	88.1	89.0	89.3	88.6	88.9
Taking cocaine regularly	97.3	96.9	97.5	96.6	96.1	95.6	96.0	95.6	94.9	95.5	94.9	95.0	95.8	95.4	96.0
Trying crack once or twice	92.1	93.1	89.9	89.5	91.4	87.4	87.0	86.7	87.6	87.5	87.0	87.8	86.6	86.9	86.7
Taking crack occasionally	94.2	95.0	92.8	92.8	94.0	91.2	91.3	90.9	92.3	91.9	91.6	91.5	90.8	92.1	91.9
Taking crack regularly	95.0	95.5	93.4	93.1	94.1	93.0	92.3	91.9	93.2	92.8	92.2	92.4	91.2	93.1	92.1
Trying cocaine powder once or twice	88.0	89.4	86.6	87.1	88.3	83.1	83.0	83.1	84.3	84.1	83.3	83.8	83.6	82.2	83.2
Taking cocaine powder occasionally	93.0	93.4	91.2	91.0	92.7	89.7	89.3	88.7	90.0	90.3	89.8	90.2	88.9	90.0	89.4
Taking cocaine powder regularly	94.4	94.3	93.0	92.5	93.8	92.9	91.5	91.1	92.3	92.6	92.5	92.2	90.7	92.6	92.0
Trying heroin once or twice	96.0	94.9	94.4	93.2	92.8	92.1	92.3	93.7	93.5	93.0	93.1	94.1	94.1	94.2	94.3
Taking heroin occasionally	97.3	96.8	97.0	96.2	95.7	95.0	95.4	96.1	95.7	96.0	95.4	95.6	95.9	96.4	96.3
Taking heroin regularly	97.8	97.2	97.5	97.1	96.4	96.3	96.4	96.6	96.4	96.6	96.2	96.2	97.1	97.1	96.7
Trying heroin once or twice without using a needle	—	—	—	—	92.9	90.8	92.3	93.0	92.6	94.0	91.7	93.1	92.2	93.1	93.2
Taking heroin occasionally without using a needle	—	—	—	—	94.7	93.2	94.4	94.3	93.8	95.2	93.5	94.4	93.5	94.4	95.0
Trying amphetamines once or twice ^d	86.5	86.9	84.2	81.3	82.2	79.9	81.3	82.5	81.9	82.1	82.3	83.8	85.8	84.1	86.1
Taking amphetamines regularly ^d	96.0	95.6	96.0	94.1	94.3	93.5	94.3	94.0	93.7	94.1	93.4	93.5	94.0	93.9	94.8
Trying sedatives (barbiturates) once or twice ^e	90.6	90.3	89.7	87.5	87.3	84.9	86.4	86.0	86.6	85.9	85.9	86.6	87.8‡	83.7	85.4
Taking sedatives (barbiturates) regularly ^e	97.1	96.5	97.0	96.1	95.2	94.8	95.3	94.6	94.7	95.2	94.5	94.7	94.4‡	94.2	95.2
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	29.8	33.0	30.1	28.4	27.3	26.5	26.1	24.5	24.6	25.2	26.6	26.3	27.2	26.0	26.4
Taking one or two drinks nearly every day	76.5	75.9	77.8	73.1	73.3	70.8	70.0	69.4	67.2	70.0	69.2	69.1	68.9	69.5	70.8
Taking four or five drinks nearly every day	90.6	90.8	90.6	89.8	88.8	89.4	88.6	86.7	86.9	88.4	86.4	87.5	86.3	87.8	89.4
Having five or more drinks once or twice each weekend	67.4	70.7	70.1	65.1	66.7	64.7	65.0	63.8	62.7	65.2	62.9	64.7	64.2	65.7	66.5
Smoking one or more packs of cigarettes per day	71.4	73.5	70.6	69.8	68.2	67.2	67.1	68.8	69.5	70.1	71.6	73.6	74.8	76.2	79.8
Vape an e-liquid with nicotine occasionally ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly ^f	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking steroids	90.5	92.1	92.1	91.9	91.0	91.7	91.4	90.8	88.9	88.8	86.4	86.8	86.0	87.9	88.8

Approximate weighted N = 2,547 2,645 2,723 2,588 2,603 2,399 2,601 2,545 2,310 2,150 2,144 2,160 2,442 2,455 2,460

Table continued on next page.

TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Percentage who disapprove or strongly disapprove^b

<i>Do you disapprove of people (who are 18 or older) doing each of the following?^a</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change
Trying marijuana once or twice	55.6	58.6	55.5	54.8	51.6	51.3	48.8	49.1	48.0	45.5	43.1	39.0	41.1	+2.1
Smoking marijuana occasionally	69.3	70.2	67.3	65.6	62.0	60.9	59.1	58.9	56.7	52.9	50.5	46.7	49.2	+2.6
Smoking marijuana regularly	82.2	83.3	79.6	80.3	77.7	77.5	77.8	74.5	73.4	70.7	68.5	64.7	66.7	+2.1
Trying LSD once or twice	88.0	87.8	85.5	88.2	86.5	86.3	87.2	86.6	85.0	81.7	82.4	78.0	80.5	+2.5
Taking LSD regularly	95.9	94.9	93.5	95.3	94.3	94.9	95.2	95.3	94.7	92.5	92.4	92.7	93.4	+0.7
Trying ecstasy (MDMA, Molly) once or twice ^c	89.0	87.8	88.2	88.2	86.3	83.9	87.1	84.9	83.1	84.5	84.0	85.1	85.6	+0.4
Trying cocaine once or twice	89.1	89.6	89.2	90.8	90.5	91.1	91.0	92.3	90.0	89.0	88.4	88.0	88.9	+0.9
Taking cocaine regularly	96.1	96.2	94.8	96.5	96.0	96.0	96.8	96.7	96.3	95.2	94.8	94.8	95.8	+1.1
Trying crack once or twice	88.8	88.8	89.6	90.9	89.8	91.4	92.8	91.4	89.3	90.2	90.1	89.7	90.4	+0.7
Taking crack occasionally	92.9	92.4	93.3	94.0	92.6	93.9	95.0	93.6	91.9	92.5	92.0	91.8	92.2	+0.4
Taking crack regularly	93.8	93.6	93.5	94.3	93.1	94.4	95.4	94.1	92.4	92.8	92.6	92.5	92.5	0.0
Trying cocaine powder once or twice	84.1	83.5	85.7	87.3	87.0	88.1	88.7	88.2	85.5	86.4	86.6	85.5	86.5	+1.0
Taking cocaine powder occasionally	90.4	90.6	91.7	92.3	91.0	92.2	93.0	91.7	90.4	91.3	90.6	90.3	91.3	+1.0
Taking cocaine powder regularly	93.2	92.6	92.8	93.9	92.6	93.8	95.0	94.1	91.7	92.4	92.0	92.2	92.0	-0.1
Trying heroin once or twice	93.8	94.8	93.3	94.7	93.9	94.3	95.8	95.6	94.7	94.2	94.1	93.7	95.0	+1.2
Taking heroin occasionally	96.2	96.8	95.3	96.9	96.2	96.3	97.0	96.9	96.6	95.3	95.5	95.5	96.4	+0.8
Taking heroin regularly	96.9	97.1	95.9	97.4	96.4	96.7	97.4	97.4	97.1	96.4	95.7	95.9	96.8	+0.9
Trying heroin once or twice without using a needle	93.7	93.6	94.2	94.7	93.2	92.6	95.2	93.7	92.5	92.6	93.8	93.3	93.0	-0.2
Taking heroin occasionally without using a needle	94.5	94.9	95.3	95.5	94.5	94.1	95.9	94.6	93.5	92.8	94.0	93.8	93.4	-0.4
Trying amphetamines once or twice ^d	86.3	87.3	87.2	88.2	88.1	84.1	83.9	84.9	83.1	81.4	82.1	81.9	81.0	-0.8
Taking amphetamines regularly ^d	95.3	95.4	94.2	95.6	94.9	92.9	93.9	93.2	93.0	92.2	92.2	92.0	92.8	+0.8
Trying sedatives (barbiturates) once or twice ^e	85.3	86.5	86.1	87.7	87.6	87.3	88.2	88.9	88.5	87.4	86.5	85.9	86.9	+0.9
Taking sedatives (barbiturates) regularly ^e	95.1	94.6	94.3	95.8	94.7	95.1	96.1	95.8	95.0	94.7	94.8	94.4	95.3	+0.9
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	29.0	31.0	29.8	30.6	30.7	28.7	25.4	27.3	29.2	28.9	28.8	27.2	31.3	+4.1
Taking one or two drinks nearly every day	72.8	73.3	74.5	70.5	71.5	72.8	70.8	71.9	71.7	71.1	71.8	70.8	74.7	+3.9 s
Taking four or five drinks nearly every day	90.6	90.5	89.8	89.7	88.8	90.8	90.1	90.6	91.9	89.7	91.1	90.7	91.7	+1.0
Having five or more drinks once or twice each weekend	68.5	68.8	68.9	67.6	68.8	70.0	70.1	71.6	72.6	71.9	74.2	72.5	75.8	+3.3 s
Smoking one or more packs of cigarettes per day	81.5	80.7	80.5	81.8	81.0	83.0	83.7	82.6	85.0	84.1	85.3	86.6	89.0	+2.4 s
Vape an e-liquid with nicotine occasionally ^f	—	—	—	—	—	—	—	—	—	—	—	62.0	59.2	-2.7
Vape an e-liquid with nicotine regularly ^f	—	—	—	—	—	—	—	—	—	—	—	71.8	70.9	-0.9
Taking steroids	89.4	89.2	90.9	90.3	89.8	89.7	90.4	88.2	87.5	87.8	86.7	88.5	87.4	-1.1
<i>Approximate weighted N =</i>	<i>2,377</i>	<i>2,450</i>	<i>2,314</i>	<i>2,233</i>	<i>2,449</i>	<i>2,384</i>	<i>2,301</i>	<i>2,147</i>	<i>2,078</i>	<i>2,193</i>	<i>2,000</i>	<i>1,870</i>	<i>1,918</i>	

Table continued on next page.

TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe 1975 question asked about people who are 20 or older.

^bAnswer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

^cBeginning in 2014 "molly" was added to the question on disapproval of using MDMA once or twice. 2014 and 2015 data are not comparable to earlier years due to this change.

^dIn 2011 the list of examples was changed from upper, pep pill, bennie, speed to upper, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

^eIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

^fBased on two of six forms; N is two times the N indicated.

TABLE 8-7
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

<i>Do you think that people (who are 18 or older)^b should be prohibited by law from doing each of the following?</i>	Percentage saying "yes" ^a															
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Smoking marijuana in private	32.8	27.5	26.8	25.4	28.0	28.9	35.4	36.6	37.8	41.6	44.7	43.8	47.6	51.8	51.5	56.0
Smoking marijuana in public places	63.1	59.1	58.7	59.5	61.8	66.1	67.4	72.8	73.6	75.2	78.2	78.9	79.7	81.3	80.0	81.9
Taking LSD in private	67.2	65.1	63.3	62.7	62.4	65.8	62.6	67.1	66.7	67.9	70.6	69.0	70.8	71.5	71.6	72.9
Taking LSD in public places	85.8	81.9	79.3	80.7	81.5	82.8	80.7	82.1	82.8	82.4	84.8	84.9	85.2	86.0	84.4	84.9
Taking heroin in private	76.3	72.4	69.2	68.8	68.5	70.3	68.8	69.3	69.7	69.8	73.3	71.7	75.0	74.2	74.4	76.4
Taking heroin in public places	90.1	84.8	81.0	82.5	84.0	83.8	82.4	82.5	83.7	83.4	85.8	85.0	86.2	86.6	85.2	86.7
Taking amphetamines or sedatives in private ^c	57.2	53.5	52.8	52.2	53.4	54.1	52.0	53.5	52.8	54.4	56.3	56.8	59.1	60.2	61.1	64.5
Taking amphetamines or sedatives in public places ^c	79.6	76.1	73.7	75.8	77.3	76.1	74.2	75.5	76.7	76.8	78.3	79.1	79.8	80.2	79.2	81.6
Getting drunk in private	14.1	15.6	18.6	17.4	16.8	16.7	19.6	19.4	19.9	19.7	19.8	18.5	18.6	19.2	20.2	23.0
Getting drunk in public places	55.7	50.7	49.0	50.3	50.4	48.3	49.1	50.7	52.2	51.1	53.1	52.2	53.2	53.8	52.6	54.6
Smoking cigarettes in certain specified public places	—	—	42.0	42.2	43.1	42.8	43.0	42.0	40.5	39.2	42.8	45.1	44.4	48.4	44.5	47.3
<i>Approximate weighted N =</i>	2,620	2,959	3,113	3,783	3,288	3,224	3,611	3,627	3,315	3,236	3,254	3,074	3,332	3,288	2,813	2,571

Table continued on next page.

TABLE 8-7 (cont.)
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

<i>Do you think that people (who are 18 or older)^b should be prohibited by law from doing each of the following?</i>	Percentage saying "yes" ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Smoking marijuana in private	51.6	52.4	48.0	42.9	44.0	40.4	38.8	39.8	39.3	38.8	39.1	38.4	40.3	41.4	40.7
Smoking marijuana in public places	79.8	78.3	77.3	72.5	72.9	70.0	69.4	72.2	71.5	72.1	68.3	67.6	68.6	69.2	69.6
Taking LSD in private	68.1	67.2	63.5	63.2	64.3	62.0	61.2	64.7	62.6	62.9	63.1	64.2	64.2	64.4	63.7
Taking LSD in public places	83.9	82.2	82.1	80.5	81.5	79.2	80.3	82.7	80.4	80.4	78.8	79.9	79.1	77.0	77.4
Taking heroin in private	72.8	71.4	70.7	70.1	72.2	70.8	70.6	73.9	72.9	71.1	70.6	73.6	73.1	72.0	71.3
Taking heroin in public places	85.4	83.3	84.5	82.9	84.8	82.3	84.3	86.4	84.2	83.9	81.7	83.7	83.2	80.9	82.0
Taking amphetamines or sedatives in private ^c	59.7	60.5	57.4	55.7	57.5	54.6	54.6	58.5	55.1	56.0	55.9	56.0	55.8†	52.2	53.6
Taking amphetamines or sedatives in public places ^c	79.7	78.5	78.0	76.4	77.6	74.3	76.5	77.4	76.1	75.4	74.5	73.6	74.4†	69.9	72.0
Getting drunk in private	22.0	24.4	22.1	21.0	21.6	21.4	20.5	20.2	20.5	21.5	22.6	21.0	21.4	22.0	22.5
Getting drunk in public places	54.3	54.1	53.6	54.3	54.5	52.8	51.7	51.2	52.8	51.9	50.6	48.6	50.1	47.7	48.2
Smoking cigarettes in certain specified public places	44.9	47.6	45.9	47.3	45.1	43.4	41.3	41.1	43.2	45.1	44.2	43.8	45.5	44.3	46.8
<i>Approximate weighted N =</i>	<i>2,512</i>	<i>2,671</i>	<i>2,759</i>	<i>2,603</i>	<i>2,578</i>	<i>2,422</i>	<i>2,587</i>	<i>2,563</i>	<i>2,283</i>	<i>2,146</i>	<i>2,161</i>	<i>2,162</i>	<i>2,450</i>	<i>2,450</i>	<i>2,461</i>

Table continued on next page.

TABLE 8-7 (cont.)
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

<i>Do you think that people (who are 18 or older)^b should be prohibited by law from doing each of the following?</i>	Percentage saying "yes" ^a													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Smoking marijuana in private	42.3	38.7	39.3	36.7	32.8	34.2	33.0	32.0	28.5	26.5	23.8	22.9	21.7	-1.2
Smoking marijuana in public places	68.5	69.4	70.2	67.1	62.4	63.8	64.4	61.3	57.0	55.7	57.0	50.3	47.9	-2.4
Taking LSD in private	62.3	63.6	60.9	60.2	56.2	57.0	56.4	57.6	54.0	47.6	50.6	48.3	44.3	-4.0
Taking LSD in public places	75.0	76.9	74.2	74.8	72.3	73.3	72.8	73.9	71.9	66.9	71.9	68.6	65.4	-3.2
Taking heroin in private	71.6	72.5	72.0	71.3	70.1	68.8	68.9	71.0	68.4	64.1	69.6	68.5	66.4	-2.1
Taking heroin in public places	80.1	81.7	80.6	80.5	80.0	79.1	80.6	80.6	78.7	74.1	79.2	77.3	74.8	-2.5
Taking amphetamines or sedatives in private ^c	51.5	54.3	53.0	51.1	50.8	50.2	48.7	48.9	46.2	43.0	45.3	44.2	42.4	-1.7
Taking amphetamines or sedatives in public places ^c	69.5	72.8	71.6	71.1	70.7	68.5	69.8	68.5	67.0	61.5	66.1	63.3	60.2	-3.1
Getting drunk in private	23.4	21.3	23.2	22.1	20.3	21.4	21.6	21.8	19.5	22.0	18.8	20.3	19.7	-0.5
Getting drunk in public places	47.3	47.8	49.6	49.7	47.3	49.3	48.8	47.5	47.9	46.2	48.2	43.4	41.9	-1.5
Smoking cigarettes in certain specified public places	47.0	46.4	45.1	45.4	41.3	42.6	43.0	40.8	39.2	39.7	41.9	38.4	37.9	-0.5
<i>Approximate weighted N =</i>	2,381	2,459	2,356	2,306	2,410	2,339	2,304	2,101	2,070	2,170	1,976	2,117	2,234	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) No, (2) Not sure, and (3) Yes.

^bThe 1975 question asked about people who are 20 or older.

^cIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

TABLE 8-8
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies would you favor?

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Using marijuana should be entirely legal	27.3	32.6	33.6	32.9	32.1	26.3	23.1	20.0	18.9	18.6	16.6	14.9	15.4	15.1	16.6	15.9
It should be a minor violation like a parking ticket, but not a crime	25.3	29.0	31.4	30.2	30.1	30.9	29.3	28.2	26.3	23.6	25.7	25.9	24.6	21.9	18.9	17.4
It should be a crime	30.5	25.4	21.7	22.2	24.0	26.4	32.1	34.7	36.7	40.6	40.8	42.5	45.3	49.2	50.0	53.2
Don't know	16.8	13.0	13.4	14.6	13.8	16.4	15.4	17.1	18.1	17.2	16.9	16.7	14.8	13.9	14.6	13.6

If it were legal for people to USE marijuana, should it also be legal to SELL marijuana?

No	27.8	23.0	22.5	21.8	22.9	25.0	27.7	29.3	27.4	30.9	32.6	33.0	36.0	36.8	38.8	40.1
Yes, but only to adults	37.1	49.8	52.1	53.6	53.2	51.8	48.6	46.2	47.6	45.8	43.2	42.2	41.2	39.9	37.9	38.8
Yes, to anyone	16.2	13.3	12.7	12.0	11.3	9.6	10.5	10.7	10.5	10.6	11.2	10.4	9.2	10.5	9.2	9.6
Don't know	18.9	13.9	12.7	12.6	12.6	13.6	13.2	13.8	14.6	12.8	13.1	14.4	13.6	12.8	14.1	11.6

Table continued on next page.

If marijuana were legal to use and legally available, which of the following would you be most likely to do?

Not use it, even if it were legal and available	53.2	50.4	50.6	46.4	50.2	53.3	55.2	60.0	60.1	62.0	63.0	62.4	64.9	69.0	70.1	72.9
Try it	8.2	8.1	7.0	7.1	6.1	6.8	6.0	6.3	7.2	6.6	7.5	7.6	7.3	7.1	6.7	7.0
Use it about as often as I do now	22.7	24.7	26.8	30.9	29.1	27.3	24.8	21.7	19.8	19.1	17.7	16.8	16.2	13.1	13.0	10.1
Use it more often than I do now	6.0	7.1	7.4	6.3	6.0	4.2	4.7	3.8	4.9	4.7	3.7	5.0	4.1	4.3	2.4	2.7
Use it less often than I do now	1.3	1.5	1.5	2.7	2.5	2.6	2.5	2.2	1.5	1.6	1.6	2.0	1.3	1.5	2.1	1.1
Don't know	8.5	8.1	6.6	6.7	6.1	5.9	6.9	6.0	6.4	6.0	6.5	6.1	6.3	5.0	5.7	6.1

<i>Approximate weighted N =</i>	2,600	2,970	3,110	3,710	3,280	3,210	3,600	3,620	3,300	3,220	3,230	3,080	3,330	3,277	2,812	2,570
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TABLE 8-8
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies would you favor?

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Using marijuana should be entirely legal	18.0	18.7	22.8	26.8	30.4	31.2	30.8	27.9	27.3	31.2	29.2	30.8	29.5	30.5	27.6
It should be a minor violation like a parking ticket, but not a crime	19.2	18.0	18.7	19.0	18.0	21.0	20.7	24.3	23.7	23.4	24.5	24.2	25.8	26.5	27.7
It should be a crime	48.6	47.6	43.4	39.4	37.3	33.8	34.0	32.6	32.5	30.2	31.1	29.1	29.8	28.5	29.7
Don't know	14.3	15.7	15.1	14.8	14.4	13.9	14.5	15.2	16.5	15.2	15.3	15.9	14.9	14.5	15.1

If it were legal for people to USE marijuana, should it also be legal to SELL marijuana?

No	36.8	37.8	36.7	33.1	32.3	29.4	29.1	30.2	30.2	27.4	30.0	29.1	30.5	28.4	32.3
Yes, but only to adults	41.4	39.5	40.7	41.7	43.4	46.7	44.8	42.4	42.9	45.5	43.6	43.6	43.2	45.2	43.0
Yes, to anyone	9.4	9.6	10.1	11.6	11.7	11.1	12.5	11.9	12.1	13.4	12.0	13.6	11.6	12.2	11.2
Don't know	12.5	13.1	12.5	13.7	12.6	12.8	13.7	15.5	14.7	13.6	14.3	13.7	14.7	14.3	13.5

Table continued on next page.

If marijuana were legal to use and legally available, which of the following would you be most likely to do?

Not use it, even if it were legal and available	70.7	72.5	69.0	64.6	60.2	59.9	56.4	58.3	59.0	60.3	58.1	58.6	57.9	56.4	60.1
Try it	6.3	7.4	7.3	7.6	8.8	8.8	9.1	8.1	9.3	7.3	9.3	8.4	10.6	10.6	8.9
Use it about as often as I do now	11.7	10.2	11.9	14.3	17.1	17.3	18.4	17.9	15.2	18.5	16.8	17.2	15.6	17.4	15.2
Use it more often than I do now	3.3	3.2	3.5	4.7	4.9	4.8	6.1	5.9	6.5	5.4	6.3	7.1	7.1	6.0	6.1
Use it less often than I do now	1.6	1.0	1.4	1.5	1.6	1.6	2.0	2.0	1.9	1.6	2.2	1.7	1.6	1.6	1.8
Don't know	6.4	5.7	7.0	7.3	7.4	7.7	7.9	7.8	8.1	7.0	7.3	7.0	7.2	8.0	8.0

<i>Approximate weighted N =</i>	2,515	2,672	2,768	2,597	2,574	2,426	2,585	2,566	2,285	2,143	2,160	2,150	2,444	2,461	2,466
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TABLE 8-8 (cont.)
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies would you favor?

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
Using marijuana should be entirely legal	27.1	29.3	29.4	31.8	36.2	39.2	39.3	41.5	43.4	42.4	44.7	48.9	48.2	-0.7
It should be a minor violation like a parking ticket, but not a crime	27.6	27.8	30.0	28.9	28.6	26.9	26.8	25.0	24.6	27.4	28.5	25.9	27.0	+1.1
It should be a crime	31.7	30.2	27.5	26.0	21.8	21.3	21.7	20.8	17.1	15.4	13.8	12.4	10.5	-1.9
Don't know	13.6	12.8	13.1	13.3	13.4	12.6	12.2	12.7	14.9	14.8	13.1	12.7	14.2	+1.5

If it were legal for people to USE marijuana, should it also be legal to SELL marijuana?

No	32.9	29.9	30.5	28.7	28.1	28.1	30.9	28.8	26.8	22.8	24.4	21.3	19.2	-2.1
Yes, but only to adults	42.5	45.9	45.9	47.9	48.9	51.0	47.2	51.6	51.3	54.9	53.5	55.4	54.9	-0.4
Yes, to anyone	10.8	11.0	10.3	10.5	9.9	10.5	10.3	9.4	8.8	9.1	9.3	11.2	11.0	-0.1
Don't know	13.9	13.2	13.3	12.9	13.1	10.3	11.6	10.3	13.0	13.2	12.8	12.2	14.9	+2.7 s

If marijuana were legal to use and legally available, which of the following would you be most likely to do?

Not use it, even if it were legal and available	62.5	61.5	60.5	59.9	55.4	54.9	55.8	56.3	52.7	52.6	51.0	46.5	45.0	-1.5
Try it	9.7	8.8	8.9	9.8	10.7	9.6	10.6	10.3	10.7	12.9	13.9	15.2	15.9	+0.7
Use it about as often as I do now	13.8	15.1	14.8	14.7	16.1	17.6	16.8	15.0	16.7	14.0	16.1	16.7	15.5	-1.2
Use it more often than I do now	5.6	5.5	5.5	5.7	7.3	7.3	8.3	8.5	7.7	8.6	7.8	10.1	9.2	-0.9
Use it less often than I do now	1.1	1.5	1.4	1.1	1.8	1.7	1.6	1.5	1.0	1.4	0.8	1.3	1.3	+0.0
Don't know	7.3	7.6	9.0	8.8	8.8	8.9	7.1	8.5	11.2	10.5	10.4	10.1	13.0	+2.9 s

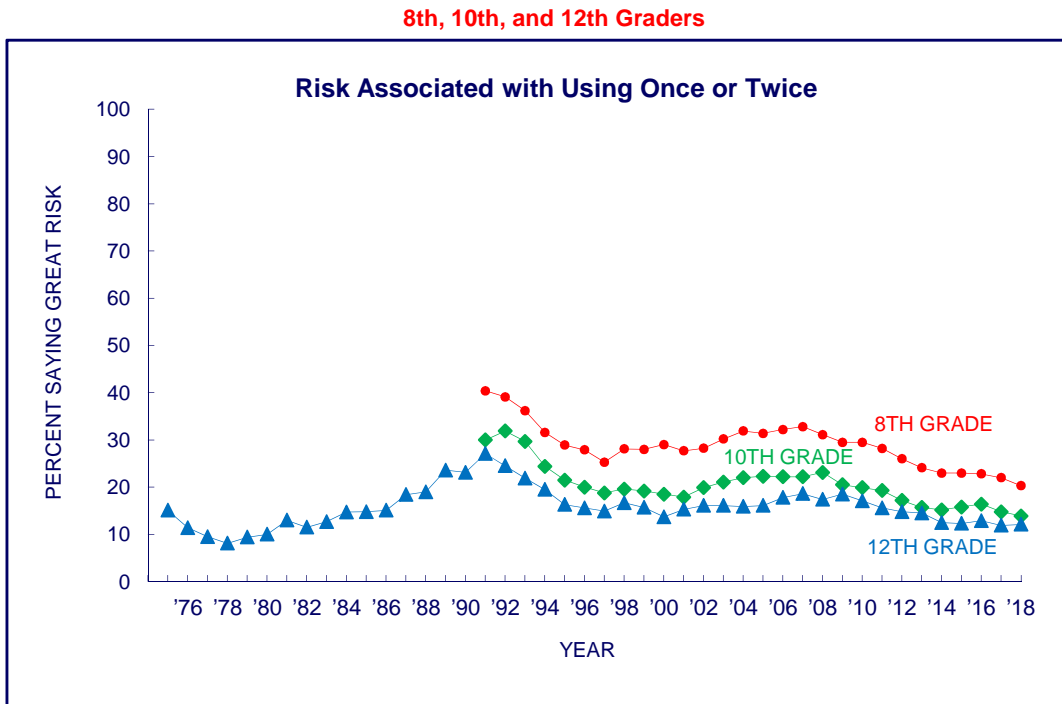
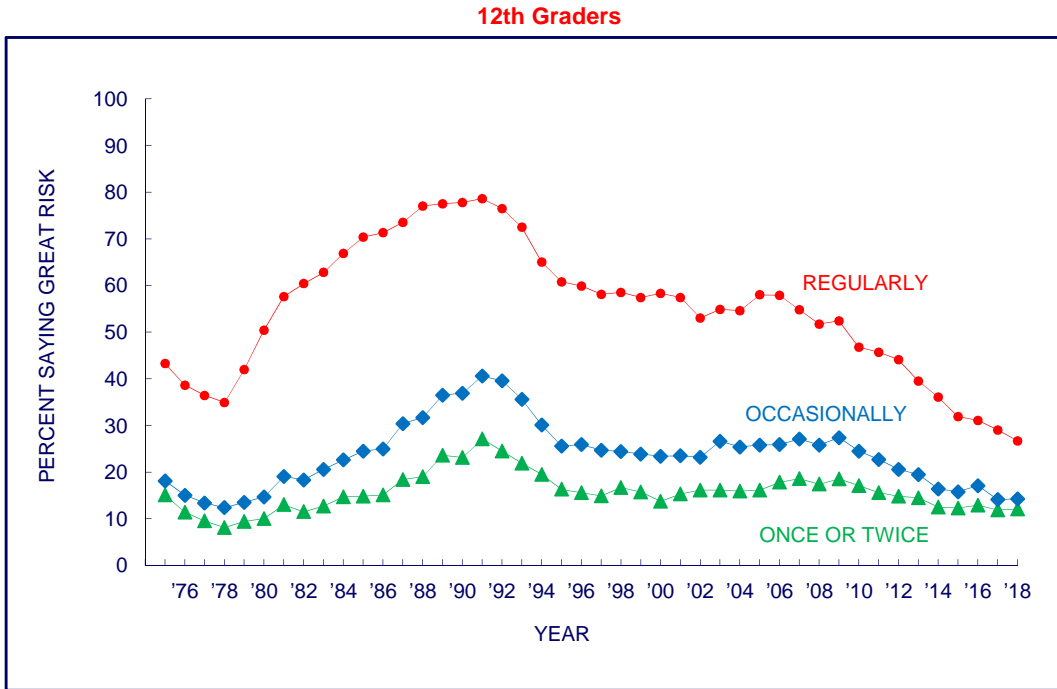
Approximate weighted N = 2,383 2,450 2,366 2,311 2,425 2,349 2,303 2,106 2,079 2,165 1,962 2,119 2,246

Source: The Monitoring the Future study, the University of Michigan.

FIGURE 8-1a

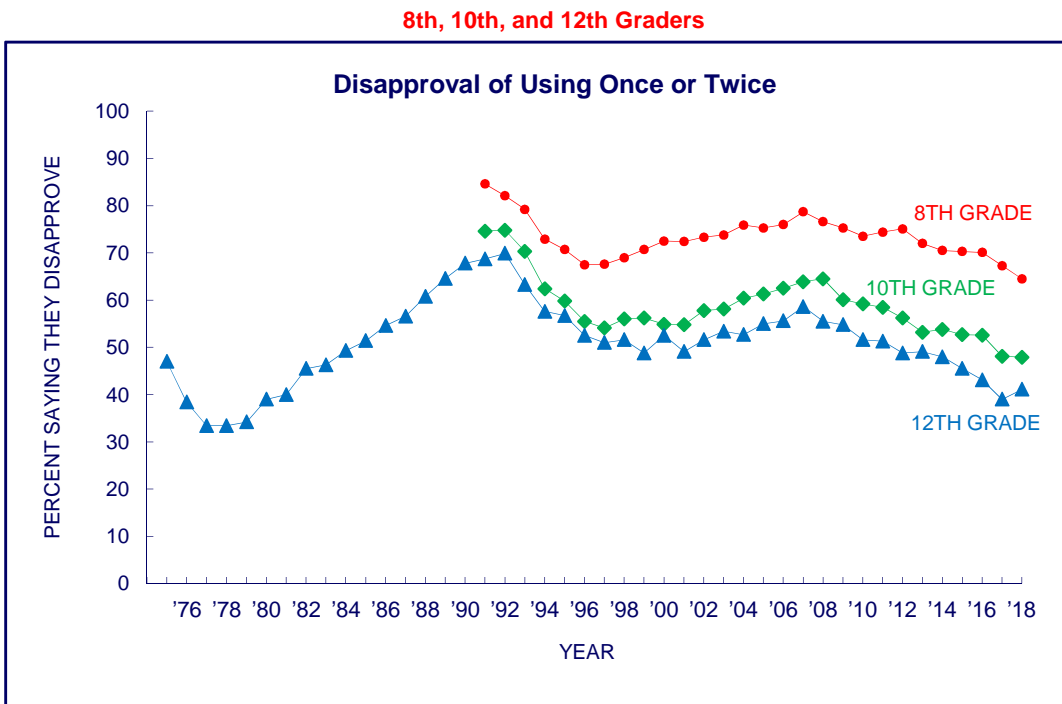
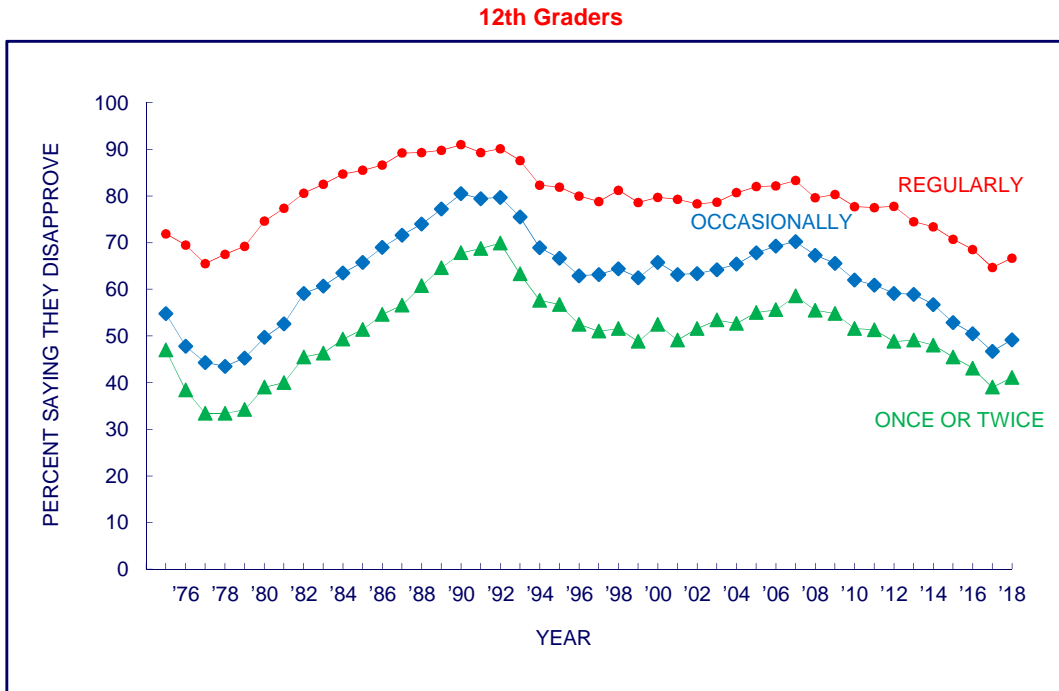
MARIJUANA

Trends in Perceived Harmfulness for Different Levels of Use in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-1b
MARIJUANA
Trends in Disapproval of Different Levels of Use
in Grades 8, 10, and 12

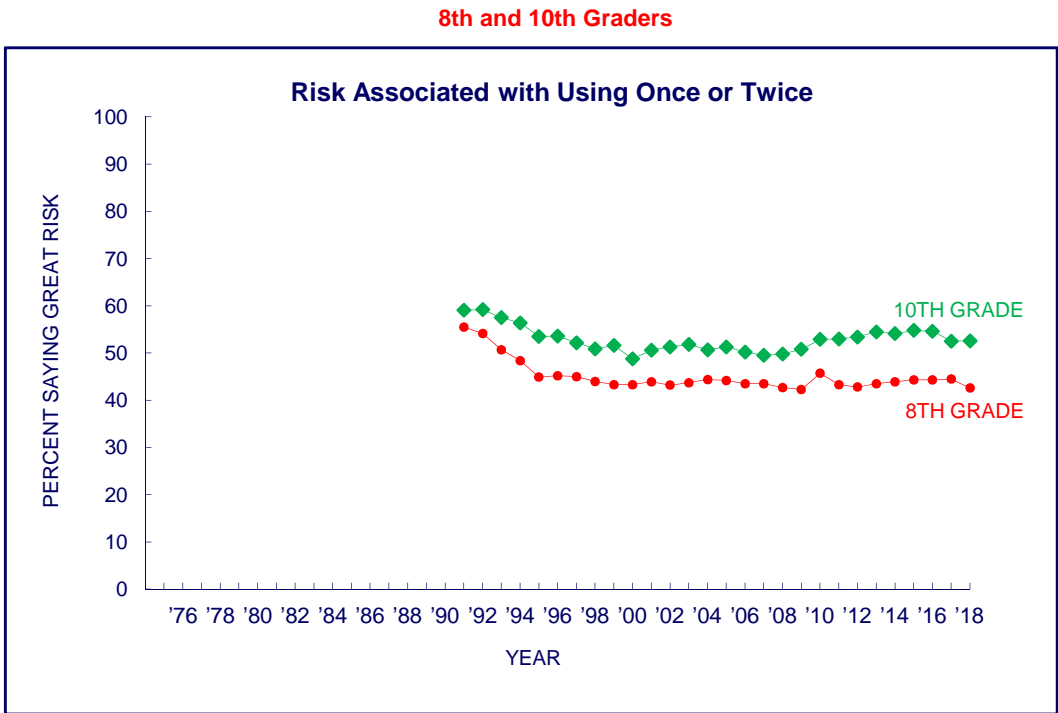
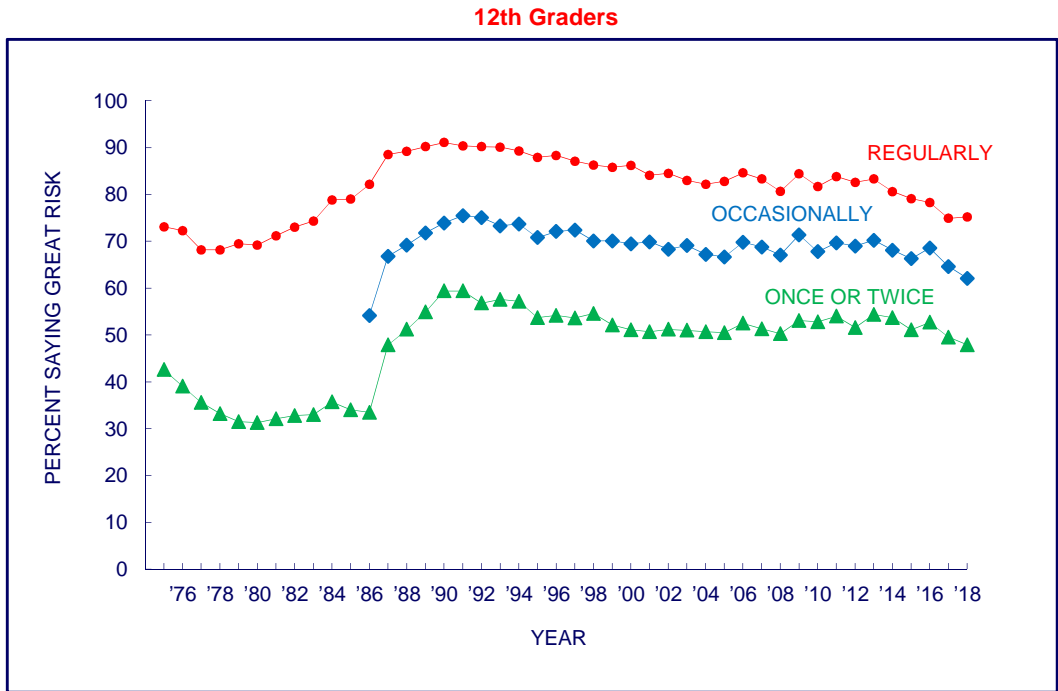


Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-2a

COCAINE

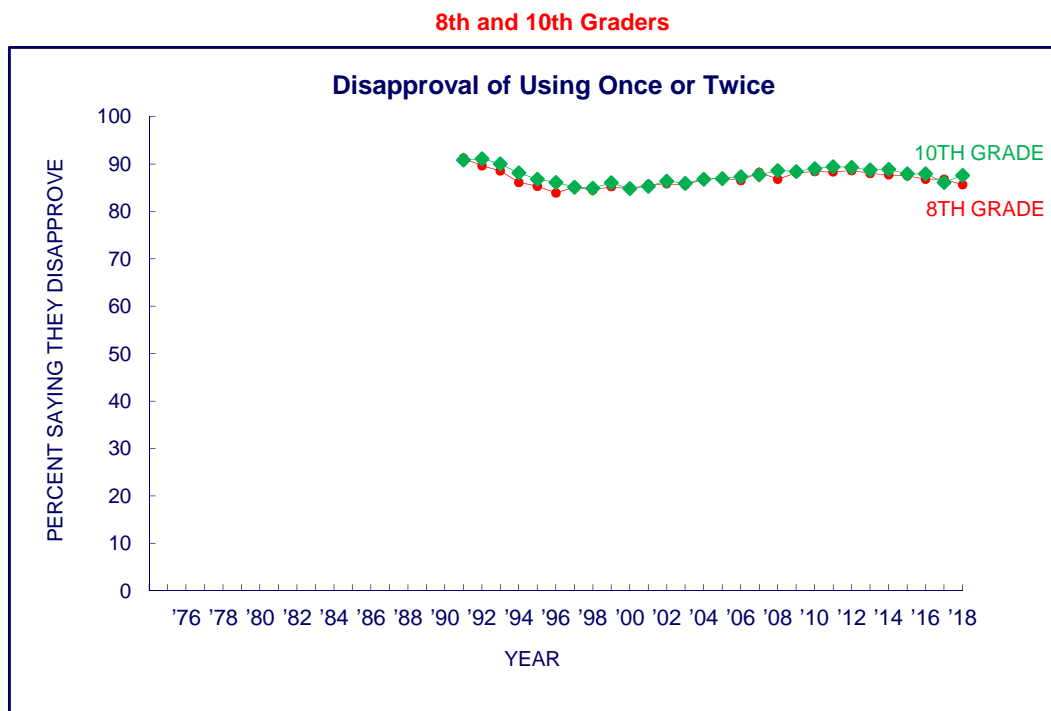
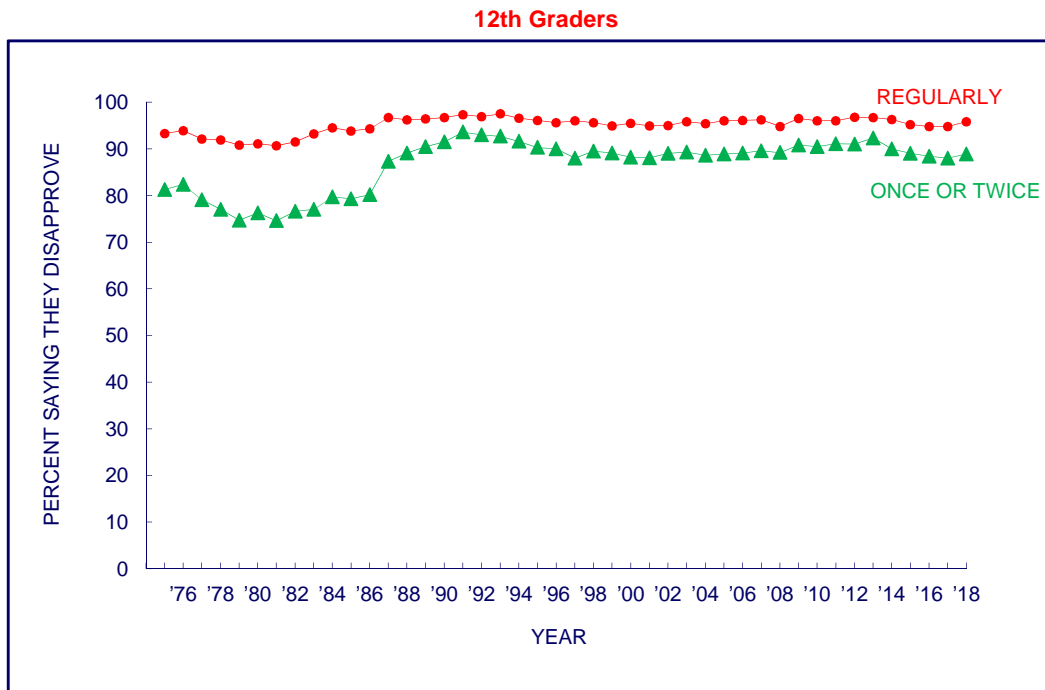
**Trends in Perceived Harmfulness for Different Levels of Use
in Grades 8, 10, and 12**



Source. The Monitoring the Future study, the University of Michigan.

Note. Data presented above for 12th graders pertains to cocaine in general, while the data for 8th and 10th graders pertains specifically to cocaine in powder form.

FIGURE 8-2b
COCAINE
Trends in Disapproval of Different Levels of Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

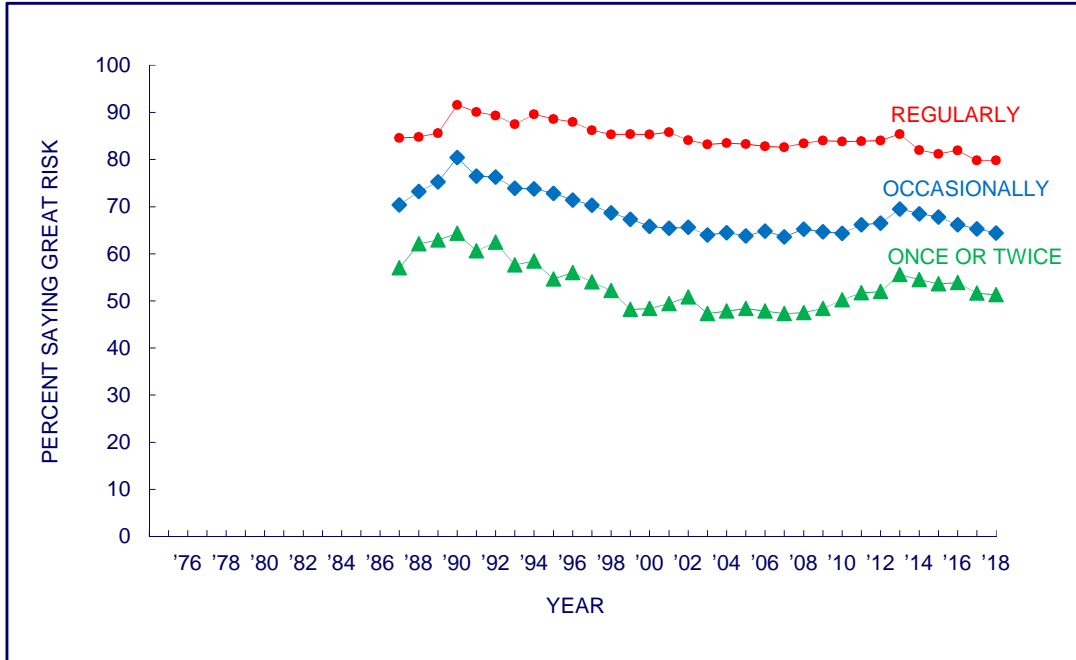
Note. Data presented above for 12th graders pertains to cocaine in general, while the data for 8th and 10th graders pertains specifically to cocaine in powder form.

FIGURE 8-3a

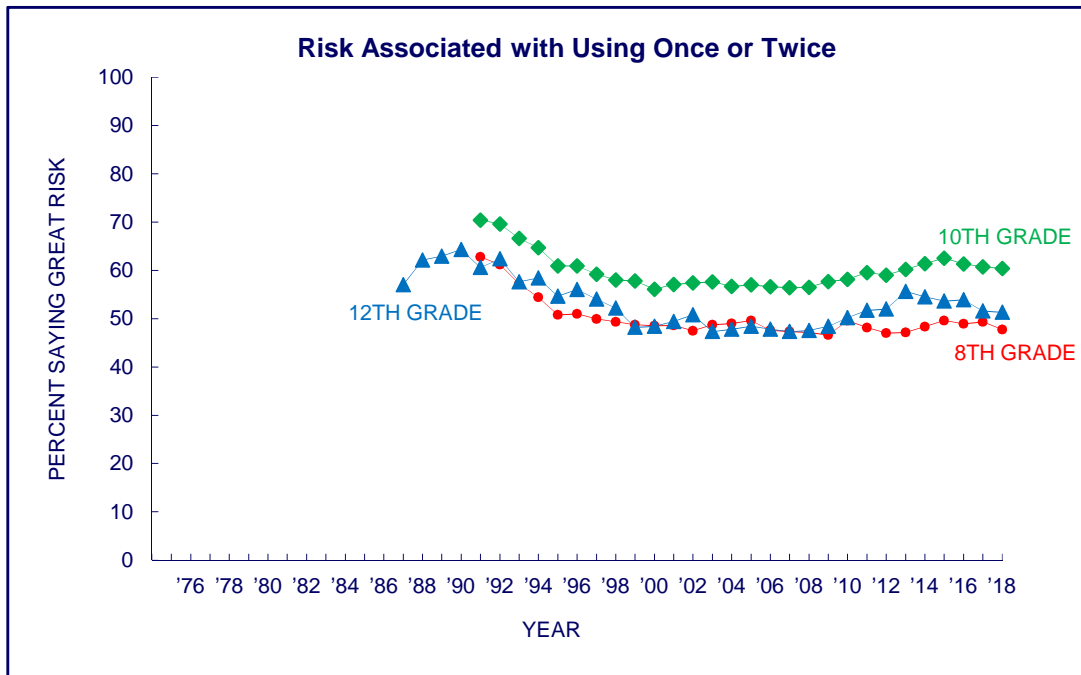
CRACK

**Trends in Perceived Harmfulness for Different Levels of Use
in Grades 8, 10, and 12**

12th Graders

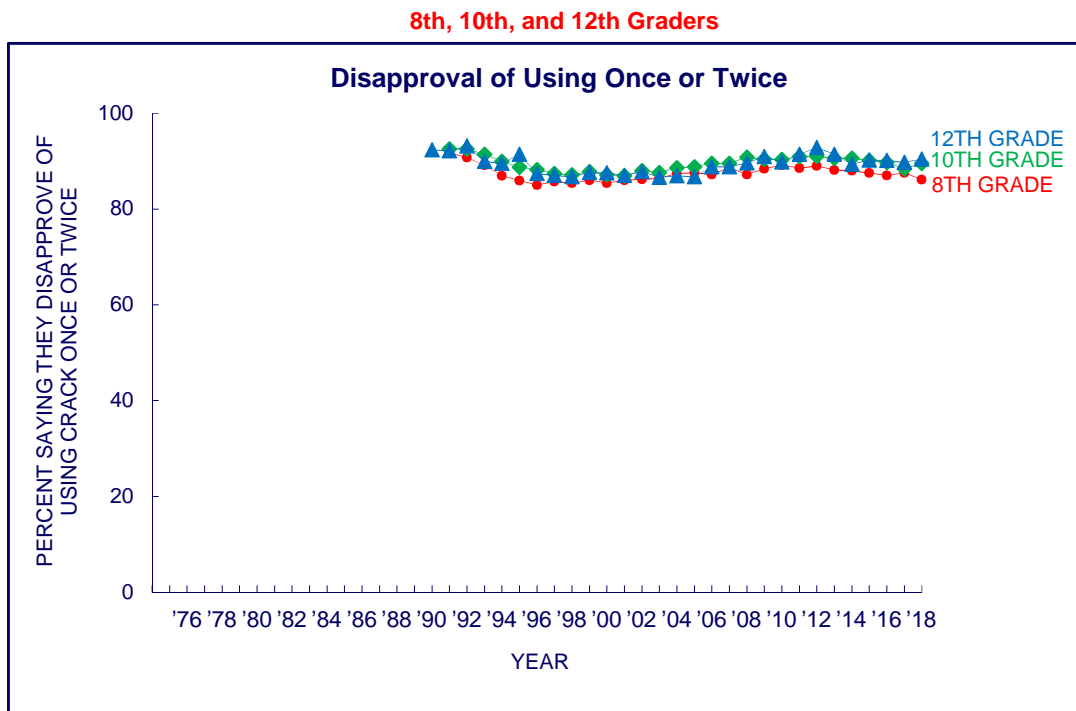
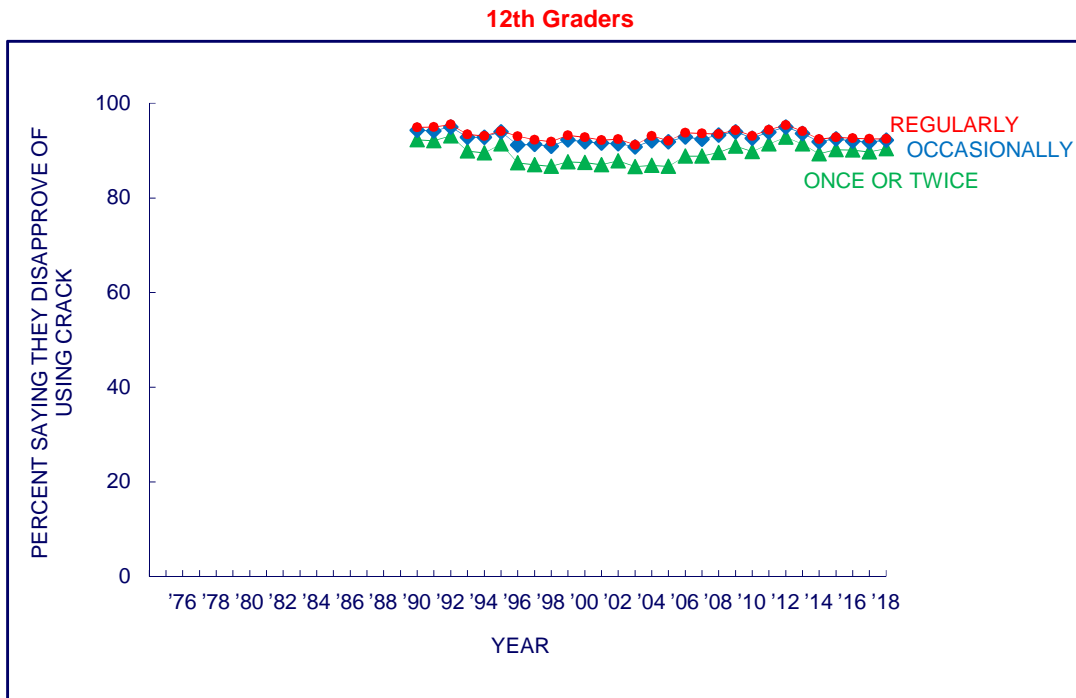


8th, 10th, and 12th Graders



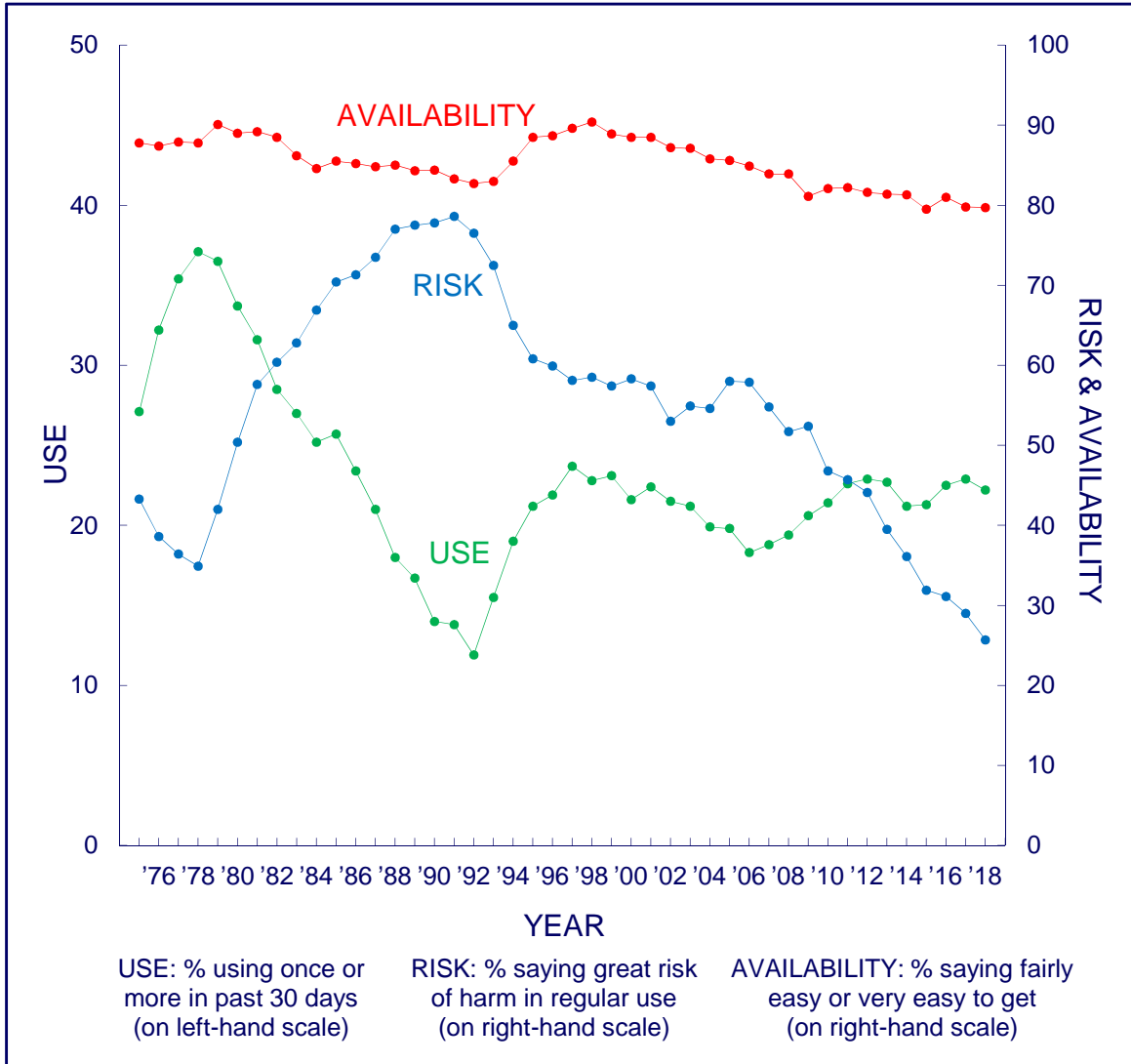
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-3b
CRACK
Trends in Disapproval of Different Levels of Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-4
MARIJUANA
Trends in Perceived Availability,
Perceived Risk of Regular Use, and
Prevalence of Use in Past 30 Days in Grade 12

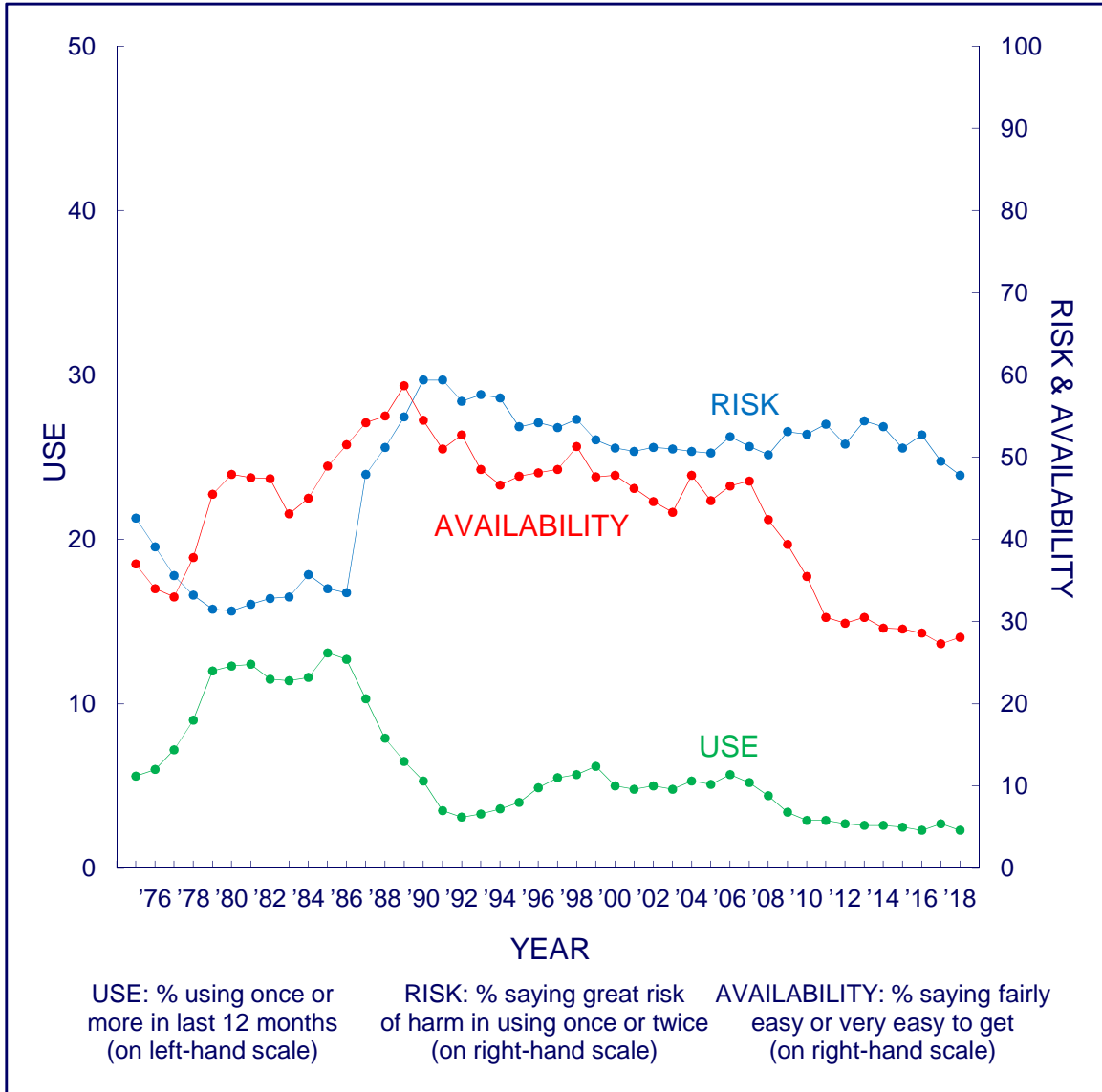


Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-5

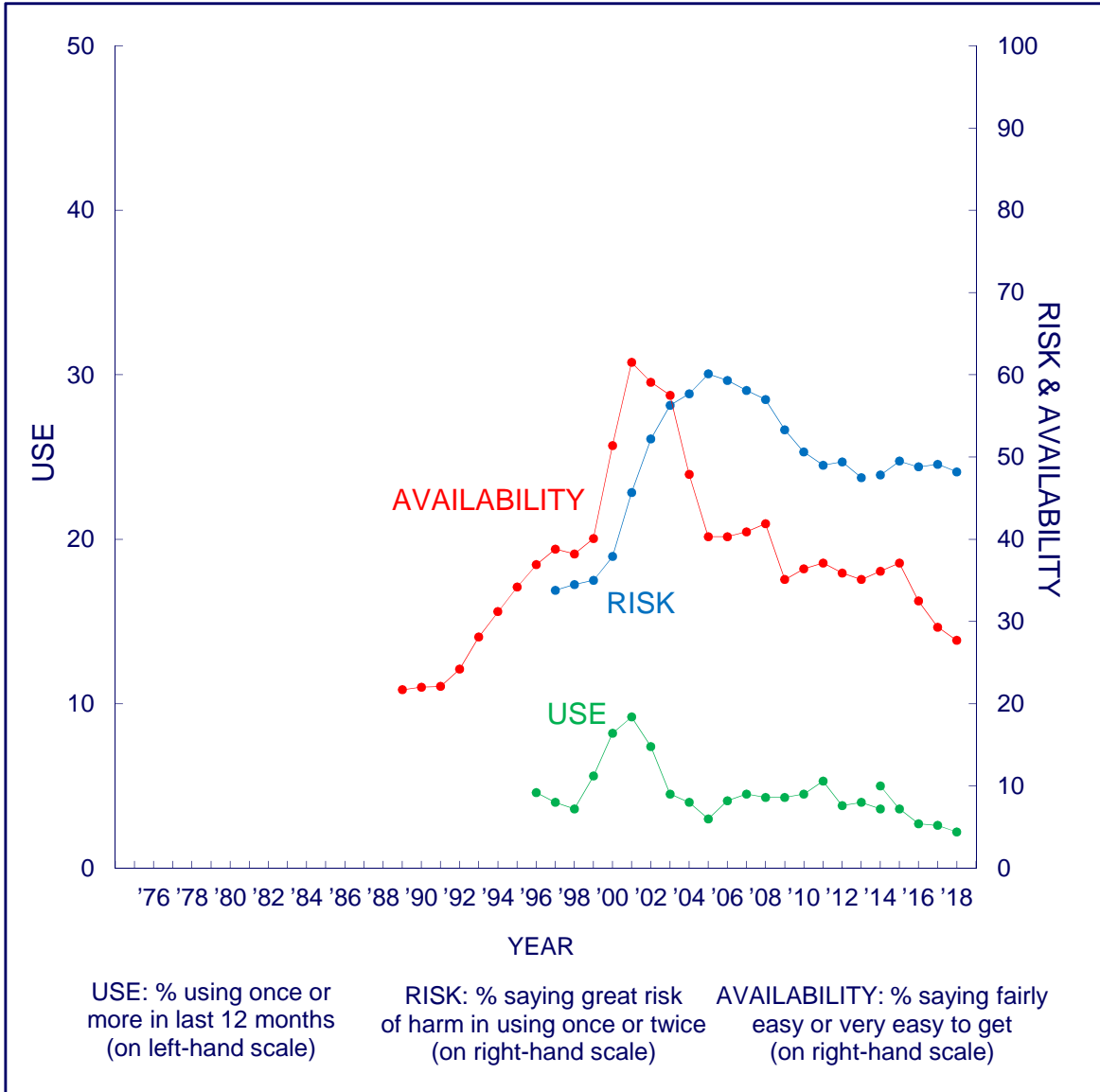
COCAINE

**Trends in Perceived Availability,
Perceived Risk of Trying, and
Prevalence of Use in Last 12 Months in Grade 12**



Source. The Monitoring the Future study, the University of Michigan.

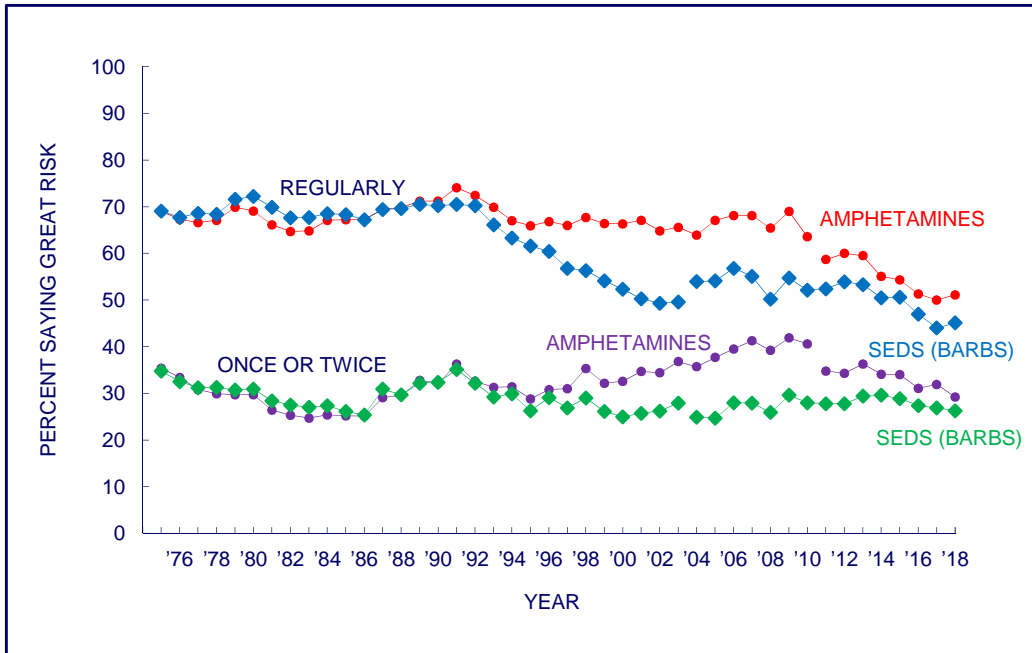
FIGURE 8-6
ECSTASY (MDMA)
Trends in Perceived Availability,
Perceived Risk of Trying, and
Prevalence of Use in Last 12 Months in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

Notes. In 2014, the text was changed on one of the questionnaire forms to include "molly" in the description of the question on annual use. The remaining forms were changed in 2015. Data for both versions of the question are presented here. In 2014, the same change was made to the question on perceived risk. Data from 2014 on are based on the new version of the question.

FIGURE 8-7a
AMPHETAMINES^a AND SEDATIVES (BARBITURATES)^b
Trends in Perceived Harmfulness for Different Levels of Use
in Grade 12



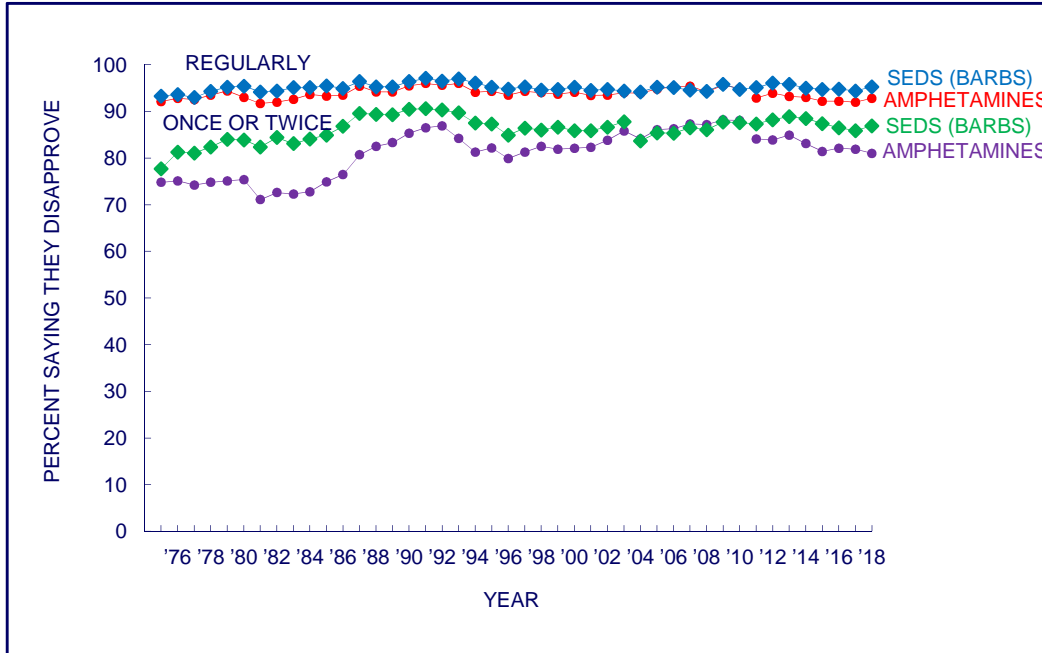
Source. The Monitoring the Future study, the University of Michigan.

Note. Data not available for 8th and 10th graders.

^aIn 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

^bIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

FIGURE 8-7b
AMPHETAMINES^a AND SEDATIVES (BARBITURATES)^b
Trends in Disapproval of Different Levels of Use
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

Note. Data not available for 8th and 10th graders.

^aIn 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

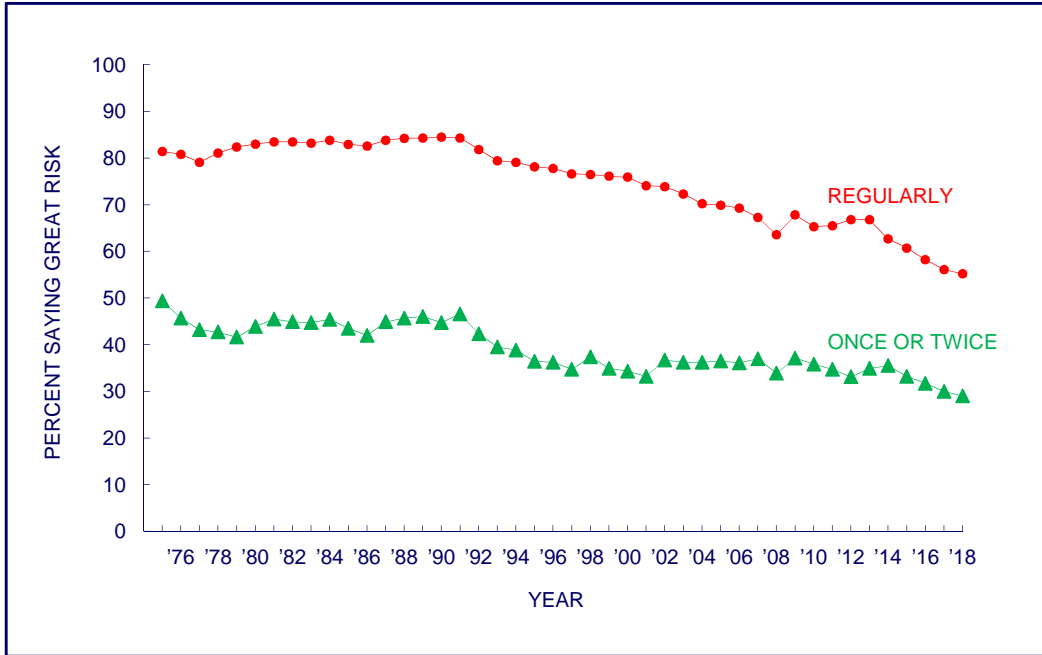
^bIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

FIGURE 8-8a

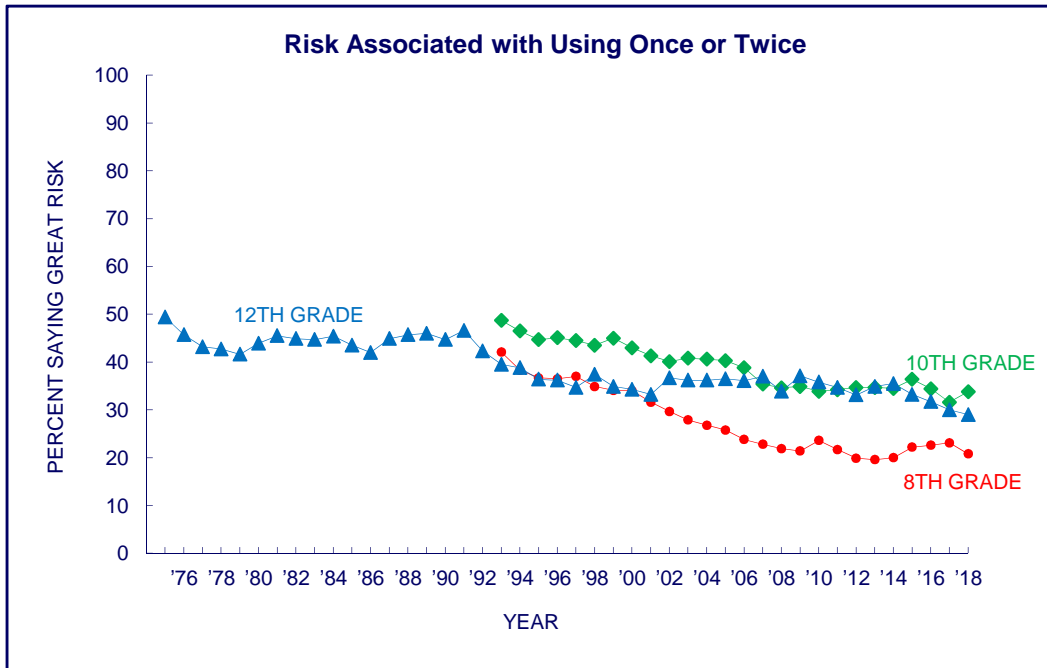
LSD

**Trends in Perceived Harmfulness for Different Levels of Use
in Grades 8, 10, and 12**

12th Graders

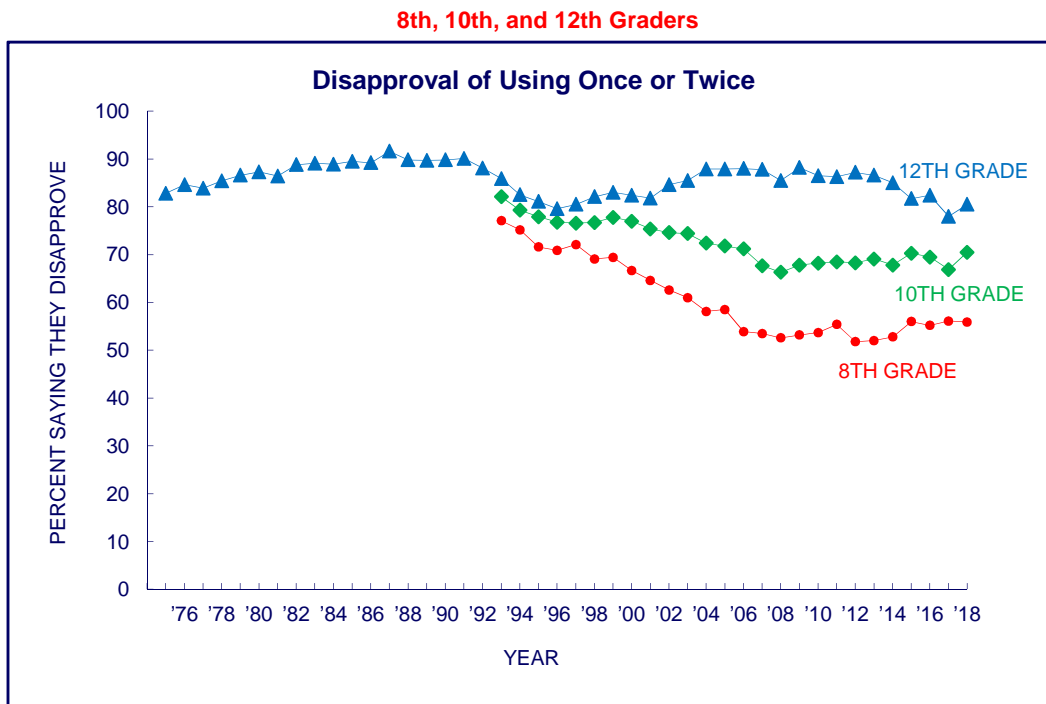
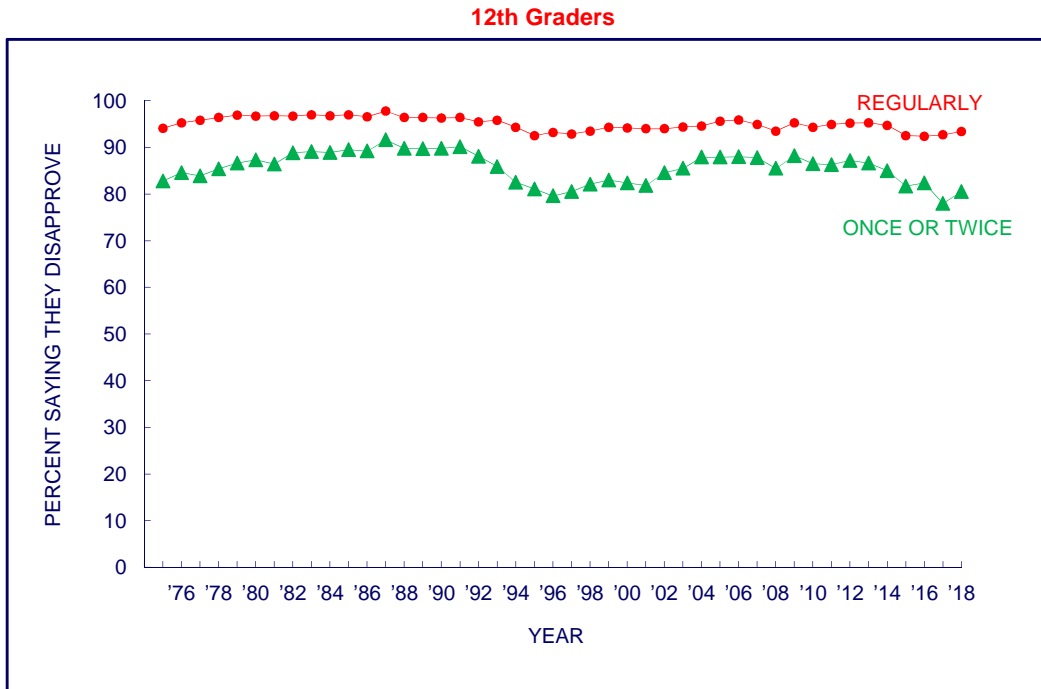


8th, 10th, and 12th Graders



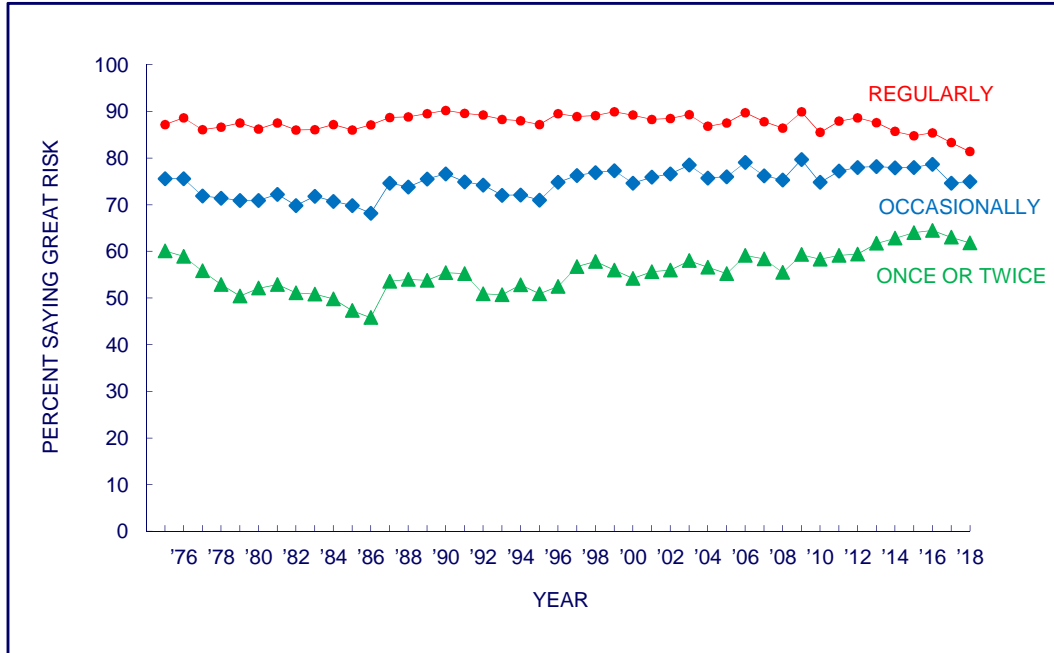
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-8b
LSD
Trends in Disapproval of Different Levels of Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

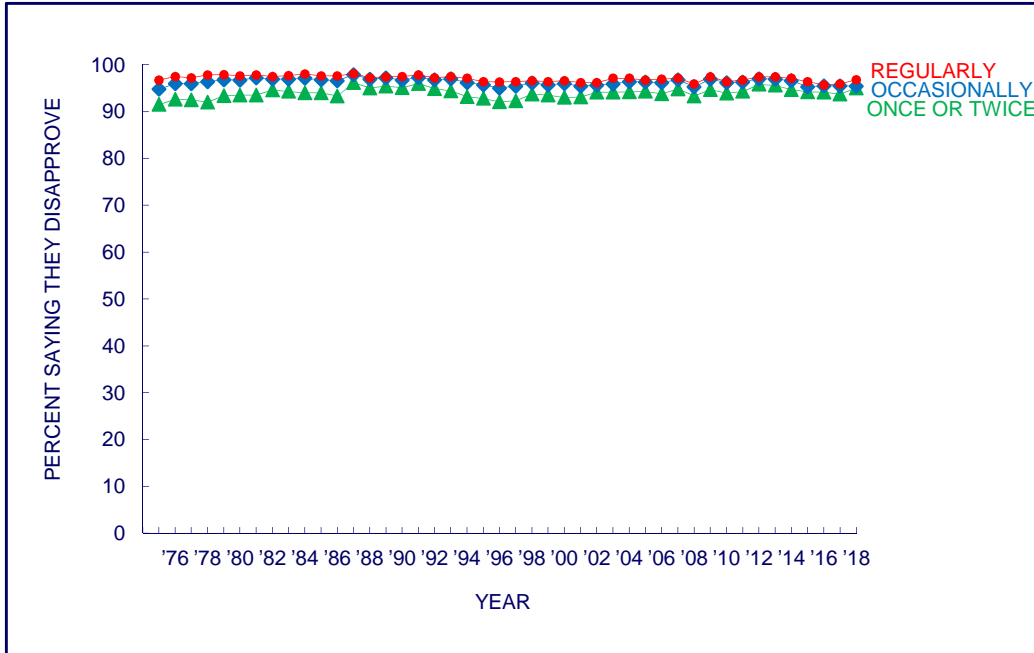
FIGURE 8-9a
HEROIN
Trends in Perceived Harmfulness for Different Levels of Use
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

Note. Data not available for 8th and 10th graders.

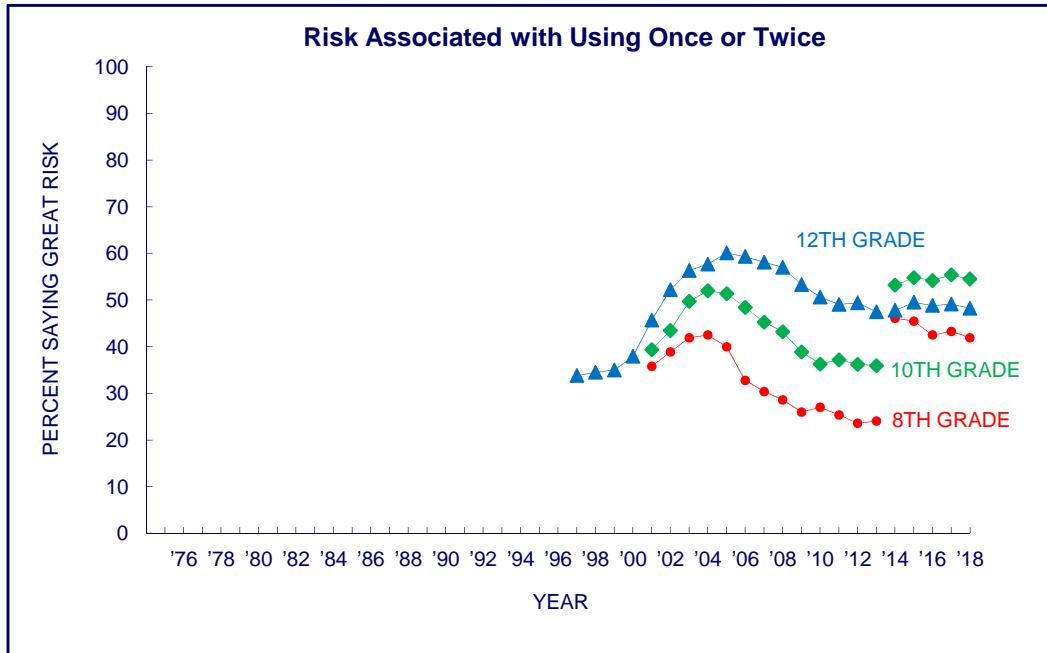
FIGURE 8-9b
HEROIN
Trends in Disapproval of Different Levels of Use
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

Note. Data not available for 8th and 10th graders.

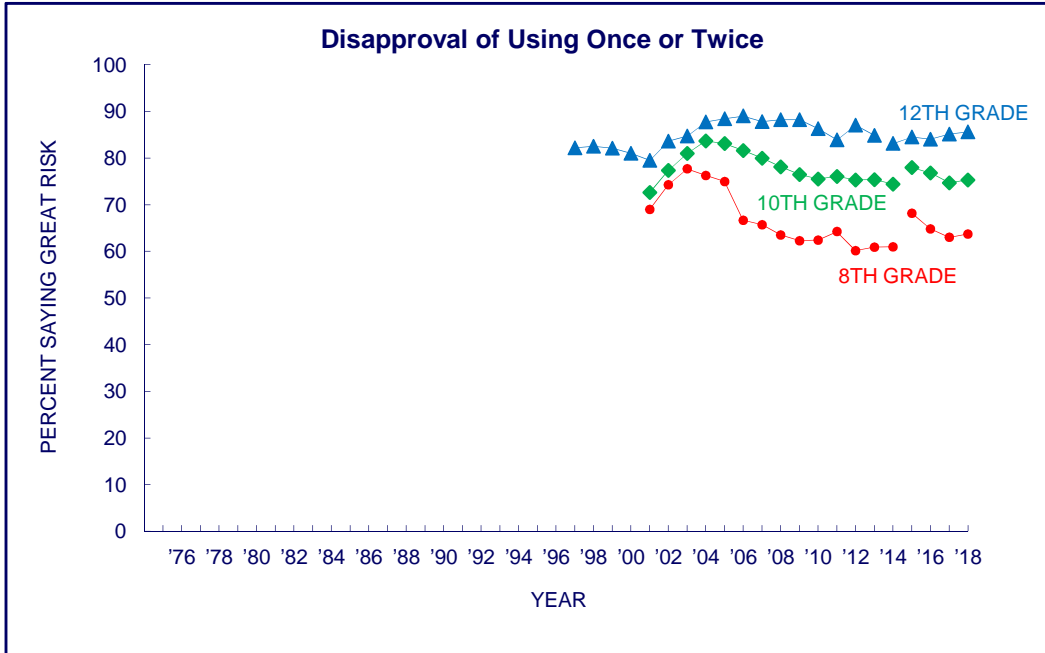
FIGURE 8-10a
MDMA (Ecstasy, Molly)
Trends in Perceived Harmfulness for Experimental Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

Notes. In 2014, the text was changed to include "molly" in the description. Data from 2014 on are based on the new version of the question.

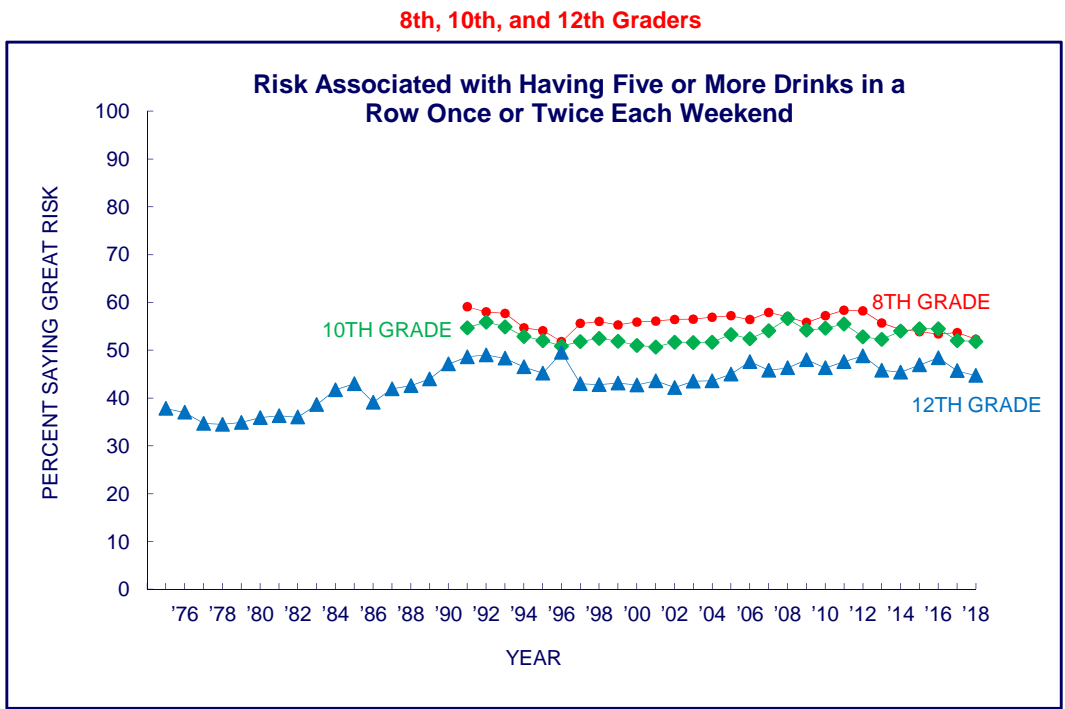
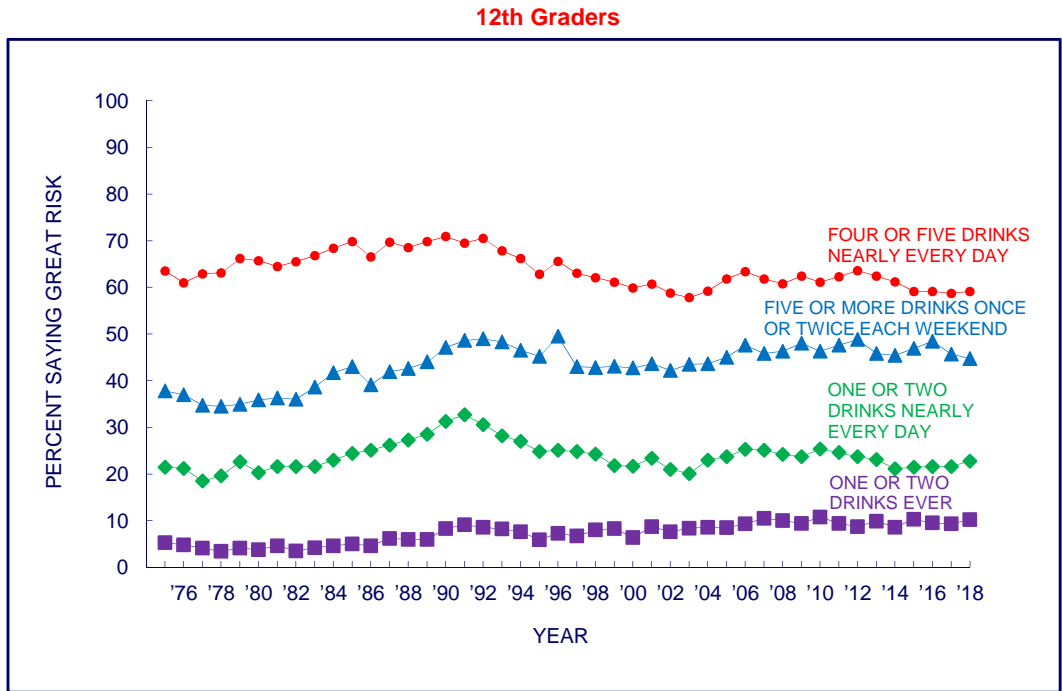
FIGURE 8-10b
MDMA (Ecstasy, Molly)
Trends in Disapproval of Experimental Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

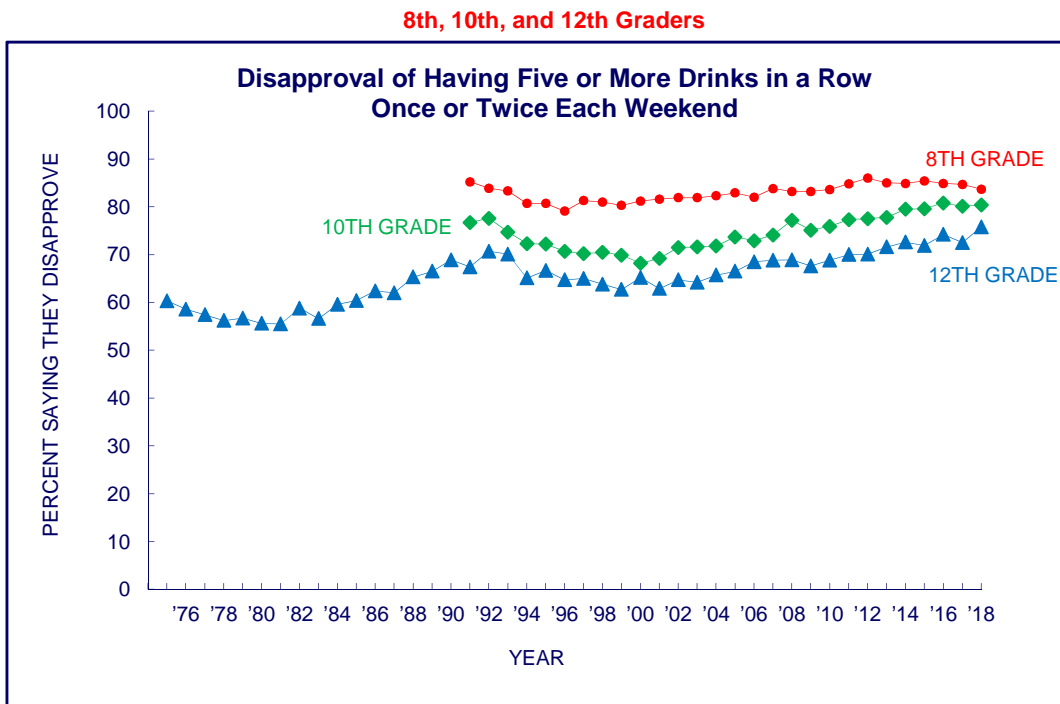
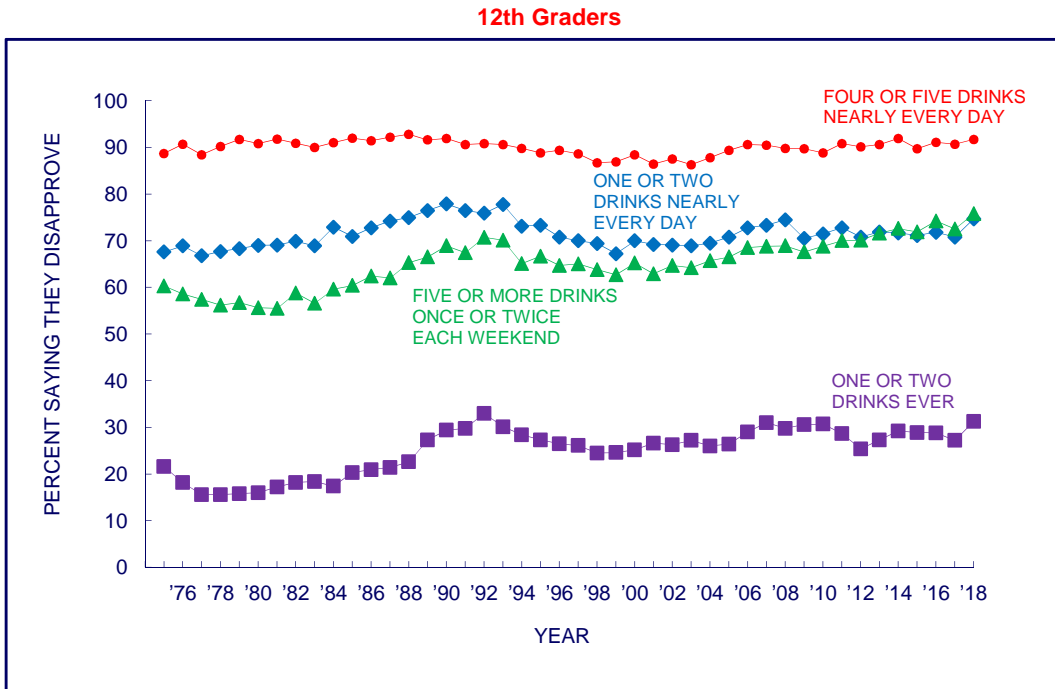
Notes. In 2014 for 12th graders and 2015 for 8th and 10th graders, the text was changed to include "molly" in the description. Data from 2014 on are based on the new version of the question.

FIGURE 8-11a
ALCOHOL
Trends in Perceived Harmfulness for Different Levels of Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-11b
ALCOHOL
Trends in Disapproval of Different Levels of Use
in Grades 8, 10, and 12

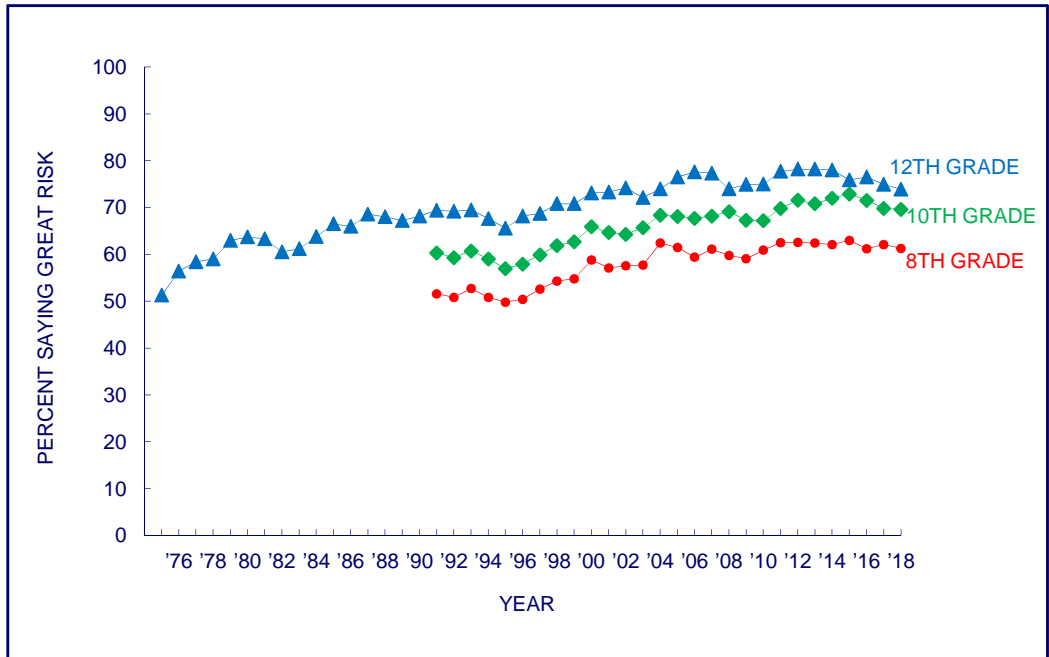


Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-12a

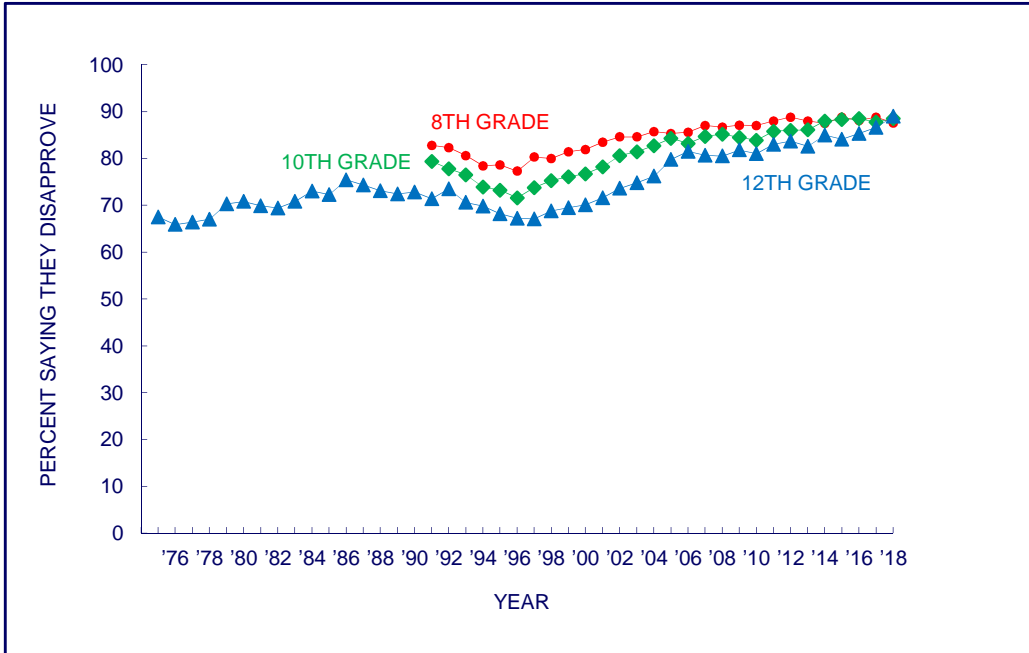
CIGARETTES

**Trends in Perceived Harmfulness of Smoking 1 or More Packs per Day
in Grades 8, 10, and 12**



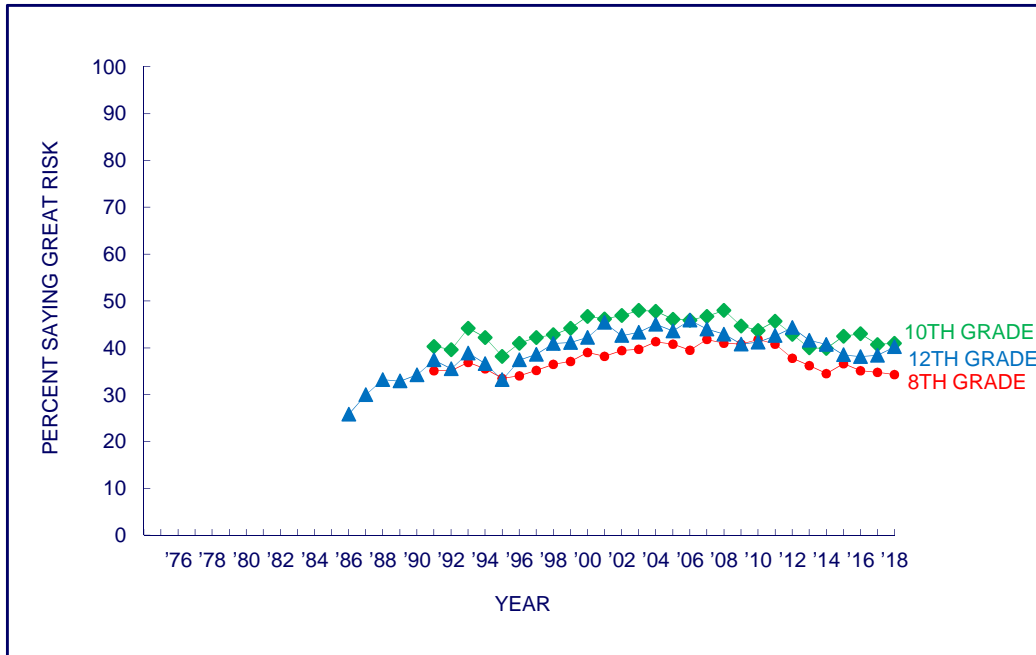
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-12b
CIGARETTES
Trends in Disapproval of Smoking 1 or More Packs per Day
in Grades 8, 10, and 12



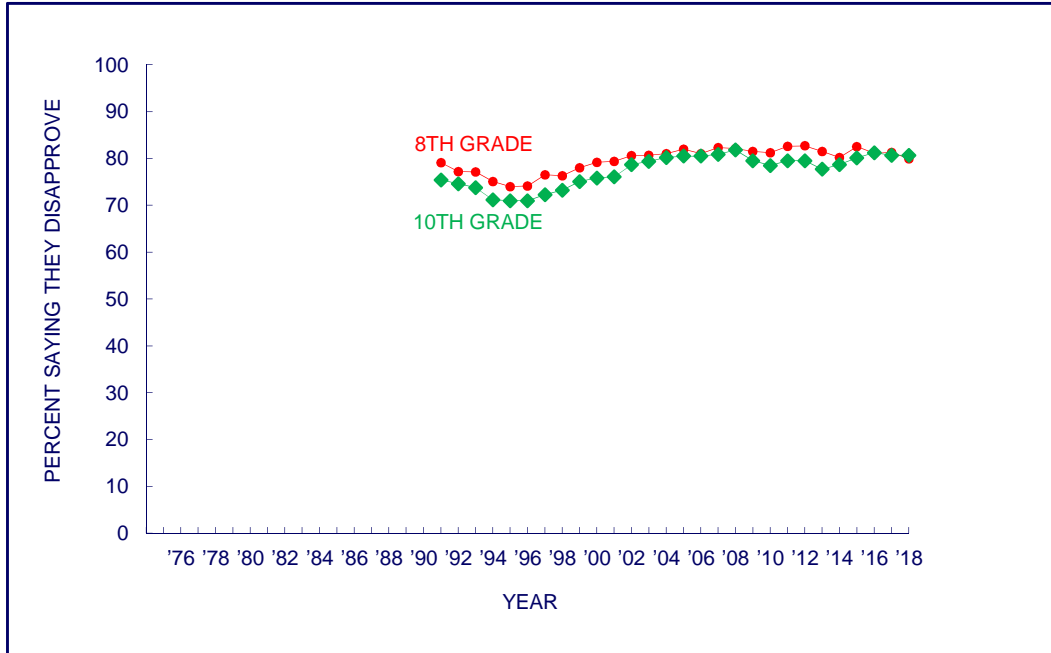
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-13a
SMOKELESS TOBACCO
Trends in Perceived Harmfulness of Regular Use
in Grades 8, 10, and 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 8-13b
SMOKELESS TOBACCO
Trends in Disapproval of Regular Use
in Grades 8 and 10



Source. The Monitoring the Future study, the University of Michigan.

Note. Data not available for 12th graders.

Chapter 9

THE SOCIAL CONTEXT

Substance abuse is an individual behavior, but it occurs within a social context. In this chapter we consider some of the forces in the social context that may influence attitudes and beliefs about drugs as well as use. For 8th, 10th, and 12th graders, we report the proportions of friends who use various drugs and the perceived availability of these drugs. In addition, for 12th graders only, we report measures of perceived parents' and friends' disapproval of drug use, the extent of direct exposure to people using drugs, as well as sources from which respondents say they got prescription drugs.

PERCEIVED ATTITUDES OF FRIENDS AND PARENTS: 12th GRADERS

Perceptions of Friends' Attitudes

Since the beginning of the study, a set of questions has asked 12th graders to estimate their friends' attitudes about drug use (see Table 9-2). These questions ask, "*How do you think your close friends feel (or would feel) about you [using the specified drug at the specified level]?*" The questions parallel the questions asked of students about their own attitudes, which are discussed in Chapter 8. Disapproval is defined here as the percentage of respondents indicating that their close friends would either "disapprove" or "strongly disapprove" of their using each drug at the specified level. Highlights of the 2018 findings include the following:

- In 2018, overwhelming majorities of 12th graders reported that their friends would disapprove of their even experimenting with ("trying once or twice") **crack** (93%) or **cocaine powder** (92%). Nearly as many indicated that their friends would disapprove of their trying **LSD** (83%), or **amphetamines** (85%). Presumably, if **heroin**, **PCP**, or **crystal methamphetamine (ice)** were on the list, they too would show very high peer disapproval.
- Nearly half of 12th graders in 2018 (46%) thought their close friends would disapprove of their even experimenting with **marijuana**, and about two out of three (68%) thought that their friends would disapprove of them smoking marijuana regularly.
- About seven out of eight (87%) 12th graders in 2018 thought their close friends would disapprove of their **smoking a pack or more of cigarettes a day**.
- The proportion of 2018 12th graders who anticipated disapproval from friends for alcohol use varied with level of consumption: 72% for **binge drinking on weekends**, 78% for consuming **one or two drinks nearly every day**, and 87% for **having four or five drinks nearly every day**.

In sum, peer norms among 12th grade students differ considerably for various drugs and also for varying degrees of involvement with those drugs, but overall they tend to be quite conservative. The majority of 12th graders have close friends who do not condone the use of illicit drugs other than marijuana, and nearly half (46%) of 12th graders believe that their close friends would also disapprove of their even trying marijuana.

Although these questions are not included in the 8th and 10th grade questionnaires, there seems little doubt that these students would report peer norms at least as restrictive as the 12th graders, and quite likely more restrictive ones, based on the cross-grade comparisons in levels of personal disapproval (discussed in Chapter 8). Cigarette smoking might be an exception, because there is less personal disapproval of cigarette smoking at lower grades.

A Comparison of the Attitudes of Parents, Friends, and 12th Graders

Measures of perceived *parental* disapproval of drug use were asked of 12th grade students from 1975 to 1979, were discontinued because high levels of disapproval showed no trending, and were then reintroduced in 2017 to assess possible change during the 39 year hiatus.¹ Today's parents of 12th graders have more experience with drug use than did parents in the late 1970s, which may have changed their levels of disapproval for marijuana use. Similarly, the growing number of states that are legalizing recreational marijuana use suggests a historical period effect in which population attitudes toward marijuana use across all ages are becoming more lenient.

In 2018 a large majority of 12th grade students reported that their parents would disapprove of their marijuana use, although this disapproval has slipped somewhat as compared to the mid and late 1970s (Table 9-1 and Figure 9-1a). In 2018 the proportion of 12th graders who believed their parents did NOT disapprove of using *marijuana once or twice* was 21%, which is quite low albeit significantly higher than the 15% average for 1976-1979 (Figure 9-1a). The percentage of 12th graders who believed their parents would NOT disapprove of *occasional marijuana use* was 16% in 2018, which is also quite low albeit double the 8% average for 1976-1979 (a statistically significant increase, Figure 9-1a). And for *regular marijuana use* 12% of 12th graders in 2018 did not think their parents would disapprove, which is three times higher than the 4% average for 1976-1979 (a significant increase, Figure 9-1a).

While parental disapproval of marijuana use diminished somewhat over the course of the survey, disapproval of cigarette smoking and weekend binge drinking increased. Perceived parental disapproval of *smoking one or more packs of cigarettes per day* significantly increased to 93% as compared to 89% in 1976-1979 (Table 9-1 and Figure 9-2b). Parental disapproval of *weekend binge drinking* was slightly higher at 88% in 2018 as compared to 85% in the late 1970s (Table 9-1 and Figure 9-2a).

A comparison of 12th graders' perceptions of drug use disapproval by their friends versus their parents shows several relevant findings.

- First, students' perceptions of their *parents'* attitudes shows much less variability than their perceptions of *peer* norms across drugs and across years. As mentioned previously, the great majority of 12th graders in each year said their parents would disapprove of any of the drug behaviors listed. However, *peer* norms varied considerably from drug to drug and also across time, consistent with the variability in the respondents' own attitudes and use.

¹ The context of the parental disapproval questions on the survey was not the same when they were reintroduced in 2017 and later. In 1975-1979 the questions were preceded by questions on perceived parental attitudes on a host of topics as well as a brief preamble transitioning from these questions to items on parental disapproval of drug use. These preceding survey questions and the preamble were not included in the 2017 and later surveys. The finding that the parental disapproval results for 2017 in comparison to 1975-1979 were higher for some substances and lower for others works against the idea that changes in question context created a general bias that affected responses for all substances.

While parental norms did not show much variance, we emphasize that this is quite different from saying that parental attitudes do not matter, or even that they matter less than peer attitudes.

- Despite differences in how students characterized parents' versus friends' disapproval of drug use, the rankings of disapproval of specific drugs were similar for the two groups.
- A comparison with 12th graders' own attitudes regarding drug use reveals that, on average, they were much more in accord with peers than parents (see Figures 9-1a through 9-2b). The differences between 12th graders' own disapproval ratings and those attributed to their parents tended to be large, with parents seen as far more conservative overall in relation to *every drug*, licit or illicit. The largest difference occurred in the case of *marijuana* experimentation, of which only 39% of 12th graders in 2018 said they disapproved, versus 79% who said their parents would disapprove.

Trends in Perceptions of Friends' Attitudes

A number of important changes in 12th graders' perceptions of peer attitudes have taken place over the life of the study. These shifts are presented graphically in Figures 9-1a through 9-2b along with data on the respondents' own attitudes.²

- Friends' disapproval for each level of *marijuana* use – trying once or twice, occasional use, and regular use – increased slightly in 2018, although this increase was not statistically significant. Overall, perceived disapproval by friends has slightly but consistently decreased over the past several years (Figure 9-1a). For example, 46% of 12th graders reported that their friends disapprove of experimental marijuana use in 2018, down from 61% in 2009. This finding suggests that social norms regarding marijuana use among adolescents have been relaxing in recent years. Or, at least, in recent years adolescents perceive relaxing social norms, a perception that in itself can have an impact on individuals' marijuana attitudes and behaviors.
- In general, throughout the years of the study adolescents' perceptions of disapproval from their peers have tracked closely with their own personal levels of disapproval. This close tracking is consistent with the general principle that peers exert a substantial influence on adolescent attitudes and beliefs. Looking back from the latest years to earlier ones, personal

² Adjusted trend lines have been used for data on friends' attitudes collected before 1980 for the following reason. We discovered that the deletion in 1980 of the parental attitude questions, which were located immediately preceding the questions about friends' attitudes, removed what we judged to be an artefactual depression of the ratings of friends' attitudes, a phenomenon known as a *question-context effect*. This effect was particularly evident in the trend lines dealing with friends' disapproval of alcohol use, where otherwise smooth trend lines for peer disapproval showed abrupt upward shifts in 1980. It appears that when questions about parents' attitudes were present, respondents tended to understate peer disapproval in order to emphasize the *difference* between their parents' attitudes and their peers' attitudes. In the adjusted lines, we have attempted to correct for that artefactual depression in the 1975, 1977, and 1979 scores and provide a more accurate picture of the change that took place then. Note that the question-context effect seems to have had more influence on the questions dealing with cigarettes and alcohol than on those dealing with illicit drugs.

The correction evolved as follows: We assumed that a more accurate estimate of the true change between 1979 and 1980 could be obtained by taking an average of the changes observed in the year prior and the year subsequent, rather than by taking the observed change (which we knew to contain the effect of a change in question context). We thus calculated an *adjusted* 1979–1980 change score by taking an average of one half the 1977–1979 change score (our best estimate of the 1978–1979 change) plus one half the 1980–1981 change score. This estimated change score was then subtracted from the observed change score for 1979–1980, the difference being our estimate of the amount by which peer disapproval of the behavior in question was being understated due to question context prior to 1980. The 1975, 1977, and 1979 observations were then adjusted upward by the amount of that correction factor.

and peers' disapproval both show a decline in recent years, a small overall increase from the late 1990s until the late 2000s, a marked decline during the 1990s relapse, and a substantial increase from the late 1970s to the early 1990s.

- Peer disapproval of **cocaine** use has been high and has changed little since 1988 (Figure 9-1b). The proportion of 12th graders who report that their friends disapprove of trying cocaine “once or twice” has been 87% or higher since 1988, and the proportion disapproving of “occasional” cocaine use has been above 90% during the same period. Questions on friends’ attitudes about cocaine use were added to the study in 1986. Between 1986 and 1992, the proportion of students saying that their close friends would disapprove of their experimenting with cocaine rose from 80% to 92%. This corresponds to an even larger increase in perceived risk and a precipitous drop in actual use, suggesting that fears of potential harm caused cocaine use to become less acceptable,^{3,4} and low levels of acceptability have persisted over the past three decades. (The perception of friends’ disapproval of **crack cocaine**, first asked about in 1989, closely parallels the findings for cocaine in general, but at slightly higher levels of perceived disapproval.)
- Perceived peer disapproval of trying **LSD** once or twice has historically been high and stood at 83% in 2018 (Figure 9-1b). Over the course of the study the level of disapproval has been steady, with the exception of a decline during the 1990’s drug relapse, when it dipped down to a nadir of 79% in 1997. It then rebounded, and from 1998 through 2006 perceived peer disapproval increased to 90% while use decreased substantially during that interval. As with most drugs, levels of peer disapproval and personal disapproval track closely over the course of the study.
- As is true for most of the illicit drugs other than marijuana, perceived peer disapproval of trying **amphetamines** once or twice has been quite high for the entire life of the study, though there have been some important fluctuations (Figure 9-1c). The level of disapproval in 2018 was 85%, a slight decline since the peak in 2007, when it was 87%. In previous years peer disapproval followed the common pattern of a decline during the 1990s drug relapse, and an increase beforehand and afterwards. Once again, peer disapproval and personal disapproval tracked very closely over the life of the study.
- **Alcohol** is depicted with three charts in Figure 9-2a: one for daily use, one for 4-5 drinks nearly every day, and one for weekend binge drinking. Perceived peer disapproval differs considerably for these three behavior patterns. In 2018 the perceived proportion of peers who disapproved of **weekend binge drinking** reached 72%, a historic high which corresponds with historical low levels of self-reported binge drinking in recent years. Perceived disapproval increased to this level from lows of 51% in the early 1980s. This increase was interrupted by a pause and slight decline in levels of disapproval during the 1990s relapse. Prior to the relapse, during the 1983-1992 period, laws mandating an increase in the drinking age were enacted in a number of states, ad campaigns were

³ Bachman, J. G., Johnston, L. D., & O’Malley, P. M. (1990). [Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use](#). *Journal of Health and Social Behavior*, 31, 173–184.

⁴ Johnston, L. D. (1991). [Toward a theory of drug epidemics](#). In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–132). Hillsdale, NJ: Lawrence Erlbaum.

launched aimed at deterring drinking and driving, and subsequent ad campaigns encouraged the use of designated drivers. Some divergence occurred when 12th graders' own attitudes became less tolerant while perceived peer norms among friends changed more slowly, suggesting some collective ignorance of the extent to which peers had come to disapprove of weekend binge drinking. In general, binge drinking has been in decline among 12th graders during the period of increased peer disapproval.

- The proportion of 12th grade students who believe that their friends disapprove of *near-daily binge drinking* has been above 80% and changed little throughout the course of the study (middle panel of Figure 9-2a). Perceived peer disapproval of having *one or two drinks nearly every day* (top panel of Figure 9-2a) was at 78% in 2018, near the record high of 79% set in 1990.
- Perceived peer disapproval of *regular cigarette smoking* reached a historic high in 2018. The proportion of 12th graders saying that their friends would disapprove of their smoking a pack or more daily was 87%, which is tied with 2016 for the highest level recorded by the survey. These high levels of disapproval coincide with self-reported smoking reaching a historical low. In general, peer disapproval of regular cigarette smoking has steadily increased over the course of the study from a low of 64% in 1975, with an exception of a slight decline during the 1990s relapse. Clearly, smoking became a less acceptable behavior among young people over the life of the study, particularly since 1996, and this corresponds to a period of a very considerable decline in adolescent smoking as is documented in Chapter 5.

Methodological Implications

The very close tracking of *self-reported disapproval* with *reported friends' disapproval* – across all of the drugs about which both in the aggregate survey questions are asked of 12th graders – suggests that self-reported disapproval in the aggregate gives a very good approximation of perceived peer norms (see Figures 9-1a through 9-2b). This finding is valuable for two reasons: first, it may not be necessary for both to be measured in most surveys (and for that reason we did not include perceptions of peer attitudes in the questionnaires developed for 8th and 10th graders); second, the self-reported disapproval provided by the 8th and 10th graders in this study should serve quite well in the aggregate to reflect perceived peer norms at those grade levels.

FRIENDS' USE OF DRUGS

It is generally acknowledged that peer influences are among the most powerful mechanisms of substance use initiation during adolescence. Much youthful drug use is initiated through a peer social-learning process, and research, including our own, has shown a high correlation between an individual's illicit drug use and that of his or her friends. Such a correlation can, and probably does, reflect several causal patterns: (a) a person with friends who use a drug will be more likely to try the drug; (b) conversely, the individual who is already using a drug will be more likely to introduce friends to the experience; and (c) users are more likely to establish friendships with other people who use (and likewise, nonusers are more likely to form friendships with other nonusers).

Given the importance of exposure to drug use by others, it is useful to monitor students' associations with others taking drugs, as well as their perceptions about the extent to which their friends use drugs. For 12th graders, two sets of questions – each in a different questionnaire form and together covering nearly all categories of drug use addressed in this report – ask students to indicate for each drug (a) how often during the last 12 months they were around people taking that drug to get high (Table 9-3) and, separately, (b) what proportion of their own friends use it (Table 9-6).

As would be expected, respondents' answers to these two questions tend to be consistent with the respondents' self-reported drug use. For example, 12th graders who have recently used marijuana are much more likely to report that they have often been around others getting high on marijuana and separately state that most or all of their friends use (see Figure 9-3c). The high correspondence between reports of self-use and reports of friends' use is observed across nearly all drugs (see Figure 9-3a through 9-3t), with the exception of a divergence between these two reports for narcotics other than heroin (Figure 9-3l) after 2001. This exception likely results from a question change in which the survey updated examples of these drugs for the questions on self-report, but unfortunately did not update the examples for the questions on friends' use. Another question change, in 2010, likely accounts for the re-convergence.

For 8th and 10th graders, questions on the proportion of friends using the various drugs were included in the questionnaires from the beginning of the 8th and 10th grade surveys in 1991 (Tables 9-3 and 9-4); the results are discussed below in a separate section. However, in the interest of saving questionnaire space, and because the information about exposure and proportion of friends who use are highly consistent, questions on direct exposure were not included for 8th and 10th graders.

Exposure to Drug Use by Friends and Others: 12th Graders

A comparison of the aggregated responses about friends' use and about being around people in the prior 12 months who were using various drugs to get high reveals a high degree of correspondence between these two indicators of exposure, even though these two questions appear in separate questionnaire forms. For each drug, the proportion of respondents saying none of their friends use is fairly close to the proportion reporting that during the prior 12 months they have not been around anyone who was using that drug to get high. Similarly, the proportion reporting that most or all of their friends use a given drug bears a rough similarity to the proportion saying they have often been around people getting high on that drug.

- It is no surprise that the highest levels of exposure involved *alcohol*; about one-third (34%) of the 2018 12th graders said they have often been around people using it to get high. What may come as a surprise is that 12%, or one-out-of-eight, of all 12th graders said that most or all of their friends *get drunk* at least once a week
- After alcohol use, students are exposed next most frequently to *marijuana* use (Table 9-3). Only about 30% of the 2018 12th graders reported “not at all” having been around people using marijuana during the prior year; or, put another way, 70% reported having been around people using it to get high at least once. Some 28% said they have *often* been around people using it to get high. On the question about friends' use, 26% said that most or all of

their friends smoke marijuana, and only 24% of 12th graders in 2018 said that none of their friends smoked marijuana (Table 9-6).

- **Amphetamines, tranquilizers, narcotics other than heroin, and hallucinogens other than LSD** rank next in exposure, with 22%, 21%, 18%, and 16%, respectively, of 12th graders reporting some exposure to use in the prior year (Table 9-3). The proportions who said they have at least some friends who use are 22% for amphetamines, 11% for tranquilizers, 15% for narcotics other than heroin, and 22% for hallucinogens other than LSD (Table 9-6).
- For the remaining illicit drugs, any exposure to use in the past year ranged from 17% for **cocaine** down to 5% for **heroin** in 2018 (Table 9-3).
- Only about one quarter (27%) of 12th graders reported no exposure to **any illicit drug** use during the prior year.
- Three-fifths (60%) of 12th graders reported no exposure to use of **any illicit drug other than marijuana** during the prior year – in other words, fewer than half (40%) had some exposure to use of the other drugs.
- Only about one in sixteen (6.1%) 12th graders reported that *most or all* of their friends smoked **cigarettes** in 2018, but just over a half (51%) reported having at least *some* friends who smoked.

Friends' Use of Drugs: 8th and 10th Graders, 2018

While the questions about exposure to use were not included in the 8th and 10th grade questionnaires, questions about friends' use were included.

- As would be expected, with few exceptions 10th graders are less likely than 12th graders to have friends who use drugs, and 8th graders are less likely still (see Tables 9-4, 9-5, and 9-6). For example, 36% of 8th graders in 2018 said that they have any friends who smoke **marijuana**, compared with 67% of 10th graders and 78% of 12th graders. Still, that means that more than a third of 8th graders – most of whom are 13 or 14 years old – already have friends who smoke marijuana.
- **Inhalants** are one important exception to the typical developmental trend. Consistent with our finding that current inhalant use is more prevalent in 8th grade than in 10th or 12th grades, 16% of 8th graders said they have some friends who use inhalants versus 10% of 10th graders and 9% of 12th graders in 2018.
- Exposure to **alcohol** use by friends is widespread even at these younger ages, with 49% of 8th graders and 76% of 10th graders reporting having friends who use alcohol. In fact, 8% of 8th graders and 26% of 10th graders said that most or all of their friends drink, and the proportions saying that most or all of their friends **get drunk** at least once a week are 3% in 8th grade and 9% in 10th grade, compared to 12% in 12th grade.

- Exposure to *cigarette smoking* by friends is also very high for these young people, with over a quarter (28%) of 8th graders and more than two out of five (43%) of 10th graders saying they have at least some friends who smoke cigarettes. (These percentages are high, but the percentage who say they have at least some friends who smoke marijuana are even higher.)
- Smaller proportions have friends who use *smokeless tobacco*: 18% of 8th graders and 33% of 10th graders in 2018.

In sum, today's U.S. adolescents – even those in middle school – have high degrees of exposure to illicit drug use among their peers, whether or not they use illicit drugs themselves. They also have high levels of exposure to cigarette smoking, drinking, and drunkenness.

TRENDS IN EXPOSURE TO DRUG USE AND FRIENDS' USE OF DRUGS

The extent of exposure to licit and illicit drug use among US adolescents has seen important changes over the past 44 years. Table 9-3 presents long-term trends in reported exposure to the use of various drugs by 12th graders, and Tables 9-4, 9-5, and 9-6 present trends in reported friends' use of the various drugs for each of the three grades. Figures 9-3a to 9-3t present graphs of these trends so that long-term patterns are more readily discernible.

Trends in Exposure to Drug Use by Friends and Others: 12th Graders

In general, for almost all drugs, exposure to people using drugs moves concurrently with levels of actual use and does not precede it. These results indicate that measures of exposure and friends' use serve as additional indicators of drug use, but generally do not serve as leading predictors of actual use.

Specific Drugs

- In 2018 the proportion of 12th graders who report that they have *often been around people* who were using *marijuana* to get high during the past year (28%) is between the limits set by the high point in 1978 near the beginning of the study (39%) and the nadir set at the start of the 1990s drug relapse (16%, see Figure 9-3c). This measure trends closely with personal use. In the long run, both measures together experienced the same ups and downs over the course of the study: they increased at the start of the MTF study in the late 1970s, declined for more than a decade starting in the 1980s, increased rapidly during the 1990s drug relapse, and increased during the late 2000s.
- In 2018 the proportion of 12th grade students who report that *most or all of their friends* smoke *marijuana* (26%) is about midway between the high set in 1979 (36%) and the nadir set at the start of the 1990s drug relapse (10%, see Figure 9-3c).

Reported level of friends' use and personal use have moved together in the long run: both of them increased at the start of the study in the late 1970s, declined for more than a decade starting in the 1980s, increased rapidly during the 1990s drug relapse, and increased during the late 2000s.

- In 2018, the proportion of 12th graders who reported that they were often around people who used *cocaine* in the last year was at the lowest level ever recorded by the annual surveys and stood at 1.7% (Table 9-3 and Figure 9-3h). Together, both levels of friends' use and levels of personal use have shown an overall decline during the late 2000s, increased during the 1990s drug relapse, dropped substantially from the mid-1980s to the start of the 1990s, reached record highs in the early 1980s, and increased during the late 1970s. As seen in marijuana use, reports of friends' use move together with levels of actual use and do not consistently precede it.
- The proportions of 12th grade students who report that most or all of their friends use cocaine have been at 2% or lower for the past decade (Figure 9-3h). Reported levels of friends' use and levels of own personal use track closely with trends in personal levels of use, but do not precede it.
- The proportions of 12th graders who report that they have often been around people using *amphetamines* to get high in the past year have ranged between 3% and 6% for the past two decades (Table 9-3). This narrow range has persisted even after a 2011 change in the question wording that added Adderall and Ritalin to the list of example amphetamines and doubled the estimated prevalence. Before 2011 this measure had been decreasing overall after reaching a peak of 6.3% in 1999, and levels of personal use decreased as well during this period. Both exposure and personal use declined by more than half from peak highs in the early 1980s through 1992. Both increased substantially from the beginning of the study to the early 1980s.⁵

The same, parallel trends are also evident in reported friends' use of amphetamines and actual levels of own use, although friends' use of amphetamines shows less variation than exposure to amphetamine use (Figure 9-3m).

- The proportion of 12th grade students reporting that most or all of their friends use *MDMA* (ecstasy or more recently Molly, as well) has been under 3% for the past decade (Figure 9-3g). Although we did not ask students about their own use of MDMA until 1996, we did ask about friends' use beginning in 1990. Prevalence of both this measure and actual use is low, and as a result the estimates are somewhat noisy. Nevertheless, both showed a substantial spike between 1999 and 2001 and a substantial decline for the following five years. (Questions on exposure to people who use MDMA are not included on the survey).
- The proportion of 12th graders who report that most or all of their friends use *cigarettes* is near a historic low in 2018 at 6.1% (Figure 9-3s, the historic low was in 2016 at 5.9%). This measure corresponds with own levels of cigarette use. Both show steady and dramatic declines and are currently at one-third or less of their levels of 1997, both increased during the 1990s drug relapse, and both decreased during the late 1970s. (The survey does not include questions on exposure in the past year to people who have smoked, in part because

⁵ This finding was important because it indicated that a substantial part of the increase observed in self-reported amphetamine use was due to influences other than simply an increase in the use of over-the-counter diet pills or stay-awake pills, which presumably are not used to get high. Obviously, more young people were using stimulants for recreational purposes. Of course, the question still remains of whether the active ingredients in those stimulants really were amphetamines

exposure questions are about drug use to “get high,” which is less relevant for cigarette use).

- The proportions of 12th grade students who report any *alcohol* use in the prior 30 days track very closely the proportions saying that most or all of their friends use alcohol (Figure 9-3q). The proportion saying they were often around people who used alcohol to get high in the past year was 34%, a historic low. This measure trended with reports of their own *binge drinking* – also at a historic low – as both have declined over the 44 years of the study.
- The percentage of 12th graders who reported that most or all of their friends got *drunk* at least once a week was also at a historic low of 12% in 2018 (Figure 9-3r), about the same level as last year. This measure has declined with levels of actual binge drinking since the early 2000s. In prior years, the prevalence of binge drinking was higher than the reported percentage of friends who got drunk once a week. Since the mid-1980s the prevalence of binge drinking declined at a faster rate; its level converged with the friends’ measure around 1990, and the two have been close ever since.
- Among the most impressive findings here are that in 2018, about 12% of 12th graders reported that most or all of their friends got drunk at least once a week; although high, this level is tied with 2016 and 2017 as the study’s lowest ever (Figure 9-3r). (The highest percentage was 33%, in 2001.) Almost half (45%) say that *none* of their friends get drunk at least once a week – a historic high for the study.

Implications for validity of self-reported usage questions. We have noted a high degree of concurrence in the aggregate-level data presented in this report among 12th graders’ self-reports of their own drug use, their friends’ use, and their own exposure to such use. Drug-to-drug comparisons in any given year across these three measures tend to be highly parallel, as are the changes from year to year.⁶ We take this consistency as additional evidence of the validity of the self-report data (and also of the trends in the self-report data), because respondents should have little reason to distort answers about use by unidentified friends or their general exposure to use. The degree of cross-time trending for 12th graders is very high between the proportion saying they personally used drugs and both (a) the proportion reporting exposure to others using drugs and (b) the proportion reporting that most or all of their friends used drugs. *We believe that this close correspondence provides persuasive evidence that the changing social acceptability of drug use has not affected the truthfulness of self-reports of use.*

Trends in Friends’ Drug Use: 8th and 10th Graders

As with 12th graders, data on friends’ use among 8th and 10th graders (available since those grades were added to the study in 1991) show trends that are highly consistent with trends in self-reported use. Questions on friends’ use are included in all 8th and 10th grade questionnaire forms through 1998 and on three of the four forms beginning in 1999, providing very large sample sizes. Selected trend results for these questions are discussed below, with comparisons to 12th graders when salient, and are presented in Tables 9-3 and 9-4.

⁶ Those minor instances of noncorrespondence may well result from the larger sampling errors in our estimates of these environmental variables, which are measured on a sample size one fifth or one-sixth the size of the self-reported usage measures. They may also result, of course, from a lag between a change in the reality and students’ recognition of that change.

- The proportions of 8th and 10th grade students reporting that most or all of their friends smoke *marijuana* has been in decline in recent years. In 2018, among 8th graders it was 8%, down from 12% in 2013. Among 10th grade students it was 24%, down from 28% in 2013. Over the past 28 years these measures have trended in parallel with major changes in personal levels of use. All measures increased substantially during the 1990s relapse, retreated from peak levels established in 1996-1997 at the end of the 1990s, and increased during the late 2000s.
- The proportions reporting having any friends who use *inhalants* was at or near record lows for 8th and 10th graders in 2018. Among 8th grade students 16% responded that at least one friend used inhalants, a level that is close to the record low of 15% recorded in 2017 and 2016. Among 10th grade students 10% responded that at least one friend used inhalants, a record low. These low levels correspond with use, which is also at or near record lows in these grades. In both grades, reported levels of having any friends who use have trended with own levels of use to the extent that both increased during the 1990s relapse with a peak in 1996-1997 and have overall declined since then, with some small pauses and temporary increases along the way.
- Reports that most friends *got drunk* at least once a week were near historic lows in 8th and 10th grades in 2018, at 3% and 9%, respectively (Tables 9-4 and 9-5). These levels are similar to the levels found last year, 3% and 8%, respectively, which were record lows. These reports correspond with the prevalence of self-reported drunkenness in these grades, which are near historic lows. All four measures have trended together over the course of the study, with increases during the 1990s relapse and a substantial decline since then. Room remains for continued progress, as 25% of 8th graders and 52% of 10th graders report that they have at least one friend who gets drunk at least once a week.
- The proportions of 8th grade students who reported that most or all of their friends smoke *cigarettes* was at a historic low of 1.5% in 2018, and in 10th grade it was 3.6% which is near the record low of 3.2% set in 2016. These low levels accompany historic lows in personal levels of smoking in the past 30 days. All four measures have trended together very closely, with all four increasing during the 1990s and reaching a peak in 1996, and thereafter steadily decreasing to reach the lows achieved in recent years.

SOURCES OF CERTAIN PRESCRIPTION DRUGS USED WITHOUT MEDICAL SUPERVISION

The misuse of prescription drugs – that is, their use outside of a doctor’s orders – reemerged as a problem in the 1990s and into the 2000s, as is documented in Chapter 5. It was previously an issue in the late 1970s and early 1980s. To understand the sources of such drugs, in 2007 we added a set of questions to one of the six randomly distributed 12th grade questionnaire forms asking about how the users got these drugs. Respondents who indicated that in the prior 12 months they used *tranquilizers*, for example, were branched to a set of more detailed questions about their tranquilizer use. One of those new questions asked them to indicate where they got the tranquilizers by marking all that apply out of a pre-specified set of answers. Similar measures were introduced

for *narcotics other than heroin* (most of which are analgesics) and *amphetamines*. (Sources of *sedatives [barbiturates]* were not asked.)

Table 9-10 and Figure 9-6 provide the information on sources of prescription drugs. The years 2009-2016 and 2017-2018 are combined in order to increase sample size and provide more stable estimates. Note that for the 2017 and 2018 combined data the weighted numbers of cases range between 108 and 166 for each of the drugs presented. For the 2009 through 2016 combined detailed data, the weighted numbers of cases range from 652 to 955. Hence, the confidence intervals around the estimates are fairly wide.

One interesting finding is that the distribution of sources is similar for the three different types of psychotherapeutic drugs. For the 2017-2018 combined data, the most common source is “given for free by friend or relative,” indicated by 39% to 48% of users for each of the three drugs. Another common source is “bought from friend or relative,” ranging from 26% to 46% for each. Taking the drug from a friend or relative without asking (i.e., stealing it) was reported by 7% for tranquilizers and 14% for narcotics other than heroin.

“Given for free by a friend” and “bought from a friend” are the two most common methods for obtaining amphetamines and tranquilizers. For all three drugs “given or bought from friends” is considerably more frequently mentioned than “given for free by a relative” or “bought from a relative.” *Clearly the informal peer network is a major source of these drugs for adolescents, a far more common source than any family network.*

“From a prescription I had” is a relatively common source for narcotic drugs at 32%, fairly similar to “bought from a friend” at 26%. “From a drug dealer/stranger” is not a common source for amphetamine users (14%), tranquilizer users (25%), or narcotic users (17%).

The least likely sources are “bought from a relative” and “bought on the Internet.” The Internet is mentioned as a source by only 8.2% of the users of amphetamines, 5.3% of the users of tranquilizers, and 3.6% of the users of narcotics other than heroin. This may be in part because young people this age are usually living at home and do not want to risk their parents intercepting a shipped package containing illicit drugs. The Internet may well be an important source for older people, especially those who sell these drugs.

Not all of the answers are similar across drugs, however. While obtaining the drug “from a prescription I had” is mentioned by 32% of past-year users for narcotics other than heroin, it is mentioned by only 12% of the amphetamine users and 9% of the tranquilizer users. The fact that a significant proportion of students who misuse narcotic drugs are using leftovers from previous prescriptions has implications for the prescription practices of physicians and dentists. They might be well advised to lower the number of doses of these drugs provided in the initial prescription. It seems likely that such a change in practice would reduce diversion to non-medically supervised use.

PERCEIVED AVAILABILITY OF DRUGS

One set of questions in the MTF surveys asks respondents how difficult they think it would be to obtain each of a number of different drugs if they wanted some. The answers range across five categories from “probably impossible” to “very easy.”⁷ We use the term “perceived availability” in discussing the responses to these questions because it is the person’s perception that is being measured. We recognize that availability is multidimensional, and respondents may consider a variety of factors in their answers, including knowing where to get access, the difficulty of getting to an access location, and possibly even the monetary cost. We suspect, however, that for most respondents, what we are measuring is perceived access, with little or no consideration of monetary cost.

While no systematic effort has been undertaken to directly assess the validity of these measures (because such an assessment would involve actual attempts to obtain drugs), we believe the measures do have a rather high level of face validity, particularly because it is the subjective reality of perceived availability being measured. It also seems quite reasonable to assume that, to a considerable extent, perceived availability tracks actual availability. In addition, differences across drugs in reported availability generally correspond to differences in reported prevalence of use, providing further evidence of their validity.

Perceived Availability of Drugs, 2018: All Grades

- Substantial differences were found in perceived availability of the various drugs. In general, the more widely used drugs are reported to be available by higher proportions of the age group, as would be expected (see Tables 9-7, 9-8, and 9-9). Also, older age groups generally perceive drugs to be more available. For example, in 2018, 35% of 8th graders said *marijuana* would be fairly easy or very easy to get (which we refer to as “readily available”), versus 65% of 10th graders and 80% of 12th graders. In fact, compared to 8th graders, the proportions of 12th graders indicating that drugs are available to them are two to four times as high for *other illicit drugs* included in the study. (An exception is *tranquilizers*, which are perceived to be about equally available in 8th and 12th grades, and have highest perceived availability in 10th grade.) Both associations are consistent with the notion that availability is largely attained through friendship circles. (Friends clearly are the leading source through which 12th graders obtain prescription drugs, as discussed above.) The differences among age groups may also reflect less willingness and/or motivation on the part of those who deal drugs to establish contact with younger adolescents. Because many *inhalants* – such as glues, butane, and aerosols – are universally available, we do not ask about their availability. See Table 9-9 for the full list of drugs included in the questions for 12th graders; a few of these drugs were not asked of the younger students (see Tables 9-7 and 9-8).
- In 2018, 46% of 8th graders and 62% of 10th graders, and 75% of 12th graders thought that *cigarettes* would be fairly easy or very easy for them to get if they wanted some.

⁷ In the 8th and 10th grade questionnaires, an additional answer category of “can’t say, drug unfamiliar” is offered; respondents who chose this answer are included in the calculation of percentages. Generally, fewer than 20% of respondents selected this answer.

- In 8th grade the percentage who reported they could fairly or very easily get a **vaping device** was 44% and for **e-liquids with nicotine** it was 37%. The respective availability levels in 10th grade were 66% and 61%, and in 12th grade they were 78% and 75%. In all grades these availability levels were similar to the availability levels for cigarettes.
- The great majority of teens see **alcohol** as readily available: In 2018, 54% of 8th graders, 71% of 10th graders, and 86% of 12th graders said it would be fairly easy or very easy to get.
- Drug availability levels are far lower in 8th grade. Even so, **marijuana** was described as readily available by 35% of 8th graders in 2018, followed by **amphetamines** and **tranquilizers** (both at 12%), **steroids** (11%), **cocaine powder** and **crack** (both at 10%), **sedatives (barbiturates)** (9%), **heroin** and **narcotics other than heroin** (both at 8%), **LSD** and **MDMA (ecstasy, Molly)** (both at 7%), **crystal methamphetamine (ice)** (6%), and **PCP** (5%).
- **Marijuana** appears to be readily available to the great majority of 12th graders; in 2018, 80% reported that they think it would be very easy or fairly easy to get – far higher than the proportion who reported ever having used it (44%). Marijuana has the highest availability level of all illicit substances in this grade.
- There is a considerable drop in availability after marijuana, alcohol, cigarettes, and vaping; the next most readily available class of drugs for 12th graders is **amphetamines**, with 39% saying these drugs would be very or fairly easy to get, followed by **narcotics other than heroin** (33%).
- Between 18% and 29% of 12th graders perceived the following as readily available: **MDMA (ecstasy, Molly)** (28%), **hallucinogens other than LSD** (29%), **cocaine** (28%), **LSD** (28%), **sedatives (barbiturates)** (23%), **cocaine powder** (23%), **steroids** (21%), **heroin** (18%) and **crack** (21%).
- **Crystal methamphetamine (ice)**, **tranquilizers**, and **PCP** were reported as readily available by smaller but still substantial minorities of 12th graders in 2018 (14%, 13%, and 11%, respectively).

Trends in Perceived Availability for All Grades

Trend data on availability for all grades are presented in Tables 9-7 to 9-9 and are graphed for 12th grade students in Figures 9-5a through 9-5d. A glance at the four figures will show some substantial fluctuations in the perceived availability of most drugs over the historical interval covered by the study. Indeed, most drugs have shown a considerably decline in availability since the mid to late 1990s.

- **Marijuana** has been the most consistently available illicit drug and has shown only small variations over the years (see Figure 9-5a). What is most noteworthy is how little change has occurred in the proportion of 12th graders who say that marijuana is fairly or very easy

to get. *By this measure, marijuana has been readily available to the great majority of American 12th graders (from 80% to 90%) since 1975.*

While variability has been small over the course of the survey, perceived availability of marijuana is at or near historic lows in each grade. In 2018 in 8th grade it was 35% (tied with 2016 and 2017 for a historic low), in 10th grade it was 65% (the second lowest level recorded by the survey, just above the 2016 low), and in 12th grade it was at 80% (the third lowest level recorded, just above the 2016 low). This decline in perceived availability is somewhat counter-intuitive, given the widespread adoption of medical marijuana laws and recent legalizing of recreational marijuana use for adults in several states.

- The percentage of students who reported that it would be fairly or very easy to obtain **amphetamines** has declined over the course of the study and is now near historic lows in each grade, at 39% in 12th grade (the record low was last year at 38%), 23% in 10th grade (tied with 2016 for the historic low), and 12% in 8th grade (the record low was last year at 11%, Figure 9-5a and Tables 9-6 to 9-8). These lows come despite a question change in 2011 that added Adderall and Ritalin to the list of examples, which slightly increased availability reports in that year and thereafter. In all grades the decline in availability has been consistent over the course of the study with the following exceptions: an increase in the late 1970s among 12th graders, possibly due to the advent of the “look-alike” drugs during that period (in these early years 8th and 10th graders were not surveyed), and an increase during the 1990s drug relapse in 10th and 12th grades along with a pause in the decline among 8th graders.
- Perceptions of the availability of **sedatives (barbiturates)** (Tables 9-7 to 9-9 and Figure 9-5b) are at or near the lowest levels recorded by the study in all grades. Among 12th graders the long, declining trend in availability over the course of the study was interrupted twice, once in 1981 when look-alikes were common, and again in 2004 when the question was updated with new examples of sedatives added to the question (see footnote in Figure 9-5b). Overall, availability over the course of the study declined by nearly two-thirds for 12th graders, from 68% in 1975 to 23% in 2018 (keeping in mind that the question change in 2004 led to a jump in the availability measure in that year and thereafter).

In 8th and 10th grades, availability of sedatives (barbiturates) has declined overall since first measured in 1992. In 8th grade this decline has been steady, while in 10th grade it was interrupted with a slight, short-lived increase during the 1990s drug relapse. In 2018 the percentage of students who reported it would be “fairly” or “very” easy to get sedatives was 9% in 8th grade (down from 27% in 1992), and in 10th grade it was 14% (down from 38% in 1992).

- Trends in the availability of **crack cocaine** and **cocaine powder** varied by grade (Figure 9-5a and Tables 9-7 to 9-9). Among 12th graders availability was 21% and 23%, respectively, up slightly from historic lows set last year. Past trends in availability resemble an inverted ‘U’. Availability of cocaine increased as use increased through the 1980s, and availability reached a study high of 59% in 1989, the same year study highs were also recorded for availability of the more specific measures of powder cocaine and crack. Importantly, this

peak in availability occurred after cocaine use peaked in 1985, after which use began to decline sharply. Because perceived availability increased between 1986 and 1989, we are inclined to discount reduction in supply as an explanation for the significant and important decline in cocaine use observed during that period. As discussed in Chapter 8, the sharp increase in perceived risk for cocaine seems the more compelling explanation. After 1989, availability of cocaine declined steadily, with an exception of a slight rise during the 1990s drug relapse.

In 8th and 10th grade, levels of availability of these substances in 2018 were at or near historic lows in the life of the study and continued a steady decline that began ten years earlier. In 2018 the percentage reporting that it would be “fairly” or “very” easy to get cocaine powder or crack in 8th grade was 10% for each (down from a high of 28% in the mid-1990s), and in 10th grade was 15% for powdered cocaine and 13% for crack (down from a high of 37% in the late 1990s). In these grades, levels of use of both these drugs have declined by more than half since the late 1990s.

- In 8th and 10th grade the availability of *tranquilizers* continued an increase that began in 2014. In 8th grade the percentage reporting ready availability of tranquilizers increased to 12.2% from 9.8% in 2014, and in 10th grade it increased to 24.2% from 17.5% in 2014. The increases in the lower grades mark a reversal of a long-term decline that has occurred over the course of the study. At least for now the increased availability has not been accompanied by any immediate, significant increase in use, but the uptick in availability is a concern and warrants close monitoring in the future.

In 12th grade availability of tranquilizers decreased slightly to 13%, continuing a recent decline that started in 2016.

In the long run, tranquilizer availability in 8th and 10th grade has fallen considerably since it was first measured in 1992. Despite this overall decline in perceived availability, tranquilizer *use* in these grades had been slowly rising through most of the 1990s and through 2002, followed by a slight decline in use since then. This is another example of changes in availability not being able to explain the trends in use.

- In 2018, the perceived availability of *LSD* was at or near historic lows in all grades (Figure 9-5c and Tables 9-6 to 9-8). In 12th grade, reported availability showed a gradual increase from the mid-1980s to a peak in the mid-1990s, after which all this gain receded in the following decade. Outside of these years, availability decreased sharply in the first year of the study and then followed a slight but steady decline over the life of the study. In 2018, 28% of 12th graders reported ready access to LSD, down by about half from a high of 54% in 1995. In general, attitudes and beliefs – perceived risk and disapproval of LSD use – have not moved in ways that could explain the sharp drop in use that was observed between 2000 and 2003. It seems highly likely that it was this decrease in availability that helped to drive use down – particularly the decline in the early 2000s.

In 8th and 10th grades, LSD availability increased during the 1990s drug relapse, but in recent years has since declined to its record or near record low levels. Availability of *LSD*

dropped sharply in the early 2000s, coinciding with a steep decline in use among 8th and 10th graders. As stated above, because perceived risk and disapproval did not move in a way that could explain this decline in use, but availability did, we are inclined to believe that a change in availability was driving use in this case.

- The percentage of 12th grade students who reported it would be “fairly” or “very” easy to obtain *hallucinogens other than LSD* in 2018 was 29%, which is down substantially from the high of 49% in 2001, when the question was updated to include “shrooms” (psilocybin) as an example (Figure 9-5c and Tables 9-6 to 9-8). Availability of hallucinogens other than LSD is asked only of 12th graders. Trends in this measure followed a fairly similar trajectory to that of LSD from 1975 through 1986, but quite a different one thereafter. From 1986 to 1994, there was only a gradual rise in perceived availability of hallucinogens other than LSD, in contrast to the sharp rise for LSD. From 1995 to 2000, the availability of LSD showed a modest decline (from 54% to 47%), while the availability of other hallucinogens changed very little (from 36% to 35%). While LSD and the other hallucinogens, taken as a set, were about equally available in the late 1970s, LSD availability was substantially higher in the 1990s (note the crossover of the lines in Figure 9-5c between 2000 and 2001). The availability of LSD declined again in 2001 (to 45%), while the availability of other hallucinogens appeared to show a sharp increase, which likely was due in considerable part to a question change. (In 2001, the question text changed from “other psychedelics” to “other hallucinogens,” and the term “shrooms” was added to the list of examples. After this change, this class of drugs was actually reported to be slightly more available than LSD.) Since 2001, availability of hallucinogens other than LSD has declined and now has the same level of availability as LSD.
- The portion of 12th grade students who report they could “fairly” or “very” easily obtain *MDMA* (ecstasy and later Molly) in 2018 was 28%, in between its record high of 62% (in 2001) and record low of 22% (in 1989, the first year it was measured when it was new on the scene, see Figure 9-5d and Tables 9-7 to 9-9). Availability jumped sharply in 2000 to 51% and again in 2001 to 62% – nearly three times the 1991 level – an increase that probably played an important role in the sharp increase in use after 1998. In 2002, availability of MDMA declined for the first time in several years. But while use dropped quite sharply between 2001 and 2003, perceived availability declined only slightly in that interval and did not show a sharp decline until 2004, when it dropped by 10 percentage points. This was followed by another significant decline in perceived availability (eight percentage points) and a nonsignificant decrease in use in 2005. This suggests that a reduction in availability was not key to the important downturn in MDMA use, though it may have been important to the rise in use; rather, the fall in perceived availability may simply have resulted from fewer 12th graders having friends who were users. In fact, friends’ use of MDMA dropped significantly in 2005. The decline in the frequency of raves, at which ecstasy was a popular drug, likely played a role, too.

Among 8th and 10th graders, availability of MDMA (ecstasy, Molly) has declined steadily to levels less than half of what they were in 2001, the first year it was measured in these grades. As with 12th graders, the decline in availability seemed to lag behind the decline in use for this drug, suggesting that use was driving availability and not vice versa.

- The portion of students reporting that they could readily obtain **PCP** declined in all grades and is at or near historic lows (Tables 9-7 to 9-9). In 12th grade the availability level was 11% in 2018, tying with the previous year for the lowest level recorded. In general, for 12th graders availability has been gradually decreasing since 2000; before that it had hovered around 30% since 1992. Actual use of PCP almost doubled between 1993 and 1996, which is not well explained by trends in availability. For this drug, as for many others, it appears that availability was not the determining factor in the shifts in use.

In 8th grade availability of PCP has gradually declined since 2000 to a level of 5% in 2018; before 2000 availability hovered at around 18%. Perceived availability among 10th graders has also decreased overall since 2000 and in 2018 was at 7%. Use of PCP is not measured in these grades.

- In 2018 the percentage of 12th grade students who reported that they could readily obtain **heroin** was 18%, which is not far below the level of 24% at the start of the survey in 1975 (Figure 9-5b and Tables 9-7 to 9-9). In the intervening years availability increased to a high of 35% in the mid-1990s, and then steadily declined in the following years to its current level. The stability of heroin *use* during the 1980s and early 1990s, despite a substantial increase in perceived *availability*, is worthy of note. It suggests that availability alone is not sufficient to stimulate use (though it may well affect the consumption pattern of established users). It was not until the 1990s that methods for taking heroin by other than injection began to be widely known, as purity continued to increase, and use substantially increased. The view that these methods (snorting and smoking) were less dangerous probably removed an important deterrent to use for a number of teenagers.

Among 8th and 10th graders perceived availability of heroin was at record lows in 2018, continuing an overall decrease since 1997, before which it held steady. As with 12th graders, trends in availability are insufficient, by themselves, to explain the increases in heroin use among 8th and 10th graders in the 1990s.

- In all grades the availability of **narcotics other than heroin** has decreased overall since 2010. Unfortunately, the availability question for narcotics other than heroin did not address the issue of changes in the availability of specific drugs within this general class, like OxyContin and Vicodin. Because it seemed quite likely that they had different trends in availability than the class as a whole, the list of drug examples given for narcotics other than marijuana was changed in 2010 to include OxyContin, Vicodin, and Percocet (methadone and opium were dropped from the list). The change in the question wording likely explains the large change seen in the data. For this reason, 2009 and 2010 data cannot be compared. However, the downward trend in availability after 2010, when the question was updated, seems to have continued a smaller downward trend that was present in the data from 2000 to 2008, before the question was updated. Annual prevalence of use increased from 2000 to 2004 and held steady for the next five years, making availability a poor candidate to explain this trend.

In 8th and 10th grades availability of narcotics other than heroin has declined overall since 1997, except for a jump in 2010 that resulted from the update of the question. Prevalence of use is not reported for narcotics other than heroin in these grades.

- Narcotics other than heroin fall into the more general class of *prescription drugs* used outside of medical supervision (tranquilizers, sedatives, amphetamines, and narcotics), which have been the subject of particular concern in the 2000s as their prevalence rose and then sustained for some years. Substantial efforts to curb their availability to young people include “take-back” programs and efforts by various government agencies and private organizations to persuade parents and other family members not to leave any such drugs where adolescents can get them. In addition, the medical and dental communities have been alerted about the potential for the misuse of these drugs. The results reported here, showing a considerable decline in perceived availability of these drugs to adolescents, suggest that these efforts may be working.
- As illustrated in Figure 9-5b, *sedatives (barbiturates)* and *tranquilizers* were much more available to 12th graders in 1975 compared to 2018.⁸
- In all grades the availability of *anabolic steroids* was at or near historic lows in 2018 with levels of 21%, 15%, and 11% in order of oldest to youngest of the three grade levels (Figure 9-5d and Table 9-7 to 9-9). The scheduling of steroids by the DEA no doubt played a role in the long-term decline in availability. Anabolic steroids were placed on Schedule III of the Controlled Substances Act in 1990 to take effect in early 1991, while the scheduling of the precursor androstenedione went into effect in 2005.
- In 2018 *crystal methamphetamine* was at its lowest levels of availability ever recorded by the study, in all grades (Tables 9-7 to 9-9). For 8th and 10th graders a gradual decline has taken place since 2010. For 12th graders availability has been hovering around 15% for the past six years and was 14% in 2018. Annual levels of use (measured only among 12th graders) did not decrease during this period, but have been very low (less than 2%) and have little room to decline further.
- The perceived availability of *cigarettes* continued a long-term decline in 8th and 10th grade to historic low levels. After holding fairly steady at very high levels for some years, perceived availability reported by 8th and 10th graders began to decline modestly after 1996, very likely as a result of increased enforcement of laws prohibiting sale to minors under the Synar Amendment and FDA regulations. The proportion of 8th graders saying that they could get cigarettes fairly or very easily fell from 77% in 1996 to 56% in 2010, and was at 46% in 2018. Over the same interval, the decline among 10th graders was from 91% in 1996 to 62% in 2018. These are encouraging changes and suggest that government and local efforts to reduce accessibility to adolescents – particularly younger adolescents – seem to be working.

⁸ Figure 9-5b shows a sharp increase in the availability of sedatives (barbiturates) in 2004, but this shift likely was caused by a change in question wording.

In 12th grade the availability of cigarettes also decreased in 2018, although in this grade trend data are available starting in 2017. In 2018, 75% of 12th grade students reported ready availability of cigarettes, down from 78% the previous year. A growing interest among state and local governments to increase the minimum age to 21 for the purchase of tobacco products suggests that availability may decrease for this age group in the coming years; this motivated addition of the availability question to the 12th grade questionnaire in 2017. In prior years we did not ask 12th graders about the availability of cigarettes because we assumed they were almost universally available to this age group.

- Although availability of *alcohol* among 12th grade students is near its lowest level recorded since first measured in 1999, at 86% it is still very high.

More substantial changes in the availability of alcohol have taken place among 8th and 10th graders. For 8th graders availability declined from 76% in 1992 to 54% in 2018. For 10th graders availability is down from the peak level of 90% in 1996 to 71% in 2018. This may reflect some success in state and local efforts to reduce access by those who are under age. It is worth noting, however, that even after these declines, alcohol clearly remains available to the majority of teens.

The Importance of Supply Reduction versus Demand Reduction

Overall, supply reduction – that is, reducing the availability of drugs – does not appear to have played as major a role as many had assumed in four of the five most important downturns in illicit drug use that have occurred to date, namely, those for *marijuana*, *cocaine*, *crack*, and *MDMA (ecstasy, Molly)* (see, for example, Figures 8-4, 8-5, and 8-6). The case of cocaine is particularly striking, as perceived availability actually rose during much of the period of downturn in use that began in the mid-1980s. (These data are corroborated by data from the Drug Enforcement Administration on trends in the price and purity of cocaine on the streets.⁹) For *marijuana*, perceived availability has remained very high for 12th graders since 1976, while use dropped substantially from 1979 through 1992 and has fluctuated considerably thereafter. Perceived availability for MDMA did increase in parallel with increasing use in the 1990s, but the decline phase for use appears to have been driven much more by changing beliefs about the dangers of ecstasy than by any sharp downturn in availability. Similarly, *amphetamine* use declined appreciably from 1981 to 1992, with only a modest corresponding change in perceived availability. Finally, until 1995, *heroin* use had not risen among 12th graders even though availability had increased substantially.

- What did change dramatically were young peoples' beliefs about the dangers of using *marijuana*, *cocaine*, *crack*, and *MDMA (ecstasy, and later Molly)*. We believe that increases in perceived risk led to a decrease in use directly through their impact on young people's demand for these drugs and indirectly through their impact on personal disapproval and, subsequently, peer norms. Because the perceived risk of *amphetamine* use was changing little when amphetamine use was declining substantially (1981–1986), other factors must have helped to account for the decline in demand for that class of drugs – quite conceivably some displacement by cocaine. Because three classes of drugs

⁹ Caulkins, J. P. (1994). *Developing price series for cocaine*. Santa Monica, CA: RAND.

(marijuana, cocaine, and amphetamines) have shown *different* patterns of change, it is highly unlikely that a general factor (e.g., a broad shift in attitudes about drug use) can explain their various trends.

- The increase in *marijuana* use in the 1990s among 12th graders added more compelling evidence to this interpretation. It was *both* preceded and accompanied by a decrease in perceived risk. (Between 1991 and 1997, the perceived risk of regular marijuana use declined 21 percentage points.) Perceived peer disapproval dropped sharply from 1993 through 1997, *after* perceived risk began to change, consistent with our interpretation that perceived risk can be an important determinant of disapproval as well as of use. Perceived availability remained fairly constant from 1991 to 1993 and then increased seven percentage points through 1998.¹⁰
- We do think that the expansion in the world supply of *heroin*, particularly in the 1990s, had the effect of dramatically raising the purity of heroin available on the streets, thus allowing for new means of ingestion, such as snorting and smoking. The advent of new forms of heroin, rather than any change in respondents' beliefs about the dangers associated with injecting heroin, very likely contributed to the fairly sharp increase in heroin use in the 1990s. Evidence from this study, showing that a significant portion of the self-reported heroin users are now using by means other than injection, lends credibility to this interpretation. The dramatic decline in *LSD* use in the early to mid-2000s is also not explainable by means of concurrent changes in perceived risk or disapproval; but availability did decline sharply during this period and very likely played a key role in reducing the use of that drug.

We should also note that other factors, such as price, could play an important role for some drugs. Analyses of MTF data have shown, for example, that price probably played an important role in the decline of marijuana use in the 1980s, and in changes in cigarette use in the 1990s.^{11,12} However, price does not appear to have the same influence in all periods for all drugs, as the dramatic reduction in cocaine prevalence during the late 1980s took place at the same time that the price of cocaine *decreased*,¹³ contrary to the supply/demand model.

¹⁰ In the last decade declines in perceived risk have not predicted future increases in marijuana use as expected. This disconnect results in large part from the great decline in adolescent cigarette smoking during the past ten years. Cigarette smoking is a strong, independent predictor of marijuana use, and the decline in cigarette prevalence has offset the expected increase in marijuana use. If cigarette smoking had not declined, we project current levels of marijuana use would be at or near record levels. For details see: Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). [Prevalence and attitudes regarding marijuana use among adolescents over the past decade](#). *Pediatrics*, 140(6).

¹¹ Pacula, R. L., Grossman, M., Chaloupka, F. J., O'Malley, P. M., Johnston, L. D., & Farrelly, M. C. (2001). Marijuana and youth. In J. Gruber (Ed.), *Risky behavior among youths: An economic analysis* (pp. 271–326). Chicago: The University of Chicago Press. Also appears as Working Paper No. 7703, National Bureau of Economic Research, Inc. (2000).

¹² Tauras, J. A., O'Malley, P. M., & Johnston, L. D. (2001). [Effects of price and access laws on teenage smoking initiation: A national longitudinal analysis](#). (ImpacTeen/Youth, Education, and Society Research Paper No. 1.) Chicago, IL: University of Illinois at Chicago and Ann Arbor, MI: The University of Michigan, Institute for Social Research.

¹³ Office of National Drug Control Policy. (2001). [The Price of Illicit Drugs: 1981 through the Second Quarter of 2000](#).

TABLE 9-1
Trends in Parents Disapproving of Drug Use for 12th Graders

Percentage saying parents disapprove ^{a,b}

<i>How do you think your parents feel about you doing each of the following things?</i>	1975	1976	1977	1978	1979	1980-2016	2017	2018	2017-2018 change
Trying marijuana once or twice	90.8	87.4	85.8	83.2	84.9	—	77.6	78.9	+1.3
Smoking marijuana occasionally	95.6	93.0	92.5	90.8	93.2	—	83.0	84.5	+1.5
Smoking marijuana regularly	98.1	96.3	96.5	95.6	97.2	—	87.3	88.2	+0.9
Having five or more drinks once or twice each weekend	85.3	85.9	86.5	82.6	84.5	—	86.2	88.1	+1.8
Smoking one or more packs of cigarettes per day	88.5	87.6	89.2	88.7	91.3	—	91.7	93.0	+1.2
<i>Approximate weighted N =</i>	<i>2,546</i>	<i>2,807</i>	<i>3,014</i>	<i>3,054</i>	<i>2,748</i>	—	<i>1,829</i>	<i>1,833</i>	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

See text in Chapter 9 for important details on parental disapproval survey question over the course of the survey.

^aAnswer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

^bQuestions on parental disapproval were not included in the surveys from 1980-2016. See [here](#) for levels of parental disapproval from 1975-1979 for trying LSD once or twice, trying an amphetamine once or twice, taking one or two drinks nearly every day, and taking four or five drinks every day.

TABLE 9-2
Trends in Friends Disapproving of Drug Use for 12th Graders

Percentage saying friends disapprove ^a

*How do you think your close friends feel
(or would feel) about you . . .*

	1975 ^b	1976	1977 ^b	1978	1979 ^b	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Trying marijuana once or twice	44.3	—	41.8	—	40.9	42.6	46.4	50.3	52.0	54.1	54.7	56.7	58.0	62.9	63.7	70.3
Smoking marijuana occasionally	54.8	—	49.0	—	48.2	50.6	55.9	57.4	59.9	62.9	64.2	64.4	67.0	72.1	71.1	76.4
Smoking marijuana regularly	75.0	—	69.1	—	70.2	72.0	75.0	74.7	77.6	79.2	81.0	82.3	82.9	85.5	84.9	86.7
Trying LSD once or twice	85.6	—	86.6	—	87.6	87.4	86.5	87.8	87.8	87.6	88.6	89.0	87.9	89.5	88.4	87.9
Trying cocaine once or twice	—	—	—	—	—	—	—	—	—	—	—	79.6	83.9	88.1	88.9	90.5
Taking cocaine occasionally	—	—	—	—	—	—	—	—	—	—	—	87.3	89.7	92.1	92.1	94.2
Trying crack once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.2	95.0
Taking crack occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	95.7	96.5
Trying cocaine powder once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	91.7	93.4
Taking cocaine powder occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.0	95.0
Trying an amphetamine once or twice ^c	78.8	—	80.3	—	81.0	78.9	74.4	75.7	76.8	77.0	77.0	79.4	80.0	82.3	84.1	84.2
Taking one or two drinks nearly every day	67.2	—	71.0	—	71.0	70.5	69.5	71.9	71.7	73.6	75.4	75.9	71.8	74.9	76.4	79.0
Taking four or five drinks nearly every day	89.2	—	88.1	—	88.5	87.9	86.4	86.6	86.0	86.1	88.2	87.4	85.6	87.1	87.2	88.2
Having five or more drinks once or twice each weekend	55.0	—	53.4	—	51.3	50.6	50.3	51.2	50.6	51.3	55.9	54.9	52.4	54.0	56.4	59.0
Smoking one or more packs of cigarettes per day	63.6	—	68.3	—	73.4	74.4	73.8	70.3	72.2	73.9	73.7	76.2	74.2	76.4	74.4	75.3
<i>Approximate weighted N =</i>	2,488	—	2,615	—	2,716	2,766	3,120	3,024	2,722	2,721	2,688	2,639	2,815	2,778	2,400	2,184

Table continued on next page.

TABLE 9-2 (cont.)
Trends in Friends Disapproving of Drug Use for 12th Graders

Percentage saying friends disapprove ^a

*How do you think your close friends feel
(or would feel) about you . . .*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Trying marijuana once or twice	69.7	73.1	66.6	62.7	58.1	55.8	53.0	53.8	55.1	58.1	57.6	54.1	58.4	59.5	60.9
Smoking marijuana occasionally	75.8	79.2	73.8	69.1	65.4	63.1	59.9	60.4	61.6	63.9	64.3	60.3	64.2	65.0	67.6
Smoking marijuana regularly	85.9	88.0	83.5	80.6	78.9	76.1	74.1	74.7	74.5	76.1	77.8	75.3	77.0	77.3	79.5
Trying LSD once or twice	87.9	87.3	83.5	83.4	82.6	80.8	79.3	81.7	83.2	84.7	85.5	84.9	87.5	87.3	88.4
Trying cocaine once or twice	91.8	92.2	91.1	91.4	91.1	89.2	87.3	88.8	88.7	90.2	89.3	89.1	91.2	87.9	89.0
Taking cocaine occasionally	94.7	94.4	93.7	93.9	93.8	92.5	90.8	92.2	91.8	92.8	92.2	92.2	93.0	91.0	92.3
Trying crack once or twice	94.4	94.6	95.1	93.9	93.8	93.0	92.3	93.7	93.9	94.6	92.3	93.1	94.5	92.2	92.8
Taking crack occasionally	95.7	95.9	96.4	95.3	96.1	94.7	94.8	96.2	96.0	96.9	95.0	94.7	95.6	94.3	95.5
Trying cocaine powder once or twice	93.3	94.0	94.2	93.2	93.5	92.1	91.4	91.9	91.8	93.3	91.9	92.3	92.7	90.9	91.1
Taking cocaine powder occasionally	94.8	94.8	95.2	94.7	95.3	93.6	93.9	94.5	94.0	96.3	93.7	93.8	94.1	92.9	94.1
Trying an amphetamine once or twice ^c	85.3	85.7	83.2	84.5	81.9	80.6	80.4	82.6	83.0	84.1	83.8	83.3	85.9	84.7	86.1
Taking one or two drinks nearly every day	76.6	77.9	76.8	75.8	72.6	72.9	71.5	72.3	71.7	71.6	73.4	71.6	74.7	72.8	74.0
Taking four or five drinks nearly every day	86.4	87.4	87.2	85.2	84.1	82.6	82.5	82.8	82.2	82.8	84.4	80.1	83.1	82.9	82.7
Having five or more drinks once or twice each weekend	58.1	60.8	58.5	59.1	58.0	57.8	56.4	55.5	57.6	57.7	57.8	55.6	60.3	59.4	59.9
Smoking one or more packs of cigarettes per day	74.0	76.2	71.8	72.4	69.2	69.3	68.5	69.0	71.2	72.6	74.5	75.7	79.2	78.6	81.1
<i>Approximate weighted N =</i>	2,160	2,229	2,220	2,149	2,177	2,030	2,095	2,037	1,945	1,775	1,862	1,820	2,133	2,208	2,183

Table continued on next page.

TABLE 9-2 (cont.)
Trends in Friends Disapproving of Drug Use for 12th Graders

Percentage saying friends disapprove ^a

<i>How do you think your close friends feel (or would feel) about you . . .</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change
Trying marijuana once or twice	62.3	60.4	60.8	61.4	54.9	53.0	52.9	51.2	50.4	51.0	48.6	44.3	45.8	+1.5
Smoking marijuana occasionally	68.1	65.8	66.3	68.5	61.8	59.4	59.5	57.6	56.2	58.1	54.9	51.4	53.2	+1.8
Smoking marijuana regularly	79.8	78.3	78.0	79.1	73.8	73.3	72.7	71.2	70.1	70.9	68.4	65.2	67.9	+2.7
Trying LSD once or twice	89.5	88.4	86.3	87.2	84.5	85.6	85.0	84.9	84.6	81.9	83.3	81.3	82.7	+1.4
Trying cocaine once or twice	88.7	89.6	88.7	90.2	89.7	89.7	89.2	89.2	88.6	87.0	89.1	88.5	88.7	+0.2
Taking cocaine occasionally	92.4	93.1	92.0	92.7	91.8	92.9	92.8	92.5	91.4	90.6	91.5	91.7	93.1	+1.3
Trying crack once or twice	93.5	93.2	93.6	94.5	93.1	93.5	95.1	94.8	92.8	92.7	92.6	92.8	92.6	-0.2
Taking crack occasionally	95.3	95.0	95.4	95.7	94.7	94.7	96.2	95.9	94.5	94.5	94.9	95.2	94.8	-0.3
Trying cocaine powder once or twice	91.9	91.8	92.4	93.5	92.8	92.4	94.6	94.0	91.1	91.7	92.1	92.0	92.0	-0.1
Taking cocaine powder occasionally	94.6	93.9	94.2	94.6	94.3	93.7	96.2	95.4	93.6	93.8	94.3	94.5	93.4	-1.0
Trying an amphetamine once or twice ^c	86.7	87.3	87.1	87.0	85.8	84.6	83.7	83.5	83.2	83.2	83.2	83.7	84.5	+0.8
Taking one or two drinks nearly every day	73.2	74.5	75.2	75.5	75.0	74.9	74.0	75.4	74.0	76.3	76.3	77.3	77.8	+0.5
Taking four or five drinks nearly every day	83.3	84.8	84.7	84.6	83.4	85.8	84.1	85.8	83.8	85.3	85.6	87.3	86.5	-0.8
Having five or more drinks once or twice each weekend	60.6	60.0	62.1	63.5	62.0	62.2	62.3	65.2	65.6	68.5	70.7	69.0	72.1	+3.1
Smoking one or more packs of cigarettes per day	81.2	81.4	82.5	81.6	81.4	81.6	83.2	84.4	84.0	85.1	87.1	85.3	87.0	+1.7
<i>Approximate weighted N =</i>	<i>2,188</i>	<i>2,161</i>	<i>2,090</i>	<i>2,033</i>	<i>2,101</i>	<i>2,132</i>	<i>2,126</i>	<i>1,916</i>	<i>1,863</i>	<i>1,992</i>	<i>1,759</i>	<i>1,893</i>	<i>1,972</i>	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

^bThese numbers have been adjusted to correct for a lack of comparability of question context among administrations. (See text for discussion.)

^cIn 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin.

TABLE 9-3
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Any illicit drug ^a																
% saying not at all	—	17.4	16.5	15.1	15.0	15.7	17.3	18.6	20.6	22.1	22.3	24.5	26.1	28.7	31.4	32.4
% saying often	—	34.8	39.0	40.7	40.4	36.3	36.1	31.4	29.8	28.3	27.2	26.3	23.3	20.8	22.0	20.7
Any illicit drug other than marijuana ^a																
% saying not at all	—	44.9	44.2	44.7	41.7	41.5	37.4	37.5	40.6	40.2	40.7	44.7	48.3	52.2	52.9	54.6
% saying often	—	11.8	13.5	12.1	13.7	14.1	17.1	16.6	14.2	14.6	12.9	12.1	10.2	9.6	10.7	9.2
Marijuana																
% saying not at all	—	20.5	19.0	17.3	17.0	18.0	19.8	22.1	23.8	25.6	26.5	28.0	29.6	33.0	35.2	36.6
% saying often	—	32.5	37.0	39.0	38.9	33.8	33.1	28.0	26.1	24.8	24.2	24.0	20.6	17.9	19.5	17.8
LSD																
% saying not at all	—	78.8	80.0	81.9	81.9	82.8	82.6	83.9	86.2	87.5	86.8	86.9	87.1	86.6	85.0	85.1
% saying often	—	2.2	2.0	1.8	2.0	1.4	2.0	1.9	1.4	1.5	1.3	1.6	1.8	1.6	2.2	2.6
Other hallucinogens ^b																
% saying not at all	—	76.5	76.7	76.7	77.6	79.6	82.4	83.2	86.9	87.3	87.5	88.2	90.0	91.0	91.2	90.6
% saying often	—	3.1	3.2	2.9	2.2	2.2	2.0	2.6	1.1	1.7	1.4	1.5	1.2	1.1	1.3	1.2
Cocaine																
% saying not at all	—	77.0	73.4	69.8	64.0	62.3	63.7	65.1	66.7	64.4	61.7	62.6	65.1	69.8	69.8	72.3
% saying often	—	3.0	3.7	4.6	6.8	5.9	6.6	6.6	5.2	6.7	7.1	7.8	5.9	5.1	5.4	4.7
Heroin																
% saying not at all	—	91.4	90.3	91.8	92.4	92.6	93.4	92.9	94.9	94.0	94.5	94.0	94.2	94.3	93.5	94.6
% saying often	—	0.8	1.1	0.9	0.7	0.4	0.6	1.0	0.7	1.1	0.5	1.0	0.9	0.8	1.0	0.5
Narcotics other than heroin ^c																
% saying not at all	—	81.9	81.3	81.8	82.0	80.4	82.5	81.5	82.7	82.0	81.6	84.4	85.6	85.2	86.2	85.8
% saying often	—	1.8	2.4	2.0	1.7	1.7	1.7	2.4	2.2	2.0	1.8	2.1	1.7	1.7	1.7	1.6
Amphetamines ^d																
% saying not at all	—	59.6	60.3	60.9	58.1	59.2	50.5	49.8	53.9	55.0	59.0	63.5	68.3	72.1	72.6	71.7
% saying often	—	6.8	7.9	6.7	7.4	8.3	12.1	12.3	10.1	9.0	6.5	5.8	4.5	4.1	4.7	4.1
Sedatives (barbiturates) ^e																
% saying not at all	—	69.0	70.0	73.5	73.6	74.8	74.1	74.3	77.5	78.8	81.1	84.2	86.9	87.6	88.2	86.7
% saying often	—	4.5	5.0	3.4	3.3	3.4	4.0	4.3	3.0	2.7	1.7	2.1	1.5	1.4	1.7	1.7
Tranquilizers ^f																
% saying not at all	—	67.7	66.0	67.5	67.5	70.9	71.0	73.4	76.5	76.9	76.6	80.4	81.6	81.8	84.9	83.7
% saying often	—	5.5	6.3	4.9	4.3	3.2	4.2	3.5	2.9	2.9	2.2	2.5	2.6	2.2	2.1	1.9
Alcohol																
% saying not at all	—	6.0	5.6	5.5	5.2	5.3	6.0	6.0	6.0	6.0	6.0	5.9	6.1	6.9	7.7	6.4
% saying often	—	57.1	60.8	60.8	61.2	60.2	61.0	59.3	60.2	58.7	59.5	58.0	58.7	56.4	55.5	56.1
Approximate weighted N =	—	2,950	3,075	3,682	3,253	3,259	3,608	3,645	3,334	3,238	3,252	3,078	3,296	3,300	2,795	2,556

Table continued on next page.

TABLE 9-3 (cont.)
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Any illicit drug ^a															
% saying not at all	35.8	38.7	33.9	29.2	24.7	22.0	21.2	22.8	22.1	24.0	23.5	23.5	26.4	25.7	27.0
% saying often	18.2	18.0	24.0	29.3	32.3	33.8	34.7	33.2	35.6	32.6	33.6	32.6	31.8	30.3	29.9
Any illicit drug other than marijuana ^a															
% saying not at all	60.0	58.4	57.4	54.7	52.8	50.3	52.1	52.7	53.5	52.8	50.1	50.7	53.7	51.7	54.1
% saying often	7.9	7.5	9.6	9.4	11.1	12.1	11.7	9.9	11.7	10.5	11.9	12.6	10.8	11.4	10.6
Marijuana															
% saying not at all	40.4	43.2	39.0	32.8	27.3	24.4	23.2	24.5	24.2	26.2	25.1	25.8	28.6	27.8	29.2
% saying often	16.0	15.6	20.9	27.6	30.7	31.8	32.9	31.4	34.4	30.3	30.8	30.7	30.4	28.0	27.0
LSD															
% saying not at all	84.3	82.2	79.0	75.8	73.9	72.4	74.1	76.9	76.4	78.0	78.4	82.8	85.8	87.6	89.2
% saying often	2.9	3.0	3.9	4.2	6.1	4.7	5.1	3.2	4.1	3.3	2.8	2.6	1.8	1.6	1.5
Other hallucinogens ^b															
% saying not at all	90.6	90.3	87.9	86.0	84.2	83.4	82.2	84.1	82.3	83.7†	71.9	73.6	74.2	75.2	75.7
% saying often	1.3	1.1	1.9	2.3	2.5	2.7	2.8	1.7	2.7	2.1†	3.6	4.5	3.2	3.2	2.6
Cocaine															
% saying not at all	78.7	80.2	80.8	81.2	78.4	75.0	74.4	73.4	74.2	75.8	75.5	75.1	75.2	75.6	74.3
% saying often	3.4	2.7	2.9	2.5	3.2	4.0	4.2	3.7	4.6	4.6	4.5	5.3	5.0	4.7	4.2
Heroin															
% saying not at all	94.9	94.6	94.3	92.7	92.1	91.4	90.9	91.3	91.9	90.9	91.3	91.7	92.7	93.4	92.7
% saying often	0.9	0.7	1.1	0.7	1.2	1.6	1.2	0.9	1.3	1.5	0.7	1.3	1.2	1.2	0.8
Narcotics other than heroin ^c															
% saying not at all	88.7	88.9	87.6	85.1	84.5	81.5	79.6	79.3	78.1	78.9	78.4	77.5	78.2	79.7	81.0
% saying often	1.4	1.3	1.7	1.7	2.1	3.4	2.5	2.8	3.9	2.9	3.0	3.8	3.0	3.3	2.6
Amphetamines ^d															
% saying not at all	76.4	75.5	75.3	71.8	71.9	68.5	69.0	70.1	69.9	70.5	68.5	69.4	72.6	72.8	73.6
% saying often	3.1	3.0	3.9	4.1	4.5	5.6	5.2	4.7	6.3	4.4	6.0	6.4	4.9	5.3	4.1
Sedatives (barbiturates) ^e															
% saying not at all	90.0	89.8	88.1	87.0	85.5	84.5	83.9	83.9	82.9	83.7	82.9	82.3	85.2†	78.5	79.6
% saying often	1.2	1.1	1.6	1.7	2.0	2.9	2.5	2.7	3.8	2.7	2.7	4.6	2.8†	4.1	3.7
Tranquilizers ^f															
% saying not at all	85.8	87.3	86.2	83.5	84.3	82.1	81.1	82.7	81.8	82.3†	76.2	77.3	79.0	77.9	79.1
% saying often	1.4	1.9	1.7	1.8	2.3	3.5	3.2	2.8	3.7	3.5†	4.9	5.8	4.2	4.1	4.5
Alcohol															
% saying not at all	8.3	9.4	8.2	10.0	8.8	8.5	8.6	7.8	8.2	9.3	9.2	10.5	11.7	12.4	12.6
% saying often	54.5	53.1	51.9	54.0	54.0	54.5	53.9	54.5	53.5	50.2	52.7	50.8	49.0	48.2	49.1
Approximate weighted N =	2,525	2,630	2,730	2,581	2,608	2,407	2,595	2,541	2,312	2,153	2,147	2,162	2,454	2,456	2,469

Table continued on next page.

TABLE 9-3 (cont.)
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?

	2006	2007	2008	2009	2010	2011	2012	2013	2014 ^g	2015	2016	2017	2018	2017–2018 change
Any illicit drug ^a														
% saying not at all	26.3	29.2	28.1	25.9	24.0	23.4	23.6	24.6	24.8	24.6	24.9	25.2	27.3	+2.2
% saying often	29.7	27.8	28.6	31.4	33.2	34.6	34.9	32.3	31.3	32.5	33.1	32.8	30.8	-2.0
Any illicit drug other than marijuana ^a														
% saying not at all	54.7	54.6	56.2	55.7	52.8	53.4	55.0	55.8	59.0	55.7	56.2	58.3	59.9	+1.6
% saying often	11.4	10.8	8.2	9.4	10.2	11.5	11.6	9.3	9.7	9.2	10.3	10.7	7.5	-3.3 ss
Marijuana														
% saying not at all	28.6	31.6	30.2	28.2	25.8	25.4	24.9	26.3	26.6	26.8	26.9	26.5	29.9	+3.4
% saying often	27.8	25.1	27.0	29.3	31.3	32.3	32.2	30.6	29.2	30.5	31.2	30.4	28.0	-2.3
LSD														
% saying not at all	88.4	87.6	87.9	88.1	85.9	86.5	87.0	86.2	87.1	84.3	84.5	82.6	84.6	+2.0
% saying often	1.9	1.7	0.8	1.3	1.4	1.4	1.6	1.5	1.5	1.9	2.1	2.4	2.0	-0.5
Other hallucinogens ^b														
% saying not at all	76.2	76.5	76.4	78.0	75.0	76.2	77.3	77.7	80.2	79.6	81.4	82.5	84.5	+2.0
% saying often	4.1	3.0	1.9	2.7	2.2	2.5	2.7	2.4	1.9	1.9	2.4	2.5	1.8	-0.7
Cocaine														
% saying not at all	71.8	74.8	75.9	80.0	80.0	80.7	82.6	83.3	82.4	82.0	81.8	82.4	82.9	+0.5
% saying often	5.4	4.6	3.6	2.6	2.1	2.3	2.8	2.1	2.2	2.3	3.0	3.0	1.7	-1.2 s
Heroin														
% saying not at all	91.1	91.4	93.2	92.7	91.7	93.6	94.0	93.4	94.8	94.4	94.7	93.6	94.8	+1.1
% saying often	1.7	1.1	0.8	0.8	1.0	1.1	1.3	0.7	0.7	1.2	0.9	1.1	0.6	-0.5
Narcotics other than heroin ^c														
% saying not at all	81.1	81.1	83.7	83.7†	69.7	72.5	72.9	77.1	79.1	79.0	79.0	80.1	81.9	+1.8
% saying often	3.4	3.4	2.1	2.7†	5.3	5.6	5.7	3.8	3.6	2.8	3.8	3.4	1.8	-1.6 s
Amphetamines ^d														
% saying not at all	73.4	76.2	76.7	76.2	76.4†	72.0	73.8	74.6	76.3	74.3	75.7	77.6	78.1	+0.6
% saying often	5.6	4.3	3.0	4.3	3.3†	6.1	5.7	5.3	5.7	5.2	5.0	5.0	3.3	-1.7 s
Sedatives (barbiturates) ^e														
% saying not at all	78.7	81.2	83.3	82.4	81.2	83.8	84.0	85.0	86.6	86.5	87.2	88.8	88.6	-0.2
% saying often	3.9	3.9	2.1	3.4	2.5	3.1	2.9	2.5	2.3	1.8	2.5	2.3	1.9	-0.4
Tranquilizers ^f														
% saying not at all	78.2	80.7	80.1	80.0	81.8	83.0	82.4	83.6	84.0	80.3	77.8	77.4	79.5	+2.1
% saying often	5.4	4.9	3.7	3.9	2.8	3.4	3.3	3.4	3.4	2.6	4.6	4.7	3.1	-1.7 s
Alcohol														
% saying not at all	12.4	13.5	14.3	13.5	14.8	15.0	14.7	15.2	17.9	19.5	19.6	21.1	21.7	+0.6
% saying often	47.8	46.4	45.4	46.3	45.8	40.7	43.0	41.7	40.3	38.0	37.4	35.4	33.6	-1.7
Approximate weighted N =	2,372	2,448	2,332	2,274	2,434	2,372	2,299	2,150	2,075	2,177	1,999	2,121	2,200	

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(Table continued on next page.)

TABLE 9-3 (cont.)
Trends in 12th Graders' Exposure to Drug Use

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe data presented here were derived from responses to questions on the drugs included in this table. Any illicit drug includes exposure to any of the drugs presented in this table with the exception of alcohol.

^bIn 2001 the question text was changed from other psychedelics to other hallucinogens and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

^cIn 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

^dIn 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin. This change likely explains the discontinuity in the 2011 results.

^eIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

^fIn 2001 for tranquilizers, Xanax was added to the list of examples. This change likely explains the discontinuity in the 2001 results.

^gIn 2014 the phrase 'or for "kicks"' was dropped from the question.

TABLE 9-4
Trends in Friends' Use of Drugs as Estimated by 8th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Smoke marijuana															
% saying any	21.9	25.1	30.8	41.1	46.1	50.8	50.8	46.7	44.4	42.6	46.1	42.3	40.9	38.3	38.7
% saying most or all	3.3	4.1	6.0	10.5	12.7	15.2	13.8	12.6	12.1	10.4	11.4	10.0	9.4	7.8	9.1
Use inhalants															
% saying any	20.5	23.1	26.3	29.2	32.1	32.3	32.9	31.9	31.0	29.0	29.3	25.7	27.8	27.4	28.1
% saying most or all	2.4	2.9	3.7	4.2	5.0	5.2	4.8	4.5	4.7	4.0	3.9	3.4	4.0	4.0	4.2
Take crack															
% saying any	8.6	10.9	12.5	15.2	17.7	18.5	19.3	19.2	18.5	18.1	18.9	17.4	17.2	15.8	16.7
% saying most or all	0.9	1.0	1.3	1.6	1.6	2.0	1.8	1.9	1.9	1.6	2.0	1.6	1.7	1.7	1.7
Take cocaine powder															
% saying any	8.4	10.7	12.1	14.3	16.2	17.4	17.6	17.1	16.7	16.1	16.3	14.8	14.9	13.8	15.0
% saying most or all	0.9	1.1	1.3	1.7	1.6	1.7	1.6	2.0	1.8	1.6	1.8	1.7	1.6	1.6	1.5
Take heroin															
% saying any	6.1	7.3	8.9	10.3	11.6	12.0	12.2	11.8	11.4	10.9	11.2	10.5	10.2	9.4	9.8
% saying most or all	0.7	0.9	0.9	1.3	1.3	1.4	1.2	1.3	1.3	1.1	1.4	1.3	1.0	1.2	1.1
Drink alcoholic beverages															
% saying any	72.1	76.4	75.7	77.0	75.9	77.1	75.8	74.6	73.4	72.7	72.3	68.1	65.4	65.9	63.9
% saying most or all	21.0	23.7	25.5	27.4	27.5	28.8	25.9	25.0	24.9	23.6	22.7	20.1	19.6	19.3	17.6
Get drunk at least once a week															
% saying any	42.8	48.0	48.0	50.3	48.7	51.2	48.3	47.6	48.7	46.6	45.5	42.3	40.6	39.8	38.4
% saying most or all	7.2	8.4	9.0	10.6	9.9	10.9	9.3	8.8	9.6	9.1	8.6	7.4	7.7	7.1	6.6
Smoke cigarettes															
% saying any	67.7	72.4	73.8	76.1	76.1	78.1	76.9	75.2	70.9	67.9	64.2	58.6	56.0	54.0	52.2
% saying most or all	11.8	14.4	16.7	19.0	20.5	22.5	19.7	19.4	16.4	13.0	10.6	9.0	8.9	8.1	7.5
Use smokeless tobacco															
% saying any	36.5	37.5	37.3	38.6	37.8	37.9	34.5	32.7	30.0	28.0	27.3	24.5	25.1	24.9	23.3
% saying most or all	3.8	4.2	3.8	4.8	4.7	5.1	3.5	3.5	3.5	2.6	2.9	2.5	2.9	3.0	2.5
<i>Approximate weighted N =</i>	16,000	16,600	16,500	15,800	15,300	16,100	16,100	16,000	10,100	10,000	9,700	9,200	10,400	10,500	10,400

Table continued on next page.

TABLE 9-4 (cont.)
Trends in Friends' Use of Drugs as Estimated by 8th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	2017-2018 <u>change</u>
Smoke marijuana														
% saying any	38.1	35.6	37.5	39.3	43.8	41.9	41.0	42.4	40.3	40.5	35.6	37.0	36.1	-0.9
% saying most or all	8.9	7.7	8.0	9.1	12.1	10.7	11.0	12.0	10.1	9.5	8.0	7.8	8.4	+0.6
Use inhalants														
% saying any	28.8	25.8	27.1	27.5	27.5	25.7	22.9	19.9	18.0	17.0	15.2	15.0	16.2	+1.2
% saying most or all	4.5	3.6	3.6	4.6	4.0	3.4	3.2	2.6	2.5	2.4	1.7	1.9	2.1	+0.2
Take crack														
% saying any	17.0	15.2	16.1	15.8	16.6	15.1	14.3	12.8	11.0	10.3	8.1	8.0	7.6	-0.4
% saying most or all	1.8	1.6	1.4	1.7	1.8	1.5	1.4	1.4	1.2	1.0	0.9	0.8	0.7	-0.1
Take cocaine powder														
% saying any	15.6	13.4	14.6	13.2	14.4	12.8	12.5	11.3	10.0	9.8	7.7	8.0	7.4	-0.6
% saying most or all	1.8	1.5	1.4	1.6	1.5	1.4	1.2	1.1	1.2	1.0	0.8	0.8	0.7	-0.2
Take heroin														
% saying any	10.3	8.9	9.3	9.5	10.1	9.2	8.1	7.9	7.1	6.5	5.6	5.5	4.9	-0.6
% saying most or all	1.1	1.1	1.1	1.2	1.1	1.2	0.9	0.9	1.0	0.7	0.8	0.6	0.6	0.0
Drink alcoholic beverages														
% saying any	64.7	63.7	64.1	62.8	63.7	59.8	57.2	54.7	51.7	51.5	47.9	48.9	48.6	-0.3
% saying most or all	19.1	17.6	17.9	17.8	18.0	15.3	13.9	11.8	9.4	9.5	8.3	7.7	8.0	+0.3
Get drunk at least once a week														
% saying any	40.5	39.5	39.3	38.3	39.9	34.8	33.2	30.8	26.9	27.5	24.5	24.4	25.0	+0.6
% saying most or all	6.6	6.6	6.2	6.9	6.9	5.6	5.1	4.4	3.7	3.9	3.3	2.7	2.8	+0.1
Smoke cigarettes														
% saying any	51.7	49.7	49.6	49.5	51.6	47.3	43.9	41.8	38.3	36.9	31.1	30.4	28.4	-2.0
% saying most or all	7.5	6.1	5.7	5.7	6.3	5.1	4.5	3.9	3.0	2.8	2.2	1.5	1.5	0.0
Use smokeless tobacco														
% saying any	25.5	24.6	25.1	26.7	27.4	26.7	23.9	23.1	23.7	23.7	20.5	18.8	17.5	-1.2
% saying most or all	2.7	2.6	2.7	3.4	3.3	3.2	2.4	2.5	2.3	2.4	2.1	1.3	1.5	+0.2
<i>Approximate weighted N =</i> 10,200 9,900 9,600 9,200 9,600 10,200 9,400 9,000 8,700 8,900 10,400 9,300 9,162														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. In 2000, this set of questions was removed from one of the four forms in which it appeared, which resulted in a slight adjustment in the average change score that year. To correct for this, although this set of questions was asked in all four forms in 1999, the data presented here for 1999 are from only the three forms in which the questions are still asked. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

TABLE 9-5
Trends in Friends' Use of Drugs as Estimated by 10th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Smoke marijuana															
% saying any	48.3	45.9	52.7	63.4	68.5	73.5	73.4	70.4	70.5	70.6	72.8	69.6	68.0	66.2	66.2
% saying most or all	7.9	8.0	11.2	18.0	21.3	26.4	25.0	23.5	23.3	22.4	23.8	23.3	21.8	19.2	19.5
Use inhalants															
% saying any	17.3	17.8	21.1	23.6	25.3	25.7	23.7	22.8	21.4	20.6	21.4	19.3	18.8	18.4	18.7
% saying most or all	1.4	1.5	1.8	2.0	2.1	2.2	2.2	2.5	2.1	2.2	1.8	2.1	1.9	1.7	2.0
Take crack															
% saying any	13.2	13.2	15.1	17.3	19.8	21.4	22.0	22.2	21.2	21.1	21.4	21.0	19.3	18.7	19.6
% saying most or all	0.8	0.7	0.9	1.0	1.2	1.2	1.5	1.7	1.6	1.5	1.5	1.8	1.5	1.4	1.5
Take cocaine powder															
% saying any	14.7	14.1	15.4	17.3	19.7	21.7	22.5	23.0	21.0	21.2	20.9	20.5	18.5	19.0	19.8
% saying most or all	0.8	0.8	0.8	1.1	1.3	1.4	1.7	2.0	1.9	1.7	1.5	2.0	1.5	1.4	1.5
Take heroin															
% saying any	7.8	8.1	9.3	10.5	11.1	11.7	11.8	11.5	10.7	10.1	11.4	10.3	9.9	9.0	9.8
% saying most or all	0.6	0.6	0.7	0.6	0.8	0.7	0.9	1.0	1.0	0.8	0.9	1.2	1.0	0.8	1.0
Drink alcoholic beverages															
% saying any	92.9	91.3	91.8	92.8	92.2	92.4	92.2	91.4	91.4	92.0	91.3	89.4	87.5	87.7	88.0
% saying most or all	49.6	48.2	49.9	50.3	50.7	53.4	50.7	50.1	50.3	52.0	50.2	45.7	44.9	44.5	43.9
Get drunk at least once a week															
% saying any	75.1	72.6	74.5	76.9	75.3	76.7	76.2	74.9	75.9	77.3	76.4	73.1	72.1	71.1	71.1
% saying most or all	19.3	18.6	20.2	20.3	20.6	23.1	21.8	21.2	22.8	23.5	22.4	19.9	20.9	19.0	18.3
Smoke cigarettes															
% saying any	81.2	82.0	85.4	86.3	88.0	89.3	88.1	87.1	85.4	84.6	82.7	77.2	75.1	73.9	73.6
% saying most or all	18.2	18.7	22.8	24.7	27.8	32.8	29.3	27.8	25.9	21.2	19.3	15.8	14.2	13.4	12.6
Use smokeless tobacco															
% saying any	53.1	53.1	57.5	58.4	57.9	55.0	52.0	47.5	44.8	42.3	45.5	41.8	38.6	37.6	41.5
% saying most or all	7.5	7.3	7.7	7.6	7.3	6.0	6.4	5.8	4.7	4.6	5.2	5.2	4.4	4.5	5.6
<i>Approximate weighted N =</i>	<i>14,300</i>	<i>14,000</i>	<i>14,600</i>	<i>15,000</i>	<i>16,100</i>	<i>14,800</i>	<i>14,700</i>	<i>14,400</i>	<i>8,700</i>	<i>9,100</i>	<i>9,000</i>	<i>9,100</i>	<i>10,100</i>	<i>10,500</i>	<i>10,400</i>

Table continued on next page.

TABLE 9-5 (cont.)
Trends in Friends' Use of Drugs as Estimated by 10th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017-2018 change
Smoke marijuana														
% saying any	66.3	66.4	64.6	67.6	70.9	70.9	70.7	71.9	69.4	66.7	65.6	66.0	66.6	+0.6
% saying most or all	18.5	17.8	18.9	22.0	23.9	25.6	26.2	27.8	25.1	21.4	21.2	22.7	23.6	+0.9
Use inhalants														
% saying any	20.6	21.2	21.1	19.7	20.2	18.1	15.3	14.9	12.6	11.1	10.2	10.4	10.3	-0.1
% saying most or all	2.2	2.1	2.2	2.0	2.1	1.7	1.5	1.6	1.4	1.2	1.2	1.2	1.1	0.0
Take crack														
% saying any	20.5	20.1	19.4	18.4	19.1	17.0	15.4	14.4	12.4	11.7	11.0	10.6	10.2	-0.5
% saying most or all	1.3	1.5	1.4	1.2	1.5	1.1	1.1	1.2	1.2	1.1	1.0	0.9	0.9	0.0
Take cocaine powder														
% saying any	20.9	21.2	20.2	18.6	18.5	16.7	15.6	14.9	12.9	12.5	11.8	11.4	11.4	0.0
% saying most or all	1.6	1.5	1.4	1.4	1.4	1.0	1.1	1.3	1.0	1.1	1.0	0.8	0.9	+0.1
Take heroin														
% saying any	10.1	9.9	10.6	10.0	10.6	9.1	8.8	7.8	7.0	6.6	6.5	6.1	4.9	-1.1 s
% saying most or all	0.9	0.9	1.1	1.1	0.9	0.6	0.8	0.9	0.8	0.8	0.7	0.7	0.5	-0.2
Drink alcoholic beverages														
% saying any	88.1	88.2	87.0	87.5	87.8	85.9	84.9	83.9	80.5	78.0	75.0	75.2	75.9	+0.6
% saying most or all	46.2	44.7	41.3	42.1	42.0	38.2	39.3	36.8	31.9	29.0	24.4	25.4	26.1	+0.7
Get drunk at least once a week														
% saying any	72.8	73.5	70.1	70.4	69.7	66.4	66.3	63.4	58.0	54.1	50.2	51.2	51.8	+0.5
% saying most or all	20.5	19.7	16.1	16.8	16.0	15.2	15.9	14.4	12.3	9.9	8.2	8.2	8.9	+0.7
Smoke cigarettes														
% saying any	72.5	72.1	70.7	71.3	72.7	70.2	66.5	62.6	57.2	51.7	46.3	43.7	43.3	-0.4
% saying most or all	13.0	11.8	10.5	11.4	11.8	10.2	8.9	7.3	5.8	5.0	3.5	3.2	3.6	+0.5
Use smokeless tobacco														
% saying any	45.3	44.5	41.6	45.6	48.8	47.1	44.2	45.1	42.6	39.0	32.8	32.2	33.1	+0.9
% saying most or all	5.8	5.1	4.8	5.7	7.3	5.5	6.0	6.1	6.1	5.2	3.9	3.0	3.7	+0.7
<i>Approximate weighted N =</i>	10,500	10,300	9,700	10,300	9,900	9,700	9,700	8,400	8,400	10,100	9,300	8,500	8,531	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. In 2000, this set of questions was removed from one of the four forms in which it appeared, which resulted in a slight adjustment in the average change scores that year. To correct for this, although this set of questions was asked in all four forms in 1999, the data presented here for 1999 are from only the three forms in which the questions are still asked. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

TABLE 9-6
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Take any illicit drug^a																
% saying any	85.8	84.6	86.9	87.5	89.0	87.5	85.4	86.3	82.6	81.0	82.4	82.2	81.7	79.1	76.9	71.0
% saying most or all	31.9	31.7	33.2	36.3	37.0	32.5	29.8	26.5	23.8	20.9	22.7	21.5	18.6	15.8	15.7	11.6
Take any illicit drug other than marijuana^a																
% saying any	66.7	55.5	57.5	56.4	61.3	62.4	63.3	64.7	61.2	61.3	61.8	63.3	62.4	56.5	56.2	50.1
% saying most or all	10.6	8.9	7.7	8.5	10.4	11.1	11.9	10.9	11.0	10.3	10.4	10.3	9.2	6.9	7.7	5.1
Smoke marijuana																
% saying any	83.0	82.9	85.9	86.1	87.6	86.4	83.0	84.4	80.3	77.7	79.5	79.2	78.4	75.3	72.5	68.3
% saying most or all	30.3	30.6	32.3	35.3	35.5	31.3	27.7	23.8	21.7	18.3	19.8	18.2	15.8	13.6	13.4	10.1
Use inhalants																
% saying any	24.3	18.6	18.9	20.0	19.1	17.8	16.5	18.4	16.1	19.3	21.2	22.4	24.7	20.8	22.1	20.0
% saying most or all	1.1	1.1	1.0	1.1	1.1	1.2	0.9	1.3	1.1	1.1	1.5	2.0	1.9	1.2	1.9	1.0
Use nitrites																
% saying any	—	—	—	—	21.6	19.0	17.4	17.5	14.5	15.0	15.6	18.0	18.3	13.6	13.3	10.4
% saying most or all	—	—	—	—	1.9	1.3	1.2	0.9	0.7	1.2	1.0	1.2	1.3	0.7	0.9	0.6
Take LSD																
% saying any	36.5	30.6	31.9	29.9	28.9	28.1	28.5	27.8	24.0	23.9	24.4	24.5	25.3	24.1	25.2	25.0
% saying most or all	2.7	2.8	3.0	2.0	1.9	1.8	2.2	2.4	1.4	2.0	1.5	1.8	1.6	1.5	2.4	1.9
Take other hallucinogens^b																
% saying any	41.2	30.3	31.4	29.2	28.2	28.2	26.3	25.6	22.1	21.3	22.0	22.3	21.7	17.8	18.1	15.9
% saying most or all	4.7	3.0	2.8	2.0	2.2	2.2	2.1	1.9	1.6	1.9	1.4	1.3	1.2	0.9	1.4	1.0
Take PCP																
% saying any	—	—	—	—	27.8	22.2	17.2	17.3	14.2	14.2	15.9	16.1	15.5	13.5	14.7	13.0
% saying most or all	—	—	—	—	1.7	1.6	0.9	0.9	1.1	1.1	1.2	1.2	1.1	0.8	1.2	0.5
Take ecstasy (MDMA)^g																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.4
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2
Take cocaine																
% saying any	33.6	28.8	30.1	33.2	38.9	41.6	40.1	40.7	37.6	38.9	43.8	45.6	43.7	37.7	37.4	31.7
% saying most or all	3.4	3.2	3.6	4.0	6.0	6.1	6.3	4.9	5.1	5.1	5.8	6.2	5.1	3.4	3.7	2.1
Take crack																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	27.4	25.4	26.1	19.2
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	2.2	1.1	2.1	0.6
Take cocaine powder																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.3	24.6
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.3	2.5
Approximate weighted N =	2,640	2,697	2,788	3,247	2,933	2,987	3,307	3,303	3,095	2,945	2,971	2,798	2,948	2,961	2,587	2,361

Table continued on next page.

(Table continued on next page.)

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Take any illicit drug^a															
% saying any	69.1	67.3	71.0	78.3	78.6	80.6	83.4	84.6	82.0	82.0	82.8	81.8	80.7	81.2	79.8
% saying most or all	11.7	12.0	15.5	20.3	21.7	23.8	23.7	25.9	25.5	24.5	25.2	23.1	23.5	23.0	20.2
Take any illicit drug other than marijuana^a															
% saying any	46.3	47.1	48.7	53.7	53.7	54.5	55.1	55.6	51.2	52.5	55.0	54.3	50.0	51.4	51.3
% saying most or all	4.6	5.3	7.1	7.1	7.7	8.9	7.0	8.9	7.4	7.4	7.0	6.1	6.7	7.3	6.7
Smoke marijuana															
% saying any	65.8	63.1	67.4	75.6	76.1	78.0	81.4	83.2	80.7	80.5	81.2	79.4	78.9	79.5	77.4
% saying most or all	10.0	10.3	13.9	18.9	20.7	22.2	22.5	23.8	24.2	23.2	24.0	21.4	21.7	21.1	17.9
Use inhalants															
% saying any	19.2	22.2	23.7	26.5	27.5	27.2	27.4	25.9	21.6	23.5	22.2	21.0	17.5	17.9	18.1
% saying most or all	0.7	1.8	1.8	2.0	2.0	2.4	1.9	2.7	1.8	1.4	1.4	1.2	1.1	1.2	2.0
Use nitrites															
% saying any	8.9	9.0	10.7	10.0	10.7	11.2	11.9	12.9	10.9	11.0	11.9	11.2	8.5	9.4	9.1
% saying most or all	0.4	0.7	0.7	0.8	0.8	0.8	0.7	1.0	0.7	1.0	0.6	0.8	1.0	1.2	1.0
Take LSD															
% saying any	23.4	28.1	31.3	34.1	36.9	37.9	36.5	36.8	32.2	31.9	32.2	28.6	21.9	23.5	19.5
% saying most or all	1.7	2.4	3.8	4.2	4.8	5.0	3.7	4.7	3.9	3.1	2.9	1.7	1.9	1.5	1.5
Take other hallucinogens^b															
% saying any	15.1	17.0	19.3	21.4	23.8	26.4	26.3	27.4	22.5	24.0†	35.4	33.6	30.1	31.9	31.0
% saying most or all	0.8	1.0	1.7	2.2	2.2	2.3	2.6	3.1	2.4	2.4†	2.9	2.3	2.4	2.6	2.2
Take PCP															
% saying any	12.0	12.7	15.6	15.5	18.3	20.3	19.7	20.2	16.8	17.5	19.1	17.2	13.6	11.8	10.1
% saying most or all	0.5	0.9	1.9	1.2	1.2	1.3	1.4	1.6	1.5	1.7	1.3	1.0	1.5	1.1	1.0
Take ecstasy (MDMA)^g															
% saying any	11.9	10.7	12.8	15.9	20.7	24.2	27.7	24.5	26.7	37.3	41.9	38.0	34.2	28.9	23.1
% saying most or all	1.7	2.1	1.2	1.7	2.8	3.0	2.6	2.5	2.7	4.8	5.2	3.7	2.7	3.2	2.5
Take cocaine															
% saying any	26.8	26.3	24.5	26.1	24.8	28.1	28.5	31.2	27.8	27.2	27.1	26.8	23.8	29.3	28.1
% saying most or all	1.5	1.5	2.1	1.5	2.0	2.2	2.0	3.2	2.9	2.0	1.7	1.7	2.4	2.3	2.3
Take crack															
% saying any	17.6	17.8	17.9	20.0	19.2	21.6	22.2	24.4	19.0	21.4	23.4	21.5	18.7	22.5	22.9
% saying most or all	0.6	0.7	0.9	1.0	1.1	0.9	1.1	1.7	1.5	1.4	0.8	0.8	1.4	1.6	1.6
Take cocaine powder															
% saying any	19.8	19.7	18.1	20.7	19.2	22.8	24.8	22.9	22.0	21.3	20.1	22.4	23.2	25.4	23.2
% saying most or all	1.8	2.0	1.6	1.9	1.7	1.9	2.0	1.9	1.9	1.8	1.5	1.9	1.9	3.3	1.7
Approximate weighted N =	2,339	2,373	2,410	2,337	2,379	2,156	2,292	2,313	2,060	1,838	1,923	1,968	2,233	2,271	2,266

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change
Take any illicit drug^a														
% saying any	78.8	77.7	80.1	79.2	80.4	81.7	78.9	80.8	80.8	78.2	79.9	79.6	78.1	-1.5
% saying most or all	20.9	21.7	21.3	22.4	25.4	29.1	26.4	26.7	24.6	28.0	24.9	26.1	26.7	+0.6
Take any illicit drug other than marijuana^a														
% saying any	51.0	50.0	49.3	49.4	53.7	49.9	48.9	45.4	43.7	41.2	44.2	40.3	41.1	+0.8
% saying most or all	5.3	6.5	5.3	5.6	7.1	6.5	5.5	4.3	5.1	6.0	4.6	4.6	4.8	+0.2
Smoke marijuana														
% saying any	76.4	74.8	78.2	77.2	79.7	80.6	77.7	80.2	79.3	76.9	78.9	78.2	76.5	-1.7
% saying most or all	19.6	19.2	19.9	20.9	23.6	27.3	25.0	25.7	23.4	25.9	23.8	24.3	25.7	+1.4
Use inhalants														
% saying any	19.0	17.9	18.0	18.0	19.0	16.4	12.3	12.1	9.4	8.7	8.8	7.2	9.0	+1.8
% saying most or all	1.2	1.6	1.1	0.9	1.8	1.4	0.9	1.1	0.7	0.8	0.8	0.7	1.1	+0.4
Use nitrites														
% saying any	8.1	7.7	7.3	7.7	—	—	—	—	—	—	—	—	—	—
% saying most or all	0.5	0.7	0.5	0.2	—	—	—	—	—	—	—	—	—	—
Take LSD														
% saying any	18.7	18.3	20.9	21.3	22.3	22.5	21.3	17.7	18.0	18.9	22.7	20.1	21.5	+1.4
% saying most or all	0.8	1.2	1.1	1.1	1.5	1.4	1.3	1.2	1.2	1.6	1.0	1.5	2.0	+0.5
Take other hallucinogens^b														
% saying any	30.1	30.1	29.4	30.5	32.3	31.8	29.5	26.9	22.0	22.1	23.7	20.0	21.5	+1.5
% saying most or all	1.7	1.7	1.8	1.6	2.0	2.1	2.0	1.6	1.6	1.7	1.0	1.2	1.7	+0.4
Take PCP														
% saying any	10.6	9.4	9.4	9.3	—	—	—	—	—	—	—	—	—	—
% saying most or all	0.5	0.8	0.5	0.5	—	—	—	—	—	—	—	—	—	—
Take ecstasy (MDMA)^g														
% saying any	23.1	23.6	24.7	23.5	25.9	27.5	26.8	25.6	24.3	26.3	24.4	22.4	19.4	-3.0
% saying most or all	1.9	2.1	2.4	2.2	2.1	2.7	2.7	1.8	2.3	2.0	2.6	2.1	2.0	-0.1
Take cocaine														
% saying any	29.7	29.7	25.2	24.0	22.9	18.8	18.1	18.8	17.9	18.3	16.9	17.0	18.1	+1.1
% saying most or all	1.9	2.1	1.2	1.8	1.4	1.0	0.8	1.1	0.8	1.5	0.9	1.1	1.0	-0.2
Take crack														
% saying any	22.3	21.8	19.1	18.8	15.2	12.1	10.4	10.3	9.0	10.1	8.0	8.0	8.6	+0.6
% saying most or all	1.0	1.3	1.1	1.1	1.5	0.9	0.8	0.9	0.8	1.0	0.7	1.0	0.8	-0.2
Take cocaine powder														
% saying any	22.8	22.3	22.6	19.1	17.6	15.9	17.4	15.6	15.4	14.7	16.0	17.1	15.8	-1.3
% saying most or all	1.7	1.8	1.5	1.5	1.0	1.6	1.5	1.2	1.8	1.2	2.2	2.2	2.1	-0.1
<i>Approximate weighted N =</i>	2,217	2,253	2,125	2,110	2,195	2,208	2,144	1,973	1,920	2,055	1,828	1,955	2,002	

Table continued on next page.

↓
 (List of drugs continued)

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Take heroin																
% saying any	15.2	13.6	12.9	14.3	12.9	13.0	12.5	13.2	12.0	13.0	14.5	15.3	13.9	12.4	14.0	11.4
% saying most or all	0.7	0.8	0.7	0.9	0.5	1.0	0.5	0.7	0.8	0.8	0.9	1.1	0.9	0.7	1.1	0.4
Take other narcotics ^c																
% saying any	28.8	24.1	23.7	23.2	23.1	22.4	23.1	23.9	20.8	21.4	22.8	21.8	23.2	19.2	19.2	17.2
% saying most or all	2.1	2.2	1.7	1.4	1.5	1.7	1.5	1.4	1.4	1.6	1.4	1.8	1.4	1.2	1.4	0.9
Take amphetamines ^d																
% saying any	51.0	42.2	41.3	40.7	40.7	43.9	48.8	50.6	46.1	45.1	43.3	41.8	39.5	33.4	33.5	28.7
% saying most or all	5.9	5.6	4.1	4.7	4.3	4.8	6.4	5.4	5.1	4.5	3.4	3.4	2.6	1.9	2.6	1.9
Take crystal methamphetamine (ice)																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.1
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.7
Take sedatives (barbiturates) ^e																
% saying any	45.0	36.3	34.7	32.5	30.7	30.5	31.1	31.3	28.3	26.6	27.1	25.6	24.3	19.7	20.3	17.4
% saying most or all	4.3	3.5	3.0	2.3	2.1	2.6	2.1	1.8	1.7	1.7	1.6	1.4	1.1	1.1	1.4	0.6
Take quaaludes																
% saying any	31.7	27.0	28.3	27.0	27.7	32.5	35.0	35.5	29.7	26.1	26.0	23.5	22.0	17.1	16.6	14.3
% saying most or all	3.0	1.8	2.9	2.2	2.8	3.6	3.6	2.6	2.6	1.7	1.3	1.6	1.0	1.0	1.3	0.8
Take tranquilizers ^f																
% saying any	45.6	36.3	37.8	34.8	32.0	29.7	29.5	29.9	26.7	26.6	25.8	24.2	23.3	19.9	18.0	14.9
% saying most or all	3.5	3.1	2.7	1.8	2.0	1.9	1.4	1.1	1.2	1.5	1.2	1.3	1.0	0.7	1.5	0.5
Drink alcoholic beverages																
% saying any	96.7	95.1	94.4	94.9	95.4	96.1	94.7	95.7	95.5	94.6	94.6	95.6	95.4	95.7	95.1	92.0
% saying most or all	68.4	64.7	66.2	68.9	68.5	68.9	67.7	69.7	69.0	66.6	66.0	68.0	71.8	68.1	67.1	60.5
Get drunk at least once a week																
% saying any	82.4	80.7	81.0	82.0	83.3	83.1	81.8	83.1	83.9	81.5	82.5	84.7	85.6	84.4	82.8	79.2
% saying most or all	30.1	26.6	27.6	30.2	32.0	30.1	29.4	29.9	31.0	29.6	29.9	31.8	31.3	29.6	31.1	27.5
Smoke cigarettes																
% saying any	95.2	93.7	93.7	93.1	92.1	90.6	88.5	88.3	87.0	86.0	87.0	87.8	88.3	87.7	86.5	84.9
% saying most or all	41.5	36.7	33.9	32.2	28.6	23.3	22.4	24.1	22.4	19.2	22.8	21.5	21.0	20.2	23.1	21.4
Take steroids																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.9
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8
Approximate weighted N =	2,640	2,697	2,788	3,247	2,933	2,987	3,307	3,303	3,095	2,945	2,971	2,798	2,948	2,961	2,587	2,361

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders
(Entries are percentages.)

How many of your friends would you estimate . . .

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Take heroin															
% saying any	11.4	13.2	13.3	14.3	14.5	15.6	15.6	16.5	12.7	14.9	13.1	12.9	10.3	12.7	13.1
% saying most or all	0.4	0.7	1.1	1.0	1.1	0.9	0.8	1.3	1.0	1.1	0.9	0.7	0.9	0.9	1.1
Take other narcotics ^c															
% saying any	13.7	14.9	16.1	18.5	19.5	21.8	22.2	24.8	22.9	23.1	24.0	27.5	21.6	24.6	21.4
% saying most or all	0.5	1.1	1.2	1.0	1.6	1.5	1.4	2.9	1.8	2.0	2.0	2.1	2.4	2.4	1.9
Take amphetamines ^d															
% saying any	24.3	24.3	27.5	28.1	30.3	32.2	32.7	33.8	30.8	32.9	33.2	34.4	28.1	31.4	28.8
% saying most or all	1.3	1.3	2.0	1.8	2.0	2.8	2.4	3.4	2.8	3.1	2.2	2.4	2.1	2.9	2.2
Take crystal methamphetamine (ice)															
% saying any	10.2	8.9	9.4	11.8	12.9	15.9	18.6	16.8	15.7	16.9	17.0	17.5	16.2	17.8	14.3
% saying most or all	1.0	1.5	1.2	1.5	1.7	1.5	2.3	2.1	1.1	2.0	1.6	2.0	1.8	3.0	1.9
Take sedatives (barbiturates) ^e															
% saying any	14.8	16.4	17.8	18.2	17.8	21.6	20.4	22.8	20.9	21.6	22.1	25.3	18.1‡	25.2	22.3
% saying most or all	0.5	0.6	1.0	1.1	1.4	1.6	1.1	2.5	1.4	1.7	1.1	1.7	1.9‡	2.0	1.8
Take qualuldes															
% saying any	12.0	13.1	14.2	14.2	15.5	18.1	16.1	17.4	15.5	16.2	17.8	18.0	14.2	16.6	13.6
% saying most or all	0.5	0.8	1.1	1.1	1.3	1.7	1.1	2.0	1.4	1.4	1.2	1.2	1.2	1.6	1.3
Take tranquilizers ^f															
% saying any	13.5	14.6	15.5	16.5	15.8	18.1	17.9	19.7	16.4	19.4	18.6	21.2	17.2	18.3	16.9
% saying most or all	0.4	0.7	0.9	0.9	1.1	1.4	0.8	2.3	1.3	2.1	1.3	1.6	1.5	1.7	1.6
Drink alcoholic beverages															
% saying any	91.2	90.5	88.9	90.1	90.9	89.6	90.7	91.2	90.2	89.8	89.2	88.0	87.9	87.8	87.2
% saying most or all	58.6	56.9	57.0	59.6	56.4	56.4	60.9	61.0	58.2	57.2	59.2	53.7	53.1	53.9	55.3
Get drunk at least once a week															
% saying any	79.8	79.9	79.2	81.4	78.9	78.5	82.4	81.1	81.5	79.5	79.6	78.3	77.3	79.0	78.7
% saying most or all	29.7	28.6	27.6	28.4	27.4	29.0	30.9	31.7	30.1	32.4	32.7	28.3	27.1	27.6	28.5
Smoke cigarettes															
% saying any	85.7	84.4	84.8	88.1	87.9	88.3	89.9	89.5	89.3	87.2	86.8	85.4	83.3	83.7	81.8
% saying most or all	21.8	21.4	25.0	25.3	27.5	30.4	34.4	33.9	31.1	28.2	25.0	23.0	19.6	20.6	16.7
Take steroids															
% saying any	24.7	21.5	19.0	18.1	19.5	17.9	18.9	18.3	20.0	19.8	21.7	21.6	21.1	22.8	19.1
% saying most or all	1.0	1.7	0.9	1.2	1.3	0.8	1.7	1.4	0.9	1.9	1.2	1.5	1.5	2.6	1.5
<i>Approximate weighted N =</i>	<i>2,339</i>	<i>2,373</i>	<i>2,410</i>	<i>2,337</i>	<i>2,379</i>	<i>2,156</i>	<i>2,292</i>	<i>2,313</i>	<i>2,060</i>	<i>1,838</i>	<i>1,923</i>	<i>1,968</i>	<i>2,233</i>	<i>2,271</i>	<i>2,266</i>

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

<i>How many of your friends would you estimate . . .</i>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	2017– 2018 <u>change</u>
Take heroin														
% saying any	12.8	12.9	11.2	12.7	12.4	10.2	7.7	8.5	7.9	7.1	6.0	5.3	5.8	+0.5
% saying most or all	0.8	1.4	0.7	0.9	1.3	0.6	0.6	0.6	0.5	0.7	0.7	0.9	0.3	-0.5
Take other narcotics ^c														
% saying any	23.0	20.7	20.6	21.5†	36.3	31.0	28.5	25.8	22.0	20.0	20.5	18.4	14.7	-3.7 s
% saying most or all	1.9	2.6	1.3	1.9†	3.8	2.6	1.8	1.9	1.8	1.5	1.7	1.7	1.3	-0.3
Take amphetamines ^d														
% saying any	29.0	27.4	27.3	30.0	31.1	31.3	30.5	25.7	25.0	24.2	27.3	21.4	21.5	+0.2
% saying most or all	2.0	2.4	1.8	2.0	2.9	2.2	2.4	2.2	2.9	2.5	2.4	1.7	1.7	0.0
Take crystal methamphetamine (ice)														
% saying any	13.4	11.9	10.9	9.4	9.2	8.9	9.6	8.9	8.2	6.8	7.9	9.0	6.2	-2.8 s
% saying most or all	1.2	0.8	1.4	1.5	1.0	1.3	1.5	1.0	1.5	0.9	1.8	1.3	1.4	+0.1
Take sedatives (barbiturates) ^e														
% saying any	22.5	20.8	19.8	21.0	23.5	21.1	17.3	15.5	14.2	14.5	15.1	12.9	11.9	-0.9
% saying most or all	1.3	1.6	1.3	1.3	1.5	1.3	1.5	1.2	1.1	1.4	1.4	1.0	0.8	-0.2
Take qualudes														
% saying any	13.4	13.6	11.2	14.3	—	—	—	—	—	—	—	—	—	—
% saying most or all	1.3	1.6	0.8	1.1	—	—	—	—	—	—	—	—	—	—
Take tranquilizers ^f														
% saying any	15.3	15.5	15.0	15.8	16.1	13.9	13.3	11.7	10.1	11.5	12.0	11.1	10.5	-0.6
% saying most or all	1.2	1.8	1.2	1.5	1.4	0.8	0.8	1.0	1.3	1.5	1.1	1.0	0.7	-0.3
Drink alcoholic beverages														
% saying any	86.0	85.1	85.2	83.7	83.9	82.6	82.0	82.0	79.7	75.5	77.2	75.7	74.2	-1.5
% saying most or all	52.4	52.0	51.6	50.5	51.4	50.3	49.4	46.9	46.2	42.3	39.2	39.7	38.0	-1.7
Get drunk at least once a week														
% saying any	77.4	75.5	76.2	76.2	73.5	71.9	68.9	69.9	64.2	58.9	59.0	58.0	55.4	-2.6
% saying most or all	27.7	27.0	25.2	24.4	23.7	23.8	21.2	20.7	18.5	15.5	11.5	12.4	11.6	-0.9
Smoke cigarettes														
% saying any	81.4	77.1	78.4	79.6	78.0	75.4	74.3	72.1	66.4	60.2	58.4	54.0	50.9	-3.1
% saying most or all	15.8	16.4	13.9	14.1	14.9	14.1	12.2	11.0	8.1	6.5	5.9	6.6	6.1	-0.5
Take steroids														
% saying any	19.8	20.1	19.4	19.3	16.4	16.0	18.7	17.4	15.7	12.8	15.5	13.7	13.0	-0.6
% saying most or all	0.9	1.2	1.3	1.5	1.7	1.1	1.8	1.5	1.7	1.0	1.9	1.7	1.5	-0.1
<i>Approximate weighted N =</i>	2,217	2,253	2,125	2,110	2,195	2,208	2,144	1,973	1,920	2,055	1,828	1,955	2,002	

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThese estimates were derived from responses to the questions listed. Any illicit drug includes all drugs listed except ecstasy (MDMA), cocaine powder, crystal methamphetamine (ice), alcohol, get drunk, cigarettes, and steroids. PCP and the nitrites were not included from 1975 to 1978. Crack was not included from 1975 to 1986. Methaqualone was not included beginning in 2010.

^bIn 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

^cIn 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

^dIn 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin.

^eIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

^fIn 2001 for tranquilizers, Xanax was added to the list of examples. This change likely explains the discontinuity in the 2001 results.

^gBeginning in 2014 "molly" was added to the question on friends' use of Ecstasy (MDMA). An examination of the data did not show any effect from this wording change.

TABLE 9-7
Trends in Availability of Drugs as Perceived by 8th Graders

<i>How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?</i>	Percentage saying fairly easy or very easy to get ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Marijuana	—	42.3	43.8	49.9	52.4	54.8	54.2	50.6	48.4	47.0	48.1	46.6	44.8	41.0	41.1
LSD	—	21.5	21.8	21.8	23.5	23.6	22.7	19.3	18.3	17.0	17.6	15.2	14.0	12.3	11.5
PCP ^b	—	18.0	18.5	17.7	19.0	19.6	19.2	17.5	17.1	16.0	15.4	14.1	13.7	11.4	11.0
MDMA (e.g. ecstasy, "Molly") ^b	—	—	—	—	—	—	—	—	—	—	23.8	22.8	21.6	16.6	15.6
Crack	—	25.6	25.9	26.9	28.7	27.9	27.5	26.5	25.9	24.9	24.4	23.7	22.5	20.6	20.8
Cocaine powder	—	25.7	25.9	26.4	27.8	27.2	26.9	25.7	25.0	23.9	23.9	22.5	21.6	19.4	19.9
Heroin	—	19.7	19.8	19.4	21.1	20.6	19.8	18.0	17.5	16.5	16.9	16.0	15.6	14.1	13.2
Narcotics other than Heroin ^{b,c}	—	19.8	19.0	18.3	20.3	20.0	20.6	17.1	16.2	15.6	15.0	14.7	15.0	12.4	12.9
Amphetamines ^d	—	32.2	31.4	31.0	33.4	32.6	30.6	27.3	25.9	25.5	26.2	24.4	24.4	21.9	21.0
Crystal methamphetamine (ice) ^b	—	16.0	15.1	14.1	16.0	16.3	15.7	16.0	14.7	14.9	13.9	13.3	14.1	11.9	13.5
Sedatives (barbiturates)	—	27.4	26.1	25.3	26.5	25.6	24.4	21.1	20.8	19.7	20.7	19.4	19.3	18.0	17.6
Tranquilizers	—	22.9	21.4	20.4	21.3	20.4	19.6	18.1	17.3	16.2	17.8	16.9	17.3	15.8	14.8
Alcohol	—	76.2	73.9	74.5	74.9	75.3	74.9	73.1	72.3	70.6	70.6	67.9	67.0	64.9	64.2
Cigarettes	—	77.8	75.5	76.1	76.4	76.9	76.0	73.6	71.5	68.7	67.7	64.3	63.1	60.3	59.1
Vaping device ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	—	24.0	22.7	23.1	23.8	24.1	23.6	22.3	22.6	22.3	23.1	22.0	21.7	19.7	18.1
<i>Approximate weighted N =</i>		8,355	16,775	16,119	15,496	16,318	16,482	16,208	15,397	15,180	14,804	13,972	15,583	15,944	15,730

Table continued on next page.

TABLE 9-7 (cont.)
Trends in Availability of Drugs as Perceived by 8th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get ^a													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Marijuana	39.6	37.4	39.3	39.8	41.4	37.9	36.9	39.1	36.9	37.0	34.6	35.2	35.0	-0.3
LSD	10.8	10.5	10.9	10.0	10.0	9.3	7.5	7.4	6.9	6.6	6.9	6.3	6.5	+0.2
PCP ^b	10.5	9.5	10.1	9.1	8.0	7.9	6.7	5.8	5.5	5.1	4.8	4.6	4.7	+0.1
MDMA (e.g. ecstasy, "Molly") ^b	14.5	13.4	14.1	13.1	12.9	12.0	9.6	9.5	10.1	9.6	8.7	8.0	7.2	-0.8
Crack	20.9	19.7	20.2	18.6	17.9	15.7	14.4	13.7	12.0	11.3	11.1	10.2	9.6	-0.6
Cocaine powder	20.2	19.0	19.5	17.8	16.6	14.9	14.1	13.5	11.9	11.6	11.0	10.4	9.8	-0.5
Heroin	13.0	12.6	13.3	12.0	11.6	9.9	9.4	10.0	8.6	7.8	8.9	8.1	7.8	-0.3
Narcotics other than Heroin ^{b,c}	13.0	11.7	12.1	11.8 [‡]	14.6	12.3	10.6	9.7	9.2	8.8	8.9	8.9	8.3	-0.5
Amphetamines ^d	20.7	19.9	21.3	20.2	19.6 [‡]	15.0	13.4	12.8	12.1	11.8	12.1	11.0	11.6	+0.5
Crystal methamphetamine (ice) ^b	14.5	12.1	12.8	11.9	10.9	9.6	8.8	8.5	7.7	6.9	6.6	6.6	6.2	-0.4
Sedatives (barbiturates) ^e	17.3	16.8	17.5	15.9	15.3	12.6	11.1	10.6	10.0	9.0	9.3	9.2	8.6	-0.5
Tranquilizers	14.4	14.4	15.4	14.1	13.7	12.0	10.5	10.4	9.8	9.8	11.4	11.8	12.2	+0.5
Alcohol	63.0	62.0	64.1	61.8	61.1	59.0	57.5	56.1	54.4	53.6	52.7	53.2	53.9	+0.7
Cigarettes	58.0	55.6	57.4	55.3	55.5	51.9	50.7	49.9	47.2	47.0	45.6	46.2	45.7	-0.6
Vaping device ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	38.6	45.7	+7.1 sss
E-liquid with nicotine (for vaping) ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	31.0	37.9	+6.9 sss
Steroids	17.1	17.0	16.8	15.2	14.2	13.3	12.5	12.9	11.8	11.6	12.6	11.6	10.9	-0.7
<i>Approximate weighted N = 15,502 15,043 14,482 13,989 14,485 15,233 14,235 13,605 13,208 13,494 15,628 14,042 12,315</i>														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, (5) Very easy, and (6) Can't say, drug unfamiliar.

^bBeginning in 1993, data based on one of two of forms; N is one half of N indicated. Beginning in 2014 data based on one sixth of N indicated. For MDMA only: In 2014 the question text was changed in one form to include "Molly." In 2015 a second form was changed to including "Molly;" data based on one sixth of N indicated in 2014 and on one half of N indicated in 2015. An examination of the data did not show any effect from this wording change.

^cIn 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

^dIn 2011 the list of examples for amphetamines was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2012 results.

^eBeginning in 2017, data based on one half of N indicated.

^fPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

TABLE 9-8
Trends in Availability of Drugs as Perceived by 10th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get ^a														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Marijuana	—	65.2	68.4	75.0	78.1	81.1	80.5	77.9	78.2	77.7	77.4	75.9	73.9	73.3	72.6
LSD	—	33.6	35.8	36.1	39.8	41.0	38.3	34.0	34.3	32.9	31.2	26.8	23.1	21.6	20.7
PCP ^b	—	23.7	23.4	23.8	24.7	26.8	24.8	23.9	24.5	25.0	21.6	20.8	19.4	18.0	18.1
MDMA (e.g. ecstasy, "Molly") ^c	—	—	—	—	—	—	—	—	—	—	41.4	41.0	36.3	31.2	30.2
Crack	—	33.7	33.0	34.2	34.6	36.4	36.0	36.3	36.5	34.0	30.6	31.3	29.6	30.6	31.0
Cocaine powder	—	35.0	34.1	34.5	35.3	36.9	37.1	36.8	36.7	34.5	31.0	31.8	29.6	31.2	31.5
Heroin	—	24.3	24.3	24.7	24.6	24.8	24.4	23.0	23.7	22.3	20.1	19.9	18.8	18.7	19.3
Narcotics other than Heroin ^b	—	26.9	24.9	26.9	27.8	29.4	29.0	26.1	26.6	27.2	25.8	25.4	23.5	23.1	23.6
Amphetamines ^d	—	43.4	46.4	46.6	47.7	47.2	44.6	41.0	41.3	40.9	40.6	39.6	36.1	35.7	35.6
Crystal methamphetamine (ice) ^b	—	18.8	16.4	17.8	20.7	22.6	22.9	22.1	21.8	22.8	19.9	20.5	19.0	19.5	21.6
Sedatives (barbiturates)	—	38.0	38.8	38.3	38.8	38.1	35.6	32.7	33.2	32.4	32.8	32.4	28.8	30.0	29.7
Tranquilizers	—	31.6	30.5	29.8	30.6	30.3	28.7	26.5	26.8	27.6	28.5	28.3	25.6	25.6	25.4
Alcohol	—	88.6	88.9	89.8	89.7	90.4	89.0	88.0	88.2	87.7	87.7	84.8	83.4	84.3	83.7
Cigarettes	—	89.1	89.4	90.3	90.7	91.3	89.6	88.1	88.3	86.8	86.3	83.3	80.7	81.4	81.5
Vaping device ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	—	37.6	33.6	33.6	34.8	34.8	34.2	33.0	35.9	35.4	33.1	33.2	30.6	29.6	29.7
<i>Approximate weighted N =</i>		7,014	14,652	15,192	16,209	14,887	14,856	14,423	13,112	13,690	13,518	13,694	15,255	15,806	15,636

Table continued on next page

TABLE 9-8 (cont.)
Trends in Availability of Drugs as Perceived by 10th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get ^a													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Marijuana	70.7	69.0	67.4	69.3	69.4	68.4	68.8	69.7	66.9	65.6	64.0	64.6	64.5	-0.1
LSD	19.2	19.0	19.3	17.8	18.3	16.6	14.9	16.3	14.8	15.5	15.2	15.9	14.9	-1.0
PCP ^b	15.8	15.4	14.4	13.4	12.6	12.0	10.2	9.4	8.3	9.0	7.6	7.1	7.3	+0.1
MDMA (e.g. ecstasy, "Molly") ^c	27.4	27.7	26.7	25.6	25.7	24.8	21.0	20.7	20.4	19.3	16.3	15.0	13.9	-1.1
Crack	29.9	29.0	27.2	23.9	22.5	19.7	18.4	17.1	15.1	14.4	13.9	13.8	13.0	-0.8
Cocaine powder	30.7	30.0	28.2	24.7	22.6	20.6	19.2	18.3	16.4	16.1	14.9	15.0	14.7	-0.2
Heroin	17.4	17.3	17.2	15.0	14.5	13.2	11.9	11.9	10.9	11.0	10.6	10.6	9.7	-0.9
Narcotics other than Heroin ^{b,g}	22.2	21.5	20.3	18.8‡	28.7	25.0	24.3	22.5	18.8	19.2	16.8	17.7	16.8	-1.0
Amphetamines ^d	34.7	33.3	32.0	31.8	32.6‡	28.5	27.3	26.5	25.2	27.3	22.9	24.2	23.4	-0.8
Crystal methamphetamine (ice) ^b	20.8	18.8	15.8	14.0	13.3	11.8	10.7	10.0	9.8	8.9	8.2	8.0	8.0	-0.0
Sedatives (barbiturates) ^e	29.9	28.2	26.9	25.5	24.9	22.0	20.2	18.3	16.7	16.6	14.2	15.1	14.4	-0.7
Tranquilizers	25.1	24.9	24.1	22.3	21.6	20.8	19.7	18.3	17.5	19.4	20.5	23.3	24.2	+0.8
Alcohol	83.1	82.6	81.1	80.9	80.0	77.9	78.2	77.2	75.3	74.9	71.1	71.5	70.6	-0.9
Cigarettes	79.5	78.2	76.5	76.1	75.6	73.6	72.9	71.4	69.0	66.6	62.9	62.5	61.5	-1.0
Vaping device ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	59.5	66.6	+7.1 sss
E-liquid with nicotine (for vaping) ^{e,f}	—	—	—	—	—	—	—	—	—	—	—	52.8	60.4	+7.6 sss
Steroids	30.2	27.7	24.5	20.8	20.3	18.8	18.0	17.2	16.5	17.0	15.3	15.0	14.5	-0.6
<i>Approximate weighted N =</i> 15,804 15,511 14,634 15,451 14,827 14,509 14,628 12,601 12,574 15,186 14,126 12,901 13,365														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, (5) Very easy, and (6) Can't say, drug unfamiliar.

^bBeginning in 1993, data based on one of two forms; *N* is one half of *N* indicated. Beginning in 2014 data based on one sixth of *N* indicated.

^cBeginning in 1993, data based on one of two of forms; *N* is one half of *N* indicated. Beginning in 2014 data based on one sixth of *N* indicated for MDMA only:

In 2014 the question text was changed in one form to include "Molly." In 2015 a second form was changed to including "Molly;" data based on one sixth of *N* indicated in 2014 and on one half of *N* indicated in 2015. An examination of the data did not show any effect from this wording change.

^dIn 2011 the list of examples for amphetamines was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

^eBeginning in 2017, data based on one half of *N* indicated.

^fPercentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

^gIn 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

TABLE 9-9
Trends in Availability of Drugs as Perceived by 12th Graders

Percentage saying fairly easy or very easy to get ^a

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Marijuana	87.8	87.4	87.9	87.8	90.1	89.0	89.2	88.5	86.2	84.6	85.5	85.2	84.8	85.0	84.3	84.4
Amyl/butyl nitrites	—	—	—	—	—	—	—	—	—	—	—	—	23.9	25.9	26.8	24.4
LSD	46.2	37.4	34.5	32.2	34.2	35.3	35.0	34.2	30.9	30.6	30.5	28.5	31.4	33.3	38.3	40.7
Some other hallucinogen ^b	47.8	35.7	33.8	33.8	34.6	35.0	32.7	30.6	26.6	26.6	26.1	24.9	25.0	26.2	28.2	28.3
PCP	—	—	—	—	—	—	—	—	—	—	—	—	22.8	24.9	28.9	27.7
MDMA (e.g. ecstasy, "molly") ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.7	22.0
Cocaine	37.0	34.0	33.0	37.8	45.5	47.9	47.5	47.4	43.1	45.0	48.9	51.5	54.2	55.0	58.7	54.5
Crack	—	—	—	—	—	—	—	—	—	—	—	—	41.1	42.1	47.0	42.4
Cocaine powder	—	—	—	—	—	—	—	—	—	—	—	—	52.9	50.3	53.7	49.0
Heroin	24.2	18.4	17.9	16.4	18.9	21.2	19.2	20.8	19.3	19.9	21.0	22.0	23.7	28.0	31.4	31.9
Some other narcotic (including methadone) ^d	34.5	26.9	27.8	26.1	28.7	29.4	29.6	30.4	30.0	32.1	33.1	32.2	33.0	35.8	38.3	38.1
Amphetamines ^e	67.8	61.8	58.1	58.5	59.9	61.3	69.5	70.8	68.5	68.2	66.4	64.3	64.5	63.9	64.3	59.7
Crystal methamphetamine (ice)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.1
Sedatives (barbiturates) ^f	60.0	54.4	52.4	50.6	49.8	49.1	54.9	55.2	52.5	51.9	51.3	48.3	48.2	47.8	48.4	45.9
Tranquilizers	71.8	65.5	64.9	64.3	61.4	59.1	60.8	58.9	55.3	54.5	54.7	51.2	48.6	49.1	45.3	44.7
Alcohol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cigarettes ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping device ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Approximate weighted N =</i>	2,627	2,865	3,065	3,598	3,172	3,240	3,578	3,602	3,385	3,269	3,274	3,077	3,271	3,231	2,806	2,549

Table continued on next page

TABLE 9-9 (cont.)
Trends in Availability of Drugs as Perceived by 12th Graders

Percentage saying fairly easy or very easy to get ^a

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Marijuana	83.3	82.7	83.0	85.5	88.5	88.7	89.6	90.4	88.9	88.5	88.5	87.2	87.1	85.8	85.6
Amyl/butyl nitrites	22.7	25.9	25.9	26.7	26.0	23.9	23.8	25.1	21.4	23.3	22.5	22.3	19.7	20.0	19.7
LSD	39.5	44.5	49.2	50.8	53.8	51.3	50.7	48.8	44.7	46.9	44.7	39.6	33.6	33.1	28.6
Some other hallucinogen ^b	28.0	29.9	33.5	33.8	35.8	33.9	33.9	35.1	29.5	34.5‡	48.5	47.7	47.2	49.4	45.0
PCP	27.6	31.7	31.7	31.4	31.0	30.5	30.0	30.7	26.7	28.8	27.2	25.8	21.9	24.2	23.2
MDMA (e.g. ecstasy, "Molly") ^c	22.1	24.2	28.1	31.2	34.2	36.9	38.8	38.2	40.1	51.4	61.5	59.1	57.5	47.9	40.3
Cocaine	51.0	52.7	48.5	46.6	47.7	48.1	48.5	51.3	47.6	47.8	46.2	44.6	43.3	47.8	44.7
Crack	39.9	43.5	43.6	40.5	41.9	40.7	40.6	43.8	41.1	42.6	40.2	38.5	35.3	39.2	39.3
Cocaine powder	46.0	48.0	45.4	43.7	43.8	44.4	43.3	45.7	43.7	44.6	40.7	40.2	37.4	41.7	41.6
Heroin	30.6	34.9	33.7	34.1	35.1	32.2	33.8	35.6	32.1	33.5	32.3	29.0	27.9	29.6	27.3
Some other narcotic (including methadone) ^d	34.6	37.1	37.5	38.0	39.8	40.0	38.9	42.8	40.8	43.9	40.5	44.0	39.3	40.2	39.2
Amphetamines ^e	57.3	58.8	61.5	62.0	62.8	59.4	59.8	60.8	58.1	57.1	57.1	57.4	55.0	55.4	51.2
Crystal methamphetamine (ice)	24.3	26.0	26.6	25.6	27.0	26.9	27.6	29.8	27.6	27.8	28.3	28.3	26.1	26.7	27.2
Sedatives (barbiturates) ^f	42.4	44.0	44.5	43.3	42.3	41.4	40.0	40.7	37.9	37.4	35.7	36.6	35.3‡	46.3	44.4
Tranquilizers	40.8	40.9	41.1	39.2	37.8	36.0	35.4	36.2	32.7	33.8	33.1	32.9	29.8	30.1	25.7
Alcohol	—	—	—	—	—	—	—	—	95.0	94.8	94.3	94.7	94.2	94.2	93.0
Cigarettes ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping device ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) ^g	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	46.7	46.8	44.8	42.9	45.5	40.3	41.7	44.5	44.6	44.8	44.4	45.5	40.7	42.6	39.7
<i>Approximate weighted N =</i>	2,476	2,586	2,670	2,526	2,552	2,340	2,517	2,520	2,215	2,095	2,120	2,138	2,391	2,169	2,161

Table continued on next page

TABLE 9-9 (cont.)
Trends in Availability of Drugs as Perceived by 12th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying "fairly easy" or "very easy" to get ^a													2017–2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Marijuana	84.9	83.9	83.9	81.1	82.1	82.2	81.6	81.4	81.3	79.5	81.0	79.8	79.7	-0.1
Amyl/butyl nitrites	18.4	18.1	16.9	15.7	—	—	—	—	—	—	—	—	—	—
LSD	29.0	28.7	28.5	26.3	25.1	25.1	27.6	24.5	25.9	26.5	28.0	26.3	28.0	+1.7
Some other hallucinogen ^b	43.9	43.7	42.8	40.5	39.5	38.3	37.8	36.6	33.6	31.4	32.5	28.4	28.6	+0.2
PCP	23.1	21.0	20.6	19.2	18.5	17.2	14.2	15.3	11.1	13.8	12.6	10.6	10.8	+0.2
MDMA (e.g. ecstasy, "Molly") ^c	40.3	40.9	41.9	35.1	36.4	37.1	35.9	35.1	36.1	37.1	32.5	29.3	27.7	-1.6
Cocaine	46.5	47.1	42.4	39.4	35.5	30.5	29.8	30.5	29.2	29.1	28.6	27.3	28.1	+0.9
Crack	38.8	37.5	35.2	31.9	26.1	24.0	22.0	24.6	20.1	22.0	19.8	18.1	20.8	+2.7
Cocaine powder	42.5	41.2	38.9	33.9	29.0	26.4	25.1	28.4	22.3	25.8	22.9	21.3	23.0	+1.7
Heroin	27.4	29.7	25.4	27.4	24.1	20.8	19.9	22.1	20.2	20.4	20.0	19.1	18.4	-0.8
Some other narcotic (including methadone) ^d	39.6	37.3	34.9	36.1‡	54.2	50.7	50.4	46.5	42.2	39.0	39.3	35.8	32.5	-3.3
Amphetamines ^e	52.9	49.6	47.9	47.1	44.1‡	47.0	45.4	42.7	44.5	41.9	41.1	38.0	39.3	+1.3
Crystal methamphetamine (ice)	26.7	25.1	23.3	22.3	18.3	17.1	14.5	17.2	13.7	15.3	14.5	13.6	13.6	-0.0
Sedatives (barbiturates) ^f	43.8	41.7	38.8	37.9	36.8	32.4	28.7	27.9	26.3	25.0	25.7	23.4	23.0	-0.4
Tranquilizers	24.4	23.6	22.4	21.2	18.4	16.8	14.9	15.0	14.4	14.9	15.2	14.9	13.0	-1.9
Alcohol	92.5	92.2	92.2	92.1	90.4	88.9	90.6	89.7	87.6	86.6	85.4	87.1	85.5	-1.6
Cigarettes ^g	—	—	—	—	—	—	—	—	—	—	—	77.9	75.1	-2.8
Vaping device ^g	—	—	—	—	—	—	—	—	—	—	—	78.2	80.5	+2.2
E-liquid with nicotine (for vaping) ^g	—	—	—	—	—	—	—	—	—	—	—	75.0	77.2	+2.2
Steroids	41.1	40.1	35.2	30.3	27.3	26.1	25.0	28.5	22.0	23.7	21.3	20.1	21.1	+1.0
	<i>Approximate weighted N =</i>													
	2,131	2,420	2,276	2,243	2,395	2,337	2,280	2,092	2,066	2,181	1,958	1,882	1,931	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: $s = .05$, $ss = .01$, $sss = .001$. '—' indicates data not available. '‡' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aAnswer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, and (5) Very easy.

^bIn 2001 the question text was changed from other psychedelics to other hallucinogens and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

^cBeginning in 2014 "molly" was added to the question on availability of Ecstasy (MDMA). An examination of the data did not show any effect from this wording change.

^dIn 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

^eIn 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

^fIn 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

^gData based on 2 of 6 forms. N is twice the N indicated.

TABLE 9-10
Source of Prescription Drugs
among Those Who Used in Last Year
Grade 12, 2009–2018

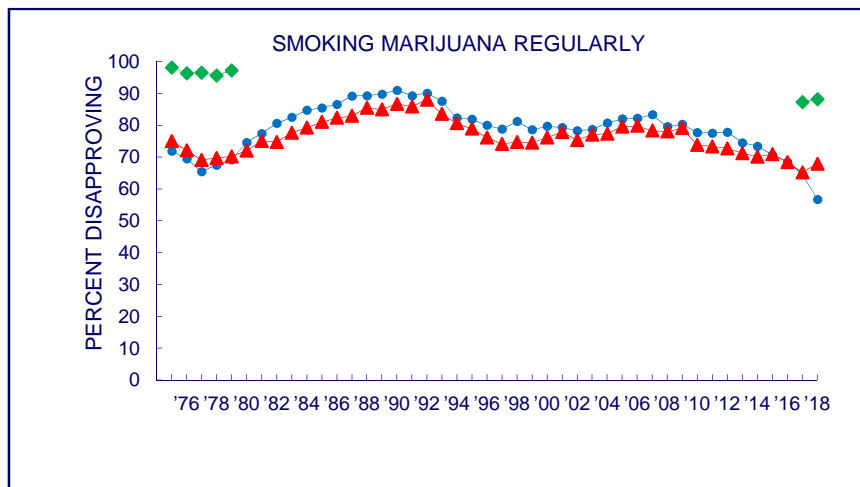
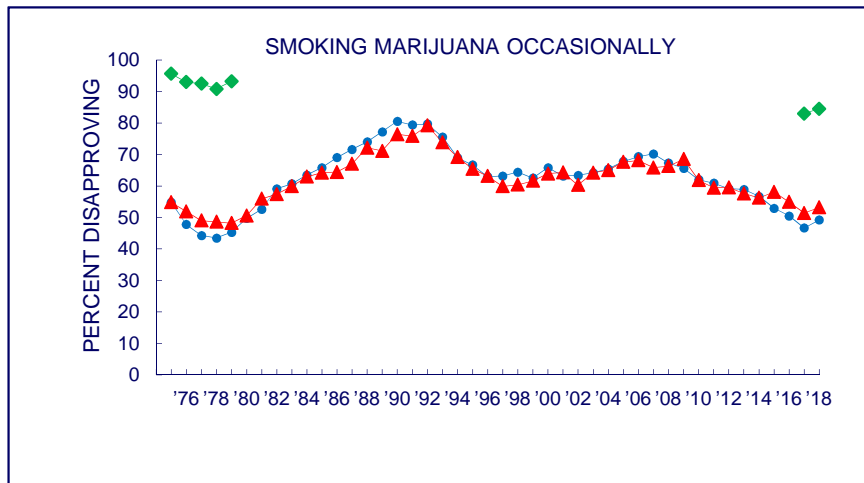
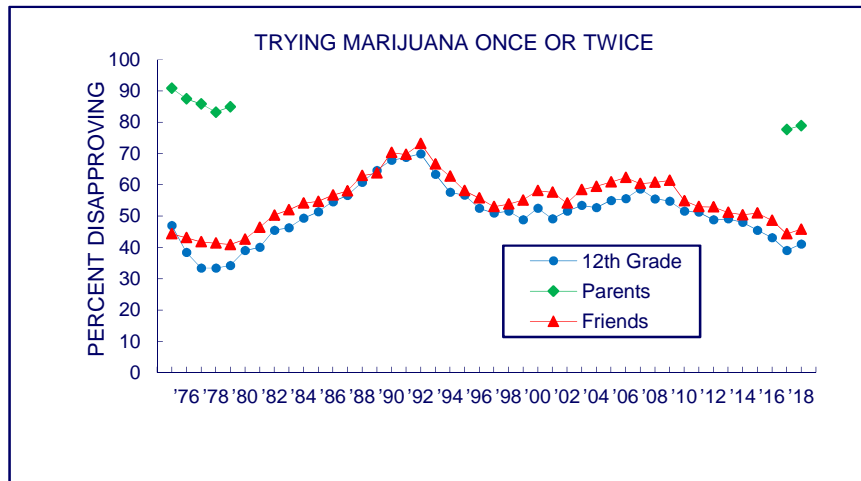
(Entries are percentages.)

Where did you get the [insert drug name here] you used without a doctor's orders during the past year? (Mark all that apply.)

	Amphetamines		Tranquilizers		Narcotics other than Heroin	
	2009-2016	2017-2018	2009-2016	2017-2018	2009-2016	2017-2018
Bought on Internet	5.1	8.2	4.0	5.3	1.7	3.6
Took from friend/relative without asking	10.1	10.0	16.3	6.8	21.0	13.7
Took from a friend without asking	4.4	2.9	4.5	1.1	4.5	0.5
Took from a relative without asking	7.9	7.8	14.3	5.7	19.2	13.7
Given for free by friend or relative	58.6	44.4	62.9	38.9	55.8	48.2
Given for free by a friend	54.4	38.0	52.6	32.6	48.8	40.2
Given for free by a relative	9.3	13.1	18.7	10.6	14.7	16.4
Bought from friend or relative	42.9	41.9	35.9	45.5	32.1	26.1
Bought from a friend	42.1	40.8	34.8	43.3	31.6	26.1
Bought from a relative	2.8	2.9	4.3	3.5	3.4	3.3
From a prescription I had	15.3	11.6	12.7	9.3	35.7	31.9
Bought from drug dealer/stranger	18.5	14.2	22.1	24.8	16.6	17.4
Other method	12.2	14.4	9.2	11.0	9.3	14.5
<i>Weighted N =</i>	915	166	652	116	955	108

Source. The Monitoring the Future study, the University of Michigan.

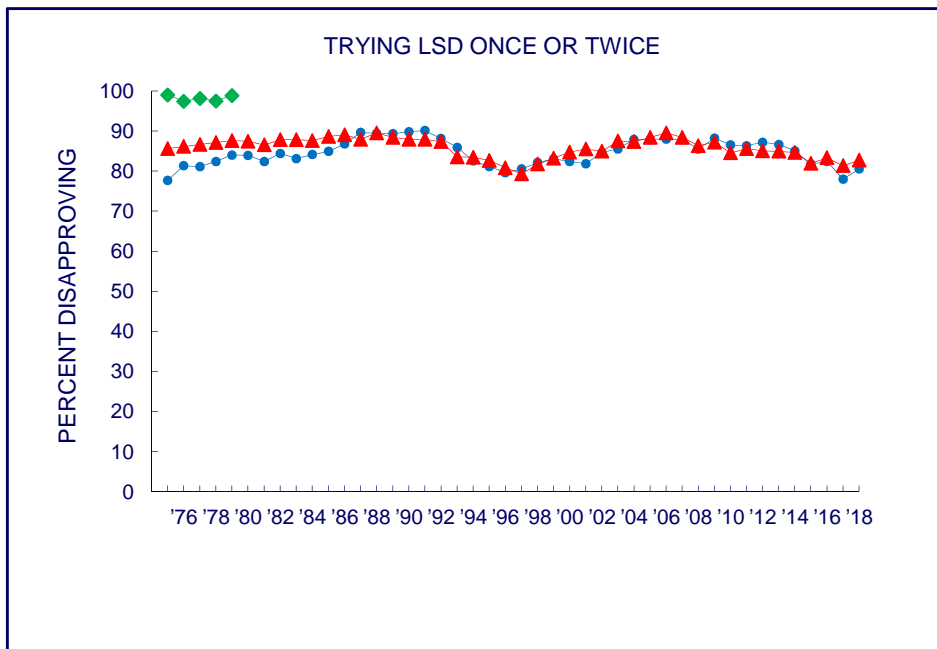
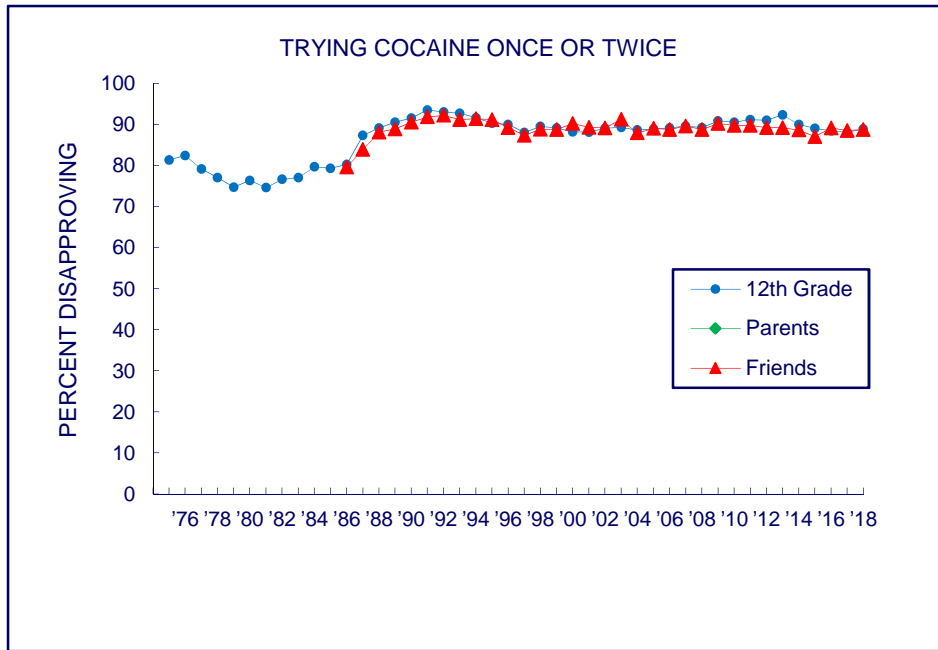
FIGURE 9-1a
MARIJUANA
Trends in Disapproval
12th Graders, Parents, and Friends



Source. The Monitoring the Future study, the University of Michigan.

Note. The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question context between administration years.

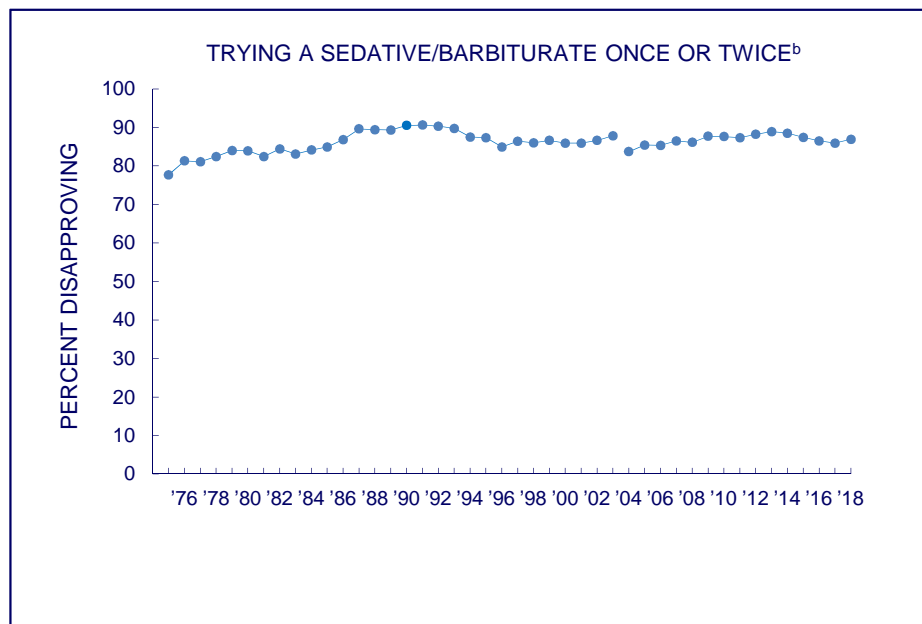
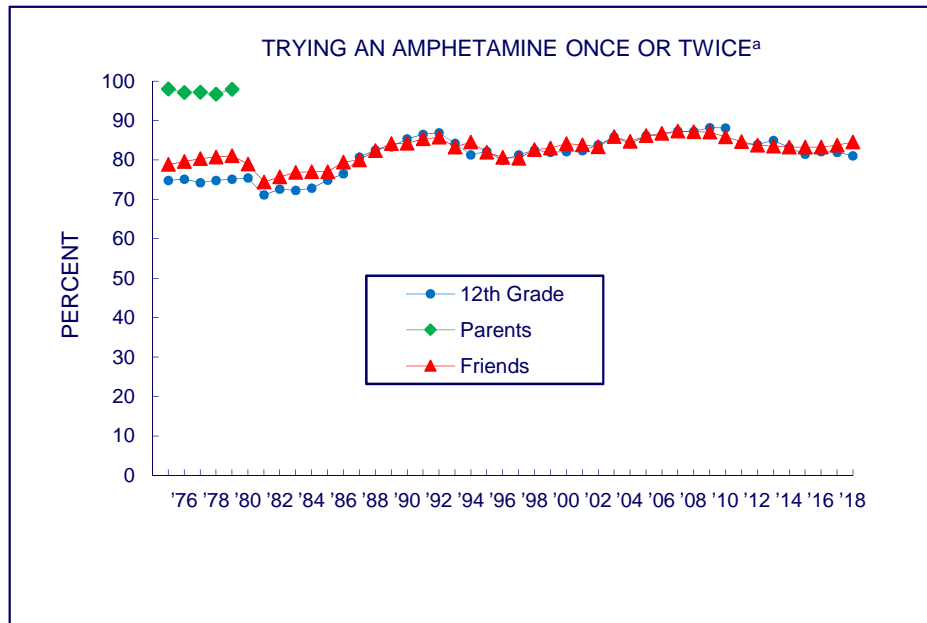
FIGURE 9-1b
COCAINE AND LSD
Trends in Disapproval
12th Graders, Parents, and Friends



Source. The Monitoring the Future study, the University of Michigan.

Note. The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question text between administration years.

FIGURE 9-1c
AMPHETAMINES AND SEDATIVES (BARBITURATES)
Trends in Disapproval
12th Graders, Parents, and Friends



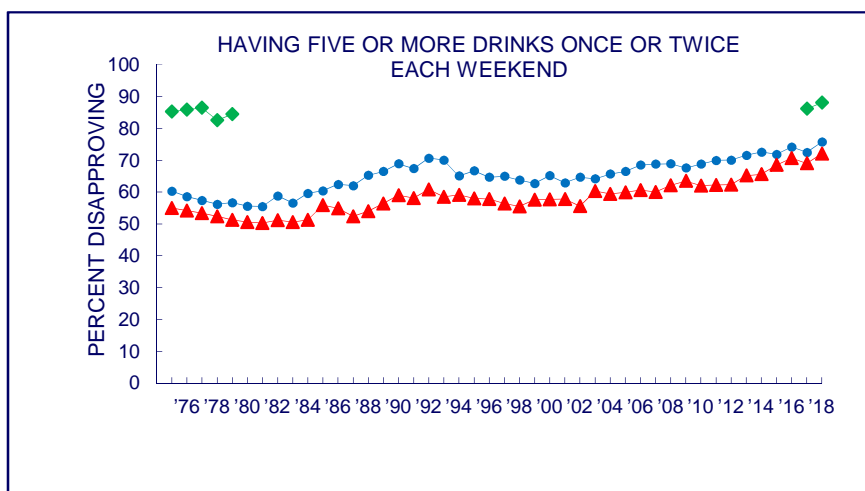
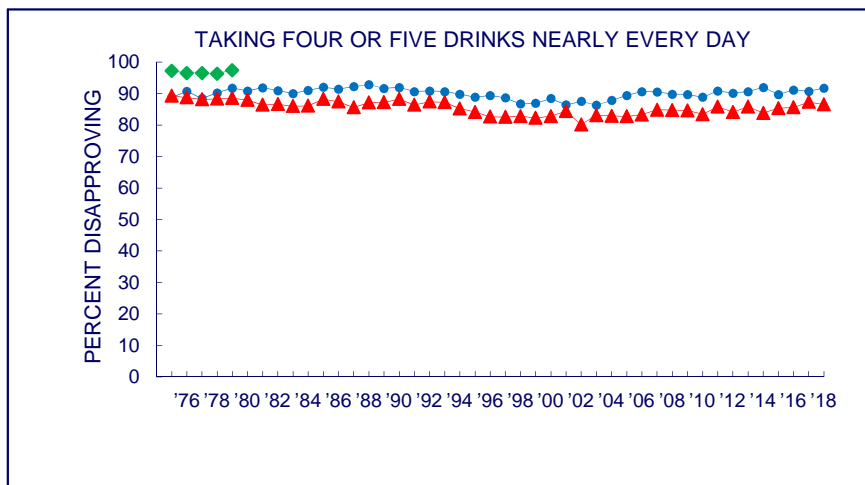
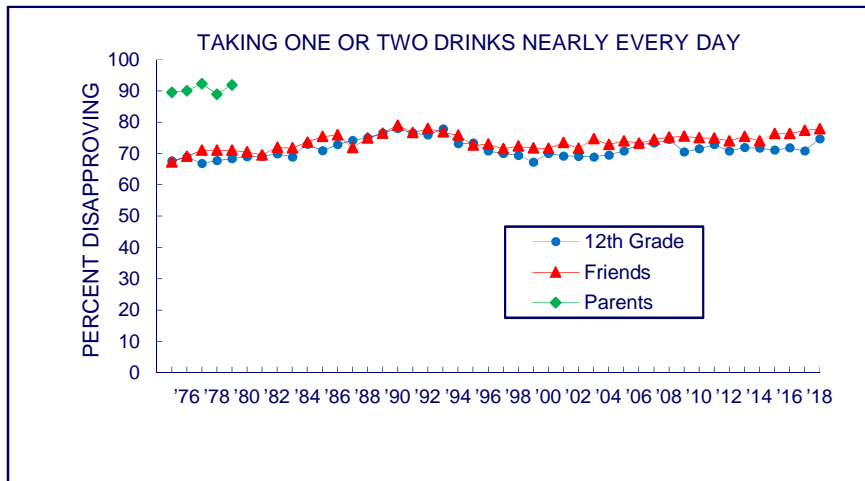
Source. The Monitoring the Future study, the University of Michigan.

Note. The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question text between administration years.

^aFor 12th graders only: In 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

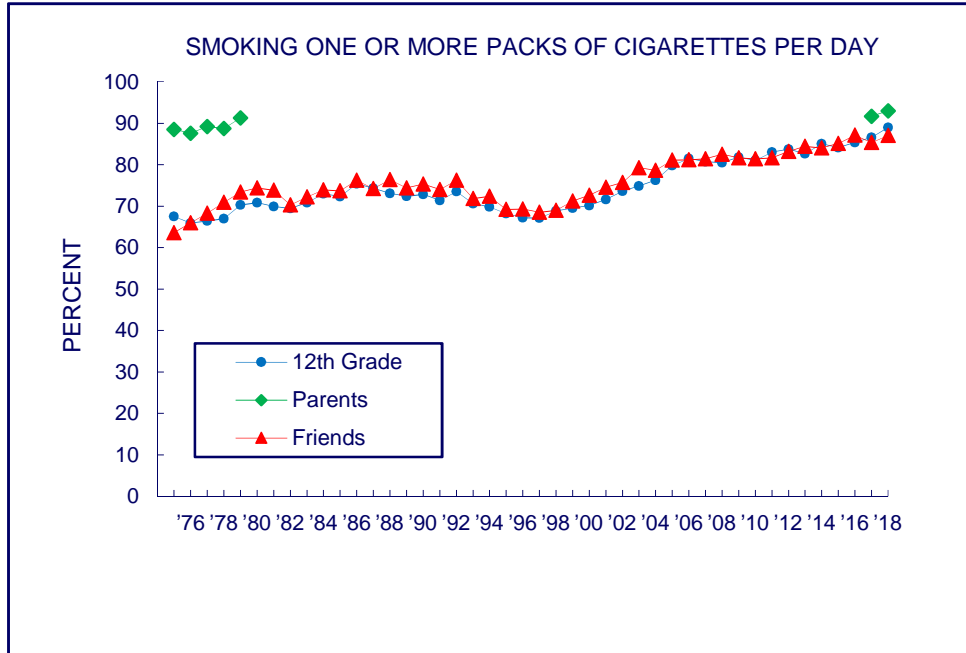
^bIn 2004 the question text was changed from barbiturates to sedatives/barbiturates, and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

FIGURE 9-2a
ALCOHOL
Trends in Disapproval
12th Graders, Parents, and Friends



Source. The Monitoring the Future study, the University of Michigan.
Note. The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question context between administration years.

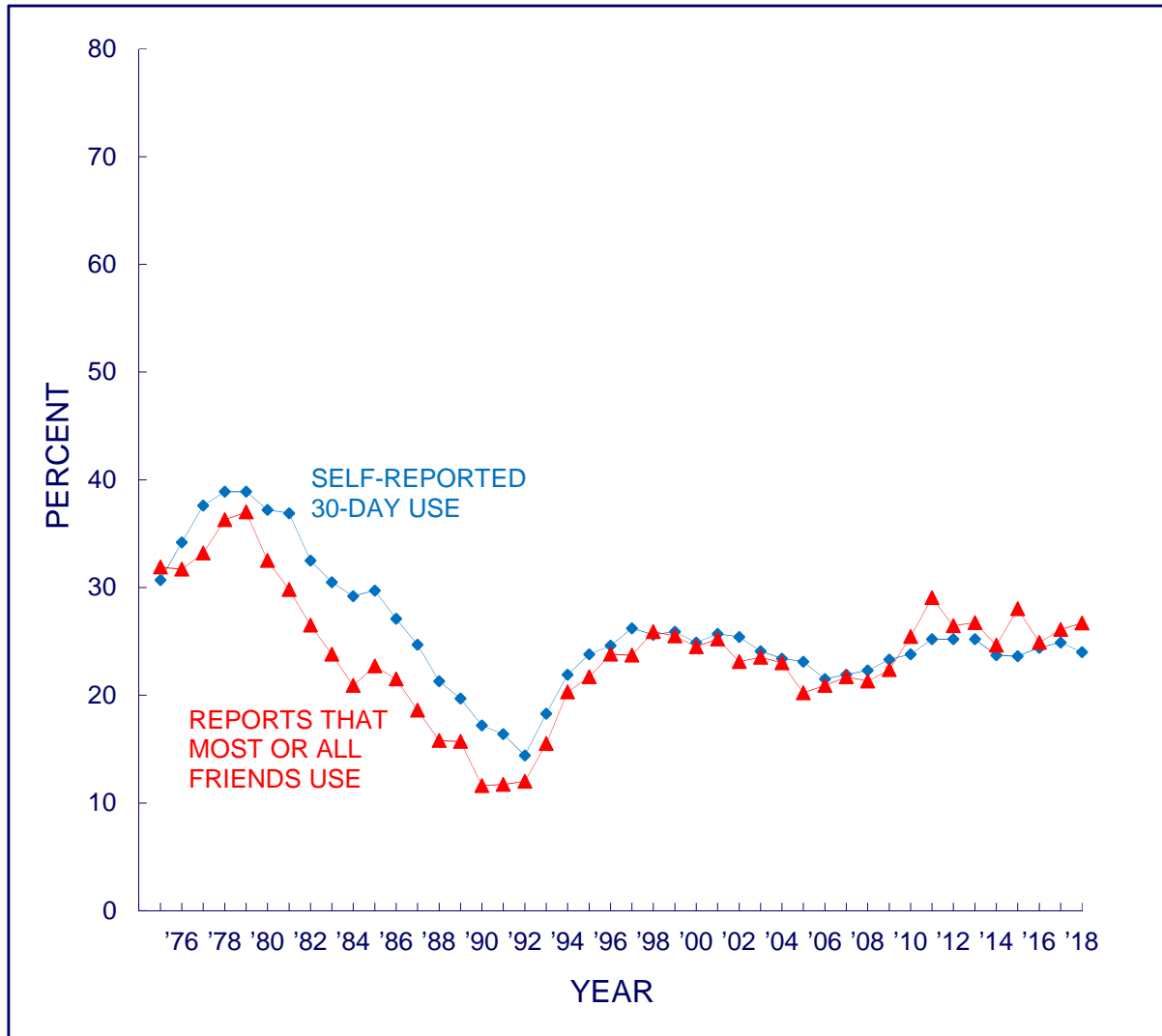
FIGURE 9-2b
CIGARETTES
Trends in Disapproval
12th Graders, Parents, and Friends



Source. The Monitoring the Future study, the University of Michigan.

Note. The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question text between administration years.

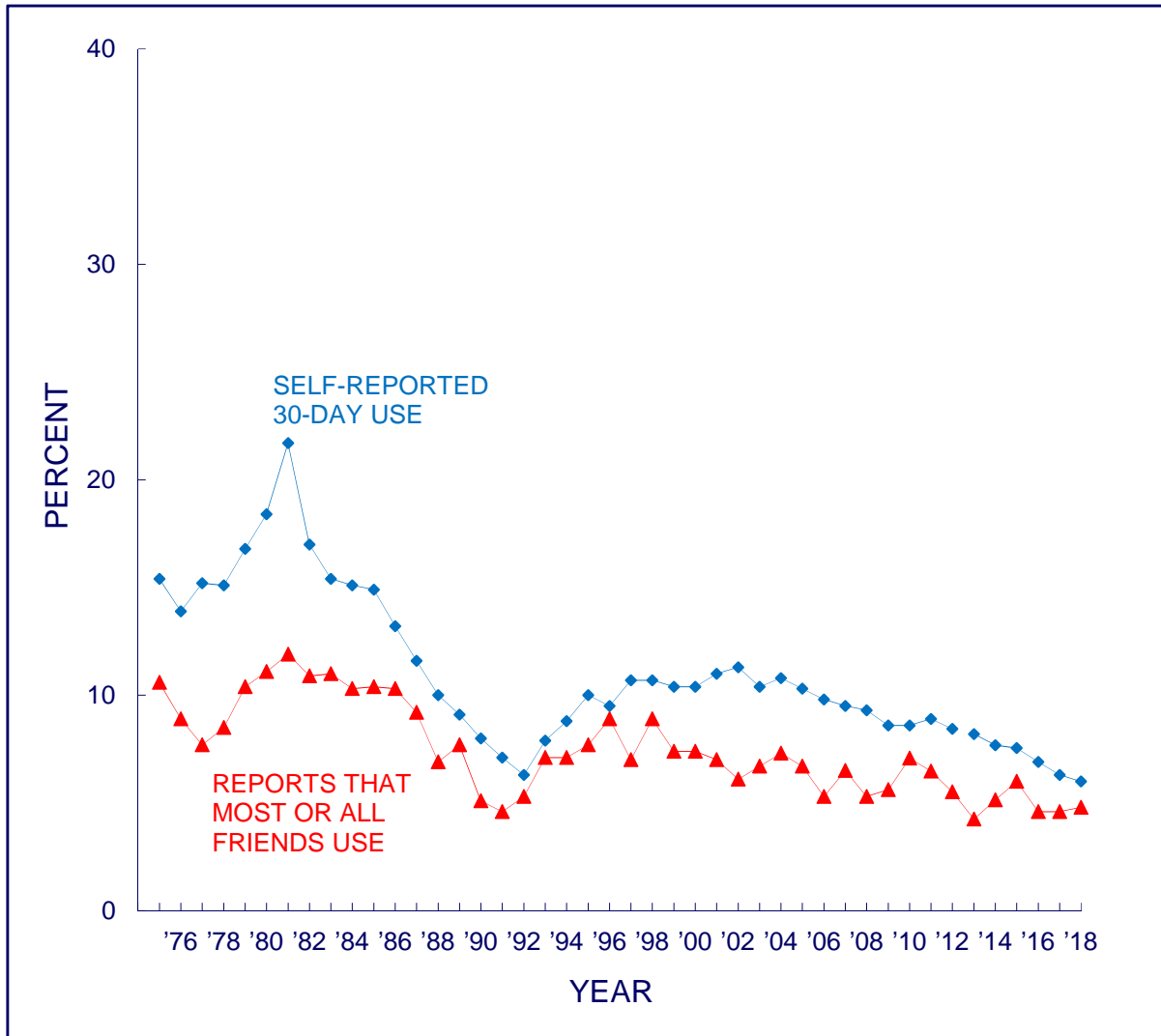
FIGURE 9-3a
ANY ILLICIT DRUG
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aIn 2013, the question text for the use of amphetamines was changed on some of the questionnaire forms, with the remaining forms changed in 2014. This change affected the data for use of any illicit drug. Data presented here include only the changed forms.

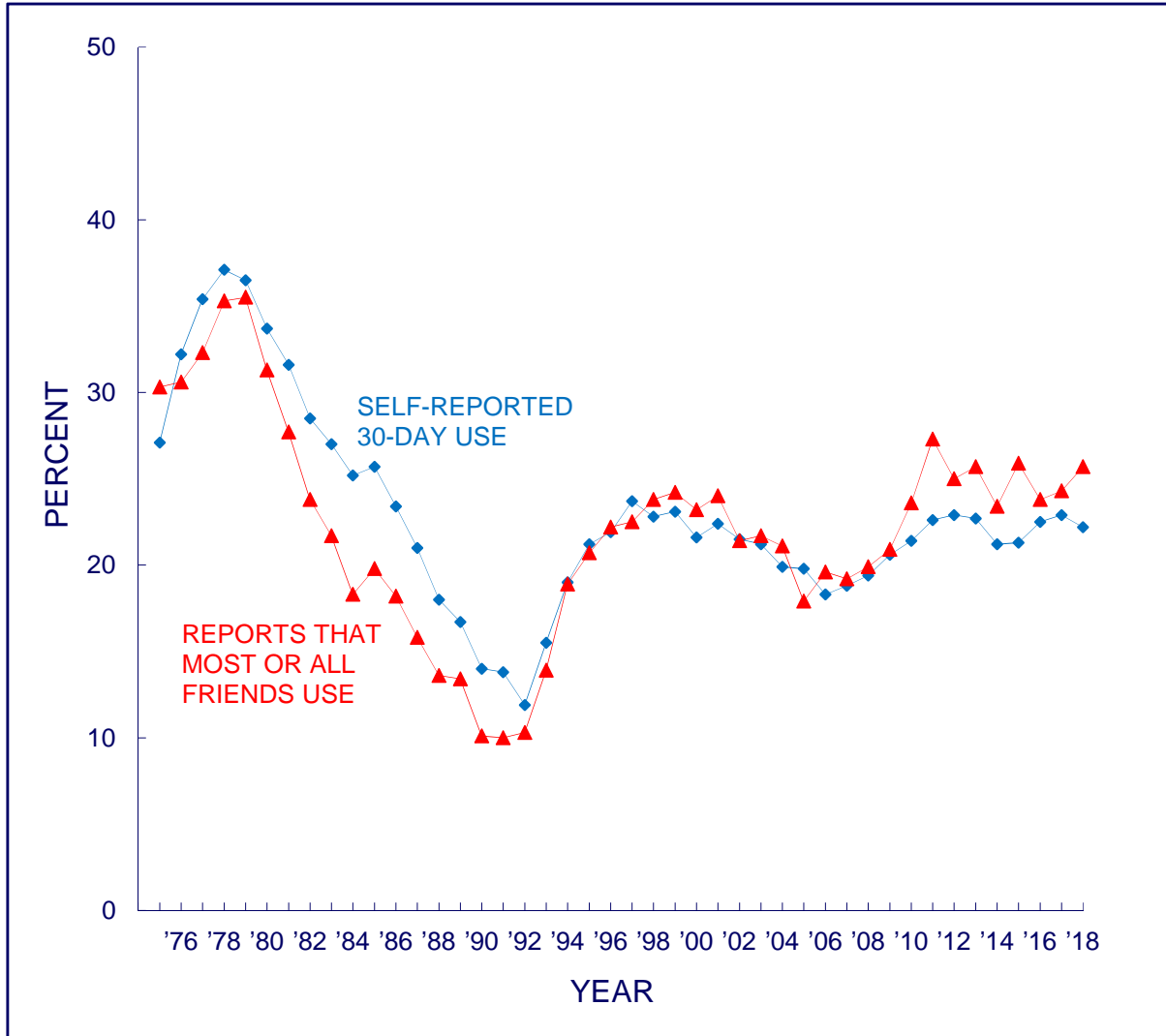
FIGURE 9-3b
ANY ILLICIT DRUG OTHER THAN MARIJUANA
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

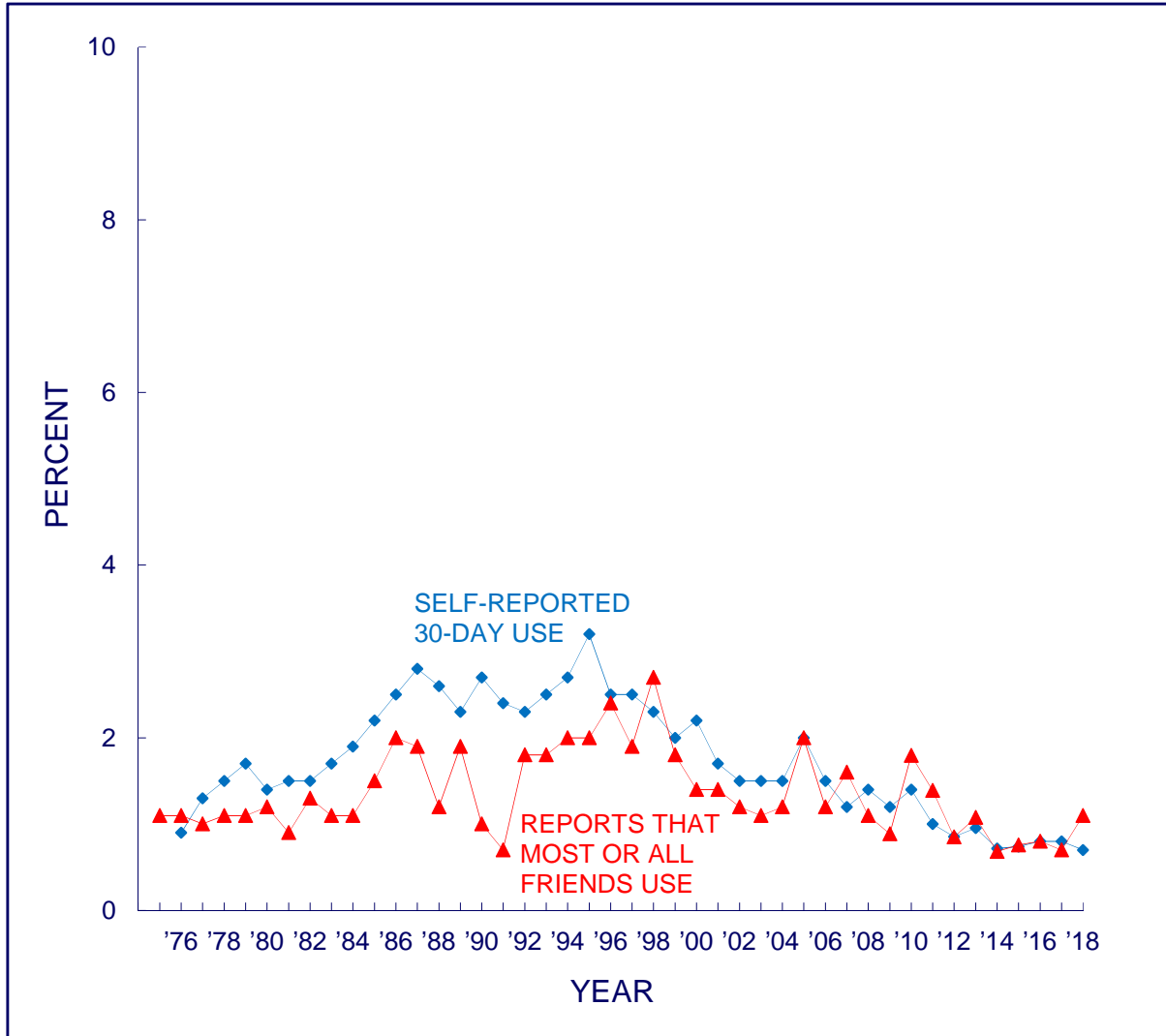
^aIn 2013, the question text for the use of amphetamines was changed on some of the questionnaire forms, with the remaining forms changed in 2014. This change affected the data for use of any illicit drug other than marijuana. Data presented here include only the changed forms.

FIGURE 9-3c
MARIJUANA
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



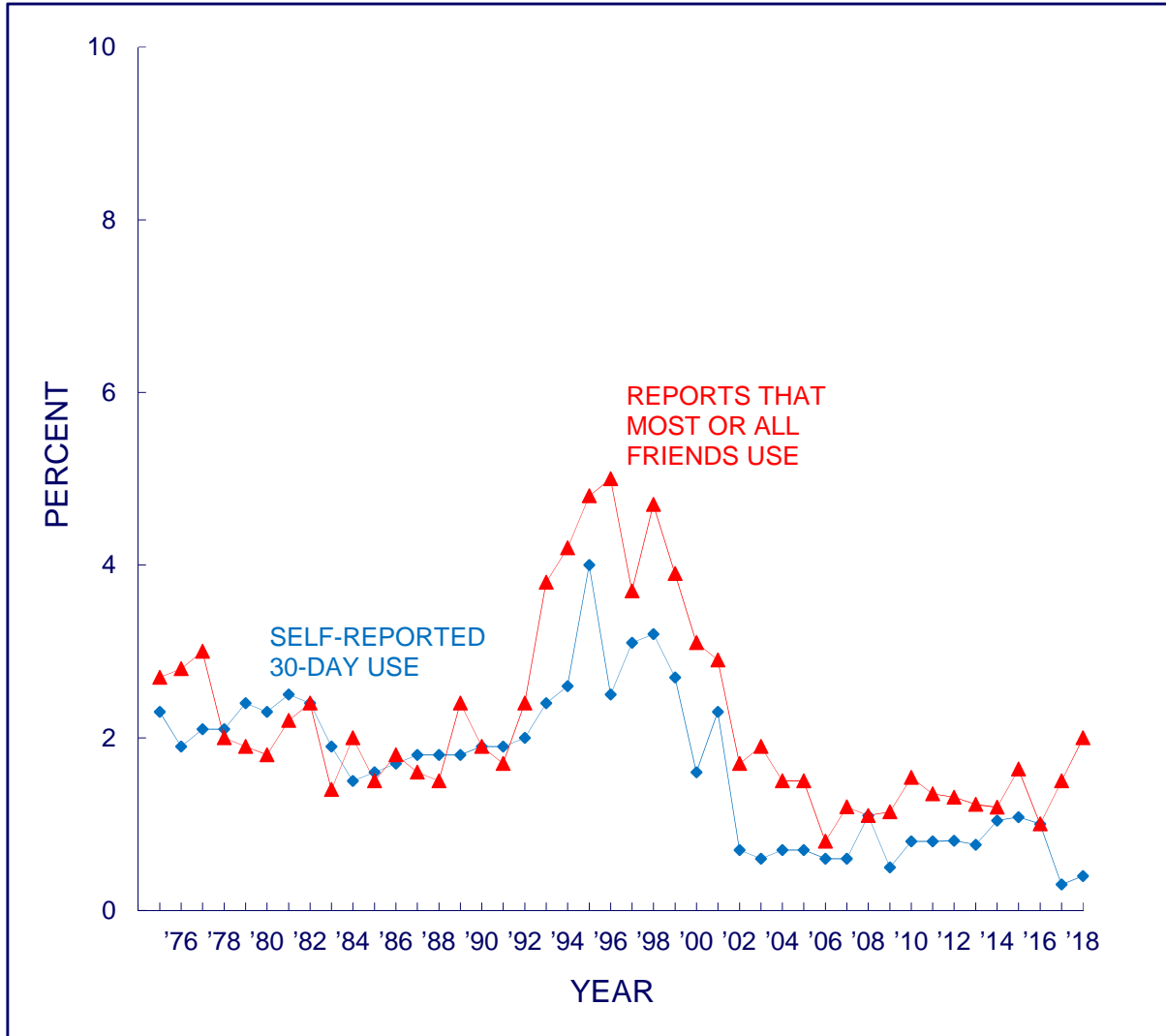
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3d
INHALANTS
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



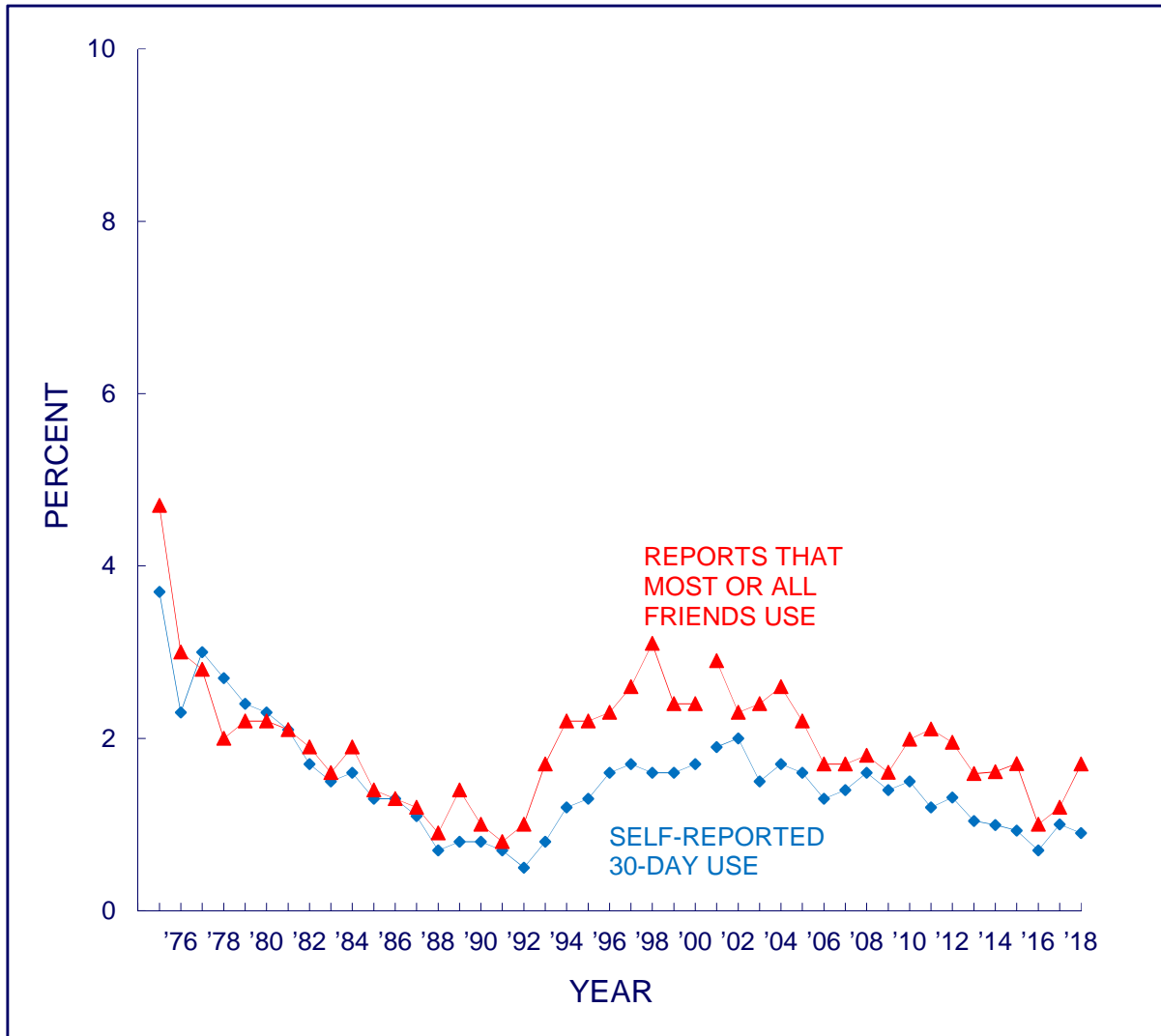
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3e
LSD
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

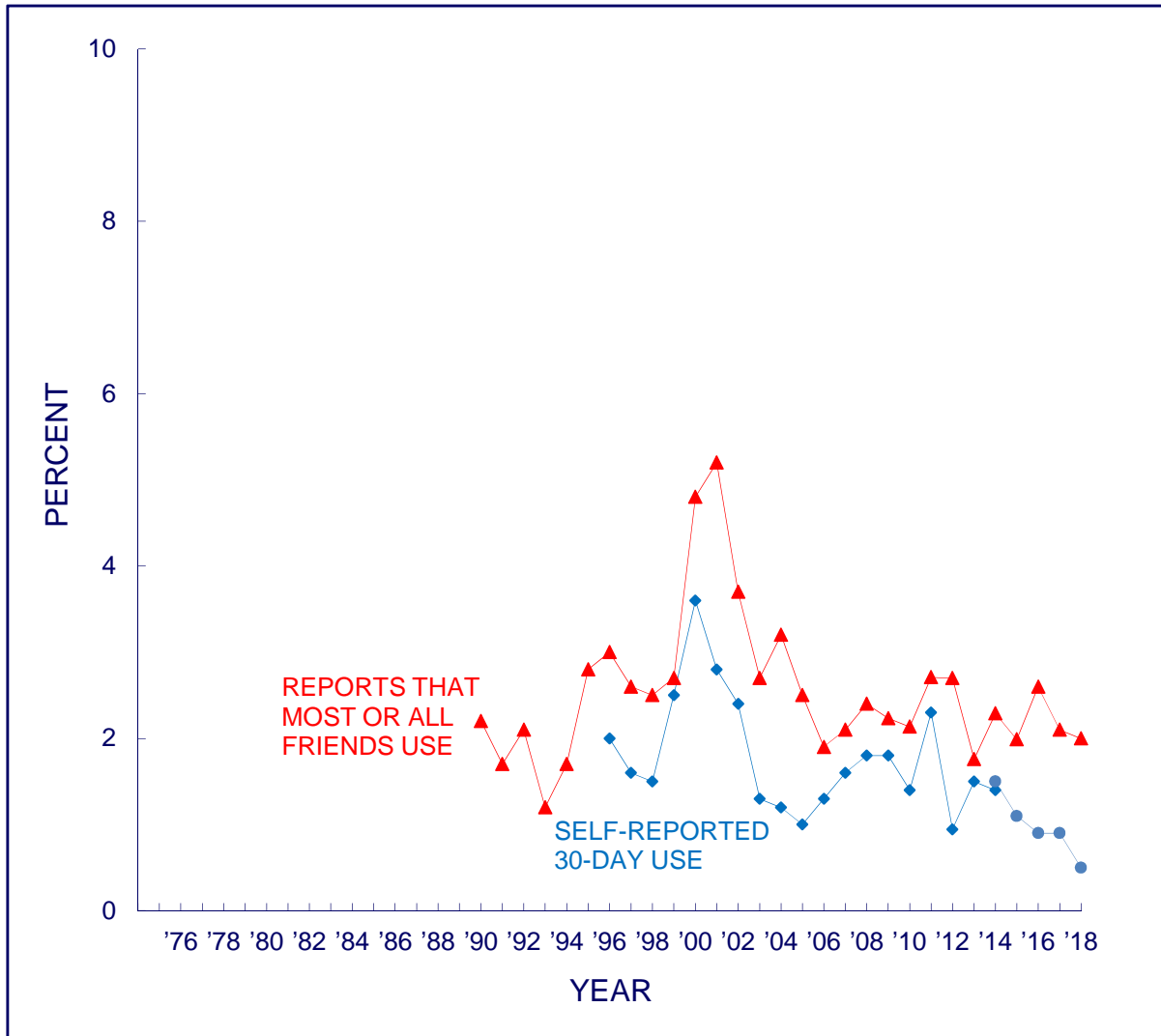
FIGURE 9-3f
HALLUCINOGENS OTHER THAN LSD
Trends in 30-Day Prevalence^a and
Friends' Use^a in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aIn 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

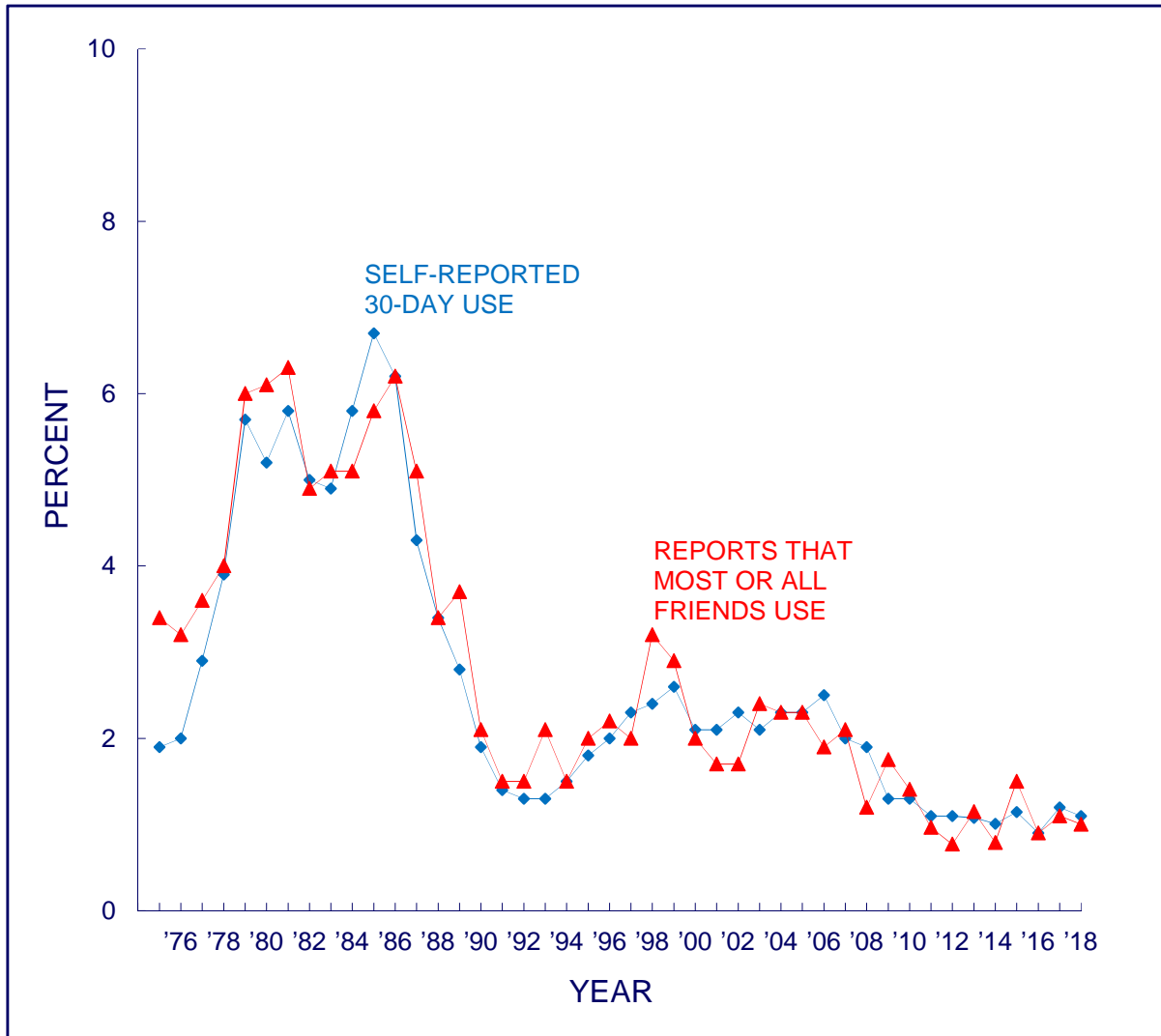
FIGURE 9-3g
MDMA (ECSTASY, MOLLY)
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

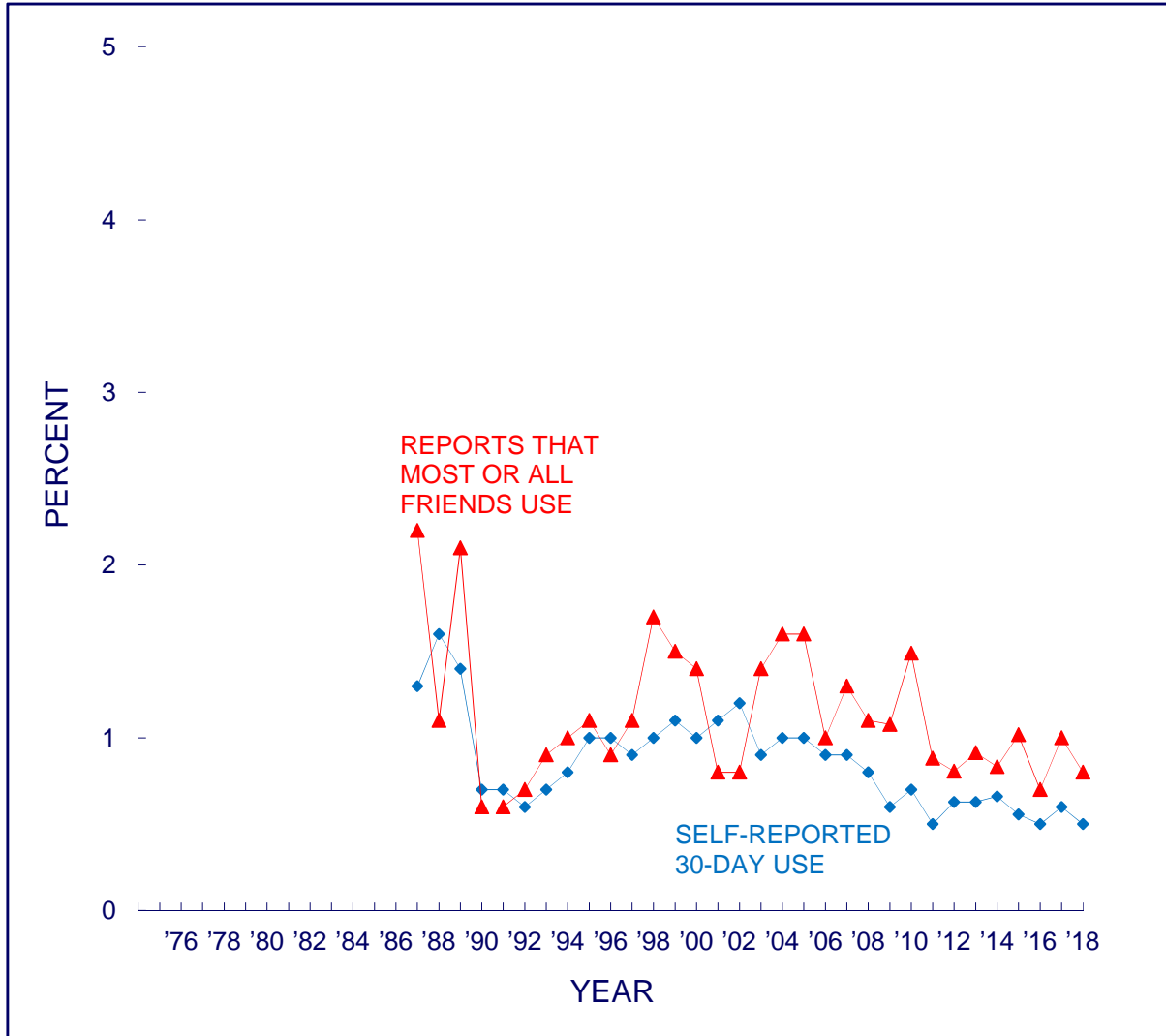
^aIn 2014, the text was changed on one of the questionnaire forms to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

FIGURE 9-3h
COCAINE
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



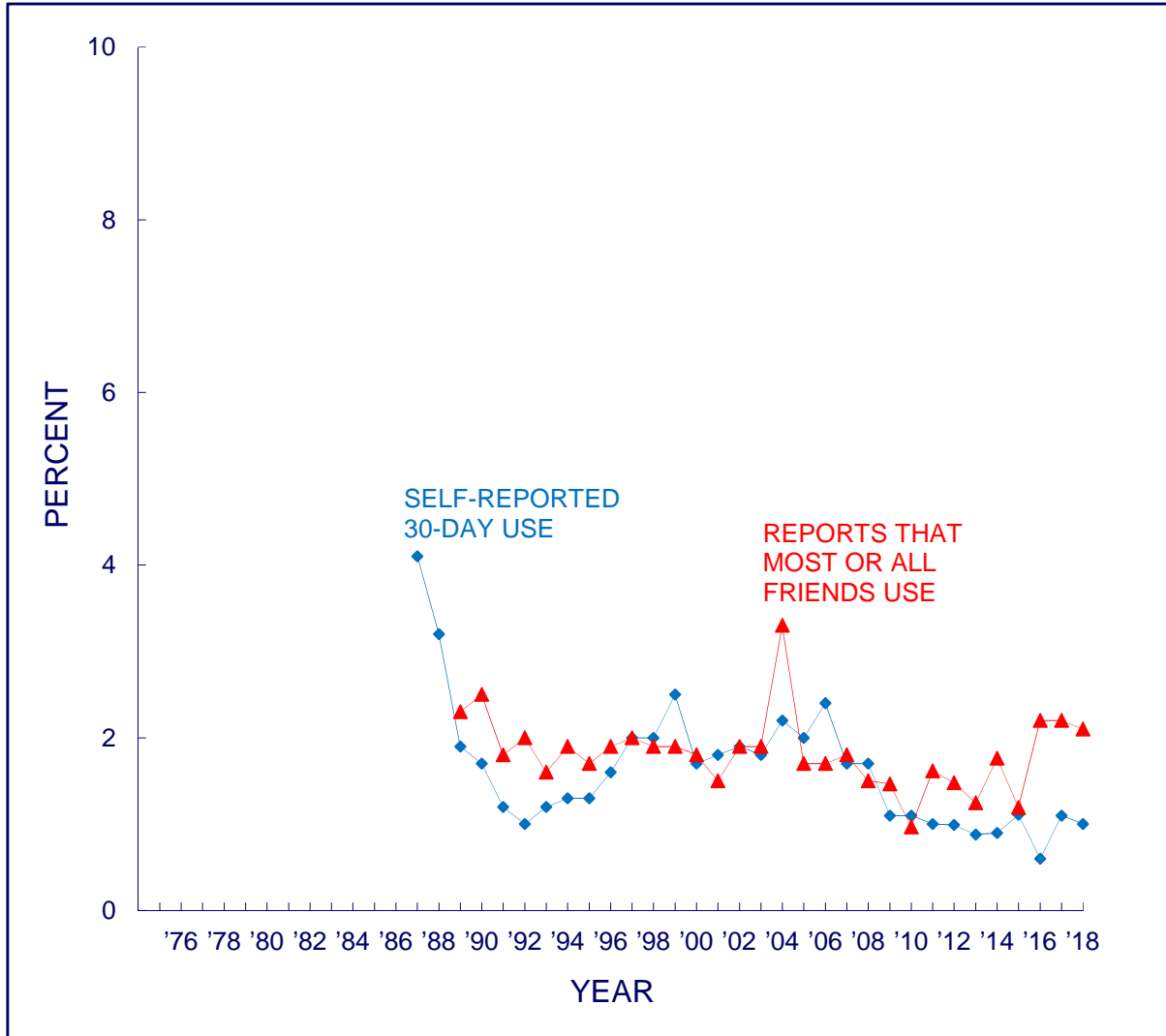
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3i
CRACK
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



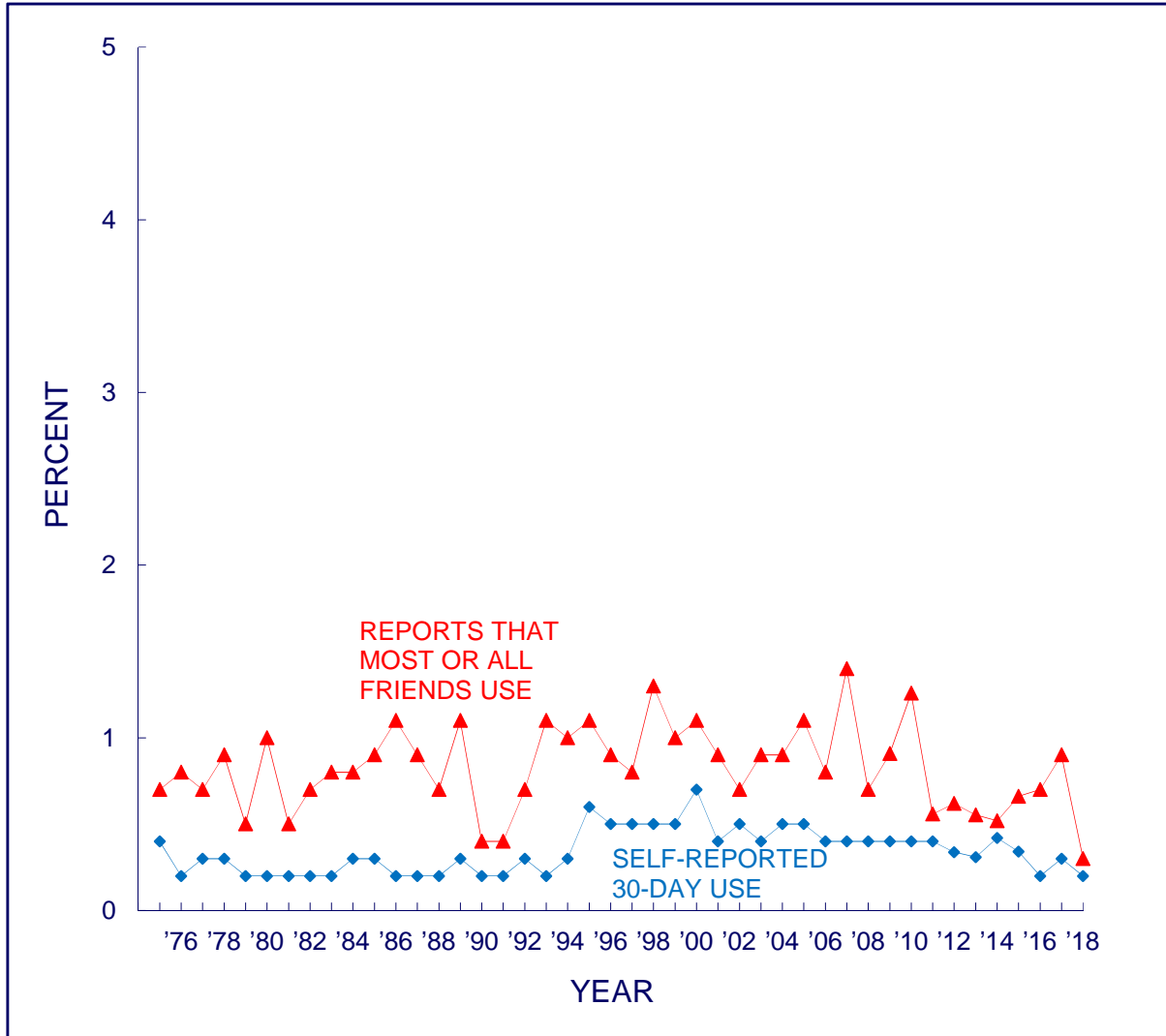
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3j
COCAINE POWDER
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



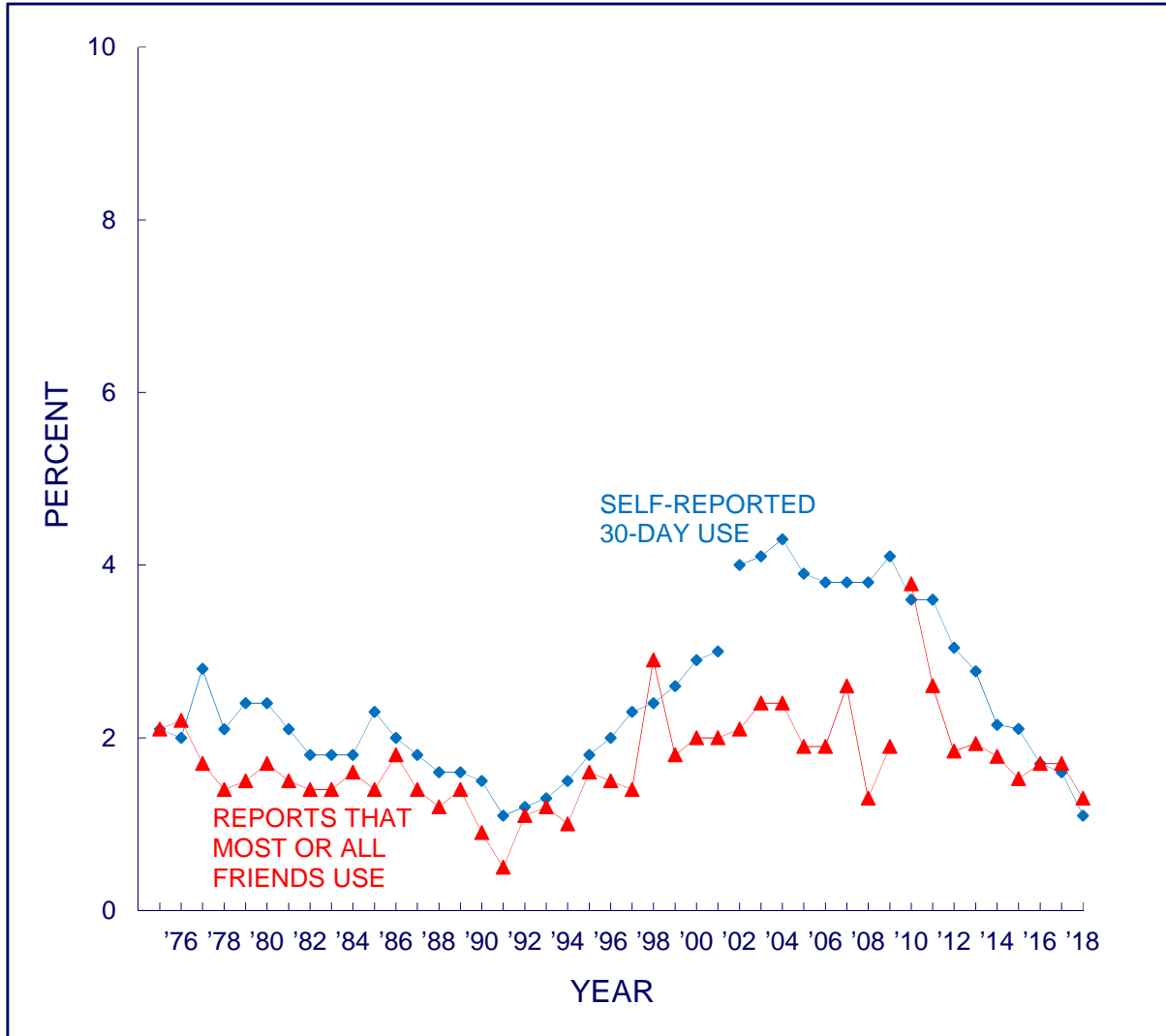
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3k
HEROIN
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-31
NARCOTICS OTHER THAN HEROIN
Trends in 30-Day Prevalence^a and
Friends' Use^b in Grade 12

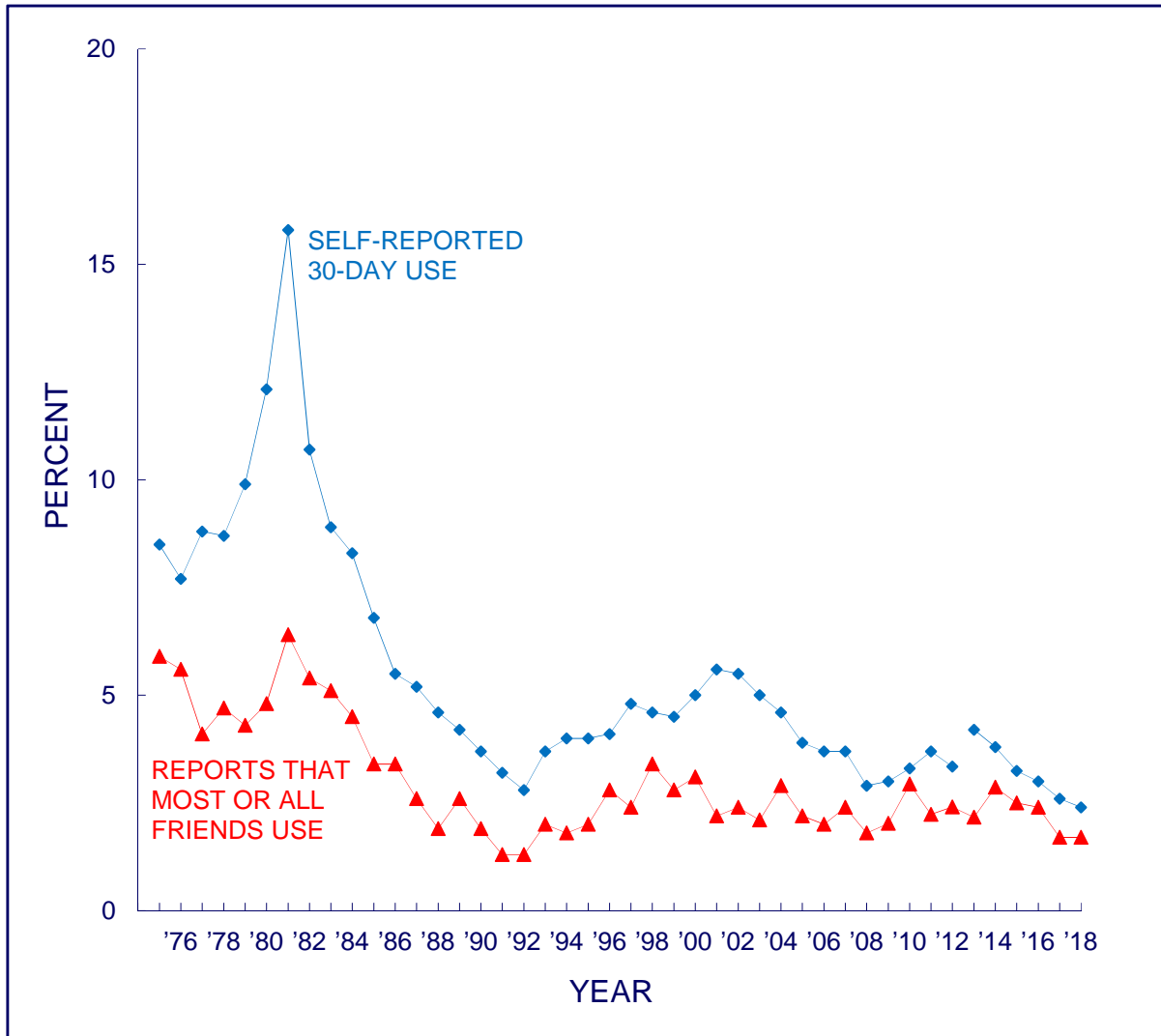


Source. The Monitoring the Future study, the University of Michigan.

^aIn 2002, a revised set of questions on other narcotic use was introduced. Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet in the list of examples. From 2002 on, data points are based on the revised question.

^bIn 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

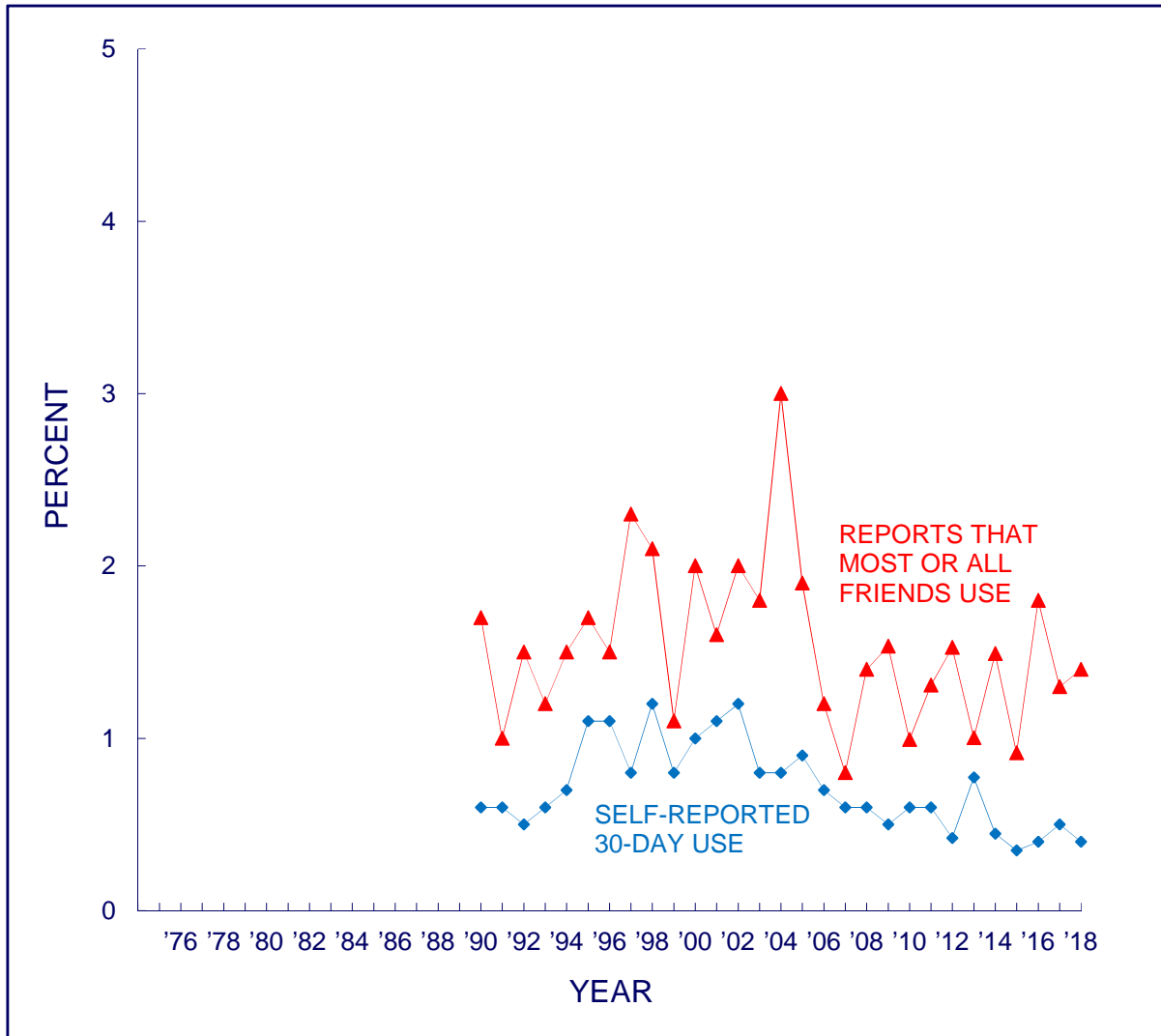
FIGURE 9-3m
AMPHETAMINES
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

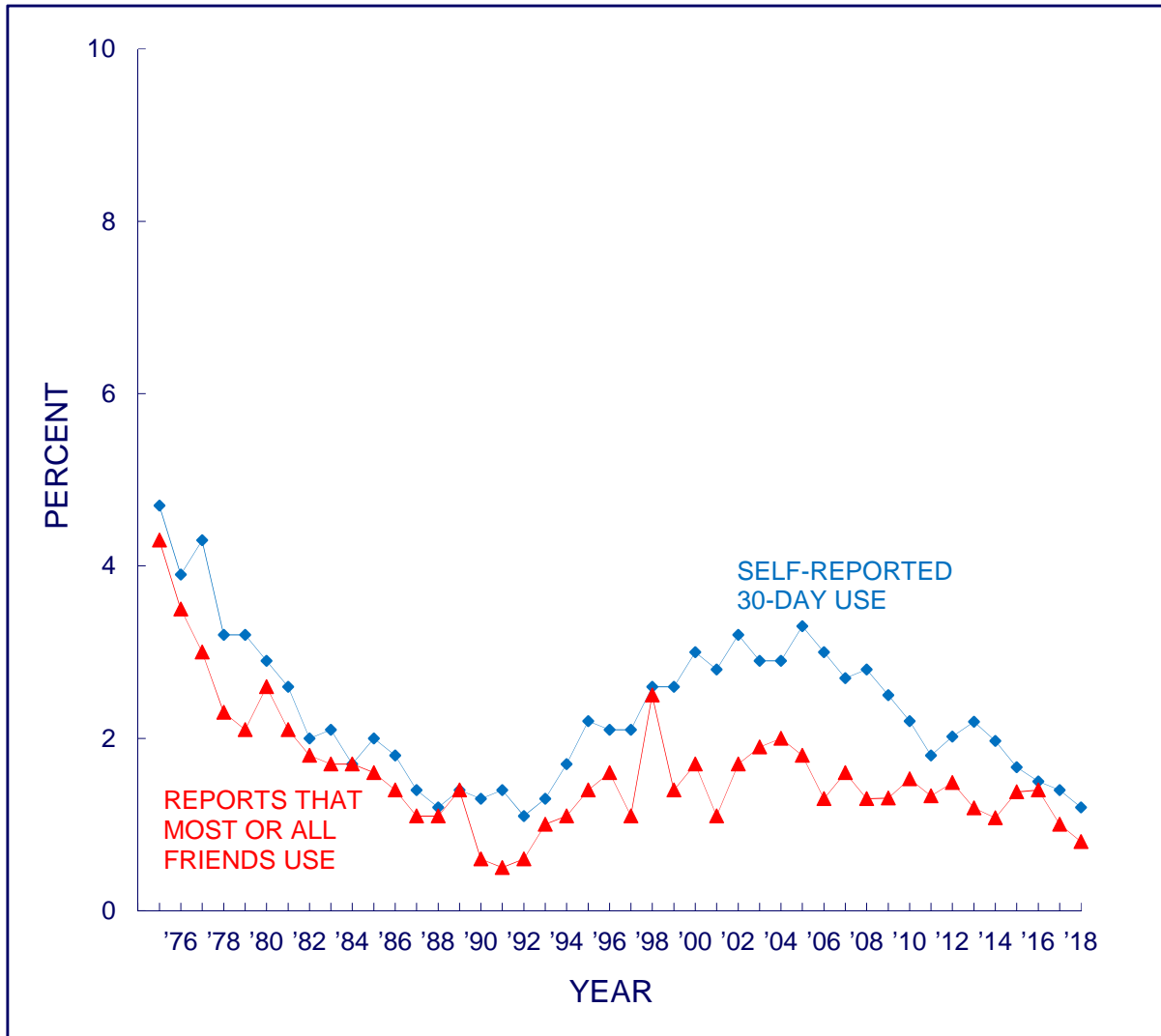
^aIn 2013, the question text for the use of amphetamines was changed on some of the questionnaire forms, with the remaining forms changed in 2014. Data presented here include only the changed forms.

FIGURE 9-3n
CRYSTAL METHAMPHETAMINE (ICE)
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



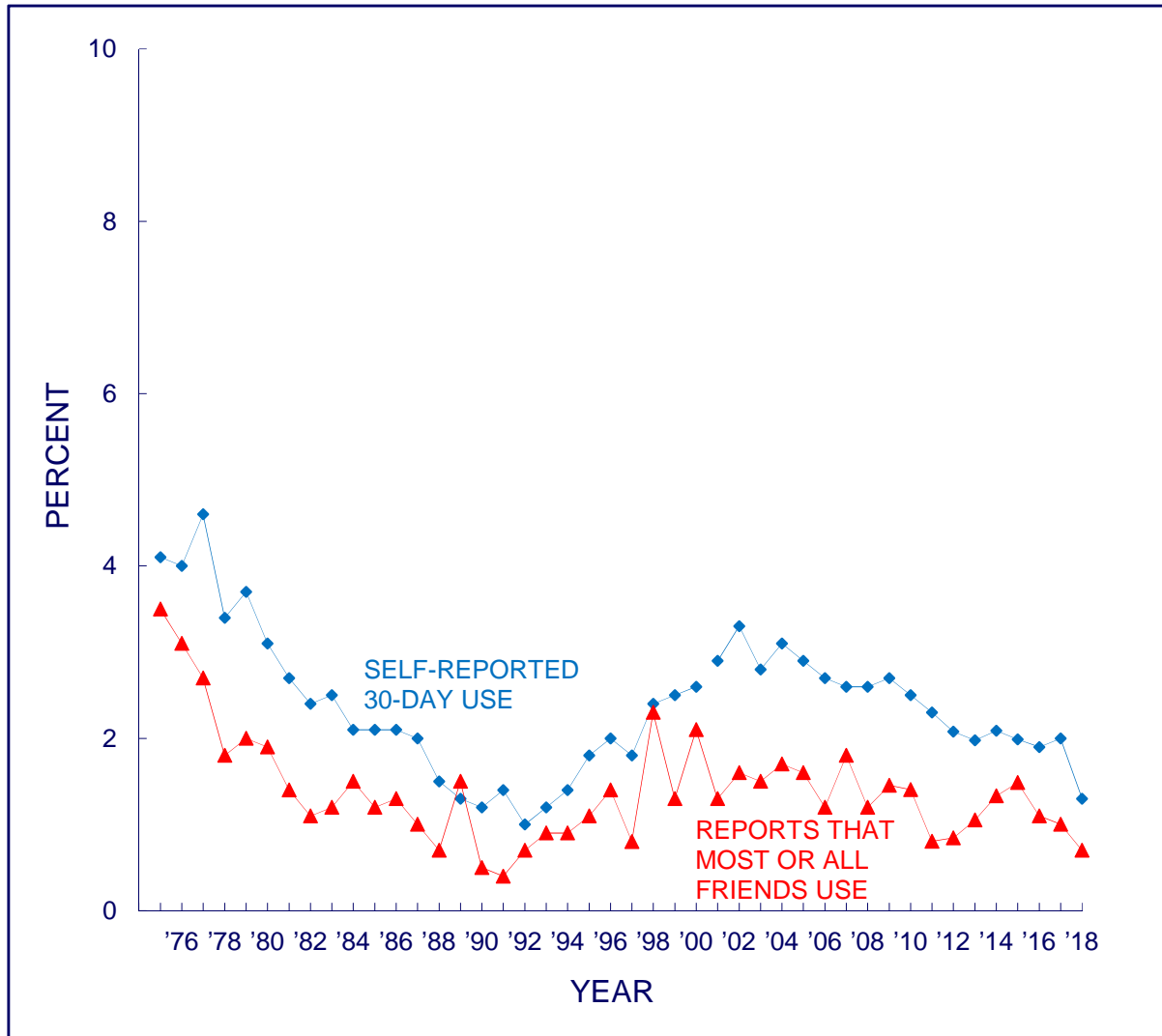
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3o
SEDATIVES (BARBITURATES)
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

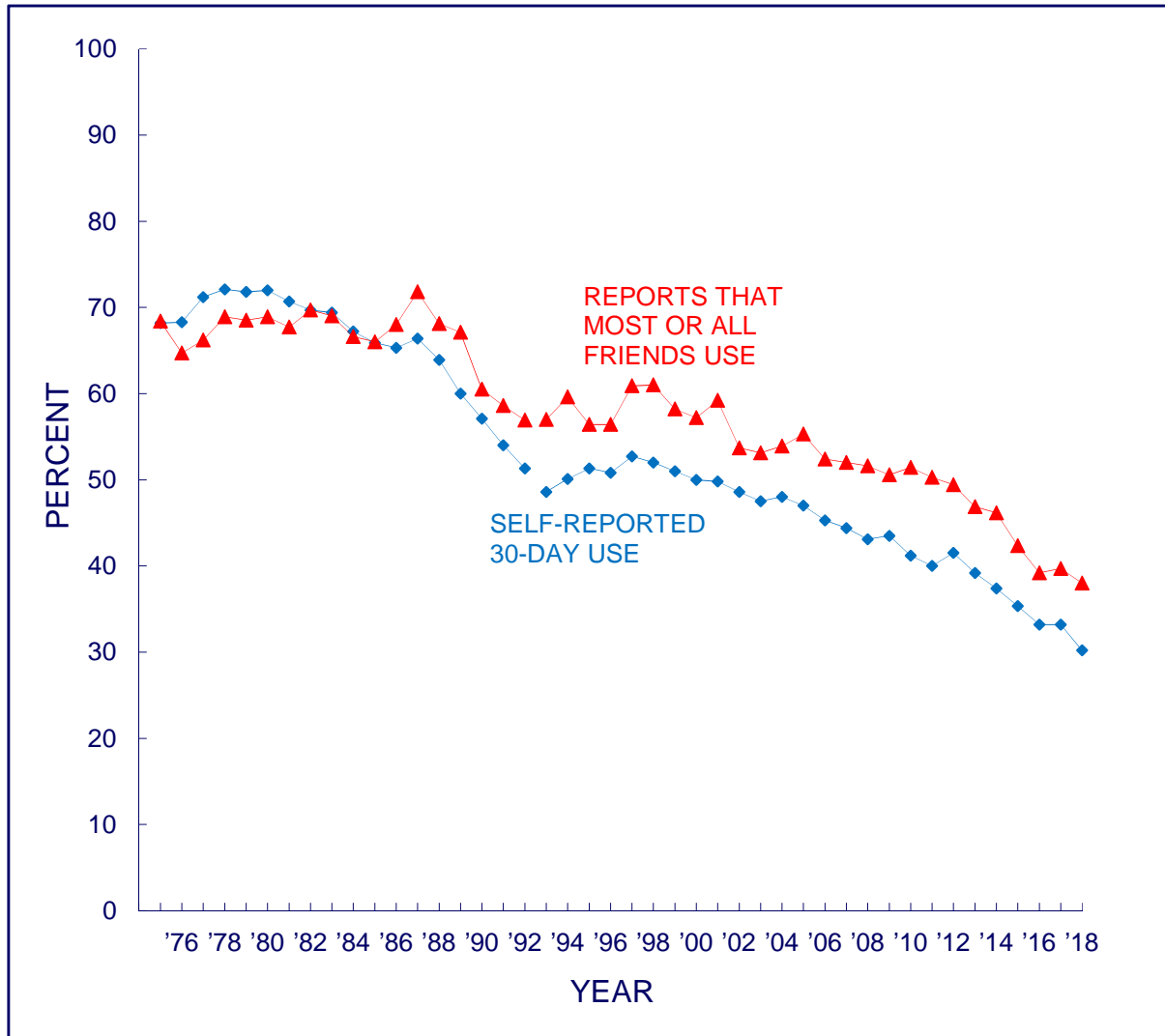
FIGURE 9-3p
TRANQUILIZERS
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aBeginning in 2001, a revised set of questions on tranquilizer use was introduced in which Xanax replaced Miltown in the list of examples. From 2001 on data points are based on the revised question.

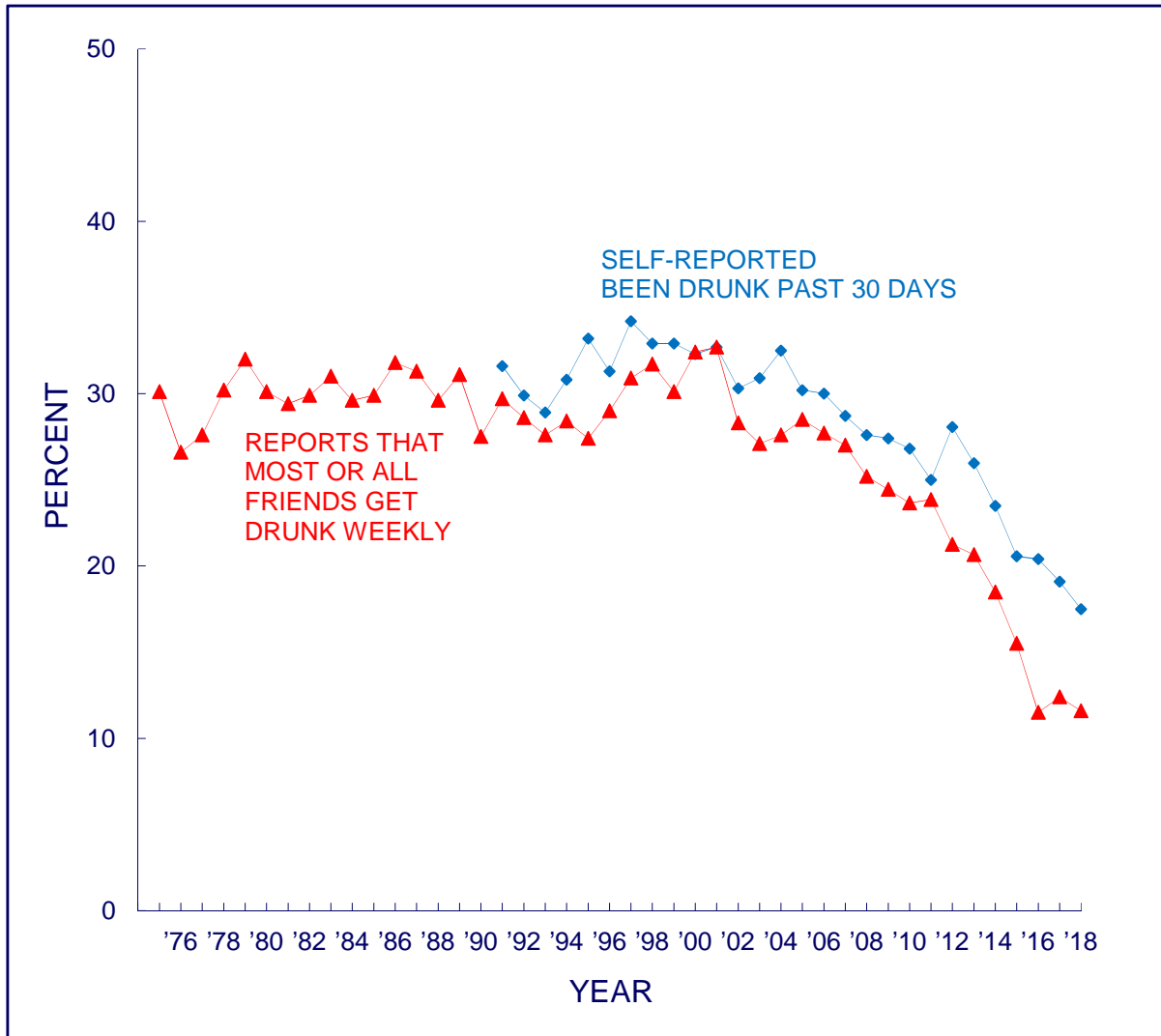
FIGURE 9-3q
ALCOHOL
Trends in 30-Day Prevalence^a and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

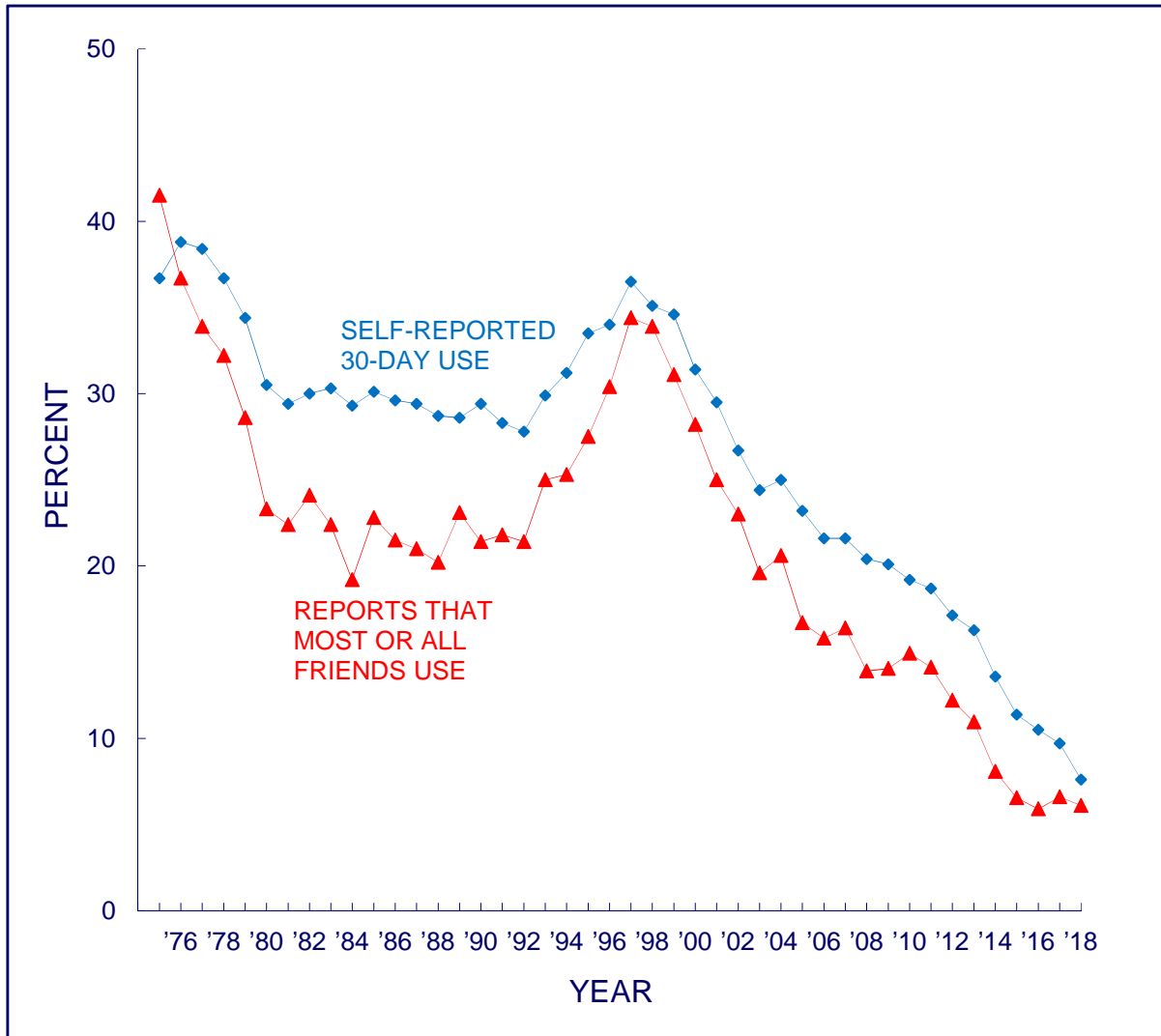
^aIn 1993, a revised set of questions on alcohol use was introduced indicating that a drink meant more than a few sips. From 1993 on, data points are based on the revised question.

FIGURE 9-3r
BEEN DRUNK
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



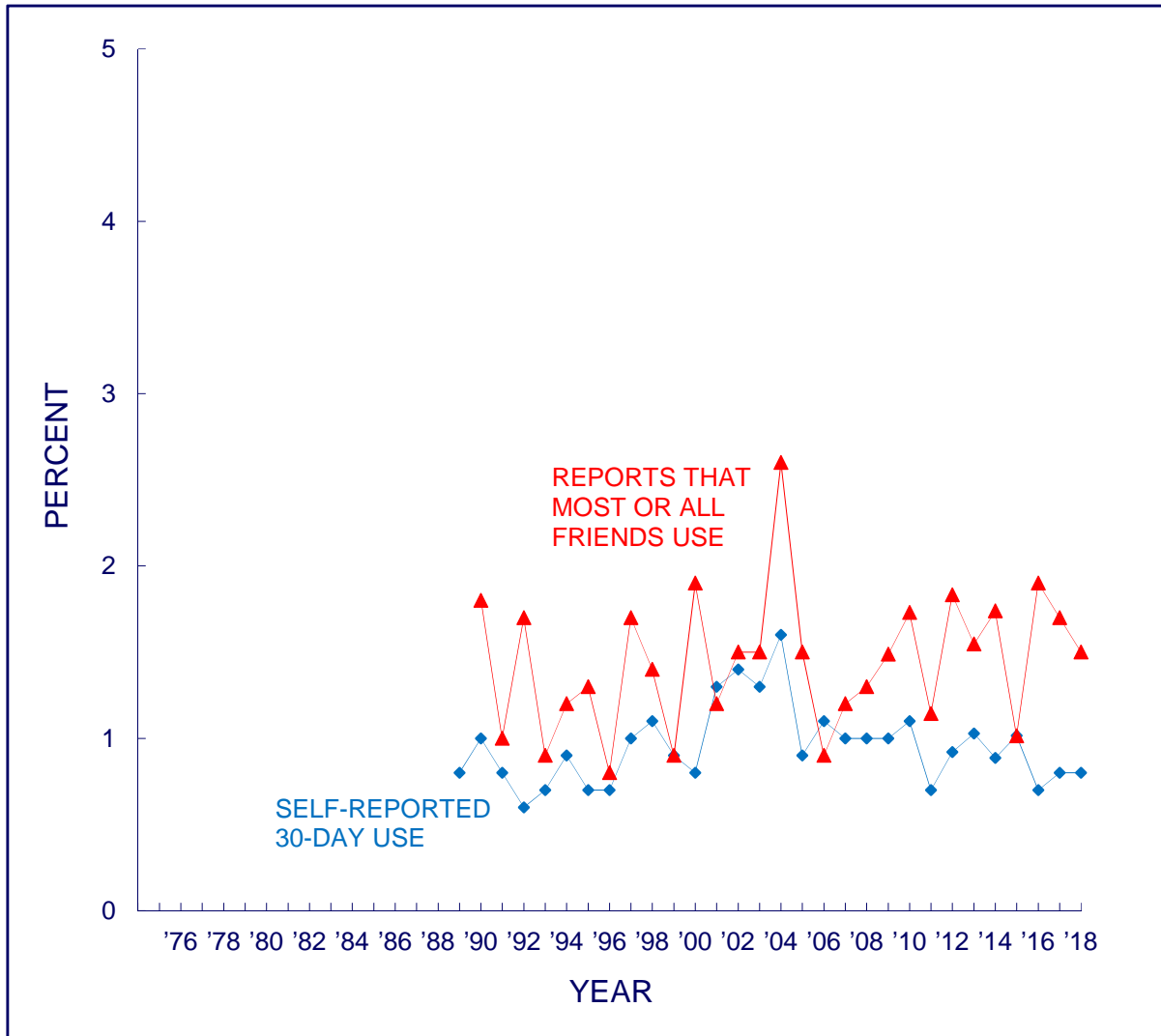
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-3s
CIGARETTES
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

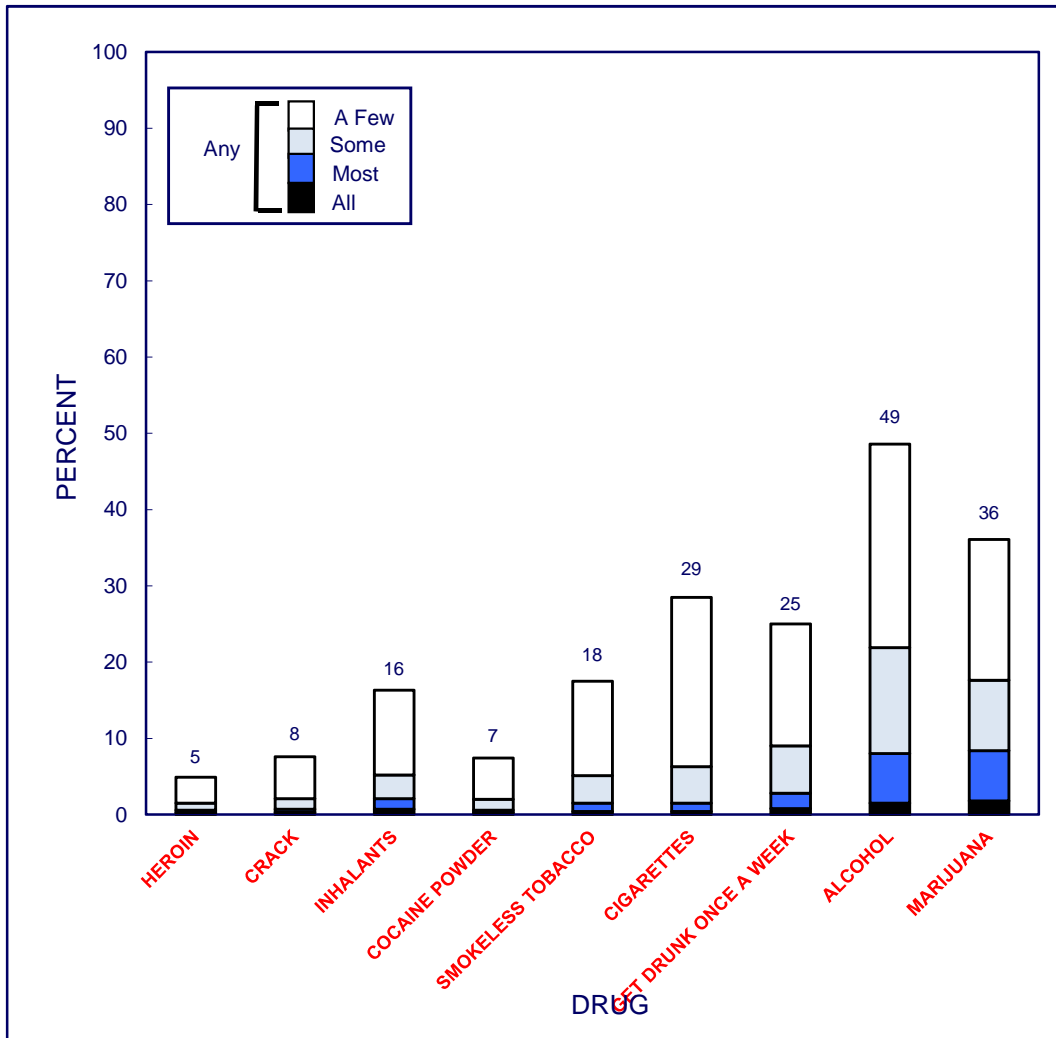
FIGURE 9-3t
STERIODS
Trends in 30-Day Prevalence and
Friends' Use in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-4
Proportion of Friends Using Each Drug
as Estimated by 8th, 10th, and 12th Graders, 2018

8th Graders

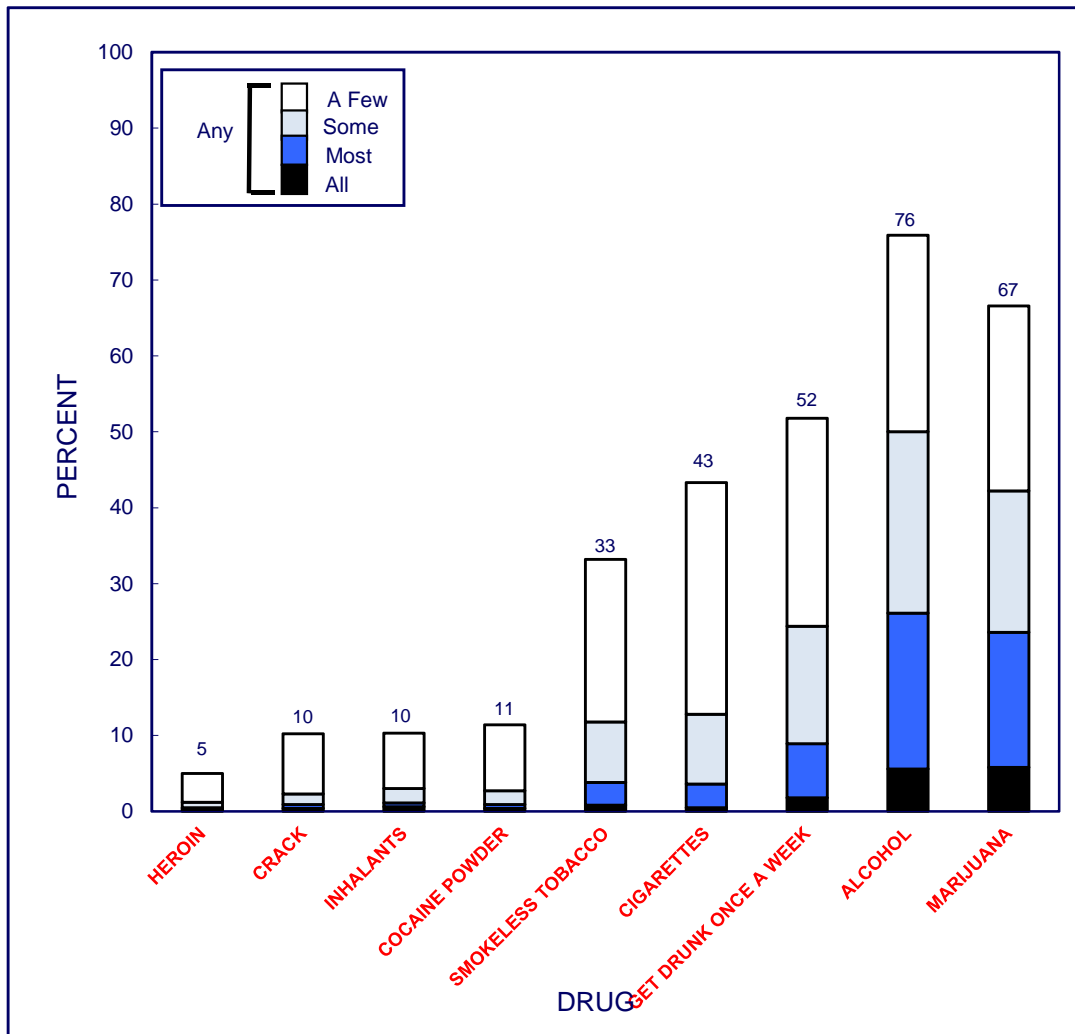


Source. The Monitoring the Future study, the University of Michigan.

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FIGURE 9-4 (cont.)
Proportion of Friends Using Each Drug
as Estimated by 8th, 10th, and 12th Graders, 2018

10th Graders

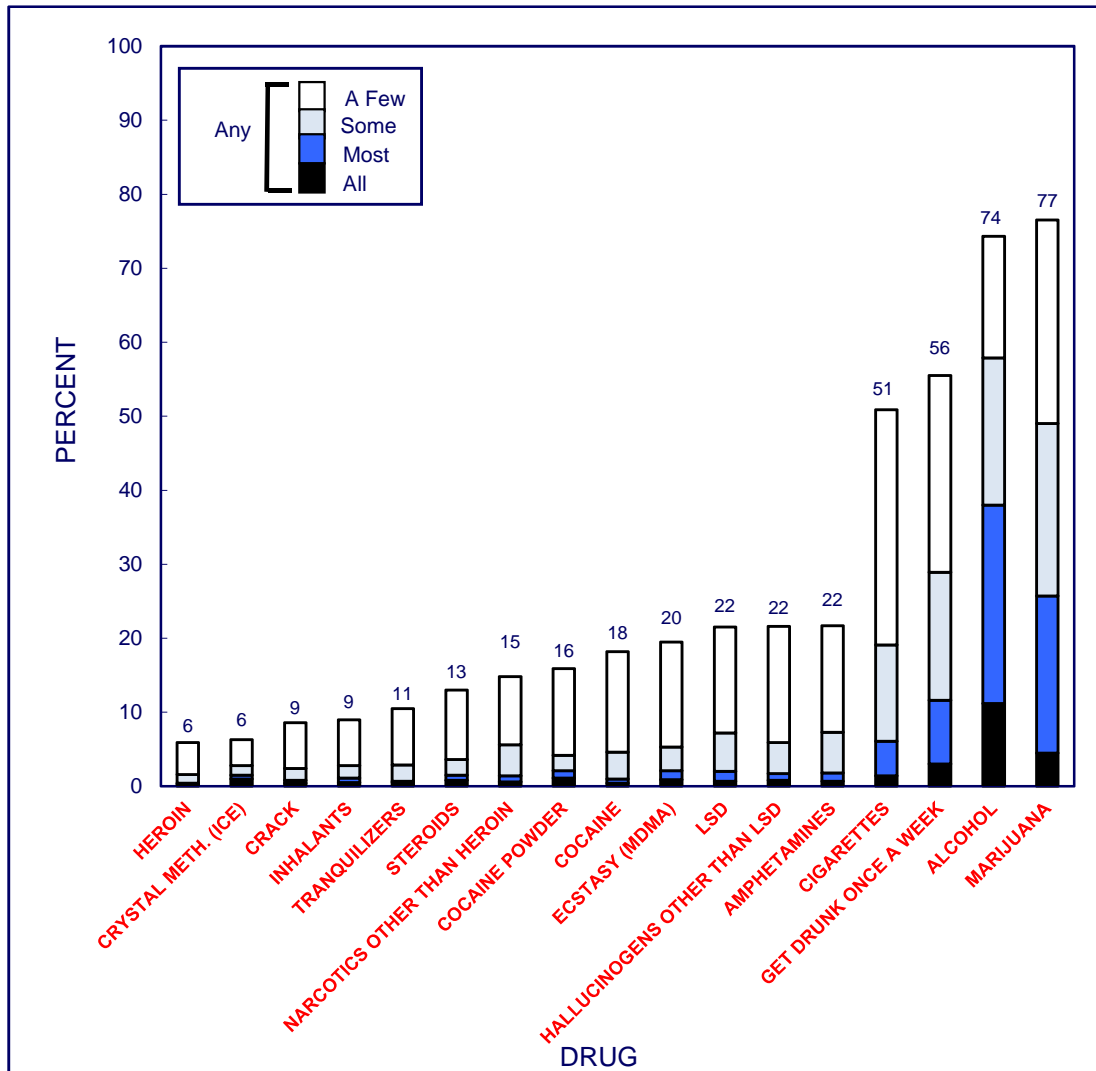


Source. The Monitoring the Future study, the University of Michigan.

(Figure continued on next page.)

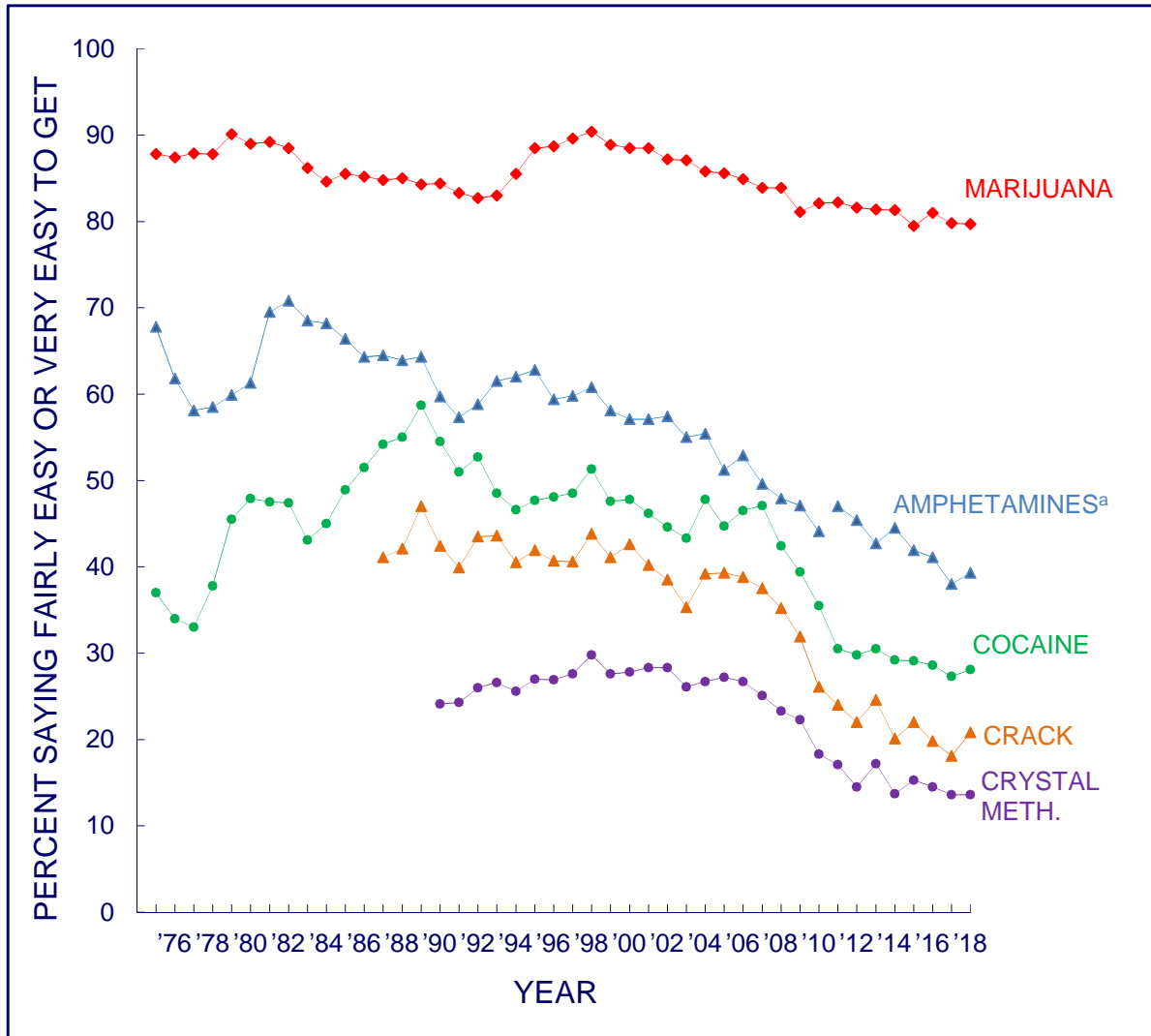
FIGURE 9-4 (cont.)
Proportion of Friends Using Each Drug
as Estimated by 8th, 10th, and 12th Graders, 2018

12th Graders



Source. The Monitoring the Future study, the University of Michigan.

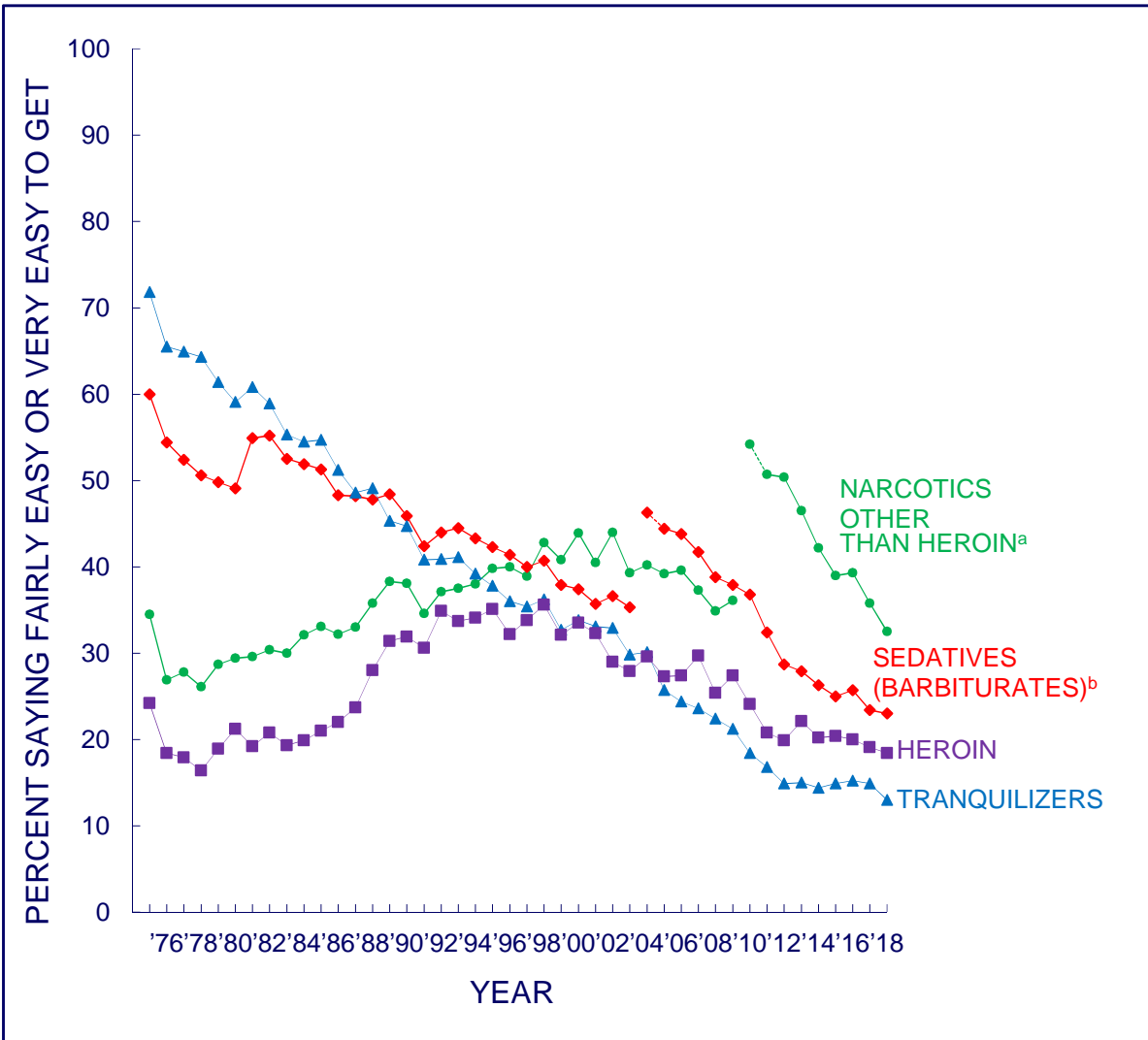
FIGURE 9-5a
Various Drugs: Trends in Perceived Availability in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aFor 12th graders only: In 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

FIGURE 9-5b
Various Drugs: Trends in Perceived Availability in Grade 12

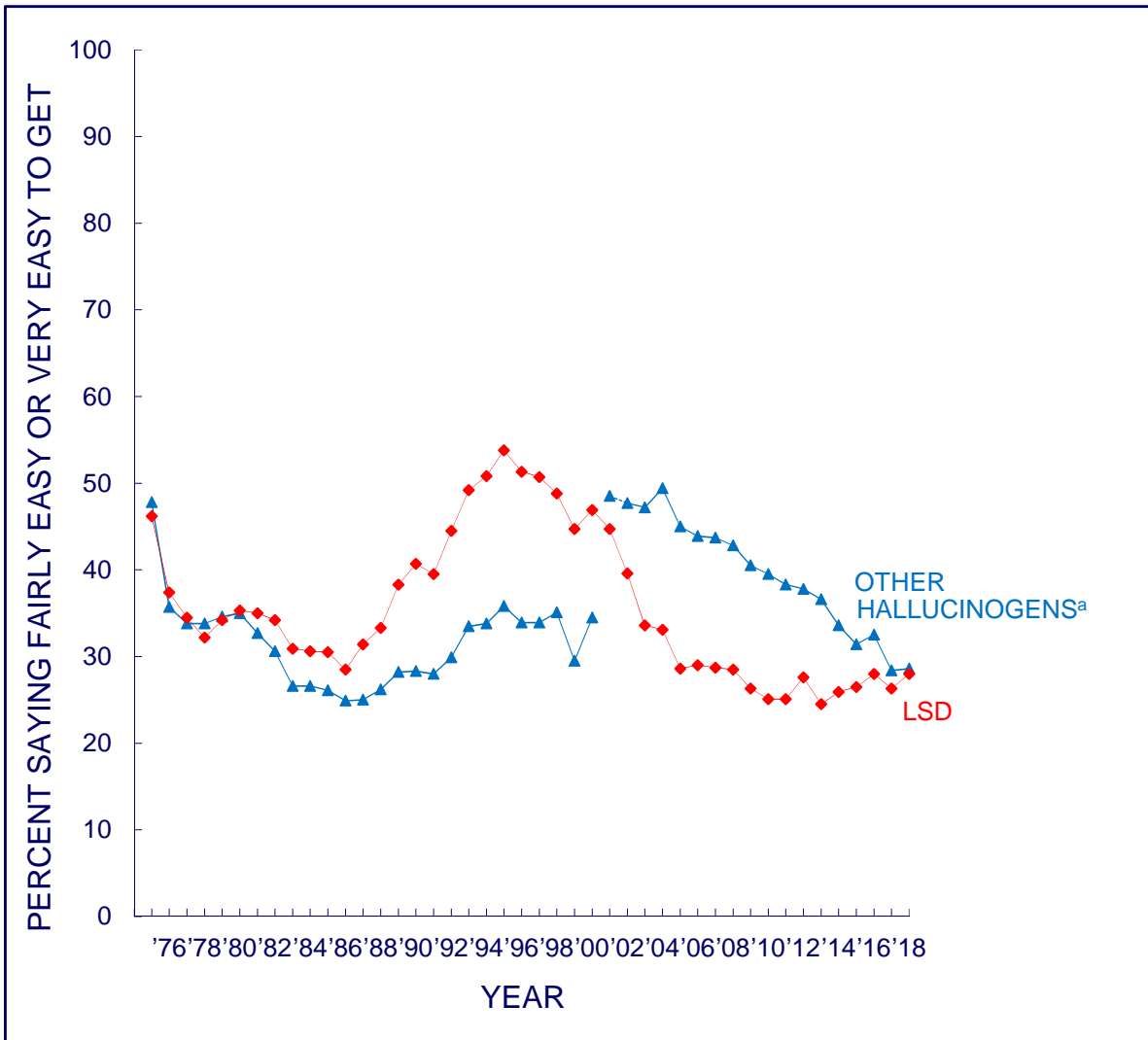


Source. The Monitoring the Future study, the University of Michigan.

^aIn 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

^bIn 2004 the question text was changed from barbiturates to sedatives/barbiturates, and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

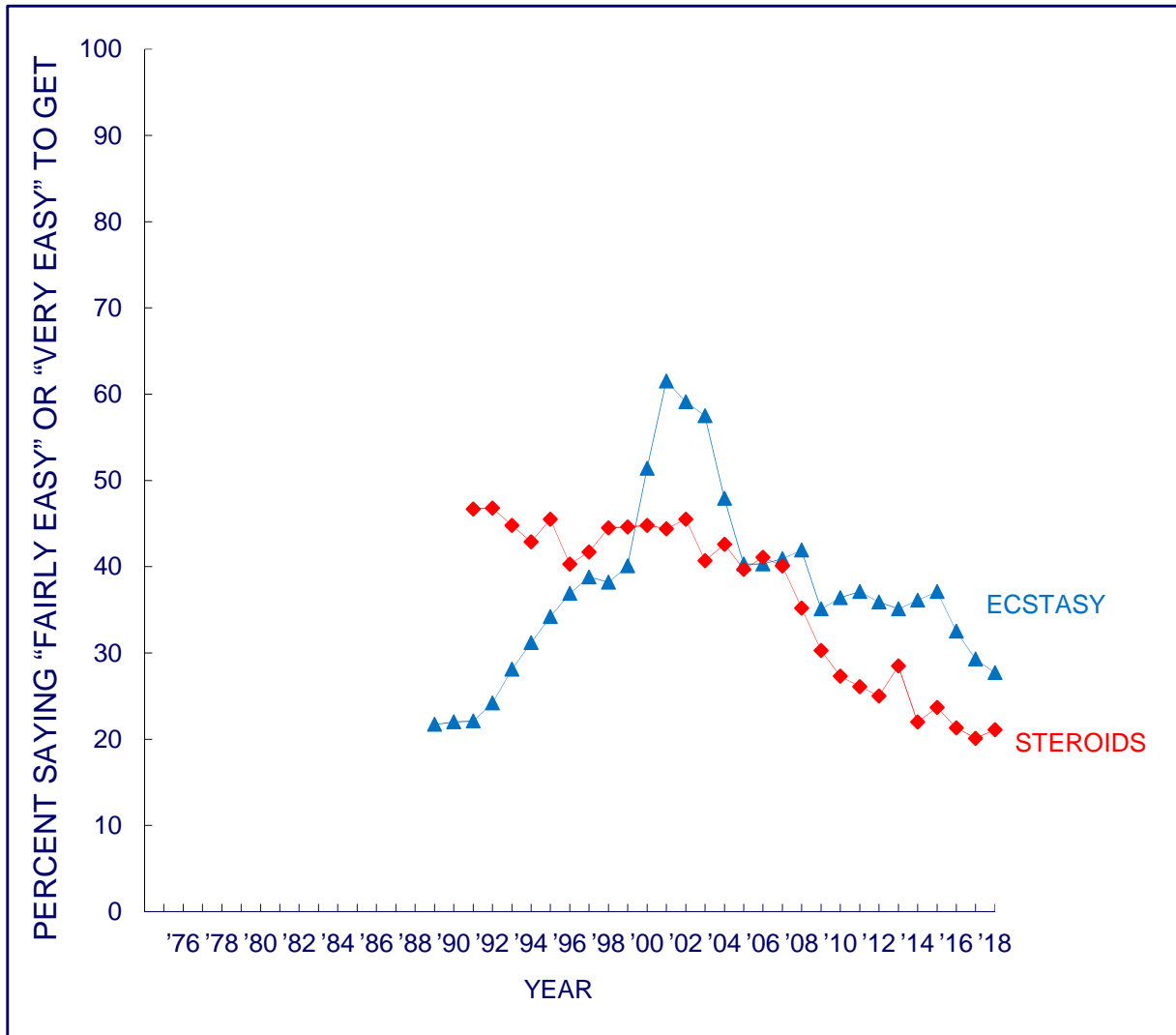
FIGURE 9-5c
LSD AND HALLUCINOGENS OTHER THAN LSD
Trends in Perceived Availability
in Grade 12



Source. The Monitoring the Future study, the University of Michigan.

^aIn 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

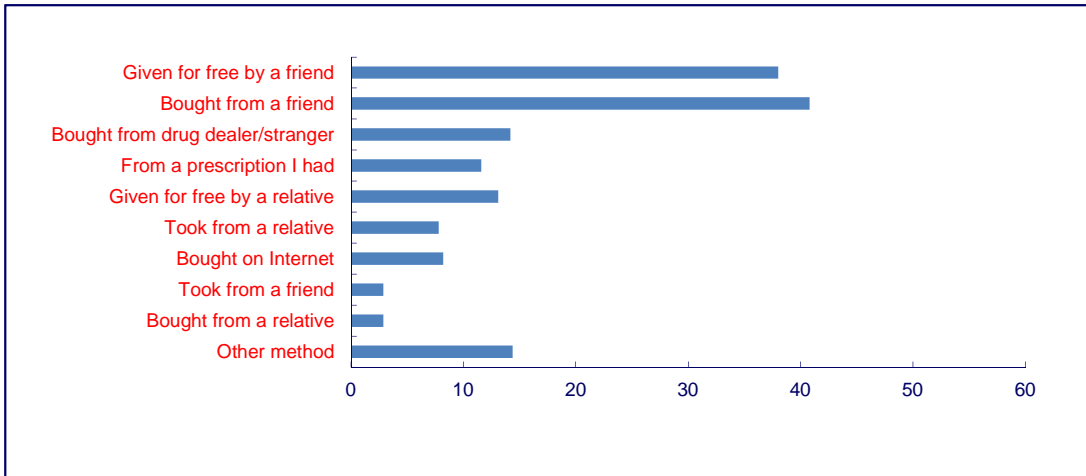
FIGURE 9-5d
ECSTASY (MDMA) AND STEROIDS
Trends in Perceived Availability in Grade 12



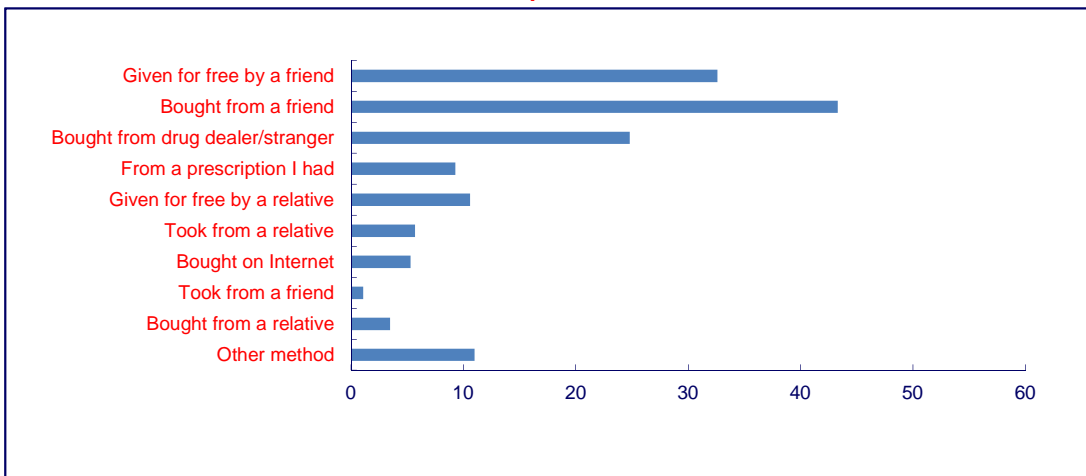
Source. The Monitoring the Future study, the University of Michigan.

FIGURE 9-6
Source of Prescription Drugs
among Those Who Used in Past Year
Grade 12, 2017–2018

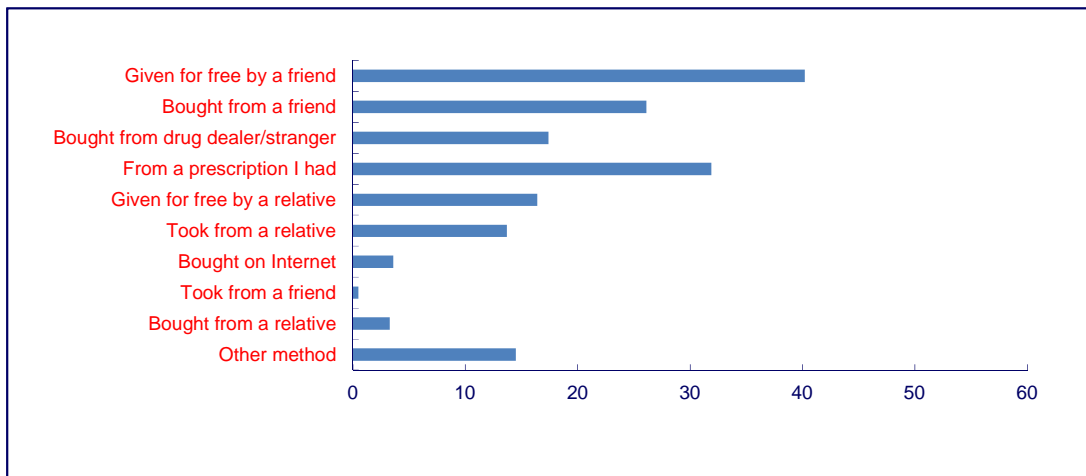
Amphetamines



Tranquilizers



Narcotics other than Heroin



Source. The Monitoring the Future study, the University of Michigan.

Note. Respondents were instructed to mark all answers that apply.

Chapter 10

STUDY PUBLICATIONS

MTF results are reported in a number of other types of publications, in particular peer-reviewed journals. Selected articles published by MTF Investigators since the last release of this Volume or are in press as of this writing are summarized below. These publications used MTF data from the 8th, 10th, and 12th grade samples, and/or the panel data. Further details, as well as more listings of publications from previous years, may be found on the [Monitoring The Future website](#).

Two-year follow-up of a sequential mixed-mode experiment in the U.S. national Monitoring the Future study¹

Introduction: This study examines the two-year follow up of an original mixed-mode longitudinal survey experiment, comparing participant retention in the experimental conditions to retention in the standard Monitoring the Future (MTF) control condition.

Methods: Two-year MTF follow-up data were collected in 2016 at modal age 21/22 based on original data collected in 2014 at modal age 19/20. The control group consisted of participants who completed an in-school baseline survey in 12th grade in 2012 or 2013 and were selected to participate in the first follow-up survey by mail in 2014 ($N=2,451$). A supplementary sample who completed the 12th grade baseline survey in 2012 or 2013 but were *not* selected to participate in the main MTF follow-up ($N=4,950$) were recruited and randomly assigned to one of three experimental conditions in 2014 and 2016: 1: Mail Push, 2: Web Push, 3: Web Push + Email.

Results: The first experiment found Condition 3 (Web Push + Email) promising based on similar response rates and lower costs (Patrick et al. 2018). The current study examines associations between the experimental response in 2014 and 2016, change in response mode and device type from 2014 to 2016, and cumulative cost comparisons across conditions. Results indicated that responding via web in 2014 was associated with greater odds of participation again in 2016 regardless of condition; respondents tended to respond in the same mode although the “push” condition did move respondents toward web over paper; device type varied between waves; and the cumulative cost savings of Web Push + Email grew larger compared to the MTF Control.

Conclusion: The web push strategy in MTF is promising for maintaining respondent engagement while reducing cost.

Historical trends in the grade of onset and sequence of cigarette, alcohol, and marijuana use among adolescents from 1976-2016: Implications for "Gateway" patterns in adolescence²

Introduction: In the past decade, marijuana use prevalence among adolescents has remained relatively steady while cigarette and alcohol prevalence levels have declined. We examined historical trends in: average grade of onset of marijuana, alcohol, and cigarette use by 12th grade;

¹ Patrick, M. E., Couper, M. P., Jang, B., Laetz, V. B., Schulenberg, J., Johnston, L. D., Bachman, J., & M., O. M. P. (in press). Two-year follow-up of a sequential mixed-mode experiment in the U.S. national Monitoring the Future study. *Survey Practice*.

² Keyes, K. M., Rutherford, C., & Miech, R. (2018). [Historical trends in the grade of onset and sequence of cigarette, alcohol, and marijuana use among adolescents from 1976-2016: Implications for "Gateway" patterns in adolescence](#). *Drug and Alcohol Dependence*, 194, 51-58. doi: 10.1016/j.drugalcdep.2018.09.015.

proportion who try alcohol/cigarettes before first marijuana use, among those who use by 12th grade; and conditional probability of marijuana use by 12th grade after trying alcohol/cigarettes.

Methods: Data were drawn from 40 yearly, cross-sectional surveys of 12th grade US adolescents. A subset of students (N=246,050) were asked when they first used each substance. We reconstructed cohorts of substance use from grade-of-onset to determine sequence of drug use, as well as probability of marijuana use in the same or later grade.

Results: Average grade of first alcohol and cigarette use by 12th grade increased across time; e.g., first cigarette increased from grade 7.9 in 1986 to 9.0 by 2016 ($\beta=0.04$, SE = 0.001, $p < 0.01$). The proportion of 12th grade adolescents who smoke cigarettes before marijuana fell below 50% in 2006. Each one-year increase was associated with 1.11 times increased odds of first cigarette in a grade after first marijuana (95% C.I. 1.11-1.12). Among those who initiate alcohol/cigarettes prior to marijuana by 12th grade, the probability of subsequent marijuana use is increasing.

Conclusion: Marijuana is increasingly the first substance in the sequence of adolescent drug use. Reducing adolescent smoking has been a remarkable achievement of the past 20 years; those who continue to smoke are at higher risk for progression to marijuana use.

College degree attainment by age of first marijuana use and parental education³

Background: Age of first marijuana use is a key predictor of later educational outcomes, but limited work has identified demographic factors that impact this association across continuous ages of first use. The purpose of this study was threefold: (1) to identify the age-varying prevalence of later college degree attainment as a function of age of first marijuana use; (2) to examine the age-varying association of gender and college degree attainment as a function of age of first use; and (3) to examine the age-varying association of parent education and college degree attainment as a function of age of first use.

Methods: Data were from the panel portion of the Monitoring the Future (MTF) study, an ongoing longitudinal study of adolescents and young adults. Those who used marijuana by age 22 were included in analyses. Among these participants (N = 2134), 47.0% were male, 67.5% were white, 53.2% reported having at least one parent with a bachelor's degree or higher, and 44.1% attained a bachelor's degree or higher by age 25/26.

Results: Intercept-only and logistic time-varying effect models (TVEMs) modeled prevalence levels and associations as functions of age of first marijuana use. Prevalence of college degree completion was relatively linear across age of first use; such that college degree attainment increased as age of first use increased. Results indicated that college degree attainment varied across age of first use similarly for men and women. Degree attainment differences existed based on parent education. Parental education and degree attainment were most strongly linked at an age of first use between 16 and 19 years.

Conclusions: Findings suggest that age of first marijuana use has an association with academic achievement such that earlier ages of first use are associated with lower academic achievement later in adulthood. Parental education serves as a protective factor for college degree attainment in late adolescence.

³ Linden-Carmichael, A. N., Kloska, D. D., Evans-Polce, R., Lanza, S. T., & Patrick, M. E. (2018). [College degree attainment by age of first marijuana use and parental education](https://doi.org/10.1080/08897077.2018.1521354). *Substance Abuse*, 1-5. doi: 10.1080/08897077.2018.1521354

E-cigarette price sensitivity among middle and high school students: Evidence from Monitoring the Future⁴

Aims: We estimated associations between e-cigarette prices (both disposable and refill) and e-cigarette use among middle and high-school students in the United States. We also estimated associations between cigarette prices and e-cigarette use.

Design: We used regression models to estimate the associations between e-cigarette and cigarette prices and e-cigarette use. In our regression models, we exploited changes in e-cigarette and cigarette prices across four periods of time and across 50 markets. We report the associations as price elasticities. In our primary model, we controlled for socio-demographic characteristics, cigarette prices, tobacco control policies, market fixed effects and year-quarter fixed effects. Setting: United States of America. Participants: A total of 24 370 middle- and high-school students participating in the Monitoring the Future Survey in years 2014 and 2015. Measurements: Self-reported e-cigarette use over the last 30 days. Average quarterly cigarette prices, e-cigarette disposable prices and e-cigarette refill prices were constructed from Nielsen retail data (inclusive of excise taxes) for 50 US markets.

Findings: In a model with market fixed effects, we estimated that a 10% increase in e-cigarette disposable prices is associated with a reduction in the number of days vaping among e-cigarette users by approximately 9.7% [95% confidence interval (CI) = -17.7 to 1.8%; P = 0.02] and is associated with a reduction in the number of days vaping by the full sample by approximately 17.9% (95% CI = -31.5 to -4.2%; P = 0.01). Refill e-cigarette prices were not statistically significant predictors of vaping. Cigarette prices were not associated significantly with e-cigarette use regardless of the e-cigarette price used. However, in a model without market fixed effects, cigarette prices were a statistically significant positive predictor of total e-cigarette use.

Conclusions: Higher e-cigarette disposable prices appear to be associated with reduced e-cigarette use among adolescents in the US.

Recent rapid decrease in adolescents' perception that marijuana is harmful, but no concurrent increase in use⁵

Background: National trends in adolescent's marijuana risk perceptions are traditionally used as a predictor of concurrent and future trends in adolescent marijuana use. We test the validity of this practice during a time of rapid marijuana policy change.

Methods: Two repeated cross-sectional U.S. nationally-representative surveys of 8th, 10th, and 12th-graders: Monitoring the Future (MTF) (1991-2015; N=1,181,692) and National Survey on Drug Use and Health (NSDUH) (2002-2014; N=113,317). We examined trends in the year-to-year prevalence of perceiving no risk of harm in using marijuana regularly, and prevalence of regular marijuana use within the previous month. A piecewise linear regression model tested for a change in the relationship between trends. Similar analyses examined any past-month use and controlled for demographic characteristics.

Results: Among MTF 12th-graders, the prevalence of regular marijuana use and risk perceptions changed similarly between 1991 and 2006 but diverged sharply afterward. The prevalence of regular marijuana use increased by approximately 1 percentage point to 6.03% by 2015. In

⁴ Pesko, M. F., Huang, J., Johnston, L. D., & Chaloupka, F. J. (2018). [E-cigarette price sensitivity among middle and high school students: Evidence from Monitoring the Future](#). *Addiction*, 113(5), 896-906. doi: 10.1111/add.14119

⁵ Sarvet, A. L., Wall, M. M., Keyes, K. M., Cerda, M., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., & Hasin, D. S. (2018). [Recent rapid decrease in adolescents' perception that marijuana is harmful, but no concurrent increase in use](#). *Drug and Alcohol Dependence*, 186, 68-74. doi: 10.1016/j.drugalcdep.2017.12.041

contrast, the proportion of 12th-graders that perceived marijuana as posing no risk increased over 11 percentage points to 21.39%. A similar divergence was found among NSDUH 12th-graders and other grades, for any past month marijuana use, and when controlling demographic characteristics. **Conclusions:** An increase in adolescent marijuana use has not accompanied recent rapid decreases in marijuana risk perceptions. Policy makers may consider broader prevention strategies in addition to targeting marijuana risk perceptions. Further monitoring of predictors of marijuana use trends is needed as states legalize recreational marijuana use.

Simultaneous alcohol and marijuana use among young adult drinkers: Age-specific changes in prevalence from 1977-2016⁶

Background: The overall prevalence of U.S. young adult alcohol use has decreased, but little is known about historical change in related behaviors such as simultaneous alcohol and marijuana (SAM) use that may increase alcohol-related risks and societal costs. The purpose of this paper was to examine historical change in SAM use prevalence among U.S. young adult alcohol users from 1977 to 2016, and consider the extent to which observed historical change in SAM use among alcohol users reflects co-occurring change in marijuana use during these years.

Methods: Data on past 12-month alcohol, marijuana, and SAM use at up to 6 modal ages (19/20, 21/22, 23/24, 25/26, 27/28, and 29/30) were collected from 11,789 individuals (45.0% men) participating in the Monitoring the Future panel study. Annual prevalence estimates within modal age group were obtained; historical SAM use trends among alcohol and marijuana users were estimated.

Results: From 2014 to 2016, SAM use was reported by approximately 30% of alcohol users aged 19/20 and 21/22, and 20 to 25% of alcohol users aged 23/24 through 29/30. Since the mid-1990s, age-specific historical trends in SAM use prevalence among alcohol users followed 1 of 4 patterns: significant increase followed by oscillating increases/decreases (at modal age 19/20), consistent and significant increases (at modal ages 21/22, 23/24, and 25/26), stability followed by increase (at modal ages 27/28), or stability (at modal ages 29/30). In contrast, SAM use trends among marijuana users primarily reflected stability, with some evidence of a decrease across time at modal ages 19/20 and 23/24. Historical change in SAM prevalence among alcohol users was strongly and positively correlated with changes in overall marijuana use prevalence.

Conclusions: A growing proportion of early and mid-young adult alcohol users reported SAM use, with the highest risk among those in the early years of young adulthood. Young adult SAM use may continue to increase in proportion to the degree that young adult marijuana use continues to increase.

The end of convergence in developmental patterns of frequent marijuana use from ages 18 to 30: An analysis of cohort change from 1976–2016⁷

Background: This study examines the extent to which the developmental pattern of frequent marijuana use prevalence from ages 18 to 30 (overall and by gender) has varied across historical time (cohort groups) using data from a national sample of US young adults.

⁶ Terry-McEllrath, Y. M., & Patrick, M. E. (2018). [Simultaneous alcohol and marijuana use among young adult drinkers: Age-specific changes in prevalence from 1977-2016](#). *Alcoholism: Clinical and Experimental Research*, 42(11), 2224-2233. doi: 10.1111/acer.13879

⁷ Terry-McElrath, Y. M., Patrick, M. E., O'Malley, P. M., & Johnston, L. D. (2018). [The end of convergence in developmental patterns of frequent marijuana use from ages 18 to 30: An analysis of cohort change from 1976–2016](#). *Drug and Alcohol Dependence*, 191, 203-209. doi: 10.1016/j.drugalcdep.2018.07.002

Methods: Self-reported data on frequent marijuana use (use on 20+ occasions in the past 30 days) from modal ages 18 to 30 were obtained from 58,059 individuals from 29 sequential cohorts (graduating high school classes of 1976-2004) participating in the Monitoring the Future study. Time-varying effect modeling was used to model cohort group differences in developmental patterns of frequent use overall and by gender.

Results: Developmental patterns of frequent marijuana use prevalence varied meaningfully across cohort groups. Frequent use at age 18 differed significantly across cohort groups as expected based on national data. Among earlier cohort groups (reaching age 30 during 1987-2008), developmental patterns converged by age 30 to relatively low frequent marijuana use prevalence. In contrast, among cohort groups reaching age 30 during 2008-2016, frequent marijuana use at age 30 was significantly higher than all previous cohort groups. Observed cohort differences did not vary significantly by gender.

Conclusions: Cross-cohort convergence in developmental patterns of frequent marijuana use prevalence by age 30 was not observed among recent cohort groups, among whom age 30 frequent marijuana use prevalence was at the highest levels observed since the study began. Higher frequent marijuana use prevalence in late young adulthood has meaningful health risk and service provision implications.

Recent increases in depressive symptoms among US adolescents: trends from 1991 to 2018⁸

Background: Mental health problems and mental health related mortality have increased among adolescents, particularly girls. These trends have implications for etiology and prevention and suggest new and emerging risk factors in need of attention. The present study estimated age, period, and cohort effects in depressive symptoms among US nationally representative samples of school attending adolescents from 1991 to 2018.

Methods: Data are drawn from 1991 to 2018 Monitoring the Future yearly cross-sectional surveys of 8th, 10th, and 12th grade students (N = 1,260,159). Depressive symptoms measured with four questions that had consistent wording and data collection procedures across all 28 years. Age-period-cohort effects estimated using the hierarchical age-period-cohort models.

Results: Among girls, depressive symptoms decreased from 1991 to 2011, then reversed course, peaking in 2018; these increases reflected primarily period effects, which compared to the mean of all periods showed a gradual increase starting in 2012 and peaked in 2018 (estimate = 1.15, $p < 0.01$). Cohort effects were minimal, indicating that increases are observed across all age groups. Among boys, trends were similar although the extent of the increase is less marked compared to girls; there was a declining cohort effect among recently born cohorts, suggesting that increases in depressive symptoms among boys are slower for younger boys compared to older boys in recent years. Trends were generally similar by race/ethnicity and parental education, with a positive cohort effect for Hispanic girls born 1999-2004.

Conclusions: Depressive symptoms are increasing among teens, especially among girls, consistent with increases in depression and suicide. Population variation in psychiatric disorder symptoms highlight the importance of current environmental determinants of psychiatric disorder risk, and provide evidence of emerging risk factors that may be shaping a new and concerning trend in adolescent mental health.

⁸ Keyes, K. M., Gary, D., O'Malley, P. M., Hamilton, A., & Schulenberg, J. (2019). [Recent increases in depressive symptoms among US adolescents: trends from 1991 to 2018](#). *Social Psychiatry and Psychiatric Epidemiology*. doi: 10.1007/s00127-019-01697-8

A prospective study of nonmedical use of prescription opioids during adolescence and subsequent substance use disorder symptoms in early midlife⁹

Background: This longitudinal study assesses characteristics associated with adolescents' nonmedical use of prescription opioids (NMUPO) including: frequency, co-ingestion, motives, specific opioid type; sequence of initiation of medical use of prescription opioids and NMUPO in relationship to subsequent substance use disorder (SUD) symptoms.

Methods: Twenty-one independent national cohorts of U.S. high school seniors (n = 8,373) were surveyed and followed 17 years from adolescence to age 35.

Results: The majority of adolescents who engaged in NMUPO reported occasional/frequent NMUPO, non-pain relief motives for NMUPO, simultaneous co-ingestion involving NMUPO and other drugs, opioid analgesics with high misuse potential, and multiple types of opioid analgesics. Adolescents who reported NMUPO for pain relief, NMUPO involving opioid analgesics with high misuse potential, or multiple prescription opioids had significantly greater odds of SUD symptoms at age 35, relative to those who had no history of NMUPO during adolescence. In addition, medical use of prescription opioids after initiating NMUPO (or NMUPO only) during adolescence was associated with significantly greater odds of subsequent SUD symptoms at age 35 relative to those who reported the medical use of prescription opioids only or had no medical use or NMUPO during adolescence.

Conclusions: This is the first U.S. national prospective study to examine the relationships between adolescents' NMUPO characteristics and later SUD symptoms in early midlife. Several characteristics (frequency, co-ingestion, motives, opioid type, and medical/NMUPO initiation history) were identified that could be used to screen and detect high-risk youth for indicated interventions to reduce prescription opioid misuse and SUDs.

Adolescent vaping and nicotine use in 2017-2018 - U.S. national estimates¹⁰

Background: Multiple media reports highlighted a surge in nicotine vaping among U.S. adolescents in 2018. This study is the first to use nationally representative data to assess the magnitude of increases in nicotine vaping from 2017 to 2018.

Methods: Data for this study come from Monitoring the Future, which surveyed nationally representative, independent samples of 12th, 10th, and 8th grade students in 2017 and 2018. Analyses are based on a total of 13,850 completed survey responses. For a randomly selected subsample of the 12th grade respondents the surveys included a cluster of questions on both vaping and the six most common forms of tobacco use, thereby allowing examination of overall nicotine use with any nicotine product.

Results: Nicotine vaping significantly increased by 9.9, 7.9, and 2.6 percentage points in 12th, 10th, and 8th grade, respectively. In 12th grade overall use of nicotine by any method measured in the survey increased by 5.2 percentage points. This increase in overall nicotine use was driven solely by nicotine vaping, which more than offset declines the prevalence of use of the six of the most commonly used tobacco products.

Conclusions: Increases in vaping in 2018 are the largest ever seen for any of the 30-day prevalence

⁹ McCabe, S. E., Veliz, P. T., Boyd, C. J., Schepis, T. S., McCabe, V. V., & Schulenberg, J. E. (2019). [A prospective study of nonmedical use of prescription opioids during adolescence and subsequent substance use disorder symptoms in early midlife](#). *Drug and Alcohol Dependence*, 194, 377-385. doi: 10.1016/j.drugalcdep.2018.10.027

¹⁰ Miech, R., Johnston, L., O'Malley, P. M., Bachman, J. G., & Patrick, M. E. (2019). [Adolescent vaping and nicotine use in 2017-2018 - U.S. national estimates](#). *New England Journal of Medicine*. doi: 10.1056/NEJMc1814130

outcomes monitored by Monitoring the Future in the 44 years it has continuously tracked adolescent substance use. These results document a recent increase in adolescent nicotine use, due to an epidemic of nicotine vaping among U.S. adolescents in 2018.

Increasing marijuana use for black adolescents in the United States: A test of competing explanations¹¹

Aims: In the last decade the relatively lower levels of marijuana use for black relative to non-black high school seniors has grown smaller and disappeared, drawing to a close a unique disparity that actually favored a disadvantaged group for at least thirty years. In this study we test trends in cigarette smoking and religiosity as possible explanations for this closing disparity. The study also examines whether increasing marijuana levels for black adolescents is better characterized as a cohort effect or an historical period effect.

Design: Analyses use relative risk regression and focus on data from yearly, cross-sectional surveys from the time period 2008-2017. Data come from the nationally representative Monitoring the Future survey, which conducts in-school surveys of secondary school students. The analysis uses data from 114,552 high school seniors (in 12th grade), 123,594 in 10th grade, and 136,741 in 8th grade.

Findings: Past 12-month marijuana prevalence significantly increased for black as compared to non-black adolescents from 2008 to 2017 in 12th grade, 10th grade, and 8th grade. The increase attenuated by more than half and was not statistically significant after adjusting for cigarette smoking. In contrast, the increase was little changed after adjusting adolescent levels of religiosity. The increase is better characterized as a cohort effect than a period effect.

Conclusions: These results support the increase in marijuana use for black relative to non-black adolescents as an unexpected consequence of the great decline in adolescent cigarette smoking, which has occurred more slowly for black adolescents.

The national prevalence of adolescent nicotine use in 2017: Estimates taking into account student reports of substances vaped¹²

Introduction: This study presents the first nationally-representative estimates of adolescent nicotine prevalence that take into account adolescent reports of substances vaped. These reports allow nicotine estimates that consider the impact of the newly-emerged group of adolescents who report vaping only non-nicotine substances such as flavoring and/or marijuana and do not use nicotine in any form – a group typically treated as nicotine users.

Methods: Data come from Monitoring the Future and are a randomly-selected subsample of 2231 U.S. 12th grade students who answered surveys with detailed questions on tobacco use and vaping in 2017.

Results: Among 12th grade students 24.7% used nicotine in the last 30 days. This estimate does not include the 3.8% of students who vaped only non-nicotine substances and did not use nicotine in any other form. These students more closely resemble their peers who do not use nicotine than those who do, in terms of perceived risk and disapproval of cigarettes, as well as percentage of

¹¹ Miech, R. A., Terry-McElrath, Y. M., O'Malley, P. M., & Johnston, L. D. (2019). [Increasing marijuana use for black adolescents in the United States: A test of competing explanations](#). *Addictive Behaviors*, 93, 59-64. doi: 10.1016/j.addbeh.2019.01.016

¹² Miech, R. A., Johnston, L. D., O'Malley, P. M., & Terry-McElrath, Y. (2019). [The national prevalence of adolescent nicotine use in 2017: Estimates taking into account student reports of substances vaped](#). *Addictive Behaviors Reports*, 9, 100159. doi: 10.1016/j.abrep.2019.100159

friends who use cigarettes.

Conclusions: A decline in overall nicotine prevalence was statistically significant, but not strikingly large, after taking into account students who vape non-nicotine substances and do not use nicotine in any form. These students are largely similar to their peers who do not use nicotine, which underscores the importance of efforts to alert youth that they may be vaping nicotine unknowingly, and prevent them from doing so.

“Flakka” use among high school seniors in the United States¹³

Background: Use of synthetic cathinones, commonly referred to as "bath salts", has been associated with tens of thousands of emergency department visits in the US; however, few national studies have estimated prevalence of use and we know very little about use among adolescents. In this study we estimate prevalence and correlates of use of "Flakka" (alpha-PVP), a highly-potent "bath salt" associated with at least 80 deaths in the US.

Methods: We analyzed data from the 2016/2017 Monitoring the Future study, which surveyed a nationally representative sample of high school seniors in the US (n = 3786). Bivariable and multivariable models were used to determine demographic and drug-related correlates of use.

Results: Overall, 0.8% (95% CI: 0.5-1.2) of high school seniors in 2016/2017 are estimated to have used Flakka in the past year. Students whose parents have less than a high school education were at higher odds for use (aOR = 4.12, 95% CI: 1.00-16.94). Flakka users reported high prevalence of use of other drugs, particularly synthetic cannabinoids (85.6%), ketamine (72.3%), marijuana (59.1%), and GHB (47.5%). Flakka use was also associated with use of a higher number of other drugs and higher frequency of use of other drugs, with 51.7% using 4-12 other drugs and 22.4% using 4-12 other drugs >6 times.

Conclusions: Students who use multiple drugs are elevated risk for Flakka use, suggesting synthetic cathinone use alone is rare and the use of multiple substances may compound adverse effects of these drugs. Socio-economic disparities are concerning given reduced access to prevention and intervention.

Faster escalation from first drink to first intoxication as a risk factor for binge and high-intensity drinking among adolescents¹⁴

Introduction: Age of first drink is a key risk factor for adolescent high-risk alcohol use. The current study examined whether speed of escalation from first drink to first intoxication is an additional risk factor, and whether these two factors are associated with binge and high-intensity drinking among adolescents.

Methods: Data collected in 2005-2017 from a nationally-representative sample of 11,100 U.S. 12th grade students participating in the Monitoring the Future study were coded to indicate grade of first drink, grade of first intoxication, and speed of escalation from first drink to first intoxication. Logistic regression models estimated bivariate and multivariable odds of past 2-week binge (5+ drinks in a row) and high-intensity (10+ drinks in a row) drinking in 12th grade.

Results: Of those who reported intoxication by 12th grade, almost 60% reported first drunkenness in the same grade in which they first drank. The likelihoods of 12th grade binge and high-intensity

¹³ Palamar, J. J., Rutherford, C., & Keyes, K. M. (2019). [“Flakka” use among high school seniors in the United States](#). *Drug and Alcohol Dependence*, 196, 86-90. doi:10.1016/j.drugalcdep.2018.12.014.

¹⁴ Patrick, M. E., Evans-Polce, R., & Terry-McElrath, Y. M. (2019). [Faster escalation from first drink to first intoxication as a risk factor for binge and high-intensity drinking among adolescents](#). *Addictive Behaviors*, 92, 199-202. doi: 10.1016/j.addbeh.2019.01.003

drinking were significantly associated with both grade of first drink and speed of escalation to intoxication. Past two-week high-intensity drinking prevalence was 17.4% among those with immediate (same-grade) escalation from first drink to first intoxication; 15.8% among those with a 1-grade delay, and 12.6% among those with a 2+ grade delay to intoxication.

Conclusions: The majority of students escalate quickly from having their first drink to being intoxicated for the first time. Both earlier age of first drink and a faster escalation from first drink to first intoxication are important indicators of binge and high-intensity drinking risk among adolescents.

Prevalence of high-intensity drinking from adolescence through young adulthood: National data from 2016-2017¹⁵

High-intensity drinking (HID; ie, having 10+ drinks in a row) is a recognized public health concern due to the individual and public risks (eg, alcohol-related injuries, alcohol poisoning, memory loss, sexual risk) associated with consumption of a large quantity of alcohol over a relatively short time period. Using nationally representative samples of US 8th, 10th, and 12th grade students, and follow-up of subsamples of 12th graders, we present overall and sex-specific prevalence estimates of past 2-week HID from 29 966 individuals at the modal ages of 14 to 30 in 2016-2017. Similar data for the more commonly studied measure of binge drinking (having 5+ drinks in a row) are provided for comparison. HID prevalence ranged from 1% to 11.5% and was significantly higher for males than females at all ages other than modal age 14 (8th grade). Binge drinking prevalence ranged from 3.5% to 32.5%; males reported a higher prevalence than females at approximately half of the ages examined. Peak binge drinking and HID age for males was earlier (modal age 21/22) than that for females (modal age 21-24 for binge drinking and 25/26 for HID). The observed rapid increase in HID from adolescence through the early to mid-20s highlights the importance of prevention and intervention efforts targeted to these ages.

Reasons high school students use marijuana: Prevalence and links with use across four decades¹⁶

Objective: Changes in the legality and prevalence of marijuana raise questions about whether adolescents' reasons for using marijuana and associations between reasons for use and recent marijuana use have changed historically.

Method: Using nationally representative data from Monitoring the Future for 1976-2016 (N = 39,964; 47.6% female), we examined changes in self-reported reasons for marijuana use and in the associations between reasons for use and past-30-day marijuana use among 12th graders who used marijuana in the past 12 months.

Results: Time-varying effect modeling showed variation in reasons for use among adolescent past-year marijuana users from 1976 to 2016. Social/recreational reasons for marijuana use (i.e., Boredom, Feel Good/Get High, Experiment, Fit In) generally declined in prevalence; the exception was Good Time, which remained quite stable. Prevalence of coping with negative affect reasons (i.e., Anger/Frustration, Escape Problems, Relax, Get Through Day) approximately doubled across 40 years. Over time, social/recreational reasons were consistently associated with greater odds

¹⁵ Patrick, M. E., & Terry-McElrath, Y. M. (2019). [Prevalence of high-intensity drinking from adolescence through young adulthood: National data from 2016-2017](#). *Substance Abuse: Research and Treatment*, 13. doi: 10.1177/1178221818822976

¹⁶ Patrick, M. E., Evans-Polce, R., Kloska, D., & Maggs, J. L. (2019). [Reasons high school students use marijuana: Prevalence and links with use across four decades](#). *Journal of Studies on Alcohol and Drugs*, 80(1), 15-25.

(i.e., Boredom, Feel Good/Get High, Good Time) or lower odds (i.e., Experiment, Fit In) of recent marijuana use. Coping with negative affect reasons, drug effect reasons, and compulsive use were consistently associated with greater odds of recent use.

Conclusions: The most common reasons for marijuana use among high school students have shifted markedly in 40 years, with particular increases for coping-related reasons. However, reasons for use remain significant, stable predictors of use. This suggests a move toward riskier (coping-related) use but supports the continued salience of motivation-based approaches for prevention and intervention.

Shifting age of peak binge drinking prevalence: Historical changes in normative trajectories among young adults aged 18 to 30¹⁷

Background: This study examined the extent to which the developmental pattern of prevalence of binge drinking in the past 2 weeks from ages 18 through 30 has changed across 29 cohorts of U.S. young adults, and whether the changes differed by gender.

Methods: Analyses used national longitudinal data from 58,019 12th-grade students (from graduating high school classes 1976 to 2004) participating in the Monitoring the Future study followed through modal age 30 (with age 29/30 data collected from 1987 to 2016). Weighted time-varying effect modeling was used to model cohort group differences in age-related patterns of binge drinking.

Results: The age of peak binge drinking prevalence increased across cohorts (from age 20 in 1976 to 1985 to 22 in 1996 to 2004 for women, and from 21 in 1976 to 1985 to 23 in 1996 to 2004 for men). Historical change in the developmental pattern of binge drinking across all ages of young adulthood differed for men and women. Even after controlling for key covariates, women in the more recent cohort group reported significantly higher binge drinking prevalence than women in earlier cohorts from ages 21 through 30. Men in the more recent cohort group reported higher binge drinking prevalence at ages 25 to 26, but prevalence levels then converged to those seen in earlier cohort groups by age 30.

Conclusions: An older age of peak binge drinking and a decreased rate of decline in the prevalence of binge drinking in later young adulthood among more recent cohorts have resulted in an extension of individual and societal risks associated with binge drinking, particularly for women, across young adulthood. High-risk alcohol use prevention efforts are needed throughout at least the third decade of life.

Simultaneous alcohol and marijuana use among underage young adults in the United States¹⁸

Objective: The current study examines the prevalence, stability, and correlates of simultaneous alcohol and marijuana (SAM) use among underage US young adults, a population at high risk for participating in this behavior.

Method: Analyses used data from 1719 respondents (46.8% men) who participated in the nationally representative 12th-grade Monitoring the Future study and provided responses to SAM

¹⁷ Patrick, M. E., Terry-McElrath, Y. M., Lanza, S. T., Jager, J., Schulenberg, J. E., & O'Malley, P. M. (2019). [Shifting age of peak binge drinking prevalence: Historical changes in normative trajectories among young adults aged 18 to 30](#). *Alcoholism: Clinical and Experimental Research*. doi: 10.1111/acer.13933.

¹⁸ Patrick, M. E., Terry-McElrath, Y. M., Lee, C. M., & Schulenberg, J. E. (2019). [Simultaneous alcohol and marijuana use among underage young adults in the United States](#). *Addictive Behaviors*, 88, 77-81. doi: 10.1016/j.addbeh.2018.08.015.

use items at longitudinal follow-up at modal ages 19/20 between 2007 and 2016. Prevalence estimates and covariate associations with SAM use were estimated.

Results: SAM use prevalence at modal age 19/20 was 22.5%. Multivariable models indicated that odds of age 19/20 SAM use were significantly ($p < .05$) higher for men (vs. women) and for respondents who started alcohol use by age 18 (vs. those who delayed uptake until after high school). Odds of SAM use were especially high for individuals attending college full-time and not living with parents. Among those who reported SAM use at modal age 18, 56.2% continued to report SAM use at modal age 19/20. Among those who did not report SAM use at modal age 18, only 14.2% reported SAM use at modal age 19/20.

Conclusions: SAM use among young adults aged 19/20 in the US is relatively common, but especially so for those who began such use by age 18, highlighting the early onset and stability of this behavior. Among underage drinkers, SAM risk varies by sex, race/ethnicity, college status, and living arrangements.

Young adult longitudinal patterns of marijuana use among US national samples of 12th grade frequent marijuana users: A repeated measures latent class analysis¹⁹

Background and Aims: Long-term frequent marijuana use is associated with significant negative outcomes, yet little is known about the longitudinal course of marijuana use among those who start frequent use during adolescence. Objectives are (a) to identify latent patterns of within-person marijuana use from ages 19-30 among 12th graders reporting frequent marijuana use, (b) to examine if membership in identified patterns has changed across historical time, and (c) to examine if key covariates differentiate class membership.

Design: Setting and participants: Longitudinal, national US panel data from 4,423 individuals (53.4% of the eligible sample; 2,744 [62%] males) who reported frequent marijuana use in 12th grade (modal age 18 years; senior year cohorts 1976-2006) followed biennially from age 19/20 through 29/30. Measurements: Self-reported past 30-day marijuana use (frequent use defined as use on 20+ occasions), demographics, college graduation, marriage, and parenthood.

Findings: Repeated measures latent class analysis (RMLCA) identified five latent classes of past 30-day marijuana use from ages 19/20 through 29/30: Continued Frequent Users (estimated membership 23.4%); Frequent to Non-Frequent Users (15.5%); Consistent Non-Frequent Users (18.4%); Non-Frequent Users to Discontinuers (19.5%); and Discontinuers (23.2%). In multivariable models, membership in the highest-risk latent class (Continued Frequent Users) versus one or more of the lower-risk latent classes was more likely for recent cohorts ($p = 0.038$ to < 0.001), as well as those who did not marry ($p = 0.039$ to < 0.001) or become parents ($p = 0.001$) by modal age 29/30.

Conclusions: Nearly one in four 12th grade (modal age 18 years) frequent marijuana users in the US continues to report high frequency use through age 30; the proportion continuing high frequency use across young adulthood has increased among more recent cohorts.

Lifetime prevalence of self-reported concussion among adolescents involved in competitive sports: A national U.S. study²⁰

¹⁹ Terry-McElrath, Y. M., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2019). [Young adult longitudinal patterns of marijuana use among US national samples of 12th grade frequent marijuana users: A repeated measures latent class analysis](#). *Addiction*. doi: 10.1111/add.14548.

²⁰ Veliz, P., Eckner, J. T., Zdroik, J., & Schulenberg, J. E. (2019). [Lifetime prevalence of self-reported concussion among adolescents involved in competitive sports: A national U.S. study](#). *Journal of Adolescent Health*. doi:

Purpose: Examine lifetime prevalence of diagnosed concussion in US-national samples of 8th, 10th, and 12th graders involved in 16 different competitive sports; examine associations between concussion and individual sports, controlling for demographic characteristics and multiple sports involvement.

Methods: Analysis of nationally representative Monitoring the Future data from 2 cohorts (2016-2017; n=25,408).

Results: Adolescents who participated in baseball, basketball, football, gymnastics, ice hockey, lacrosse, soccer, track, weightlifting, and 'other sports' had greater odds of reporting multiple diagnosed concussions compared with peers not participating in these sports. Adolescents who participated in tennis had lower odds of reporting any diagnosed concussion or multiple concussions. Females who participated in gymnastics, soccer, and swimming showed a stronger association in reporting a diagnosed concussion when compared with males who participated in these same types of sports.

Conclusions: The study provides needed epidemiological information on prevalence of reported diagnosed concussion among teens participating in popular school and community sports. Certain high contact (e.g., football) and high volume (e.g., basketball) sports need increased efforts to manage adolescent athletes who already have a history of concussion or repeated concussions.

OTHER DATA ON CORRELATES AND TRENDS

Drug use correlates and trends not presented in this monograph or in the papers above can be calculated using the publicly available MTF data archive at the [Inter-university Consortium of Political and Social Research \(ICPSR\)](#). In addition, interested users can use the online interface at the National Addiction and HIV Data Archive Program (sponsored in part by the National Institute on Drug Abuse) to produce cross-tabulations for variables of interest, also available at the [ICPSR website](#).

These online resources allow users to calculate hundreds of correlates of drug use. For data previous to 2013, MTF published bivariate correlates without accompanying interpretation in a series of annual volumes entitled [Monitoring the Future: Questionnaire Responses from the Nation's High School Seniors](#). For each year between 1975 and 2012, a separate volume presents univariate and selected bivariate distributions on all questions asked of 12th graders. A host of variables dealing explicitly with drugs—many of them not covered here—are contained in that series. Bivariate tables are provided for all questions asked of high school seniors each year distributed against an index of lifetime illicit drug involvement, making it possible to examine the relationships between hundreds of potential risk factors and illicit drug use. These reference volumes are available on the [MTF website](#) and include MTF data up to 2012. They were discontinued thereafter as the online resources make it possible for interested readers to themselves calculate these statistics and any combination thereof, for 8th and 10th grade as well as for 12th grade respondents.

An annual [occasional paper on subgroups](#)²¹ presents trends in both graphic and tabular form for

10.1016/j.jadohealth.2018.08.023.

²¹ Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). [Demographic subgroup trends among adolescents in the use of various licit and illicit drugs 1975-2018](#) (Monitoring the Future Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research, University of Michigan.

the various subgroups of adolescents for each of the many drug classes. It covers all years for all three grades in which data have been collected. It is available on the MTF website. An additional occasional paper on [subgroup trends among young adults](#)²² is also available on the website.

WEBSITE

Any reader wishing to obtain more information on the study, or to check for recent findings and publications, may visit the [MTF website](#). Prior to publication in this series of annual monographs, many recent MTF findings on substance use trends and related attitudes and beliefs are posted on the website in two forms: (1) [press releases](#) issued in mid-December of the year in which the data were collected; and (2) an [Overview of Key Findings](#) monograph posted at the end of the following January.

²² Johnston, L. D., Schulenberg, J. E., O'Malley, P. M., Bachman, J. G., Miech, R. A., Patrick, M. E. (2018). [Demographic subgroup trends among young adults in the use of various licit and illicit drugs, 1988-2017](#) (Monitoring the Future Occasional Paper No. 91). Ann Arbor, MI: Institute for Social Research, University of Michigan.

Appendix A

PREVALENCE AND TREND ESTIMATES ADJUSTED FOR ABSENTEES AND DROPOUTS

To what extent do the MTF prevalence and trend estimates derived from 12th graders represent trends among *all* young people in the same class or age cohort, including those who have dropped out of school by senior year? To answer this question, we published an extensive report¹ and have since continued to estimate the degree to which MTF data accurately represent the entire class cohorts. In this appendix, we summarize the main points relevant to sample coverage.

We begin by noting that two segments of a given entire age cohort are missing from the 12th grade data: (a) those who are still enrolled in school but are absent the day of data collection (absentees), and (b) those who have left school and are not likely to complete high school (dropouts). Because refusal rates are negligible, absentees and dropouts constitute virtually all of the nonrespondents shown in the response rate in Table 3-1, or about 20% of all 12th graders (the percentage varies slightly by year). US Census data indicate that dropouts comprised approximately 15% of the class/age cohort through most of the life of the study, until about 2002. Since then, there has been a gradual decline, dropping to around 7% in 2018.²

The methods we use to estimate prevalence for these two missing segments are summarized briefly here. Then, the effects of adding the two segments to the calculation of the overall prevalence estimates are presented, along with the impact on the trends. Two illicit drugs are highlighted for illustrative purposes: marijuana, the most prevalent of the illicit drugs, and cocaine, one of the more dangerous and less prevalent drugs. Estimates for 12th graders are presented for both lifetime and 30-day prevalence of each drug.

CORRECTIONS FOR 8th AND 10th GRADES

Potential underestimation of drug use is likely higher among 12th graders than among 8th and 10th graders, because the rates of dropping out and absenteeism are lower for 8th and 10th grades than for 12th grade. With respect to dropping out, only very few members of an age cohort have ceased attending school by grade 8, when most are age 13 or 14. In fact, Census data suggest that less than 2% have dropped out at this stage. Most 10th graders are about age 15, and Census data indicate that only a small proportion (less than 3%) have dropped out by then.³ Thus, any correction for the missing dropouts should be negligible at 8th grade and quite small at 10th grade.

While in 2018 absentees comprised 19% of the 12th graders who should be in school, they comprised only 14% of 10th graders and 11% of 8th graders (see Table 3-1). Thus, the prevalence

¹ Johnston, L. D. & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57 (ADM) 85-1402). Washington, DC: U.S. Government Printing Office.

² U.S. Child Trends Databank. (2018). [High school dropout rates](#). Bethesda, MD.

³ According to the [Digest of Education Statistics 2017](#), in 2016 the proportion of the U.S. civilian noninstitutionalized population enrolled in school was 98.2% among 7- to 13-year-olds and 98.0% among 14- to 15-year-olds. The proportion drops to 93.0% for 16- to 17-year olds combined, but there is probably a considerable difference between age 16 and age 17 because state laws often require attendance through age 16. Eighth graders in the spring of the school year are mostly (and about equally) 13 and 14 years old, while 10th graders are mostly (and about equally) 15 and 16 years old. Thus, extrapolating from these data, we estimate that less than 3% of 8th graders and about 7% of 10th graders are dropouts.

estimate adjustments that would result from corrections for this missing segment would also be considerably less for 8th and 10th graders than for 12th graders.

In sum, the modest corrections in estimates for levels of substance use, which we show next to the results from the corrections for dropouts and absentees at the 12th grade level, set outer limits for what would be found at 8th and 10th grade. In fact, it is clear that the corrections would be considerably smaller at 10th grade and far smaller at 8th grade. For this reason, and because the corrections described below for 12th graders turn out to be modest ones, we have not made estimates of the comparable corrections for 8th and 10th graders.

THE EFFECTS OF MISSING ABSENTEES

In order to assess the effects of excluding absentees on the estimates of 12th grade drug use, we included a question asking students how many days of school they had missed in the previous four weeks. Using this variable, we can place individuals into different strata as a function of how often they tend to be absent from school. For example, all students who had been absent 50% of the time could form one stratum. Assuming that absence on the particular day of administration is a fairly random event, we can give the actual survey participants in this stratum a double weight to represent all students in their stratum, including the ones who happen to be absent that particular day. Those who say they were absent two thirds of the time would get a weight of three to represent themselves plus the two thirds in their stratum who were not there on the day of the administration, and so forth. Using this method, we found that absentees as a group have appreciably higher-than-average usage levels for all licit and illicit drugs. However, in an analysis of 2015 data, we found that the omission of absentees depressed prevalence estimates across all 25 drugs in lifetime prevalence by average less than one percentage point, because absentees represent such a small proportion of the total target sample. Considering that a substantial proportion of those who are absent are likely absent for reasons unrelated to drug use – such as illness, participation in extracurricular activities, and community service and field trips – it may be surprising to see even these differences. In any case, from a policy or public health perspective, these small corrections would appear to be of little or no significance. Further, such corrections should have virtually no effect on cross-time trend estimates unless the rate of absenteeism has changed appreciably and systematically, and we find no evidence in our data that it has. (See Table 3-1.)

THE EFFECTS OF MISSING DROPOUTS

Unfortunately, we cannot derive corrections from 12th grade data to impute drug use prevalence for dropouts directly, because we have no completely appropriate stratum from which we have sampled. We believe, based on our own previous research⁴ as well as the work of others that dropouts generally have substantially higher prevalence of use estimates for all classes of drugs compared to the estimates of individuals who remain in school.

Until 2003, we estimated the proportions who fail to complete high school to be approximately 15%; Figure A-1 displays the high school completion rate for the years 1972 through 2018 based

⁴ See Bachman, J. G., O'Malley, P. M., & Johnston, J. (1987). *Youth in transition: Vol. 6, Adolescence to adulthood: A study of change and stability in the lives of young men*. Ann Arbor, MI: Institute for Social Research; and Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education-drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis.

on Census data. As the figure indicates, completion (and dropout) rates were quite constant through 2002 for persons 20–24 years old. (Younger age brackets are less appropriate to use because they include some young people who are still enrolled in high school.) However, since 2002, completion rates have gradually increased, reaching 92.8% in 2018 (i.e., a dropout rate of 7.2%). MTF surveys probably include some small proportion of the dropouts estimated in this way, because the surveys of 12th graders take place a few months before graduation, and not quite all will graduate. On the other hand, perhaps 1–2% of the age group that the U.S. Census Bureau shows as having a diploma actually left high school before completing 12th grade, then earned a Certificate of General Education Development (GED), and thus may not be covered by MTF samples. So these two factors probably cancel each other out. Thus, we used 15% as our estimate of the proportion of an age cohort not covered through 2002; and, since then, we have used the gradually decreasing annual proportion as reported by the U.S. Census Bureau.

Extrapolation Methods

To estimate the drug usage levels for dropouts, we have used two quite different approaches. The first was based on extrapolations from 12th graders participating in the MTF study. Using this method, we developed estimates under three different assumptions about the difference between dropouts and 12th grade respondents, namely that this difference was (a) equivalent to the difference between absentees and 12th grade respondents, (b) 1.5 times that difference, and (c) twice that difference. The last assumption is a purposive overestimate to provide an upper boundary for the hypothetical estimates.

The second general method involved using the best national data then available on drug use among dropouts – namely the National Survey on Drug Use and Health (NSDUH, formerly the National Household Surveys on Drug Abuse, or NHSDA).⁵ While these surveys have rather small samples of dropouts in the relevant age range in any single year, they should at least provide unbiased estimates for dropouts still in the household population. Further, by pooling multiple years of data together it is possible to derive more stable estimates of the drug use levels of dropouts.

Using the first assumption – that dropouts are just like absentees – we found that no prevalence estimate was changed by more than four percentage points over the estimate based on 2014 12th graders only, even with the simultaneous correction for both absentees and dropouts. (The method for calculating levels of use for absentees is described in the previous section.) The largest correction involved getting drunk, with lifetime prevalence rising from just under 50% to 53%. Even under the most extreme assumption – which results in exceptionally high prevalence levels for dropouts on all drugs, for example, 85% lifetime prevalence for getting drunk – the overall correction in any of the prevalence figures for any drug remained less than 5.0 absolute percentage points. Again, getting drunk showed the biggest correction (4.8%, this in lifetime prevalence, raising it from 50% uncorrected to 54% with corrections for both absentees and dropouts). As expected, the biggest *proportional* change occurred for the drugs with low prevalence at the very

⁵ Fishburne, P. M., Abelson, H. I., & Cisin, I. (1980). *National Survey on Drug Abuse: Main findings, 1979* (NIDA (ADM) 80-976). Washington, DC: U.S. Government Printing Office; Miller, J. D., et al. (1983). *National Survey on Drug Abuse: Main findings, 1982* (NIDA (ADM) 83-1263). Washington, DC: U.S. Government Printing Office. See also Substance Abuse and Mental Health Services Administration (1995). *National Household Survey on Drug Abuse: Main findings 1992* (DHHS Publication No. (SMA) 94-3012). Rockville, MD: Substance Abuse and Mental Health Services Administration. See also Office of Applied Studies, Substance Abuse and Mental Health Services Administration (2003). *Results from the 2002 National Survey on Drug Use and Health: National findings* (DHHS Publication No. SMA 03-3836, NHSDA Series H-22). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

deviant end of the drug-using spectrum, such as crack, heroin, and methamphetamine, which we would expect to be most associated with truancy and dropping out.

The second method of estimating drug use among dropouts involved comparing NHSDA data on dropouts with MTF data from those remaining in school. We originally conducted secondary analyses of the archived data from the 1977 and 1979 National Household Surveys. (Analyses using more recent NSDUH data are shown in the next section.) Analyses were restricted to the age range 17 to 19, since about 95% of MTF 12th graders fall in this range. Of course, the numbers of NHSDA cases in this category are small. The 1977 NHSDA survey included only 46 dropouts and 175 enrolled 12th graders in this age group. In the 1979 survey, 92 dropouts and 266 12th graders were included.

For marijuana, NHSDA estimated differences between dropouts and those still enrolled in 12th grade at a level at or below the *least* extreme assumption made in the previous method (in which dropouts are assumed to have the same drug-use levels as absentees). While reassuring, we believe these household samples underrepresented the more drug-prone dropouts to some degree. Thus we concluded that estimates closer to those made under the second assumption may be more realistic – that is, that dropouts are likely to deviate from participating 12th graders by 1.5 times the amount that absentees deviate from them.

We should note that there are a number of reasons for dropping out, many of which do not result from drug use, including homelessness and economic hardship, as well as certain learning disabilities and health problems. At the national level, the extreme groups such as those in jail or without a permanent residence are a small proportion of the total age group, and probably a small proportion of all dropouts as well. Thus, regardless of their levels of drug use, their inclusion would not influence the overall prevalence estimates by a very large amount except in the case of the rarest events – in particular, heroin use. We do believe that in the case of heroin use – particularly regular use – it is probably impossible to get an entirely accurate prevalence estimate even with the corrections used in this report (although the trend estimates should be affected less, if at all). The same may be true for crack cocaine and methamphetamine. For the remaining drugs, we conclude that our estimates based on participating 12th graders, though somewhat low, are nevertheless good approximations for the age group as a whole. And, of course, the samples are drawn to be representative of students *in* school, not all persons in an age cohort.

Effects of Omitting Dropouts in Trend Estimates

Whether the omission of dropouts affects the estimates of trends in prevalence is a separate question, however, from the degree to which it affects absolute estimates at a given point in time. The relevant issues parallel those discussed earlier regarding the possible effects on trends of omitting the absentees. Most important is the question of whether the rate of dropping out has changed appreciably, because a substantial change would mean that 12th graders studied in different years would represent noncomparable segments of their whole class/age cohort. The official government data provided in Figure A-1 indicate a quite stable rate of dropping out from 1972 to 2002, followed by a decline since then.

One possible reason that 12th graders' trend data might deviate from trends for the entire age cohort (including dropouts) would be dropouts showing trends that differed from 12th grade trends; even

then, because of their small numbers, dropouts would have to show dramatically different trends to change the whole age group trend. No hypothesis offered for such a differential shift among dropouts has been convincing, at least to the present authors.

One hypothesis occasionally voiced was that more teens were being expelled from school, or voluntarily leaving school, because of their drug use, and that this explained the downturn in the use of many drugs being reported by MTF in the 1980s. However, it is hard to reconcile this hypothesis with the virtually flat (or, if anything, slightly declining) dropout rates during this period. Further, the reported prevalence of some drugs (e.g., alcohol and narcotics other than heroin) remained remarkably stable throughout those years, and the prevalence of others rose (cocaine until 1987, and amphetamines until 1981). These facts are inconsistent with the hypothesis that there had been an increased rate of departure by the most drug-prone. Certainly, more teens leaving school in the 1980s had drug problems than was true in the 1960s. (So did more of those who stayed in.) However, the teens leaving school still seem likely to be very much the same segment of the population, given the degree of association that exists between drug use, deviance, and problem behaviors in general. In recent years, with a decline in dropping out, one might predict an increase in observed usage levels among 12th graders since 2002; this assumes, of course, that everything else was equal, and also that the higher retention rate involved some staying in school who were more likely to be drug users. In fact, however, in the in-school population there actually was a pattern of decline in the years immediately after 2002, most likely because everything else did not remain equal.

FURTHER EXPLORATION OF CORRECTIONS FOR DROPOUTS

Additional information on the effects of dropout exclusion comes from a 2017 NSDUH report focusing specifically on the prevalence of drug use among high school dropouts from 2002–2014.⁶ Table A-1 presents estimates based on the results from this report. At least two findings are worth noting. First, for all drugs examined, except cigarettes and nonmedical use of prescription-type drugs, the prevalence for dropouts is less than two times the prevalence among same-grade students, which is within the range used in our estimates above (based on 1.5 to 2 times the prevalence of absentees). For cigarettes, the past-month prevalence is two and a half times greater among dropouts, and for nonmedical use of prescription drugs it is 2.1. Second, because the dropout population is not large, taking into account its higher drug prevalence does not result in substantial changes in the overall prevalence estimates. For all drugs analyzed, the absolute difference in overall prevalence estimates with and without accounting for dropouts is less than 2 percentage points. The exception is cigarette use, for which the difference in the prevalence estimate with dropouts is 4 points higher than it is without dropouts.

Table A-2 compares the total population prevalence estimates for MTF derived using the two quite different methods discussed earlier in this appendix. The first method shows the estimates that result when we use the procedure that provided the data shown in Figure A-2, in which the prevalence among dropouts is assumed to be higher than 12th graders present by 1.5 times the difference between 12th graders present on the day of the survey and 12th graders absent that day. Column 2 in Table A-2 is calculated by reweighting the data for absenteeism and calculating the

⁶ Tice, P., Lipari, R.N., & Van Horn, S. L. (August 15, 2017). [Substance use among 12th grade aged youths, by dropout status. The CBHSQ Report.](#) Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.

estimated prevalence among absentees. The prevalence among dropouts (Column 4) is estimated by assuming that they differ from 12th graders present by a factor 1.5 times greater than the difference between 12th graders present and 12th graders absent. The data in Columns 1 and 2 are combined in appropriate proportion to derive estimated prevalence among 12th graders present plus absentees (Column 3). The data in Columns 1, 2, and 4 are then combined in appropriate proportions to derive prevalence estimates for the entire 12th grade class cohort (shown in Column 5). (For 2013, the percentage of dropouts is estimated at 8.1% and the percentage of 12th graders absent is estimated at 18% [based on data in Table 3-1])

The second method for estimating prevalence among dropouts (Column 9) and the entire class cohort (Column 10) is based on the estimated prevalence from MTF 12th graders present and 12th graders absent. We then adjust for the missing dropout segment a different way – by assuming that the difference between NSDUH 12th graders and NSDUH dropouts (Column 8) is the best estimate of the difference between dropouts and nondropouts (Column 10).

The data in Columns 6 and 7 are prevalence levels reported by the 2013 NSDUH 12th graders and dropouts ages 17–18, and Column 8 shows the algebraic difference. This absolute “bias” is treated as an estimate of the difference between 12th graders (present plus absent) versus dropouts, and is then applied to the estimated prevalence based on MTF data of 12th graders present plus absent (Column 3) to derive an estimate of the prevalence among dropouts (Column 9). MTF estimates for nondropouts turn out to be higher than those from NSDUH, thus causing MTF dropout estimates to be higher also. Finally, the data in Columns 3 and 9 are combined in appropriate proportion to derive estimates presented in Column 10 for the entire class cohort.

Note that the estimated prevalence among dropouts based on NSDUH data are not very different from the estimates derived using the 1.5 factor (compare Columns 9 and 4). Consequently, the total estimates given in Column 10 turn out to be highly similar to those in Column 5. This similarity suggests that the estimates of corrections for dropouts that we have been providing, based on earlier data, are quite reasonable and valid. In fact, based on all of the NSDUH data, they may actually be conservatively high.

Finally, an additional piece of information relative to the comparison of drug use levels among students who stay in school versus dropouts comes from Fagan and Pabon (1990),⁷ who reported some in-depth comparison data between high school students and dropouts from six inner-city neighborhoods. About 1,000 male students and 1,000 female students were compared with 255 male dropouts and 143 female dropouts. Although dropouts were generally more delinquent and more involved with substance use, there was also a great deal of variability by specific class of substances. As would be generally expected, marijuana use was lower among students compared to dropouts. On the other hand, psychedelic use, as well as use of tranquilizers and barbiturates, was higher among students. Amphetamine use was lower among male students but higher among female students compared to dropouts of the same gender. Similarly, cocaine use was lower among male students but higher among female students compared to dropouts. Surprisingly, students of both genders reported more heroin use than did dropouts. Inhalant use did not differ significantly

⁷ Fagan, J. & Pabon, E. (1990). [Contributions of delinquency and substance use to school dropout among inner-city youths](#). *Youth & Society*, 21, 306–354.

between students and dropouts. This study does not support the usual assumption that dropouts invariably use drugs more than students do.

EXAMPLES OF REVISED ESTIMATES FOR TWO DRUGS

Figure A-2 provides the prevalence and trend estimates of marijuana and cocaine, for both the lifetime and 30-day prevalence periods, showing (a) the original estimates based on participating 12th graders only; (b) the empirically derived, revised estimates based on all 12th graders, including the absentees; and (c) estimates for the entire class/age cohort (developed using the assumption described above – namely, that drug use prevalence for dropouts differs from the drug use prevalence for participating 12th graders by 1.5 times the amount that the drug use prevalence for absentees does). Estimates were calculated separately for each year, thus taking into account any differences from year to year in the participation or absentee rates. The dropout rate was taken as a constant 15% of the age group through 2002, then at the rates reported by Census each subsequent year through 2018.

As Figure A-2 illustrates, any differences in the slopes of the trend lines between the original and revised estimates are extremely small. The prevalence estimates are higher, of course, but not dramatically so, and certainly not enough to have any serious policy implications. As stated earlier, the corrections for 8th and 10th grade samples should be considerably less than for 12th grade, and there is no reason to think that absentee or dropout rates at those levels have changed since 1991 in any way that could have changed the trend data. *Therefore, we have confidence that the trends that have appeared for the in-school populations represented in this study are very similar to those that would pertain if the entire age cohorts had been the universes from which we sampled.*

SUMMARY AND CONCLUSIONS

While we believe that the prevalence of drug use for the entire age cohort is somewhat underestimated in the MTF results, due to the omission of dropouts and absentees from the universe of the study, the degree of underestimation appears rather limited for most drugs; more importantly, trend estimates seem rather little affected. Short of having good trend data gathered directly from dropouts, who, fortunately, appear to constitute a shrinking proportion of the total age group, we cannot close the case definitively. Nevertheless, the available evidence argues strongly against alternative hypotheses – a conclusion also reached by the members of the 1982 NIDA technical review on this subject and reflected in the abstract of the review:⁸ “The analyses provided in this report show that failure to include these two groups (absentees and dropouts) does not substantially affect the estimates of the incidence and prevalence of drug use.”

⁸ Clayton, R. R. & Voss, H. L. (1982). *Technical review on drug abuse and dropouts*. Rockville, MD: National Institute on Drug Abuse.

**Table A-1: Past Month Substance Uses among 12th Grade Aged Youths,
by Dropout Status, NSDUH 2002-2014 (Combined)**

	<u>Dropouts^a</u>	<u>In School</u>	<u>Combined</u>	<u>Absolute Diff</u>
Alcohol	41.7	33.7	34.6	0.9
Binge Alcohol	31.8	22.1	23.2	1.1
Any Illicit	31.4	18.1	19.6	1.5
Marijuana	27.5	15.6	16.9	1.3
NM Prescription Drug	9.5	4.6	5.2	0.6
Cigarettes	55.9	20.2	24.2	4.0

Source. The National Survey on Drug Use and Health.

^a NSDUH estimates average size of dropout group from 2002-2010 to be 11.3% of the 12th grade class.

TABLE A-2
Estimated Prevalence Levels for Marijuana and Cocaine, 2013, Based on Data from
Monitoring the Future and The National Survey on Drug Use and Health

	1	2	3	4	5	6	7	8	9	10
	Monitoring the Future					NSDUH			MTF/NSDUH Combined	
	Seniors Present ^a	Seniors Absent ^b	Seniors Absent & Present ^c	Dropouts ^d	Total ^e	Seniors ^f	Dropouts (Ages 17–18 ^g)	Difference ^h	Dropouts ⁱ	Total ^j
Marijuana										
Lifetime	45.5	58.6	47.8	65.2	49.5	36.5	57.5	21.0	68.8	49.8
30-Day	22.7	32.1	24.4	36.8	25.6	16.4	29.6	13.2	37.6	25.6
Cocaine										
Lifetime	4.5	8.9	5.3	11.1	5.9	3.4	14.0	10.6	15.9	6.3
30-Day	1.1	2.6	1.4	3.4	1.5	0.3	0.9	0.6	2.0	1.4

Source. The Monitoring the Future study, the University of Michigan and the National Survey on Drug Use and Health.

^aEstimates based on all MTF seniors who completed questionnaires.

^bEstimated prevalence among seniors who were absent (using data from seniors who were present, as explained in text).

^cEstimated prevalence among seniors present plus seniors who were absent.

^dEstimated prevalence among dropouts, based on assumptions described in text.

^eEstimated prevalence among seniors present, seniors who were absent, and same-age dropouts.

^fEstimates based on all NSDUH respondents who were high school seniors.

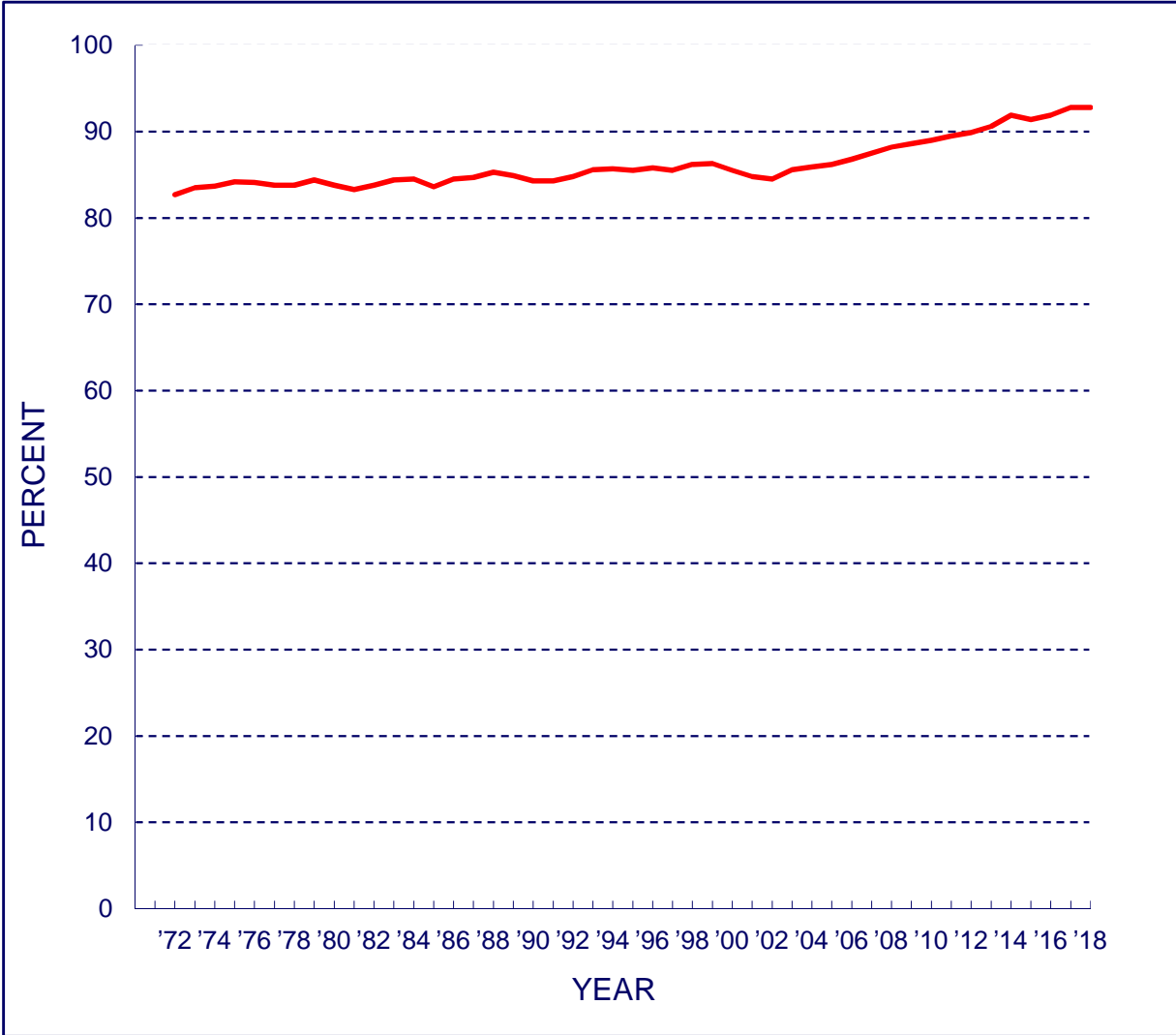
^gEstimates based on all NSDUH respondents, 17–18 years old, who were not attending school, had not graduated, and had not received a GED.

^hThe difference between all NSDUH seniors and dropouts; this is considered a valid estimate of the population difference between all seniors and dropouts, resulting in an estimated prevalence among dropouts.

ⁱCombines estimated use among all MTF seniors (absent and present) plus the estimated population difference between all NSDUH seniors and dropouts, resulting in an estimated prevalence among dropouts.

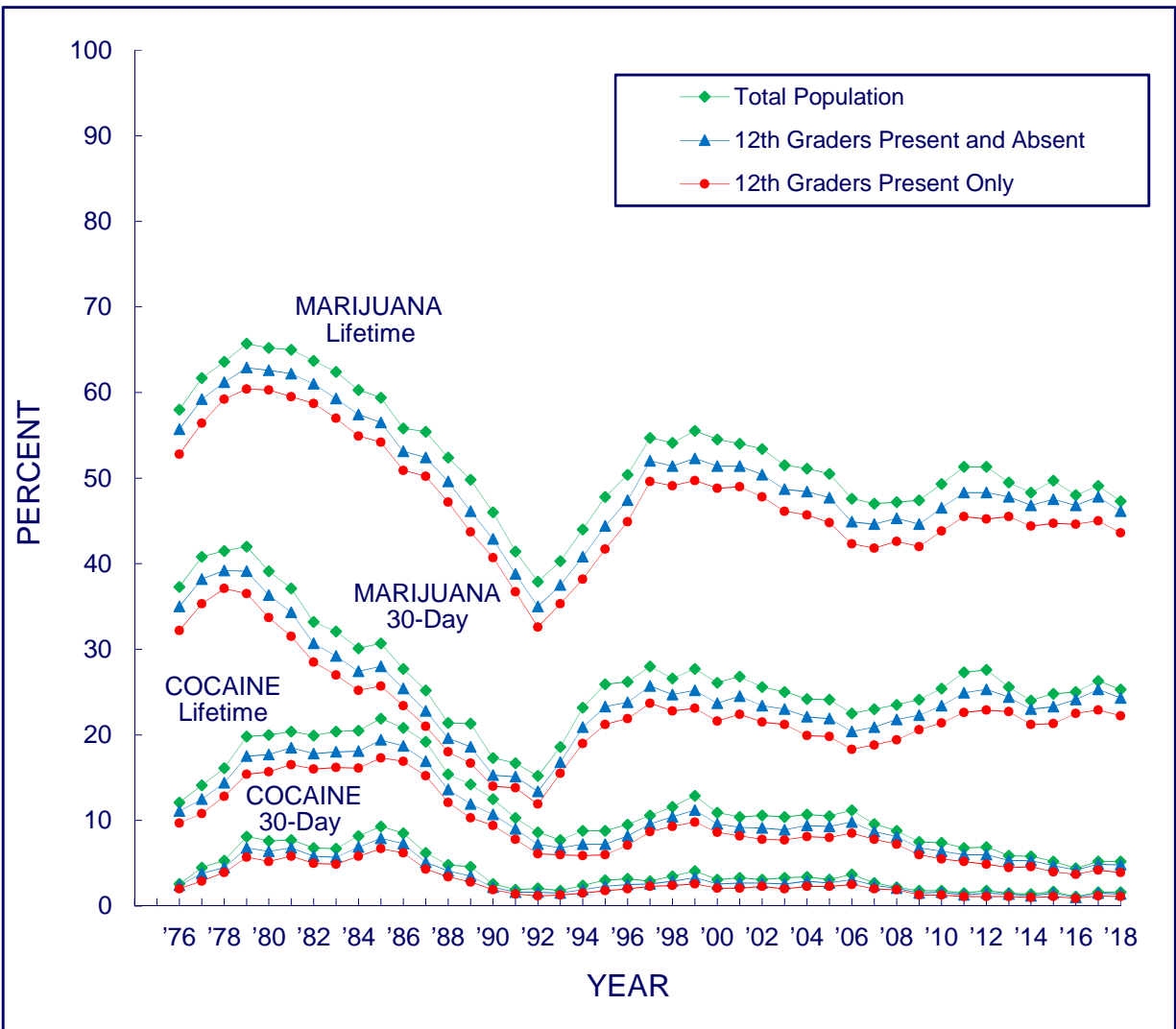
^jWeighted combined estimate of prevalence, using estimates for MTF seniors (absent and present), and estimates of prevalence among MTF and NSDUH dropouts combined.

FIGURE A-1
High School Completion by 20- to 24-Year-Olds



Source. U.S. Census Bureau, Current Populations Survey, published and unpublished data.

FIGURE A-2
Estimates of Prevalence and Trends for the Entire Age/Class Cohort
(Adjusting for Absentees and Dropouts) for 12th Graders



Source. The Monitoring the Future study, the University of Michigan.

Appendix B

DEFINITION OF BACKGROUND AND DEMOGRAPHIC SUBGROUPS

The following are brief definitions of the background and demographic subgroups explored in the Monitoring the Future (MTF) national survey of 8th, 10th, and 12th graders' attitudes toward and use of drugs (including alcohol and tobacco). Additional information on subgroup trends, such as the tables and figures depicting subgroup trends through the 2018 MTF survey, can be found in [Occasional Paper 92](#).¹

Total: The total sample of respondents in a given year based on weighted cases (set to equal the total number of actual cases).

Gender: *Male and female.* Respondents are asked “What is your sex?” Those with missing data on the question are omitted from the data presented by gender.

College Plans: Respondents are asked how likely it is that they will graduate from a four-year college program. College plans groupings are defined as follows:

None or under four years. Respondents who indicate they “definitely won’t” or “probably won’t” graduate from a four-year college program. (Note that, among those who do not expect to complete a four-year college program, a number still expect to get some postsecondary education.)

Complete four years. Respondents who indicate they “definitely will” or “probably will” graduate from a four-year college program.

Those not answering the college plans question are omitted from both groupings.

Region: Region of the country in which the respondent’s school is located. There are four mutually exclusive regions in the US based on Census Bureau categories, defined as follows:

Northeast. Census classifications of New England and Middle Atlantic states consist of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania.

Midwest. Census classifications of East North Central and West North Central states consist of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

¹ Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick M. E. (2018). [Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975-2018](#) (Monitoring the Future Occasional Paper No. 92). Ann Arbor, MI: Institute for Social Research, University of Michigan.

South. Census classifications of South Atlantic, East South Central, and West South Central states consist of Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

West. Census classifications of Mountain and Pacific states consist of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, and California (Alaska and Hawaii are also included in this Census region, but are not included in the MTF study).

**Population
Density:**

Population density of the area in which the schools are located. There are three mutually exclusive groups into which schools have been placed in a given year based on population density (which has been variously defined over time by the U.S. Bureau of the Census, as described below). The 1975–1985 samples were based on the 1970 Census; in 1986, one half of the sample was based on the 1970 Census and the other half was based on the 1980 Census. In 1987 through 1993, all samples were based on the 1980 Census; in 1994, half of the sample was based on the 1980 Census and half on the 1990 Census. Starting in 2006 until 2013, each first-year half-sample of schools comes from a sample design that utilizes 2000 Census counts as the measure of size for first-stage units. Counts from the 2010 Census were used for the samples beginning in 2014.

The three levels of population density were defined in terms of Standard Metropolitan Statistical Area (SMSA) designations through 1985, and then changed to the new Census Bureau classifications of Metropolitan Statistical Areas (MSAs). Except in the New England states, an MSA is a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000. In the New England states, MSAs consisted of towns and cities instead of counties until 1994, after which New England Consolidated Metropolitan Areas (NECMAs) were used to define MSAs. Each MSA must include at least one central city, and the complete title of an MSA identifies the central city or cities. For the complete description of the criteria used in defining MSAs, see the Office of Management and Budget publication, *Metropolitan Statistical Areas, 1990* (NTIS-PB90-214420), Washington, D.C. The population living in an MSA is designated as the metropolitan population. The levels of population density used in MTF include those described here:

Large MSA. These were the 12 largest SMSAs as of the 1970 Census and were used for the 1975–1985 samples: New York, Los Angeles, Chicago, Philadelphia, Detroit, San Francisco, Washington, Boston, Pittsburgh, St. Louis, Baltimore, and Cleveland. As of the 1980 Census, the Large MSA group consisted of the 16 largest MSAs in the nation. This new structure was used for the 1986–1994 samples. These 16 MSAs include all of those mentioned above

except Cleveland, plus Dallas-Fort Worth, Houston, Nassau-Suffolk, Minneapolis-St. Paul, and Atlanta.

A new sample design was developed based on the 1990 Census, beginning with the first-year half-sample of schools chosen in 1994. In the 1990s sample, only the eight largest MSAs are represented with certainty at all three grade levels; 16 other large MSAs are divided into pairs, with half randomly assigned to both the 8th- and 12th-grade samples and the other half assigned to the 10th-grade sample. The eight largest MSAs are New York, Los Angeles, Chicago, Philadelphia PA-NJ, Detroit, Washington DC-MD-VA, Dallas-Ft. Worth, and Boston. The other 16 large MSAs are Houston, Atlanta, Seattle-Tacoma, Minneapolis MN-WI, St. Louis MO-IL, San Diego, Baltimore, Pittsburgh, Phoenix, Oakland, Cleveland, Miami, Newark, Denver, San Francisco, and Kansas City MO-KS.

Other MSAs. This category consists of all other MSAs, as defined by the Census, except those listed previously.

Non-MSAs. This category consists of all areas not designated as MSAs—in other words, they do not contain a town (or twin cities) of at least 50,000 inhabitants. The population living outside of MSAs constitutes the nonmetropolitan population.

**Parental
Education:**

This is an average of mother’s education and father’s education based on the respondents’ answers about the highest level of education achieved by each parent, using the following scale: (1) completed grade school or less, (2) some high school, (3) completed high school, (4) some college, (5) completed college, and (6) graduate or professional school after college. Missing data were allowed for one of the two parents. The respondent was instructed, “If you were raised mostly by foster parents, stepparents, or others, answer for them. For example, if you have both a stepfather and a natural father, answer for the one that was most important in raising you.”

**Race/
Ethnicity:**

From 1975 through 2004, respondents were asked “How do you describe yourself?” and presented with a list of various racial/ethnic categories. A general instruction told them to select the one best response for each question. In 2005 the instructions in half of the questionnaire forms were revised in order to be more consistent with the guidelines of the Office of Management and Budget for assessing race/ethnicity. In the changed forms, respondents were presented with a list of racial/ethnic categories and instructed to “select one or more responses.” An examination of the data showed that relatively few respondents (about 6% in 2005 and about 9% of the sample in 2018) selected more than one racial/ethnic category. Because some survey questions appear in only one or a few forms, there was some variation in the version of the race/ethnicity question upon which the 2005 data were based. Based on the analyses we have examined, we do not believe these different permutations make any appreciable difference in the

results. In 2006 and thereafter the revised instruction was used in all forms. Those checking multiple racial/ethnic groups or one of the other specified groups are omitted from the reporting on race/ethnicity in this volume because of the small numbers of cases.

White/Caucasian. Consists of those respondents who describe themselves as White or Caucasian in 1975–2004. In 2005 the unchanged questionnaire forms were treated in a similar manner. For the revised question in 2005 and for all forms in 2006 and beyond, those checking only White and no other racial/ethnic group were categorized as White.

African American. Consists of those respondents who in 1975–1990 describe themselves as Black or Afro-American or who, in 1991–2004, describe themselves as Black or African American. In 2005 the unchanged questionnaire forms were treated in a similar manner; for the revised question in 2005 and for all forms in 2006 and beyond, only those checking Black or African American and no other racial ethnic group were categorized as African American.

Hispanic. Consists of those respondents who in 1975–1990 describe themselves as Mexican American or Chicano, or Puerto Rican or other Latin American. After 1990 this group includes those respondents who describe themselves as Mexican American or Chicano, Cuban American, Puerto Rican American, or other Latin American. The term “Puerto Rican American” was shortened to “Puerto Rican” after 1994. In 2005 the unchanged questionnaire forms were treated in a similar manner; the changed forms in 2005 and for all forms in 2006 and beyond, only those checking Mexican American or Chicano, Cuban American, Puerto Rican, or Other Hispanic or Latino and no other racial/ethnic group were categorized as Hispanic.

Appendix C

TRENDS IN SPECIFIC SUBCLASSES OF HALLUCINOGENS, AMPHETAMINES, TRANQUILIZERS, NARCOTIC DRUGS OTHER THAN HEROIN, AND SEDATIVES

The tables for this Appendix present trends in specific drugs that fall under the categories of **amphetamines, hallucinogens other than LSD, tranquilizers, narcotics other than heroin, and sedatives (barbiturates)**. Information on these specific drugs comes in part from “branching questions,” in which respondents who report that they have used a general type of drug such as amphetamines or tranquilizers are then asked to mark which ones they have used from a list of candidates. For example, in one of the six questionnaire forms administered to 12th graders, respondents who answer that they used *tranquilizers* in the prior 12 months are then asked a small set of additional questions about that use. One question asks, “What tranquilizers have you taken during the last year without a doctor’s orders? (Mark all that apply.)” A specified list of tranquilizers (e.g., Valium, Xanax, Librium, etc.) is provided, along with an additional category labeled “Other” and one labeled “Don’t know the name of some tranquilizers I have used.” (Note that 8th and 10th graders are not asked these more difficult to answer questions about the use of specific drugs.)

Answers to the detailed questions about the five drug classes are provided in this appendix in Tables C-1 to C-5, covering all years since 1976. These findings are discussed in part in Chapter 5. Because these questions are contained in only one of the six 12th grade questionnaire forms (one of five in earlier years), the number of cases on which the estimates are based is lower than for most prevalence estimates in this volume. Further, only past 12 month users of the drug class are asked the detailed questions, reducing the cases further. The relevant numbers of cases are provided in the bottom row of each table; the reader is cautioned that in some years, when annual prevalence is particularly low, the case counts are low.

We provide one other caution to the reader in interpreting these results. For some of the drug classes, the absolute prevalence may be an underestimate. This occurs because some users of a particular subclass may not realize that the substance (e.g., peyote) is actually a subclass of the more general class (in this case, hallucinogens other than LSD), even though all the subclasses are listed in the introduction to the question set. Such respondents, therefore, may not indicate use on the general question, which means they would never get to the branching question about using the subclass drug. Thus, they would not be counted among the users.

In the relevant 12th grade questionnaire form, we state both the full list of common street names as well as the proper names for the drugs in the general class *before* asking about whether they used the general class of drugs in the prior 12 months. However, because several of the drugs in the subclass lists (i.e., PCP, methamphetamine, crystal methamphetamine, Ritalin, OxyContin, and Vicodin) have also been included on a different questionnaire form in tripwire questions,¹ we have been able to determine that those questions usually yield higher levels of use when asked directly

¹A tripwire question is a single non-branching question that, for reasons of questionnaire space economy, asks only about frequency of use in the prior 12 months.

than when a branching question precedes them. For example, the 2003 prevalence rates for PCP use among 12th graders shows such a pattern. The 2003 annual prevalence for PCP generated by a single question about PCP use asked of all 12th graders was 1.3%, whereas the estimate was 0.9% when the drug was treated as a subcategory of hallucinogens other than LSD.²

Despite the potential for underestimation of *prevalence* when using branching questions, we still think such questions are helpful for discerning long-term *trends* in use. To stay with the PCP example, both the tripwire questions about PCP use and the branching question that treats PCP as a subcategory of hallucinogens other than LSD have shown very similar trends since 1979, when they were first available for comparison. Both measures showed a substantial decline in PCP use from 1979 through the mid-1980s, followed by a period of stability in use at low levels, then a modest increase in use in the 1990s until 1996, when use leveled. Thus if we only had the results from the branching question available, we would have obtained quite an accurate picture of the trend story, even though we would have been underestimating the absolute prevalence to some degree.

We conclude that the data for the other specific drug classes should also provide a fair approximation of the trends. The majority of such prevalence data probably underestimates the true prevalence, however.

Note on hallucinogens: In 2001, we changed the question wording in the branching question about use of hallucinogens other than LSD, replacing the older term “psychedelics” with the more current term “hallucinogens.” That same year the term “shrooms,” a common street name for hallucinogenic mushrooms or psilocybin, was added to the list of examples. Since then psilocybin (“shrooms”) has been the most widely used of the hallucinogens other than LSD. We believe that these methodological changes had the effect of increasing the reported prevalence; thus, the 2000–2001 change for the various classes of hallucinogens other than LSD in Table C-1 should not be mistaken for a real change in use. In 2018 “shrooms” continued to have the highest annual prevalence among hallucinogens other than LSD.

Note on psychotherapeutics: The pharmaceutical products that are part of each of these classes of psychotherapeutic drugs change over the years. Therefore, the lists of drugs are updated periodically as some drugs fall out of favor or are withdrawn from the market and others are introduced.

Note on amphetamines: Ritalin has been one of the drugs listed under the general class of amphetamines, though it is not formally an amphetamine. It is a stimulant, like amphetamine, and it is a medically indicated treatment for attention deficit hyperactivity disorder (ADHD). The issue of its diversion for other uses received increasing attention in the 1990s. For that reason, we added a separate tripwire question about its use starting with the 2001 survey. In past years, prevalence estimates based on the stand-alone question were higher than those based on the branching question. In 2018 the annual prevalence from a branching question was 0.8% vs. 0.9% from the stand-alone question.

² This may be an atypical case; proper classification of PCP is quite ambiguous – it is actually an animal tranquilizer with hallucinogenic effects. We suspected some years ago that students were not categorizing PCP as a hallucinogen other than LSD, even though it was given in the list of examples for that question. That suspicion was what originally led us to ask separate questions about its use.

We believe that the trend results based on the branching question tell a reasonably accurate story about the pattern of change for Ritalin use, despite past differences in absolute prevalence in comparison to the stand-alone, tripwire question. However, since 2001 we have based our prevalence estimates for Ritalin, shown elsewhere in this volume, primarily on the tripwire question.

In 2007, Preludin and Dexamyl (amphetamines with substantially decreased usage) were deleted to make room for Adderall and Concerta (which had become increasingly popular). Since then Adderall has been the most widely reported of the amphetamines.

In 2011, Benzedrine and Methedrine, as well as the street term Bennies, were dropped from the list of examples for the general use of amphetamines question due to very low levels of use (shown in Table C-2). In the follow-up questions asking about use of specific amphetamines, Benzedrine and Methedrine were deleted from the list of specific drugs.

In 2013, all questions on amphetamines were revised so that they asked about “amphetamines and other stimulant drugs” instead of only “amphetamines.” Also, in 2013 Vyvanse – another drug used in the treatment of ADHD – was added to the list.

In 2018 Adderall continued to have the highest annual prevalence (2.8%), with most other amphetamines and other stimulants considerably lower (Table C-2).

Note on sedatives (barbiturates): This class of drugs was originally referred to as “barbiturates” because barbiturates tended to predominate among the sedative medications. As more nonbarbiturate sedatives came into common use, we changed all relevant survey questions to refer to “sedatives.” There was also a major interruption in the time series; as prevalence of sedative use became consistently low, the sedative use branching questions were dropped after 1989 to make space for other questions. The series was resumed in 2007 because the sedative problem had made a comeback. Some older sedatives (including Nembutal, Luminal, Desbutal, Amytal, and Adrenocal) were dropped from the list of specific drugs and some newer ones (including Ambien, Lunesta, and Sonata) were added. In 2013, Tuinal was dropped and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added to the list of sedatives. All the specific sedatives in Table C-5 had low annual prevalence in 2018, with Ambien the highest at 0.5%.

Note on tranquilizers: In 2001, Xanax was added to the list of tranquilizers. In 2007, the list of drugs in the tranquilizer category was updated. Five seldom-used drugs were dropped (Equanil, meprobamate, Atarax, Tranxene, and Vistaril) and three more commonly used drugs were added (Soma, Ativan, and Klonopin). From 2006 on, Xanax has been the most widely used of the tranquilizers without medical supervision, followed by Valium, which predominated in earlier years.

Note on narcotics other than heroin: Because there had been considerable public comment on the diversion of OxyContin and Vicodin, in 2002 we added tripwire questions for these drugs in questionnaire forms different from the form containing the branching questions on the use of specific narcotics other than heroin. Once again, the absolute prevalence levels obtained for these

drugs turned out to be higher on these stand-alone questions, asked of all respondents on that questionnaire form, than those obtained from the branching questions. In 2013, the annual prevalence of OxyContin was estimated to be 3.6% in the tripwire question versus 2.2% in the branching question, while that of Vicodin was estimated to be 5.3% in the tripwire question versus only 2.6% in the branching question. Note also that Percocet, another of the narcotic drugs introduced onto the list in 2002, has shown annual prevalence levels similar to those for OxyContin. In 2007, Ultram was added to the list of narcotic drugs, and Dilaudid was dropped. In 2013, Tramadol, MS Contin, Suboxone, Roxycodone, Tylox, and Hydrocodone (Lortab, Lorcet, Norco) were added. In 2015, the drug name Roxycodone was updated to Oxycodone.

Codeine has consistently been one of the narcotic drugs most widely used without medical supervision. Since Vicodin was added to the list in 2002, it typically had either the highest prevalence in the class or one of the highest. In 2017, prevalence of both Vicodin and OxyContin fell (the decline was statistically significant for OxyContin), leaving Codeine as the drug with the highest prevalence in this class.

TABLE C-1
SPECIFIC HALLUCINOGENS OTHER THAN LSD: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What hallucinogens other than LSD ^b have you taken during the last year?</i>	<i>Percentage of ALL SENIORS using drug indicated in last 12 months</i>														
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Mescaline	5.1	5.0	5.0	4.1	4.8	3.7	3.5	2.7	3.0	2.3	2.1	1.6	0.8	0.9	0.6
Peyote	1.8	1.4	1.5	1.1	1.1	0.9	0.6	0.6	0.6	0.5	0.4	0.5	0.3	0.4	0.9
Psilocybin (shrooms) ^b	1.7	1.0	1.3	1.0	1.5	1.6	0.9	0.7	0.7	0.6	0.9	0.6	0.9	0.3	0.7
PCP	2.9	3.3	4.5	4.2	3.5	2.2	1.4	1.5	1.2	0.9	0.8	1.0	0.6	0.4	0.8
Concentrated THC	5.6	5.7	5.3	4.6	2.6	2.1	1.5	1.4	0.9	1.1	0.8	1.0	0.7	0.4	0.4
Other	3.3	3.7	3.4	3.9	2.9	2.7	1.9	1.5	1.5	1.3	0.9	0.9	0.7	0.9	0.9
Don't know the names of some I have used	1.2	1.3	1.5	1.6	1.2	1.2	1.1	1.2	0.9	1.0	0.7	0.7	0.5	0.3	0.5
<i>Approximate weighted N =</i>	<i>2,800</i>	<i>3,000</i>	<i>3,500</i>	<i>3,100</i>	<i>3,100</i>	<i>3,400</i>	<i>3,500</i>	<i>3,200</i>	<i>3,100</i>	<i>3,100</i>	<i>3,000</i>	<i>3,200</i>	<i>3,200</i>	<i>2,700</i>	<i>2,500</i>

Table continued on next page.

TABLE C-1 (cont.)
SPECIFIC HALLUCINOGENS OTHER THAN LSD: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What hallucinogens other than LSD ^b have you taken during the last year?</i>	<i>Percentage of ALL SENIORS using drug indicated in last 12 months</i>														
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Mescaline	0.6	0.6	0.8	0.5	1.1	1.2	0.8	1.3	0.9	1.3	0.9	0.8	0.5	0.6	0.7
Peyote	0.1	0.5	0.6	0.6	0.7	0.9	0.8	0.2	0.8	0.2	0.9	0.6	0.6	0.7	0.7
Psilocybin (shrooms) ^b	0.3	0.2	0.5	0.5	0.9	1.4	1.1	1.4	1.2	1.4†	4.9	4.0	4.6	5.7	4.4
PCP	0.5	0.6	0.7	0.9	1.2	1.1	0.9	0.8	1.1	1.2	0.9	1.0	0.9	1.0	0.7
Concentrated THC	0.4	0.2	0.5	0.4	0.9	1.5	1.2	1.1	1.3	0.9	1.3	0.8	0.9	1.3	0.8
Other	0.6	1.0	0.8	0.7	1.3	1.8	1.9	2.2	1.9	2.4	1.6	1.2	1.6	1.4	1.4
Don't know the names of some I have used	0.4	0.3	0.4	0.6	0.8	0.8	1.2	1.2	1.0	0.8	0.9	0.4	0.4	0.7	0.6
<i>Approximate weighted N =</i>	<i>2,500</i>	<i>2,600</i>	<i>2,600</i>	<i>2,500</i>	<i>2,500</i>	<i>2,300</i>	<i>2,500</i>	<i>2,500</i>	<i>2,200</i>	<i>2,100</i>	<i>2,100</i>	<i>2,100</i>	<i>2,400</i>	<i>2,400</i>	<i>2,400</i>

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TABLE C-1 (cont.)
SPECIFIC HALLUCINOGENS OTHER THAN LSD: Trends in Annual Prevalence of Use for All Seniors ^a

What hallucinogens other than LSD ^b have you taken during the last year?	Percentage of ALL SENIORS using drug indicated in last 12 months													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Mescaline	0.4	0.4	0.4	0.5	0.7	0.6	0.5	0.2	0.2	0.2	0.3	0.4	0.3	-0.1
Peyote	0.6	0.5	0.4	0.4	0.7	0.8	0.5	0.2	0.2	0.2	0.1	0.5	0.4	0.0
Psilocybin (shrooms) ^b	3.6	4.5	3.8	4.3	3.7	3.8	4.4	2.8	2.6	2.3	1.7	2.2	2.2	0.0
PCP	0.6	0.7	0.5	0.6	1.0	0.7	0.9	0.3	0.4	0.3	0.2	0.3	0.6	+0.3
Concentrated THC	0.9	1.0	1.3	1.2	1.1	1.2	1.5	1.0	1.3	1.0	0.6	1.1	1.1	0.0
Other	1.2	1.3	1.8	1.2	1.6	1.9	1.1	0.9	0.7	0.4	0.6	0.6	0.7	+0.1
Don't know the names of some I have used	0.6	0.4	0.4	0.8	0.8	0.6	0.6	0.3	0.3	0.4	0.6	0.2	0.3	0.0
<i>Approximate weighted N =</i> 2,300 2,400 2,300 2,300 2,300 2,300 2,200 2,000 2,000 2,100 1,900 2,100 2,200														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' ‡ ' indicates some change in the question.

See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThese are the estimated prevalence-of-use rates for the entire population of seniors, not just those who answered that they had used the more general class of drugs.

^bIn 2001, the question asking about the prevalence of use of specific hallucinogens other than LSD was changed in several ways: (1) the wording of the screening question was changed from psychedelics other than LSD to hallucinogens other than LSD; (2) in the list of examples given in the screening question, psilocybin was expanded to shrooms or psilocybin; and (3) the specific question about psilocybin was expanded to shrooms or psilocybin. The inclusion of the term shrooms elicited a higher reported level of use in response to both the general category and the specific drug psilocybin. This question change likely explains some of the discontinuity in the 2000–2001 results.

TABLE C-2
SPECIFIC AMPHETAMINES: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What amphetamines have you taken during the last year without a doctor's orders?</i>	<i>Percentage of ALL SENIORS using drug indicated in last 12 months</i>														
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Benzedrine	3.5	4.1	3.7	3.1	3.2	3.6	2.9	1.6	1.7	1.9	1.4	1.1	0.5	0.7	0.6
Dexedrine	2.9	3.5	3.7	4.0	4.0	5.1	2.8	1.4	1.6	1.2	0.9	0.6	0.4	0.6	0.5
Methedrine	3.4	4.2	3.9	4.7	4.4	5.6	4.7	3.2	3.0	2.9	2.0	1.5	1.2	0.7	0.5
Ritalin	0.5	0.7	0.6	0.4	0.6	0.7	0.5	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.5
Preludin ^b	0.6	1.0	1.1	1.3	1.1	1.7	0.8	0.6	0.5	0.4	0.3	0.1	0.2	0.3	0.1
Dexamyl ^b	1.3	1.5	1.1	1.3	1.3	1.1	1.2	0.6	0.9	0.6	0.8	0.5	0.4	0.3	0.2
Adderall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Concerta	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vyvanse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine	1.9	2.3	2.3	2.4	2.7	3.7	2.8	1.8	2.1	2.0	1.5	1.3	1.2	0.6	0.6
Crystal methamphetamine (ice)	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2	0.8
Other	4.6	5.9	6.5	6.4	6.4	7.6	4.6	4.2	4.3	3.3	3.7	2.6	1.5	2.1	1.6
Don't know the names of some I have used	6.8	7.2	6.8	7.5	8.7	11.1	9.2	8.4	8.1	7.0	5.3	4.4	3.3	2.9	2.9
<i>Approximate weighted N =</i>	<i>2,700</i>	<i>2,900</i>	<i>3,400</i>	<i>3,100</i>	<i>3,000</i>	<i>3,400</i>	<i>3,400</i>	<i>3,200</i>	<i>3,100</i>	<i>3,100</i>	<i>3,000</i>	<i>3,200</i>	<i>3,200</i>	<i>2,700</i>	<i>2,500</i>

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TABLE C-2 (cont.)
SPECIFIC AMPHETAMINES: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What amphetamines have you taken during the last year without a doctor's orders?</i>	<i>Percentage of ALL SENIORS using drug indicated in last 12 months</i>														
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Benzedrine	0.1	0.2	0.3	0.6	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.6	0.2	0.8	0.4
Dexedrine	0.3	0.2	0.2	0.5	0.4	0.3	0.9	0.6	0.6	0.6	0.8	1.0	0.7	1.3	0.6
Methedrine	0.3	0.4	0.4	0.5	0.3	0.3	0.5	0.3	0.3	0.3	0.5	0.2	0.2	0.4	0.6
Ritalin	0.1	0.1	0.4	1.0	0.8	1.2	2.8	2.8	2.4	2.2	2.4	2.6	2.3	3.9	2.3
Preludin ^b	0.1	0.1	0.1	0.3	0.1	0.5	0.2	0.3	0.2	*	0.2	0.1	0.1	0.2	0.2
Dexamyl ^b	0.1	0.2	0.3	0.5	0.2	0.4	0.3	0.4	0.2	0.2	0.5	0.2	0.1	0.5	0.3
Adderall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Concerta	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vyvanse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine	0.8	0.4	0.6	0.6	0.7	0.7	1.1	1.3	0.9	0.9	1.5	1.3	1.9	1.5	1.5
Crystal methamphetamine (ice)	1.2	1.1	1.1	1.4	1.6	1.5	1.8	2.5	1.8	1.9	2.1	2.1	1.7	2.0	1.2
Other	1.2	1.5	2.0	2.3	2.0	2.3	2.5	3.1	2.6	2.9	2.7	3.2	3.2	3.4	2.5
Don't know the names of some I have used	2.3	1.9	2.2	2.1	2.6	2.3	2.8	3.1	2.5	2.1	2.2	2.3	2.3	2.9	1.7
<i>Approximate weighted N =</i>	<i>2,500</i>	<i>2,600</i>	<i>2,600</i>	<i>2,500</i>	<i>2,500</i>	<i>2,300</i>	<i>2,500</i>	<i>2,500</i>	<i>2,200</i>	<i>2,100</i>	<i>2,000</i>	<i>2,100</i>	<i>2,400</i>	<i>2,400</i>	<i>2,400</i>

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TABLE C-2 (cont.)
SPECIFIC AMPHETAMINES: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What amphetamines have you taken during the last year without a doctor's orders?</i>	Percentage of ALL SENIORS using drug indicated in last 12 months													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013 ^d	2014 ^d	2015	2016	2017	2018	
Benzedrine	0.2	0.5	0.4	0.4	0.2	—	—	—	—	—	—	—	—	—
Dexedrine	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.4	0.3	0.1	0.1	0.6	0.2	-0.4
Methedrine	0.2	0.2	0.0	0.1	0.2	—	—	—	—	—	—	—	—	—
Ritalin	2.3	1.7	1.5	1.3	1.5	2.0	1.9	2.0	1.3	0.9	1.2	0.7	0.8	0.0
Preludin ^b	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—
Dexamyl ^b	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—
Adderall	—	2.8	3.2	3.3	3.5	5.1	4.0	4.1	4.0	2.9	3.3	3.1	2.8	-0.3
Concerta ^c	—	0.8	0.9	0.8	1.0	1.0	0.9	0.6	0.4	0.8	0.2	0.4	0.2	-0.2
Vyvanse	—	—	—	—	—	—	—	1.3	1.6	1.4	1.5	1.1	1.1	-0.1
Methamphetamine	1.1	1.2	0.5	0.6	0.6	0.4	0.4	0.3	0.4	0.7	0.3	0.3	0.4	+0.1
Crystal methamphetamine (ice)	1.3	1.1	0.4	0.2	0.5	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.1	-0.1
Other	3.4	1.4	1.5	1.1	0.8	2.0	1.4	0.6	0.7	1.3	1.0	0.3	0.7	+0.4
Don't know the names of some I have used	1.6	1.4	1.2	0.9	1.0	0.7	0.6	0.7	1.0	0.5	0.5	0.3	0.2	0.0
<i>Approximate weighted N = 2,300 2,400 2,300 2,300 2,300 2,300 2,200 2,000 2,000 2,100 1,900 2,000 2,100</i>														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available.

'*' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^bIn 2007 for the list of amphetamines, Preludin and Dexamyl were replaced with Adderall and Concerta.

^cIn 2013 "(Methylphenidate)" was added to Concerta.

^dIn 2013 the general amphetamine use question wording was changed slightly in the 12th grade questionnaires; Vyvanse was also added to the list of examples in this form. In 2014 the same form was changed; 'or other stimulant drug' was added to the question text and to the don't know' response.

TABLE C-3
SPECIFIC TRANQUILIZERS: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What tranquilizers have you taken during the last year without a</i>	Percentage of ALL SENIORS using drug indicated in last 12 months														
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Librium	2.6	2.9	2.4	2.1	1.8	2.0	0.9	1.2	0.5	0.8	0.7	0.7	0.3	0.2	0.2
Valium	5.3	6.9	6.0	5.9	5.3	5.5	3.5	3.2	2.9	3.5	2.8	2.9	2.2	1.7	1.6
Miltown ^b	0.2	0.3	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1
Xanax	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Equanil ^c	0.4	0.4	0.7	0.4	0.4	0.2	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.0	0.1
Meprobamate ^c	0.6	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	*	0.1	0.2
Soma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Serax	0.2	0.2	0.1	0.2	0.1	0.2	*	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.2
Atarax ^c	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.2	0.2	0.2	*	*	0.1
Tranxene ^c	0.2	0.3	0.3	0.5	0.3	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1
Vistaril ^c	0.1	0.2	0.4	0.3	0.3	0.3	0.1	0.1	0.2	0.4	0.2	0.1	0.0	*	0.3
Ativan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klonopin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Don't know the names of some I have used	3.0	2.7	2.7	1.9	2.3	1.6	1.3	1.7	1.4	1.7	2.0	1.3	0.9	1.0	1.5
<i>Approximate weighted N =</i> 2,700 2,900 3,400 3,100 3,000 3,300 3,400 3,200 3,100 3,100 3,000 3,100 3,200 2,700 2,500															

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TABLE C-3 (cont.)
SPECIFIC TRANQUILIZERS: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What tranquilizers have you taken during the last year without a</i>	Percentage of ALL SENIORS using drug indicated in last 12 months														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Librium	0.2	0.1	0.1	*	0.3	0.3	0.2	0.3	0.4	0.2	0.4	0.3	0.2	0.3	0.2
Valium	1.2	1.6	1.6	1.6	1.3	1.5	2.0	2.0	2.7	2.6	2.8	2.8	2.8	3.1	3.1
Miltown ^b	0.0	*	0.0	0.0	0.0	0.1	*	*	0.2	0.1	—	—	—	—	—
Xanax	—	—	—	—	—	—	—	—	—	—	1.9	2.6	2.7	2.7	2.3
Equanil ^c	0.1	*	0.1	*	*	0.2	0.2	0.1	0.1	0.2	0.1	0.4	*	0.1	*
Meproamate ^c	*	0.1	0.0	0.1	0.2	0.1	0.3	0.1	0.1	*	0.1	0.1	0.1	0.2	0.1
Soma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Serax	0.0	0.2	*	*	*	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1
Atarax ^c	0.1	0.1	0.1	0.0	*	*	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.1	0.3
Tranxene ^c	0.1	0.2	*	*	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	*	0.1	0.1
Vistaril ^c	0.0	*	*	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.3	0.2	0.1	0.2
Ativan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klonopin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	—	—	—	—	—	—	—	—	—	1.9	1.4	2.4	1.4
Don't know the names of some I have used	1.1	0.7	1.3	0.9	1.1	1.3	1.5	1.5	1.4	1.4	1.9	1.2	1.0	1.0	1.3
<i>Approximate weighted N =</i> 2,400 2,600 2,600 2,500 2,500 2,300 2,500 2,500 2,200 2,000 2,000 2,100 2,400 2,400 2,300															

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TABLE C-3 (cont.)
SPECIFIC TRANQUILIZERS: Trends in Annual Prevalence of Use for All Seniors ^a

What tranquilizers have you taken during the last year without a	Percentage of ALL SENIORS using drug indicated in last 12 months													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Librium	0.2	0.2	0.2	0.1	0.5	0.2	*	0.2	*	0.1	0.0	0.2	0.1	-0.2
Valium	2.3	2.4	1.9	1.9	1.9	1.6	1.1	1.4	1.0	0.9	0.6	0.6	0.3	-0.3
Miltown ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Xanax	2.8	3.3	3.3	3.6	3.7	2.8	3.1	2.6	3.4	2.5	2.8	2.4	2.2	-0.3
Equanil ^c	*	—	—	—	—	—	—	—	—	—	—	—	—	—
Meprobamate ^c	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—
Soma	—	1.3	1.4	0.7	1.4	0.4	1.0	0.4	0.3	0.1	0.3	0.1	0.3	+0.2
Serax	*	0.1	*	*	0.4	0.1	0.2	0.2	0.1	0.0	0.0	0.2	0.1	-0.2
Atarax ^c	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Tranxene ^c	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—
Vistaril ^c	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—
Ativan	—	0.2	0.4	0.4	0.4	0.5	0.3	0.2	0.2	0.2	0.0	0.2	0.0	-0.1
Klonopin	—	1.2	1.3	1.5	1.7	0.8	1.3	1.0	0.4	0.4	0.2	0.1	0.5	+0.4 s
Other	1.4	1.3	1.4	0.8	1.5	0.9	0.5	0.6	0.7	0.5	0.2	0.4	0.4	0.0
Don't know the names of some														
I have used	0.9	0.5	0.9	0.3	0.6	0.9	0.4	0.4	0.2	0.6	0.1	0.3	0.3	-0.1
<i>Approximate weighted N = 2,300 2,400 2,300 2,300 2,300 2,300 2,200 2,000 2,000 2,100 1,900 2,000 2,100</i>														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. '* *' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThese are the estimated prevalence-of-use rates for the entire population of seniors, not just those who answered that they had used the more general class of drugs.

^bIn 2001 for the list of tranquilizers, Miltown was replaced with Xanax.

^cIn 2007 for the list of tranquilizers, Equanil, meprobamate, Atarax, Tranxene, and Vistaril were replaced with Soma, Ativan, and Klonopin.

TABLE C-4
SPECIFIC NARCOTICS OTHER THAN HEROIN: Trends in Annual Prevalence of Use for All Seniors ^a

What narcotics other than heroin have you taken during the last year without a doctor's orders?	Percentage of ALL SENIORS using drug indicated in last 12 months														
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Methadone	0.6	0.4	0.9	0.9	0.8	0.7	0.4	0.6	0.5	0.5	0.5	0.3	0.1	*	0.5
Opium	2.7	2.4	2.6	3.0	2.8	2.4	1.6	1.2	1.5	1.4	1.5	1.3	0.9	0.9	0.7
Morphine	0.6	0.8	0.7	0.8	1.0	1.1	0.7	0.8	0.8	0.9	0.7	0.4	0.6	0.2	0.7
Codeine	2.5	2.3	3.0	3.4	3.8	4.2	2.6	2.5	3.3	3.3	3.0	2.5	2.2	1.7	2.2
Demerol	0.7	0.6	1.1	0.9	1.2	1.4	0.9	0.9	0.7	0.9	1.0	0.8	0.7	0.4	0.7
Paregoric ^b	0.4	0.3	0.3	0.2	0.4	0.2	0.1	0.3	0.1	0.1	0.1	0.1	*	0.1	0.1
Talwin ^b	0.1	0.1	0.1	0.2	0.3	0.1	0.3	0.2	0.3	0.1	0.1	0.1	*	*	0.1
Laudanum ^b	0.1	0.0	0.2	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	*	*	0.1
OxyContin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vicodin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Percocet	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Percodan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dilaudid ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ultram	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tramadol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MS Contin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Suboxone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Roxycodone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oxycodone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tylox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hydrocodone (Lortab, Lorcet, Norco)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	0.5	0.5	1.4	0.8	0.7	0.6	0.5	0.6	0.4	0.6	0.5	0.4	0.4	0.5	0.5
Don't know the names of some I have used	1.1	1.0	0.6	0.9	0.8	0.6	0.7	0.3	0.6	0.6	0.4	0.3	0.5	0.2	0.5
<i>Approximate weighted N =</i>	2,700	2,800	3,400	3,000	3,000	3,300	3,400	3,100	3,000	3,100	2,900	3,100	3,100	2,600	2,500

Table continued on next page.

TABLE C-4 (cont.)
SPECIFIC NARCOTICS OTHER THAN HEROIN: Trends in Annual Prevalence of Use for All Seniors ^a

<i>What narcotics other than heroin have you taken during the last year without a doctor's orders?</i>	<i>Percentage of ALL SENIORS using drug indicated in last 12 months</i>														
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Methadone	*	0.3	0.2	0.1	0.1	*	0.4	0.3	0.8	0.7	0.7	0.9	0.4	0.9	0.8
Opium	0.8	0.5	0.4	0.6	1.0	1.1	1.8	2.0	1.7	2.1	2.1	2.1	2.4	2.2	1.6
Morphine	0.4	0.4	0.2	0.3	0.3	0.6	1.0	1.0	1.2	1.2	1.4	1.5	1.8	2.1	2.1
Codeine	1.8	2.5	1.7	1.6	1.0	2.6	2.5	3.0	3.1	3.7	2.8	4.4	4.1	4.6	4.3
Demerol	0.5	0.9	0.8	0.6	0.4	1.0	1.2	1.1	1.5	0.9	1.2	1.4	0.9	1.3	1.2
Paregoric ^b	0.1	0.2	0.0	*	0.1	*	0.0	0.0	*	0.0	0.1	—	—	—	—
Talwin ^b	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	*	0.0	0.1	—	—	—	—
Laudanum ^b	0.0	*	*	*	0.1	*	0.1	0.0	0.1	0.1	*	—	—	—	—
OxyContin	—	—	—	—	—	—	—	—	—	—	—	1.6	2.0	2.8	3.2
Vicodin	—	—	—	—	—	—	—	—	—	—	—	4.1	4.1	5.2	4.5
Percocet	—	—	—	—	—	—	—	—	—	—	—	1.9	3.1	2.9	2.5
Percodan	—	—	—	—	—	—	—	—	—	—	—	0.6	0.7	0.6	0.6
Dilaudid ^c	—	—	—	—	—	—	—	—	—	—	—	0.1	0.1	0.3	0.1
Ultram	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tramadol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MS Contin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Suboxone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Roxycodone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oxycodone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tylox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hydrocodone (Lortab, Lorcet, Norco)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	0.2	0.5	0.3	0.6	0.3	0.7	0.6	1.2	1.6	1.4	0.9	1.6	1.8	1.7	1.6
Don't know the names of some I have used	0.3	0.1	0.5	0.4	0.3	0.4	0.5	0.8	0.6	0.6	0.5	0.7	0.4	0.5	0.4
<i>Approximate weighted N =</i>															
	<i>2,400</i>	<i>2,500</i>	<i>2,600</i>	<i>2,500</i>	<i>2,400</i>	<i>2,300</i>	<i>2,400</i>	<i>2,400</i>	<i>2,200</i>	<i>2,000</i>	<i>2,000</i>	<i>2,100</i>	<i>2,400</i>	<i>2,300</i>	<i>2,300</i>

Table continued on next page.

TABLE C-4 (cont.)
SPECIFIC NARCOTICS OTHER THAN HEROIN: Trends in Annual Prevalence of Use for All Seniors ^a

What narcotics other than heroin have you taken during the last year without a doctor's orders?	Percentage of ALL SENIORS using drug indicated in last 12 months													2017-2018 change
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Methadone	1.2	0.8	0.9	1.2	0.9	0.7	1.0	0.2	0.2	0.2	0.2	0.1	0.1	0.0
Opium	1.2	1.0	1.0	1.1	1.0	0.4	0.9	0.5	0.3	0.2	0.2	0.3	0.0	-0.3
Morphine	1.5	1.8	1.9	1.5	1.6	1.4	1.7	1.2	1.2	1.3	0.6	0.9	0.2	-0.7 s
Codeine	3.4	4.2	3.4	4.0	3.7	3.4	3.5	2.6	2.3	2.2	2.2	1.5	1.6	+0.1
Demerol	1.4	1.0	0.8	0.7	0.7	0.7	0.5	0.2	0.1	0.2	0.1	0.1	0.0	-0.1
Paregoric ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Talwin ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Laudanum ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—
OxyContin	2.8	3.0	3.7	3.5	3.7	3.2	3.0	2.2	2.2	1.0	1.8	0.7	0.8	0.0
Vicodin	4.2	5.8	5.7	4.6	4.6	4.3	4.3	2.6	1.9	1.8	1.3	0.5	0.5	0.0
Percocet	2.2	3.2	2.9	3.3	2.8	2.5	2.7	1.5	1.6	0.9	1.4	0.8	0.7	-0.1
Percodan	0.3	0.5	0.1	0.4	0.3	0.3	0.5	0.1	*	0.0	0.0	0.0	0.0	0.0
Dilaudid ^c	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Ultram	—	0.4	0.3	0.1	0.5	0.3	0.4	0.3	0.0	0.0	0.1	0.0	0.0	0.0
Tramadol	—	—	—	—	—	—	—	0.8	0.6	1.1	0.5	0.2	0.1	-0.1
MS Contin	—	—	—	—	—	—	—	*	0.1	0.1	0.0	0.0	0.0	0.0
Suboxone	—	—	—	—	—	—	—	0.2	0.1	0.2	0.2	*	0.1	0.0
Roxycodone	—	—	—	—	—	—	—	0.3	0.3	—	—	—	—	—
Oxycodone	—	—	—	—	—	—	—	—	—	1.4	2.4	1.1	0.9	-0.1
Tylox	—	—	—	—	—	—	—	0.0	*	0.1	0.0	0.0	0.1	+0.1
Hydrocodone (Lortab, Lorcet, Norco)	—	—	—	—	—	—	—	2.9	2.9	2.2	2.1	1.1	1.3	+0.2
Other	2.0	1.5	1.5	0.7	1.4	1.4	1.5	0.8	0.7	0.5	0.2	0.3	0.3	0.0
Don't know the names of some I have used	1.1	0.7	0.8	0.6	0.9	0.3	0.4	0.4	0.6	0.4	0.5	0.4	0.1	-0.2
<i>Approximate weighted N = 2,300 2,400 2,300 2,300 2,200 2,200 2,100 2,000 1,900 2,100 1,800 2,000 2,100</i>														

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available.

'*' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThese are the estimated prevalence-of-use rates for the entire population of seniors, not just those who answered that they had used the more general class of drugs.

^bIn 2002 for the list of narcotics other than heroin, paregoric, Talwin, and laudanum were replaced with OxyContin, Vicodin, Percocet, Percodan, and Dilaudid.

^cIn 2007 for the list of narcotics other than heroin, Dilaudid was replaced with Ultram.

TABLE C-5
SPECIFIC SEDATIVES: Trends in Annual Prevalence of Use for All Seniors^{a,b}

What sedatives have you taken during the last year without a doctor's orders?	Percentage of ALL SENIORS using drug indicated in last 12 months														
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990-1991
Phenobarbital	2.7	2.4	2.2	1.8	1.6	1.8	1.2	1.0	0.8	1.0	0.7	0.6	0.3	0.2	—
Seconal	3.2	2.9	2.4	2.0	1.1	1.3	1.3	0.8	0.7	0.8	0.5	0.4	0.3	0.0	—
Dalmane	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Restoril	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Halcion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tuinal	1.8	1.7	0.8	1.3	0.9	0.9	0.4	0.4	0.4	0.3	0.5	0.2	0.2	*	—
Nembutal	0.9	1.0	0.9	0.8	0.7	0.7	0.5	0.3	0.2	0.4	0.4	0.3	0.1	0.1	—
Luminal	0.6	0.9	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.2	0.2	0.2	0.2	—
Desbutal	0.2	0.3	0.5	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1	—
Amytal	0.6	0.8	0.5	0.3	0.4	0.5	0.4	0.4	0.2	0.4	0.4	0.2	0.3	0.1	—
Adrenocal	0.3	0.3	0.4	0.2	0.3	0.2	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	—
Ambien	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lunesta	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sonata	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Intermezzo	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Zolpimist	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	3.2	3.2	3.5	2.7	2.2	2.2	1.5	1.5	1.0	1.2	1.2	0.8	0.7	0.7	—
Don't know the names of some I have used	3.8	3.0	3.1	2.8	2.3	2.3	2.4	2.2	2.2	1.9	1.5	1.5	1.1	0.8	—
Approximate weighted N =	2,700	2,900	3,400	3,100	3,000	3,300	3,400	3,200	3,100	3,100	3,000	3,100	3,100	2,700	—

Table continued on next page.

TABLE C-5 (cont.)
SPECIFIC SEDATIVES: Trends in Annual Prevalence of Use for All Seniors^{a,b}

What sedatives have you taken during the last year without a doctor's orders?	Percentage of ALL SENIORS using drug indicated in last 12 months													2017-2018 change
	1992-2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Phenobarbital	—	0.1	0.1	0.1	0.4	0.3	0.2	0.1	*	0.1	0.3	0.1	0.1	0.0
Seconal	—	0.1	0.1	0.0	0.2	0.2	0.0	0.0	0.1	0.2	0.2	*	0.0	0.0
Dalmane	—	—	—	—	—	—	—	0.1	0.0	*	0.2	*	0.0	0.0
Restoril	—	—	—	—	—	—	—	0.1	*	0.2	0.3	*	0.0	0.0
Halcion	—	—	—	—	—	—	—	0.1	0.0	0.1	0.3	0.5	0.1	-0.4
Tuinal ^c	—	0.1	*	0.0	0.2	0.1	0.2	—	—	—	—	—	—	—
Nembutal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Luminal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Desbutal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Amytal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Adrenocal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ambien	—	1.5	1.1	1.4	1.5	1.5	1.3	0.9	1.2	0.8	0.3	0.6	0.5	-0.1
Lunesta	—	0.8	0.8	0.7	0.8	0.4	0.5	0.2	0.3	*	0.2	0.2	0.0	-0.2
Sonata	—	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.0	*	0.2	0.1	0.1	-0.1
Intermezzo	—	—	—	—	—	—	—	0.1	0.0	*	0.2	*	0.0	0.0
Zolpimist	—	—	—	—	—	—	—	0.2	0.1	0.1	0.2	0.1	0.1	0.0
Other	—	2.1	1.9	1.6	1.7	1.6	1.6	1.2	0.8	1.1	0.5	1.2	0.5	-0.7 s
Don't know the names of some I have used	—	0.7	0.8	0.8	0.9	0.7	1.0	1.0	1.3	0.8	0.5	0.9	1.0	+0.1
<i>Approximate weighted N =</i>	—	2,400	2,300	2,300	2,300	2,300	2,200	2,000	1,900	2,100	1,900	2,000	2,100	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. '—' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThese are the estimated prevalence-of-use rates for the entire population of seniors, not just those who answered that they had used the more general class of drugs.

^bThis question set was dropped in 1990, as sedative use had become quite low, to make room for other questions. Because of a rise in sedative use since then, it was reintroduced in 2007, and some new drugs were included in the listing.

^cIn 2013 Tuinal was dropped from the list of sedatives (barbiturates).

Appendix D

TRENDS IN DRUG USE FOR THREE GRADES COMBINED

This appendix presents tables and figures showing usage trends of the various drugs covered in this monograph, in which the data from grades 8, 10, and 12 have been combined. (Data were first gathered on all three grades in 1991, so these tables cover the interval 1991–2018.) These combined figures provide simplicity, but in doing so lose some important distinctions. For example, inflections either up or down in use have sometimes occurred first among 8th graders and then radiated up the age spectrum on a lagged basis; such cohort effects are masked when the data are combined across grade. But for those seeking an easier way of summarizing the overall historical trend results, this simplification may be useful at times.

Figures D-1 through D-9 show general shifts occurring for most of the drugs under study in MTF, both licit and illicit. In Chapter 5 these trends are presented separately by grade and discussed at length.

Tables F-1 through F-4 provide the numerical estimates that underlie the figures. The averages across grades in the use of each drug are calculated using a weighting procedure that takes into account the estimated number of students in the 48 contiguous states and the District of Columbia who are enrolled in each of the three grade levels each year. The original sampling weights used at each grade level to correct for unequal probabilities of selection within grade have been retained.

These tables also show the absolute change in use between the most recent year and the recent peak level observed for each drug, along with the statistical significance of that change. Most of these changes from recent peaks are statistically significant, in part because the sample sizes are so large. The proportional change since the recent peak year is also provided. In addition, the two far right-hand columns show absolute and proportional changes from the recent lowest level to the most recent year.

It should be noted that two important classes of drugs on which MTF routinely reports are not included in these figures, because we report the data only for 12th graders – *narcotics other than heroin* (taken as a class) and *sedatives* (barbiturates). The 12th grade trend data for these drugs may be found in Chapter 5. Several other drugs on which we lack data for the lower grades are also missing here.

TABLE D-1
Trends in Lifetime Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Any Illicit Drug ^b	30.4	29.8	32.1	35.7	38.9	42.2	43.3	42.3	41.9	41.0	40.9	39.5	37.5	36.4	35.7
Any Illicit Drug other than Marijuana ^b	19.7	19.7	21.2	22.0	23.6	24.2	24.0	23.1	22.7	22.1†	23.2	21.1	19.8	19.3	18.6
Any Illicit Drug including Inhalants ^b	36.8	36.3	38.8	41.9	44.9	47.4	48.2	47.4	46.9	46.2	45.5	43.7	41.9	41.3	41.0
Marijuana/Hashish	22.7	21.1	23.4	27.8	31.6	35.6	37.8	36.5	36.4	35.3	35.3	34.0	32.4	31.4	30.8
Inhalants	17.0	16.9	18.2	18.6	19.4	19.1	18.6	18.1	17.5	16.4	15.3	13.6	13.4	13.7	14.1
Hallucinogens	6.1	6.3	7.0	7.7	8.9	10.0	10.2	9.5	9.0	8.5‡	9.2	7.6	6.9	6.3	5.9
LSD	5.5	5.7	6.5	6.9	8.1	8.9	9.1	8.3	7.9	7.2	6.5	5.0	3.7	3.0	2.6
Hallucinogens other than LSD	2.4	2.5	2.7	3.6	3.9	4.8	4.9	4.8	4.4	4.5‡	6.7	6.0	5.8	5.6	5.4
Ecstasy (MDMA) ^c , original	—	—	—	—	—	4.9	5.2	4.5	5.3	7.2	8.0	6.9	5.4	4.7	4.0
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	4.6	4.0	4.1	4.5	5.1	6.0	6.6	7.0	7.2	6.5	5.9	5.7	5.3	5.5	5.5
Crack	2.0	1.9	2.0	2.5	2.8	3.2	3.4	3.8	3.8	3.5	3.2	3.2	2.9	2.9	2.8
Other cocaine	4.1	3.5	3.6	3.9	4.2	5.2	5.9	6.1	6.3	5.6	5.1	4.8	4.5	4.7	4.7
Heroin	1.1	1.3	1.3	1.6	1.9	2.1	2.1	2.2	2.2	2.1	1.7	1.7	1.5	1.5	1.5
With a needle	—	—	—	—	1.1	1.2	1.1	1.1	1.3	1.0	0.9	0.9	0.9	0.9	0.9
Without a needle	—	—	—	—	1.3	1.7	1.7	1.6	1.6	1.8	1.3	1.3	1.3	1.2	1.1
Amphetamines ^b	12.9	12.5	13.8	14.3	15.2	15.5	15.2	14.5	14.0	13.5	13.9	13.1	11.8	11.2	10.3
Methamphetamine	—	—	—	—	—	—	—	—	6.5	6.2	5.8	5.3	5.0	4.5	3.9
Tranquilizers	5.5	5.3	5.4	5.5	5.8	6.5	6.6	6.9	7.0	6.9‡	7.9	7.9	7.3	7.1	6.8
Alcohol	80.1	79.2‡	68.4	68.4	68.2	68.4	68.8	67.4	66.4	66.6	65.5	62.7	61.7	60.5	58.6
Been drunk	46.3	44.9	44.6	44.3	44.5	45.1	45.7	44.0	43.7	44.0	43.4	40.5	38.9	39.4	38.4
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	54.7	54.7
Cigarettes	53.5	53.0	54.0	54.6	55.8	57.8	57.4	56.0	54.5	51.8	49.1	44.2	40.8	39.6	37.4
Smokeless tobacco	—	26.2	25.6	26.3	26.0	25.7	22.7	21.1	19.4	17.9	16.6	15.2	14.1	13.6	13.8
Any Vaping ^d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	1.9	1.8	1.8	2.1	2.1	1.8	2.1	2.3	2.8	3.0	3.3	3.3	3.0	2.5	2.1

Table continued on next page.

TABLE D-1 (continued)
Trends in Lifetime Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018	<u>Peak year–2018 change</u>		<u>Low year–2018 change</u>	
														change	Absolute change	Proportional change (%) ^a	Absolute change	Proportional change
Any Illicit Drug ^b	34.0	32.7	32.6	33.2	34.4	34.7	34.1	36.0†	34.9	34.3	<u>32.6</u>	33.4	33.9	+0.5	-1.0	-2.8	+1.3	+4.0
Any Illicit Drug other than Marijuana ^b	18.2	17.7	16.8	16.5	16.8	16.1	15.5	16.8†	15.8	15.1	14.3	<u>14.0</u>	14.2	+0.2	-1.6 s	-10.4	+0.2	+1.2
Any Illicit Drug including Inhalants ^b	39.3	38.0	37.9	37.9	38.8	38.7	37.9	39.3†	37.9	37.4	<u>34.9</u>	36.5	36.6	+0.2	-1.3	-3.4	+1.8 s	+5.1
Marijuana/Hashish	28.9	27.9	<u>27.9</u>	29.0	30.4	31.0	30.7	32.0	30.5	30.0	28.6	29.3	29.7	+0.3	-8.1 sss	-21.5	+1.8 s	+6.4
Inhalants	13.7	13.5	13.1	12.5	12.1	10.6	10.0	8.9	8.8	7.5	<u>6.5</u>	6.7	6.6	-0.1	-12.8 sss	-66.0	+0.1	+1.5
Hallucinogens	5.7	5.8	5.6	5.3	5.8	5.7	5.0	5.0	4.3	4.3	4.3	4.2	<u>4.1</u>	-0.1	-5.0 sss	-54.8	—	—
LSD	2.5	2.6	2.7	2.5	2.8	2.7	2.5	2.6	<u>2.4</u>	2.8	3.1	3.1	3.0	0.0	-6.1 sss	-66.6	+0.6 s	+25.4
Hallucinogens other than LSD	5.2	5.1	4.8	4.7	5.0	4.9	4.3	4.1	3.5	3.1	3.0	2.9	<u>2.8</u>	-0.1	-3.8 sss	-57.6	—	—
Ecstasy (MDMA) ^c , original	4.3	4.5	4.1	4.6	5.5	5.5	4.6	4.7	3.5	—	—	—	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	5.0	4.0	3.1	3.0	<u>2.7</u>	-0.3	-2.4 sss	-47.0	—	—
Cocaine	5.3	5.2	4.8	4.2	3.8	3.4	3.3	3.1	2.9	2.7	<u>2.3</u>	2.5	2.6	+0.1	-4.6 sss	-63.9	+0.3	+11.2
Crack	2.6	2.5	2.2	2.0	1.9	1.6	1.5	1.5	1.3	1.3	<u>1.0</u>	1.1	1.1	0.0	-2.7 sss	-71.2	+0.1	+8.2
Other cocaine	4.7	4.6	4.1	3.7	3.4	3.1	2.9	2.7	2.5	2.3	<u>2.1</u>	2.1	2.3	+0.2	-4.0 sss	-63.7	+0.2	+8.8
Heroin	1.4	1.4	1.3	1.4	1.4	1.2	1.0	1.0	0.9	0.7	0.6	0.6	<u>0.6</u>	0.0	-1.7 sss	-75.0	—	—
With a needle	0.9	0.8	0.8	0.8	0.9	0.8	0.6	0.7	0.7	0.5	0.4	0.4	<u>0.4</u>	0.0	-0.9 sss	-71.6	—	—
Without a needle	1.0	1.0	0.9	0.9	1.0	0.9	0.7	0.7	0.6	0.5	0.4	0.4	<u>0.4</u>	0.0	-1.4 sss	-78.8	—	—
Amphetamines ^b	10.1	9.5	8.6	8.6	8.9	8.6	8.3	10.5†	9.7	9.1	8.1	<u>7.7</u>	7.7	0.0	-2.0 sss	-20.4	0.0	+0.6
Methamphetamine	3.4	2.5	2.5	2.2	2.2	1.8	1.6	1.5	1.4	1.1	0.8	0.9	<u>0.7</u>	-0.1	-5.8 sss	-88.6	—	—
Tranquilizers	7.0	6.7	6.3	6.5	6.6	6.0	5.8	5.2	5.3	<u>5.2</u>	5.5	5.6	5.4	-0.3	-2.5 sss	-31.9	+0.2	+3.3
Alcohol	57.0	56.3	55.1	54.6	53.6	51.5	50.0	48.4	46.4	45.2	41.9	41.7	<u>41.2</u>	-0.5	-27.5 sss	-40.1	—	—
Been drunk	37.6	36.6	35.1	35.9	34.2	32.5	32.8	31.7	29.2	28.2	26.4	26.0	<u>25.6</u>	-0.3	-20.7 sss	-44.6	—	—
Flavored alcoholic beverages	53.1	51.3	49.3	47.9	46.7	44.5	42.7	41.1	38.8	37.4	33.8	<u>33.5</u>	34.3	+0.8	-20.3 sss	-37.2	+0.8	+2.5
Cigarettes	35.0	33.3	31.3	31.2	30.9	28.7	27.0	25.6	22.9	21.1	18.2	17.0	<u>16.1</u>	-1.0	-41.7 sss	-72.2	—	—
Smokeless tobacco	13.3	12.9	12.3	13.5	14.5	13.8	13.5	12.8	12.1	11.3	10.3	<u>8.7</u>	8.8	+0.1	-17.5 sss	-66.5	+0.1	+1.1
Any Vaping ^d	—	—	—	—	—	—	—	—	—	29.9	26.6†	<u>28.2</u>	33.4	+5.2 sss	—	—	+5.2 sss	+18.5
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	<u>18.9</u>	25.2	+6.3 sss	—	—	+6.3 sss	+33.4
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	<u>8.5</u>	11.7	+3.2 sss	—	—	+3.2 sss	+38.1
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	<u>24.9</u>	28.3	+3.3 sss	—	—	+3.3 sss	+13.4
Steroids	2.0	1.8	1.6	1.5	1.5	1.5	1.4	1.5	1.4	1.5	1.3	<u>1.2</u>	1.3	0.0	-2.0 sss	-62.0	0.0	-2.7

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '†' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

^bIn 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

^cIn 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

^dIn 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

TABLE D-2
Trends in Annual Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined
(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Any Illicit Drug ^c	20.2	19.7	23.2	27.6	31.0	33.6	34.1	32.2	31.9	31.4	31.8	30.2	28.4	27.6	27.1
Any Illicit Drug other than Marijuana ^c	12.0	12.0	13.6	14.6	16.4	17.0	16.8	15.8	15.6	15.3‡	16.3	14.6	13.7	13.5	13.1
Any Illicit Drug including Inhalants ^c	23.5	23.2	26.7	31.1	34.1	36.6	36.7	35.0	34.6	34.1	34.3	32.3	30.8	30.1	30.1
Marijuana/Hashish	15.0	14.3	17.7	22.5	26.1	29.0	30.1	28.2	27.9	27.2	27.5	26.1	24.6	23.8	23.4
Synthetic marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Inhalants	7.6	7.8	8.9	9.6	10.2	9.9	9.1	8.5	7.9	7.7	6.9	6.1	6.2	6.7	7.0
Hallucinogens	3.8	4.1	4.8	5.2	6.6	7.2	6.9	6.3	6.1	5.4‡	6.0	4.5	4.1	4.0	3.9
LSD	3.4	3.8	4.3	4.7	5.9	6.3	6.0	5.3	5.3	4.5	4.1	2.4	1.6	1.6	1.5
Hallucinogens other than LSD	1.3	1.4	1.7	2.2	2.7	3.2	3.2	3.1	2.9	2.8‡	4.0	3.7	3.6	3.6	3.4
Ecstasy (MDMA) ^d , original	—	—	—	—	—	3.1	3.4	2.9	3.7	5.3	6.0	4.9	3.1	2.6	2.4
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	2.2	2.1	2.3	2.8	3.3	4.0	4.3	4.5	4.5	3.9	3.5	3.7	3.3	3.5	3.5
Crack	1.0	1.1	1.2	1.5	1.8	2.0	2.1	2.4	2.2	2.1	1.8	2.0	1.8	1.7	1.6
Other cocaine	2.0	1.8	2.0	2.3	2.8	3.4	3.7	3.7	4.0	3.3	3.0	3.1	2.8	3.1	3.0
Heroin	0.5	0.6	0.6	0.9	1.2	1.3	1.3	1.2	1.3	1.3	0.9	1.0	0.8	0.9	0.8
With a needle	—	—	—	—	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.5	0.5
Without a needle	—	—	—	—	0.9	0.9	1.0	0.9	1.0	1.1	0.7	0.7	0.6	0.7	0.7
OxyContin	—	—	—	—	—	—	—	—	—	—	—	2.7	3.2	3.3	3.4
Vicodin	—	—	—	—	—	—	—	—	—	—	—	6.0	6.6	5.8	5.7
Amphetamines ^c	7.5	7.3	8.4	9.1	10.0	10.4	10.1	9.3	9.0	9.2	9.6	8.9	8.0	7.6	7.0
Ritalin	—	—	—	—	—	—	—	—	—	—	4.2	3.8	3.5	3.6	3.3
Adderall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine	—	—	—	—	—	—	—	—	4.1	3.5	3.4	3.2	3.0	2.6	2.4
Bath salts (synthetic stimulants)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tranquilizers	2.8	2.8	2.9	3.1	3.7	4.1	4.1	4.4	4.4	4.5‡	5.5	5.3	4.8	4.8	4.7
OTC Cough/Cold Medicines	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rohypnol	—	—	—	—	—	1.1	1.1	1.1	0.8	0.7	0.9‡	0.8	0.8	0.9	0.8
GHB ^b	—	—	—	—	—	—	—	—	—	1.4	1.2	1.2	1.2	1.1	0.8
Ketamine ^b	—	—	—	—	—	—	—	—	—	2.0	1.9	2.0	1.7	1.3	1.0
Alcohol	67.4	66.3‡	59.7	60.5	60.4	60.9	61.4	59.7	59.0	59.3	58.2	55.3	54.4	54.0	51.9
Been drunk	35.8	34.3	34.3	35.0	35.9	36.7	36.9	35.5	36.0	35.9	35.0	32.1	31.2	32.5	30.8
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	44.5	43.9
Alcoholic beverages containing caffeine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Vaping	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dissolvable tobacco products	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Snus	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	1.2	1.1	1.0	1.2	1.3	1.1	1.2	1.3	1.7	1.9	2.0	2.0	1.7	1.6	1.3

Table continued on next page.

TABLE D-2 (continued)
Trends in Annual Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018	Peak year–2018 change		Low year–2018 change	
														change	Absolute change	Proportional change (%) ^a	Absolute change	Proportional change
Any Illicit Drug ^c	25.8	24.8	24.9	25.9	27.3	27.6	27.1	28.6†	27.2	26.8	<u>25.3</u>	26.5	27.1	+0.6	-0.1	99.5	+1.7 s	+6.9
Any Illicit Drug other than Marijuana ^c	12.7	12.4	11.9	11.6	11.8	11.3	10.8	11.4‡	10.9	10.5	9.7	9.4	<u>9.3</u>	-0.1	-1.7 ss	-15.1	—	—
Any Illicit Drug including Inhalants ^c	28.7	27.6	27.6	28.5	29.7	29.8	29.0	30.5‡	28.5	28.4	<u>26.3</u>	28.3	28.8	+0.4	—	—	+2.5 ss	+9.4
Marijuana/Hashish	22.0	<u>21.4</u>	21.5	22.9	24.5	25.0	24.7	25.8	24.2	23.7	22.6	23.9	24.3	+0.5	-5.7 sss	-19.0	+3.0 sss	+13.9
Synthetic marijuana	—	—	—	—	—	—	8.0	6.4	4.8	4.2	3.1	2.8	<u>2.6</u>	-0.1	-5.4 sss	-67.1	—	—
Inhalants	6.9	6.4	6.4	6.1	6.0	5.0	4.5	3.8	3.6	3.2	<u>2.6</u>	2.9	2.9	0.0	-7.3 sss	-71.8	+0.2	+8.5
Hallucinogens	3.6	3.8	3.8	3.5	3.8	3.7	3.2	3.1	2.8	2.8	2.8	2.7	<u>2.7</u>	0.0	-3.3 sss	-54.4	—	—
LSD	<u>1.4</u>	1.7	1.9	1.6	1.8	1.8	1.6	1.6	1.7	1.9	2.0	2.1	2.0	-0.1	-4.3 sss	-68.7	+0.6 ss	+40.9
Hallucinogens other than LSD	3.3	3.3	3.2	3.0	3.3	3.1	2.7	2.5	2.1	1.9	1.8	1.8	<u>1.7</u>	0.0	-2.3 sss	-56.9	—	—
Ecstasy (MDMA) ^d , original	2.7	3.0	2.9	3.0	3.8	3.7	2.5	2.8	2.2	—	—	—	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	3.4	2.4	1.8	1.7	<u>1.5</u>	-0.2	-1.8 sss	-54.5	—	—
Salvia	—	—	—	—	3.5	3.6	2.7	2.3	1.4	1.2	1.2	0.9	<u>0.8</u>	-0.2 s	-2.9 sss	-79.1	—	—
Cocaine	3.5	3.4	2.9	2.5	2.2	2.0	1.9	1.8	1.6	1.7	<u>1.4</u>	1.6	1.5	-0.1	-2.9 sss	-66.0	+0.1	+7.4
Crack	1.5	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.8	<u>0.6</u>	0.7	0.6	-0.1	-1.8 sss	-73.8	0.0	+7.3
Other cocaine	3.1	2.9	2.6	2.1	1.9	1.7	1.7	1.5	1.5	1.5	<u>1.2</u>	1.3	1.3	0.0	-2.7 sss	-66.7	+0.1	+7.6
Heroin	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.3	<u>0.3</u>	0.0	-1.0 sss	-78.1	—	—
With a needle	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.3	0.3	<u>0.2</u>	0.2	0.0	-0.5 sss	-68.0	0.0	+4.9
Without a needle	0.6	0.7	0.6	0.5	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2	<u>0.2</u>	0.0	-0.9 sss	-83.4	—	—
OxyContin	3.5	3.5	3.4	3.9	3.8	3.4	2.9	2.9	2.4	2.3	2.1	1.9	<u>1.7</u>	-0.1	-2.2 sss	-55.4	—	—
Vicodin	6.3	6.2	6.1	6.5	5.9	5.1	4.3	3.7	3.0	2.5	1.8	1.3	<u>1.1</u>	-0.2	-5.4 sss	-82.8	—	—
Amphetamines ^c	6.8	6.5	5.8	5.9	6.2	5.9	5.6	7.0‡	6.6	6.2	5.4	5.0	<u>5.0</u>	-0.0	-1.6 sss	-24.9	—	—
Ritalin	3.5	2.8	2.6	2.5	2.2	2.1	1.7	1.7	1.5	1.4	1.1	0.8	<u>0.8</u>	0.0	-3.4 sss	-81.2	—	—
Adderall	—	—	—	4.3	4.5	4.1	4.4	4.4	4.1	4.5	3.9	3.5	<u>3.5</u>	-0.1	-1.0 sss	-23.0	—	—
Methamphetamine	2.0	1.4	1.3	1.3	1.3	1.2	1.0	1.0	0.8	0.6	0.5	0.5	<u>0.5</u>	0.0	-3.6 sss	-88.8	—	—
Bath salts (synthetic stimulants)	—	—	—	—	—	—	0.9	0.9	0.8	0.7	0.8	<u>0.5</u>	0.7	+0.1	-0.3 s	-28.9	+0.1	+26.0
Tranquilizers	4.6	4.5	4.3	4.5	4.4	3.9	3.7	3.3	3.4	3.4	3.5	3.6	<u>3.2</u>	-0.3	-2.3 sss	-41.0	—	—
OTC Cough/Cold Medicines	5.4	5.0	4.7	5.2	4.8	4.4	4.4	4.0	3.2	3.1	3.2	<u>3.0</u>	3.2	+0.2	-2.2 sss	-40.8	+0.2	+6.3
Rohypnol	0.7	0.8	0.7	0.6	0.8	0.9	0.7	0.6	0.5	0.5	0.7	0.5	<u>0.4</u>	0.0	-0.5 sss	-53.0	—	—
GHB ^b	0.9	0.7	0.9	0.9	0.8	<u>0.8</u>	—	—	—	—	—	—	—	—	—	—	—	—
Ketamine ^b	1.1	<u>1.0</u>	1.2	1.3	1.2	1.2	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol	50.7	50.2	48.7	48.4	47.4	45.3	44.3	42.8	40.7	39.9	36.7	36.7	<u>36.1</u>	-0.6	-25.2 sss	-41.1	—	—
Been drunk	30.7	29.7	28.1	28.7	27.1	25.9	26.4	25.4	23.6	22.5	20.7	20.4	<u>20.0</u>	-0.3	-16.9 sss	-45.7	—	—
Flavored alcoholic beverages	42.4	40.8	39.0	37.8	35.9	33.7	32.5	31.3	29.4	28.8	<u>25.3</u>	25.9	26.1	+0.2	-18.4 sss	-41.3	+0.8	+3.0
Alcoholic beverages containing caffeine	—	—	—	—	—	19.7	18.6	16.6	14.3	13.0	11.2	10.6	<u>10.1</u>	-0.5	-9.6 sss	-48.8	—	—
Any Vaping	—	—	—	—	—	—	—	—	—	—	—	<u>21.5</u>	28.9	+7.4 sss	—	—	+7.4 sss	+34.2
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	<u>13.9</u>	21.6	+7.6 sss	—	—	+7.6 sss	+54.8
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	<u>6.8</u>	9.9	+3.1 sss	—	—	+3.1 sss	+44.7
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	<u>17.2</u>	21.8	+4.6 sss	—	—	+4.6 sss	+26.9
Dissolvable tobacco products	—	—	—	—	—	—	1.4	1.4	1.2	1.1	0.9	<u>0.9</u>	1.0	+0.1	-0.4 s	-28.9	+0.1	+8.8
Snus	—	—	—	—	—	—	5.6	4.8	4.1	3.8	3.6	<u>2.6</u>	3.0	+0.4	-2.6 sss	-46.3	+0.4	+16.4
Steroids	1.3	1.1	1.1	1.0	0.9	0.9	0.9	0.9	0.9	1.0	<u>0.8</u>	0.8	0.8	0.0	-1.2 sss	-61.2	0.0	+3.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '‡' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

^bQuestion was discontinued among 8th and 10th graders in 2012.

^cIn 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

^dIn 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

TABLE D-3
Trends in 30-Day Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Any Illicit Drug ^b	10.9	10.5	13.3	16.8	18.6	20.6	20.5	19.5	19.5	19.2	19.4	18.2	17.3	16.2	15.8
Any Illicit Drug other than Marijuana ^b	5.4	5.5	6.5	7.1	8.4	8.4	8.4	8.2	7.9	8.0†	8.2	7.7	7.1	7.0	6.7
Any Illicit Drug including Inhalants ^b	13.0	12.5	15.4	18.9	20.7	22.4	22.2	21.1	21.1	21.0	20.8	19.5	18.6	17.5	17.5
Marijuana/Hashish	8.3	7.7	10.2	13.9	15.6	17.7	17.9	16.9	16.9	16.3	16.6	15.3	14.8	13.6	13.4
Inhalants	3.2	3.3	3.8	4.0	4.3	3.9	3.7	3.4	3.3	3.2	2.8	2.7	2.7	2.9	2.9
Hallucinogens	1.5	1.6	1.9	2.2	3.1	2.7	3.0	2.8	2.5	2.0†	2.3	1.7	1.5	1.5	1.5
LSD	1.3	1.5	1.6	1.9	2.8	2.1	2.4	2.3	2.0	1.4	1.5	0.7	0.6	0.6	0.6
Hallucinogens other than LSD	0.5	0.5	0.7	1.0	1.0	1.2	1.2	1.2	1.1	1.1†	1.4	1.4	1.2	1.3	1.2
Ecstasy (MDMA) ^c , original	—	—	—	—	—	1.5	1.3	1.2	1.6	2.4	2.4	1.8	1.0	0.9	0.9
Revised	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cocaine	0.8	0.9	0.9	1.2	1.5	1.7	1.8	1.9	1.9	1.7	1.5	1.6	1.4	1.6	1.6
Crack	0.4	0.5	0.5	0.7	0.8	0.9	0.8	1.0	0.9	0.9	0.9	1.0	0.8	0.8	0.8
Other cocaine	0.7	0.7	0.8	1.1	1.2	1.3	1.5	1.6	1.7	1.4	1.3	1.3	1.2	1.4	1.3
Heroin	0.2	0.3	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.5	0.4	0.5	0.5
With a needle	—	—	—	—	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Without a needle	—	—	—	—	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.3
Amphetamines ^b	3.0	3.3	3.9	4.0	4.5	4.8	4.5	4.3	4.2	4.5	4.7	4.4	3.9	3.6	3.3
Methamphetamine	—	—	—	—	—	—	—	—	1.5	1.5	1.4	1.5	1.4	1.1	0.9
Tranquilizers	1.1	1.1	1.1	1.3	1.6	1.7	1.7	1.9	1.9	2.1†	2.3	2.4	2.2	2.1	2.1
Alcohol	39.8	38.4†	36.3	37.6	37.8	38.8	38.6	37.4	37.2	36.6	35.5	33.3	33.2	32.9	31.4
Been drunk	19.2	17.8	18.2	19.3	20.3	20.4	21.2	20.4	20.6	20.3	19.7	17.4	17.7	18.1	17.0
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	23.0	21.6
Cigarettes	20.7	21.2	23.4	24.7	26.6	28.3	28.3	27.0	25.2	22.6	20.2	17.7	16.6	16.1	15.3
Smokeless tobacco	—	9.2	9.1	9.7	9.6	8.5	8.0	7.0	6.3	5.8	6.1	5.2	5.3	5.1	5.3
Any Vaping ^d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Large Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored Little Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Regular Little Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tobacco using a hookah	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	0.6	0.6	0.6	0.7	0.6	0.5	0.7	0.7	0.9	0.9	0.9	1.0	0.9	0.9	0.7

Table continued on next page.

TABLE D-3 (continued)
Trends in 30-Day Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2017–2018														Peak year–2018 change		Low year–2018 change	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	change	Absolute change	Proportional change (%) ^a	Absolute change	Proportional change
Any Illicit Drug ^b	14.9	14.8	14.6	15.8	16.7	17.0	16.8	17.3†	16.5	15.9	<u>15.5</u>	16.1	16.3	+0.2	-0.2	-1.1	-0.2	-1.2
Any Illicit Drug other than Marijuana ^b	6.4	6.4	5.9	5.7	5.7	5.7	5.2	5.4†	5.4	5.1	4.6	4.4	<u>4.4</u>	-0.1	-1.1 sss	-19.8	—	—
Any Illicit Drug including Inhalants ^b	16.5	16.5	16.1	17.3	18.0	18.3	17.6	18.4†	17.3	16.8	<u>16.0</u>	17.2	17.1	0.0	-0.2	-1.0	-0.2	-1.1
Marijuana/Hashish	12.5	<u>12.4</u>	12.5	13.8	14.8	15.2	15.1	15.6	14.4	14.0	13.7	14.5	14.6	+0.2	-3.3 sss	-18.4	+2.3 sss	+18.2
Inhalants	2.7	2.6	2.6	2.5	2.4	2.1	1.7	1.5	1.4	1.3	1.2	1.3	<u>1.1</u>	-0.2	-3.2 sss	-73.8	—	—
Hallucinogens	1.3	1.4	1.4	1.3	1.4	1.3	1.1	1.1	1.0	1.0	1.0	1.0	<u>0.9</u>	-0.1	-1.3 sss	-59.0	—	—
LSD	0.6	0.6	0.7	<u>0.5</u>	0.7	0.7	<u>0.5</u>	0.6	0.6	0.7	0.7	0.8	0.6	-0.1	-2.1 sss	-76.8	+0.1	+16.8
Hallucinogens other than LSD	1.1	1.1	1.1	1.0	1.2	1.0	0.9	0.8	0.7	0.6	<u>0.5</u>	0.6	0.6	0.0	-0.8 sss	-59.0	+0.0	+9.3
Ecstasy (MDMA) ^c , original	1.0	1.1	1.2	1.2	1.5	1.4	0.8	1.0	0.8	—	—	—	—	—	—	—	—	—
Revised	—	—	—	—	—	—	—	—	1.1	0.8	0.6	0.6	<u>0.5</u>	-0.1	-0.6 s	-57.8	—	—
Cocaine	1.6	1.4	1.3	1.0	0.9	0.8	0.8	0.8	0.7	0.8	<u>0.5</u>	0.7	0.7	0.0	-1.2 sss	-61.8	+0.1	+26.1
Crack	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	<u>0.3</u>	0.4	0.3	-0.1	-0.7 sss	-64.2	+0.0	5.6
Other cocaine	1.4	1.1	1.1	0.8	0.8	0.7	0.7	0.6	0.6	0.7	<u>0.4</u>	0.6	0.6	0.0	-1.1 sss	-64.4	+0.2 s	+47.4
Heroin	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	<u>0.1</u>	-0.1 s	-0.4 sss	-69.7	—	—
With a needle	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3	0.1	0.2	0.1	<u>0.1</u>	0.0	-0.3 sss	-64.6	—	—
Without a needle	0.3	0.3	<u>0.2</u>	<u>0.2</u>	0.3	0.3	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	0.2	0.1	0.1	<u>0.1</u>	0.0	-0.4 sss	-83.0	—	—
Amphetamines ^b	3.0	3.2	2.6	2.7	2.7	2.8	2.5	3.2†	3.2	2.7	2.5	2.2	<u>2.2</u>	0.0	-1.0 sss	-30.1	—	—
Methamphetamine	0.7	0.5	0.7	0.5	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.2	<u>0.2</u>	0.0	-1.3 sss	-87.3	—	—
Tranquilizers	2.1	2.0	1.9	1.9	1.9	1.7	1.5	1.5	1.5	1.4	1.4	1.4	<u>1.2</u>	-0.2 ss	-1.2 sss	-50.9	—	—
Alcohol	31.0	30.1	28.1	28.4	26.8	25.5	25.9	24.3	22.6	21.8	19.8	19.9	<u>18.7</u>	-1.2 s	-20.1 sss	-51.9	—	—
Been drunk	17.4	16.5	14.9	15.2	14.6	13.5	14.7	13.5	11.9	11.0	10.1	9.8	<u>9.1</u>	-0.7	-12.1 sss	-57.1	—	—
Flavored alcoholic beverages	21.7	20.4	18.6	17.9	17.0	15.2	14.9	14.0	12.9	12.8	<u>10.9</u>	12.3	11.4	-0.9	-11.6 sss	-50.4	+0.5	+4.9
Cigarettes	14.4	13.6	12.6	12.7	12.8	11.7	10.6	9.6	8.0	7.0	5.9	5.4	<u>4.6</u>	-0.8 ss	-23.7 sss	-83.8	—	—
Smokeless tobacco	5.1	5.2	4.9	6.0	6.5	5.9	5.6	5.7	5.4	4.7	4.1	3.5	<u>3.4</u>	-0.1	-6.3 sss	-65.2	—	—
Any Vaping ^d	—	—	—	—	—	—	—	—	—	12.8	9.9†	<u>12.0</u>	19.2	+7.3 sss	—	—	+7.3 sss	+60.8
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	<u>7.5</u>	14.2	+6.8 sss	—	—	+6.8 sss	+90.3
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	<u>3.6</u>	5.7	+2.1 sss	—	—	+2.1 sss	+57.1
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	<u>8.0</u>	11.5	+3.5 sss	—	—	+3.5 sss	+43.8
Large Cigars	—	—	—	—	—	—	—	—	3.9	4.2	3.3	<u>3.2</u>	3.2	0.0	-1.0 sss	-24.2	+0.0	+0.3
Flavored Little Cigars	—	—	—	—	—	—	—	—	7.4	7.1	5.6	<u>5.4</u>	5.5	+0.1	-1.9 sss	-25.9	+0.1	+2.1
Regular Little Cigars	—	—	—	—	—	—	—	—	4.5	4.9	3.6	3.6	<u>3.4</u>	-0.2	-1.5 sss	-30.1	—	—
Tobacco using a hookah	—	—	—	—	—	—	—	—	—	4.3	3.4	<u>2.7</u>	2.7	-0.7	-1.6 sss	-36.2	—	—
Steroids	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5	0.4	<u>0.4</u>	0.5	0.0	-0.6 sss	-54.1	+0.0	+11.3

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '†' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

^bIn 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

^cIn 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

^dIn 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

TABLE D-4
Trends in Daily Prevalence of Use of Selected Drugs and Heavy Use of Alcohol and Tobacco
for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Marijuana	0.9	0.9	1.2	2.1	2.7	3.2	3.4	3.4	3.5	3.5	3.7	3.5	3.4	3.0	2.9
Alcohol	1.7	1.6†	2.0	1.8	1.9	2.0	2.1	2.2	2.0	1.7	2.0	1.9	1.7	1.5	1.5
5+ drinks in a row in last 2 weeks	20.0	19.0	19.5	20.3	21.1	21.9	21.9	21.5	21.7	21.2	20.4	18.9	18.6	18.8	17.5
Been drunk	0.4	0.4	0.5	0.6	0.7	0.7	0.9	0.8	0.9	0.8	0.7	0.6	0.7	0.7	0.6
Cigarettes	12.4	11.9	13.5	14.0	15.5	16.8	16.9	15.4	15.0	13.4	11.6	10.2	9.3	9.0	8.0
1/2 pack+/day	6.5	6.1	6.9	7.2	7.9	8.7	8.6	7.9	7.6	6.4	5.7	4.9	4.5	4.1	3.7
Smokeless tobacco	—	3.0	2.7	2.9	2.5	2.3	2.5	2.1	1.7	1.9	2.0	1.4	1.6	1.7	1.6

Table continued on next page.

TABLE D-4 (continued)
Trends in Daily Prevalence of Use of Selected Drugs and Heavy Use of Alcohol and Tobacco
for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2017–2018 change	Peak year–2018 change		Low year–2018 change	
														Absolute change	Proportional change (%) ^a	Absolute change	Proportional change	
Marijuana	2.8	<u>2.7</u>	2.8	2.8	3.4	3.6	3.6	3.7	3.3	3.3	3.0	3.1	3.2	+0.1	-1.6 sss	-43.7	+0.5 ss	+18.6
Alcohol	1.5	1.6	1.4	1.3	1.4	1.0	1.2	1.1	1.0	0.8	0.7	0.7	<u>0.6</u>	-0.2 s	-1.6 sss	-73.4	—	—
5+ drinks in a row in last 2 weeks	17.4	17.2	15.5	16.1	14.9	13.6	14.3	13.2	11.7	10.7	9.4	9.9	<u>8.6</u>	-1.3 sss	-13.4 sss	-61.0	—	—
Been drunk	0.7	0.6	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.3	<u>0.3</u>	0.4	0.3	-0.1 s	-0.6 sss	-66.6	0.0	+0.2
Cigarettes	7.6	7.1	6.4	6.4	6.4	5.7	5.2	4.7	3.6	3.2	2.5	2.3	<u>2.0</u>	-0.2	-14.9 sss	-87.9	—	—
1/2 pack+/day	3.4	3.0	2.7	2.6	2.5	2.1	1.9	1.8	1.4	1.1	0.9	<u>0.8</u>	0.8	0.0	-7.9 sss	-90.6	0.0	+0.2
Smokeless tobacco	1.5	1.6	1.6	1.8	2.1	1.8	1.9	1.7	1.8	1.7	1.4	<u>1.0</u>	1.0	0.0	-2.0 s	-67.1	0.0	+0.5

Source. The Monitoring the Future study, the University of Michigan.

Notes. '—' indicates data not available. '‡' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

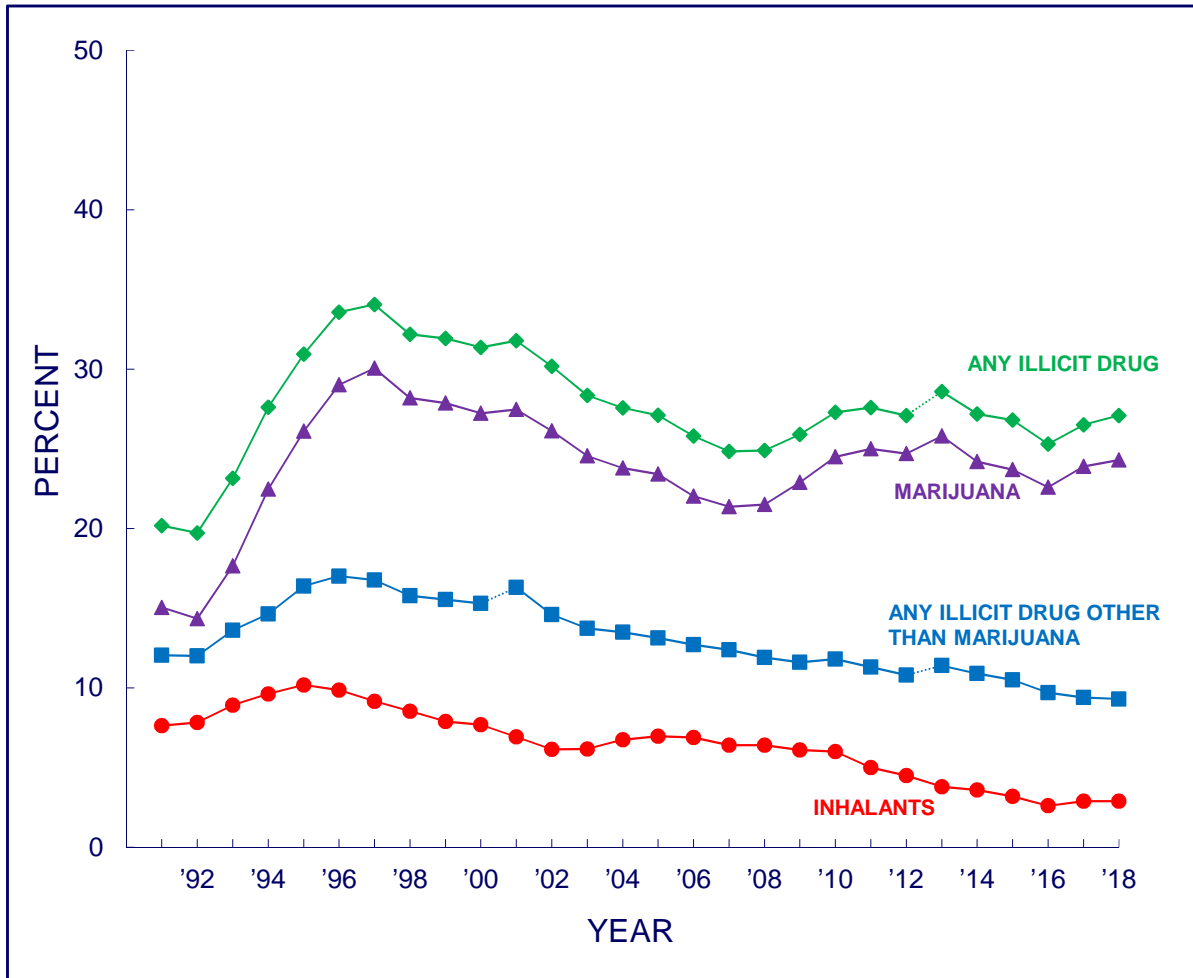
Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

^aThe proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

FIGURE D-1
ANY ILLICIT DRUG, MARIJUANA, AND INHALANTS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined

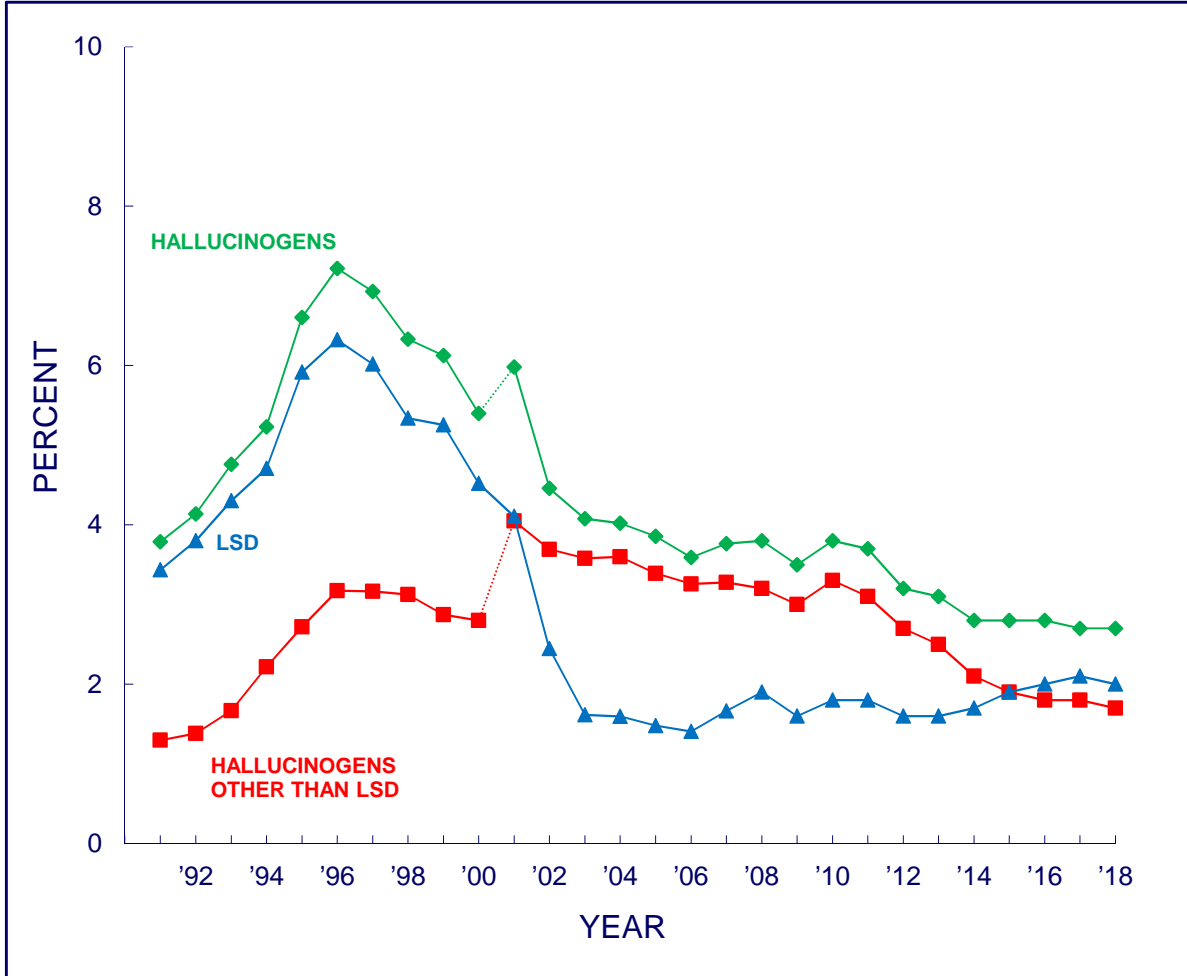


Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects.

In 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are slightly affected by these changes. In 2013, a revised set of questions on amphetamine use were introduced. Data for any illicit drug and any illicit drug other than marijuana were affected by this change.

FIGURE D-2
HALLUCINOGENS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined

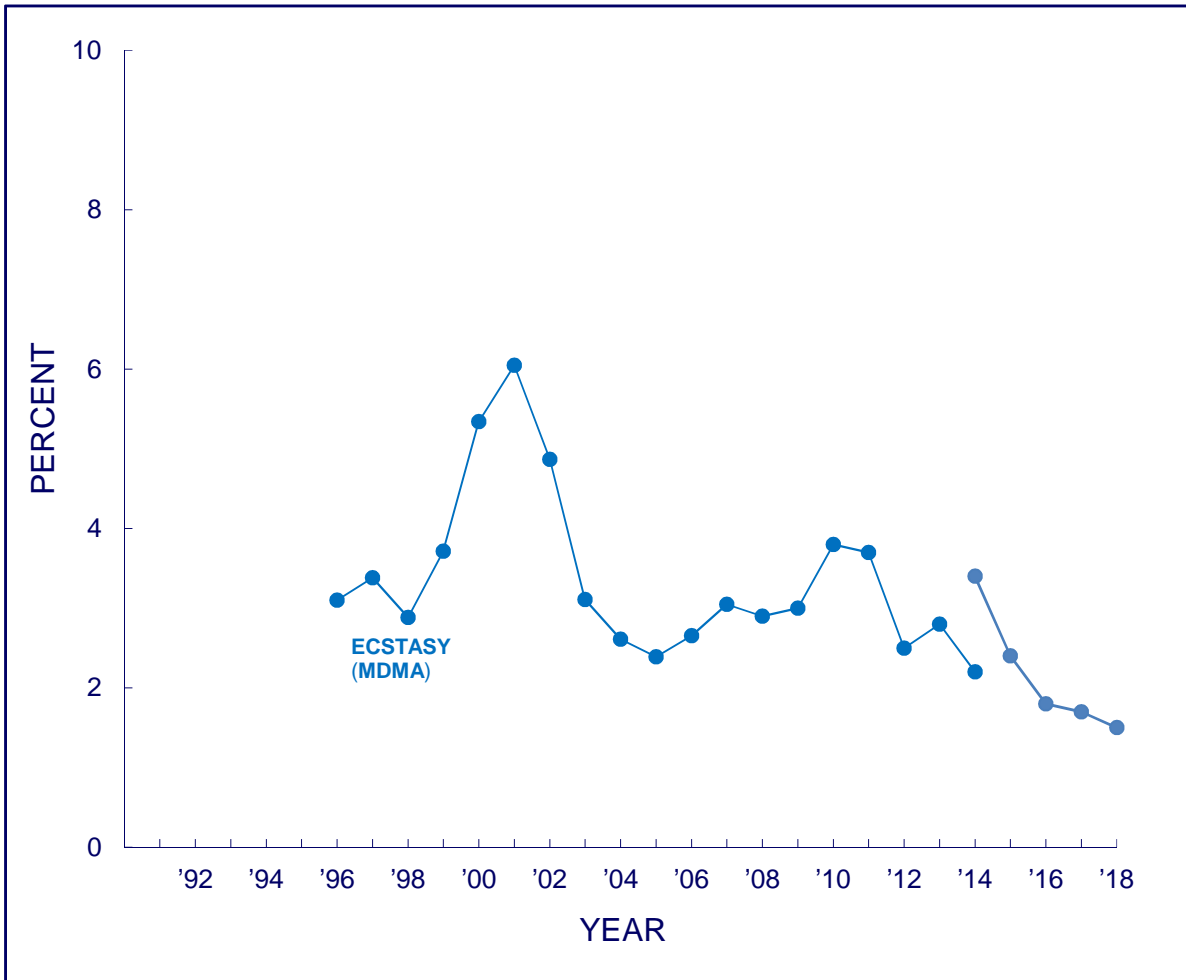


Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects.

Beginning in 2001, a revised set of questions on other hallucinogens was introduced in which shrooms was added to the list of examples. Data for hallucinogens were also affected by this change. From 2001 on, data points are based on the revised questions.

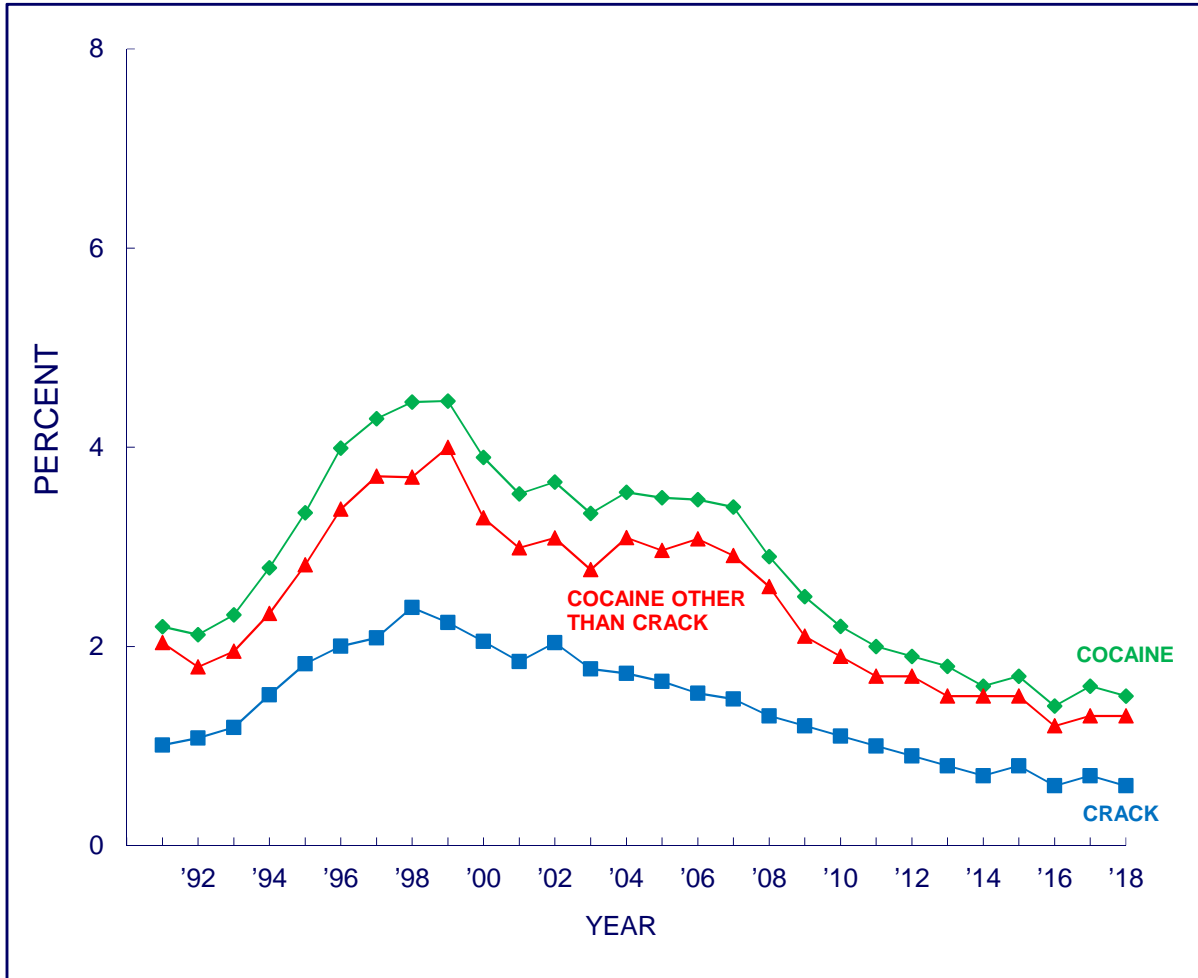
FIGURE D-3
ECSTASY (MDMA)
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

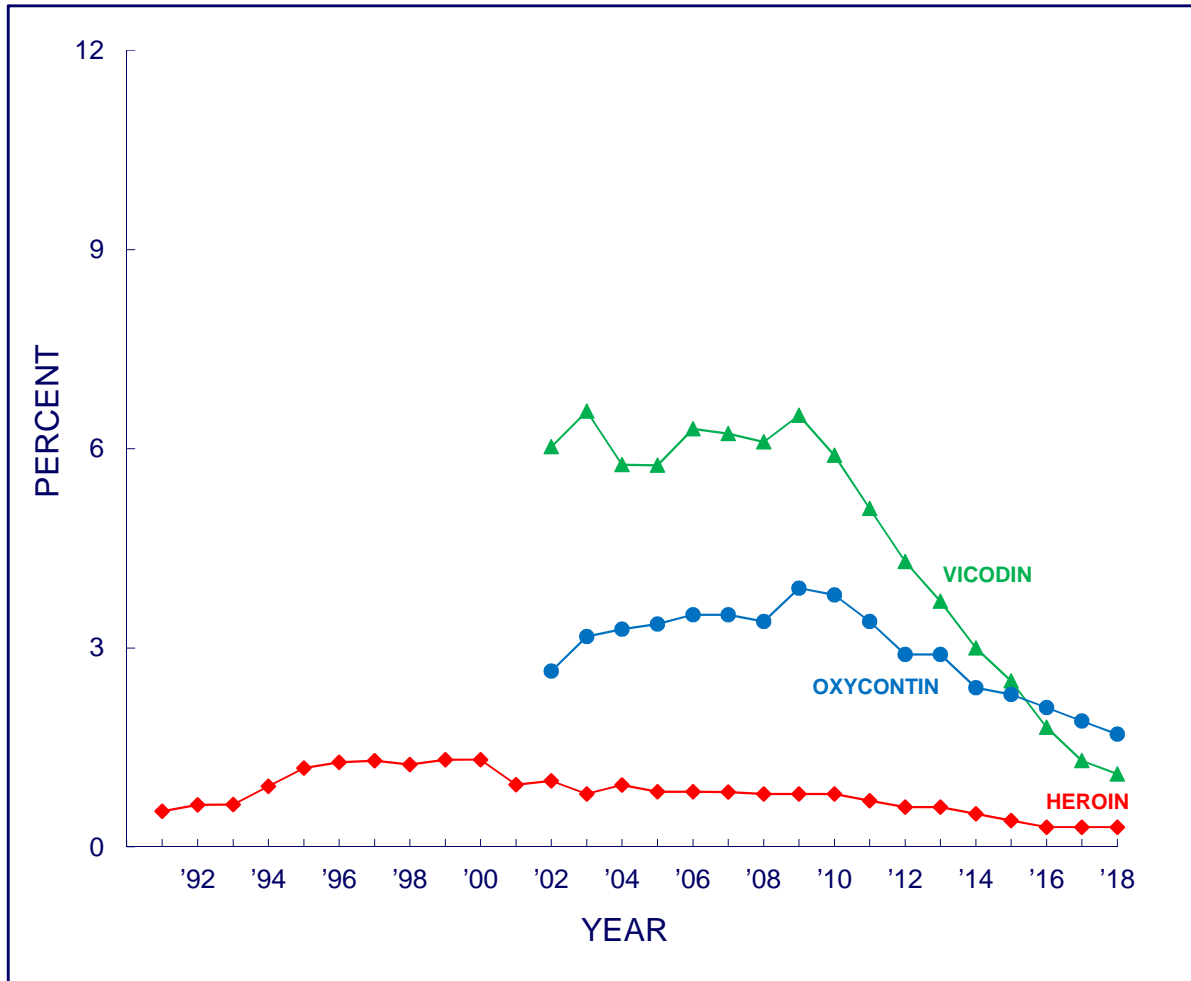
Notes. In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

FIGURE D-4
COCAINE AND CRACK
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



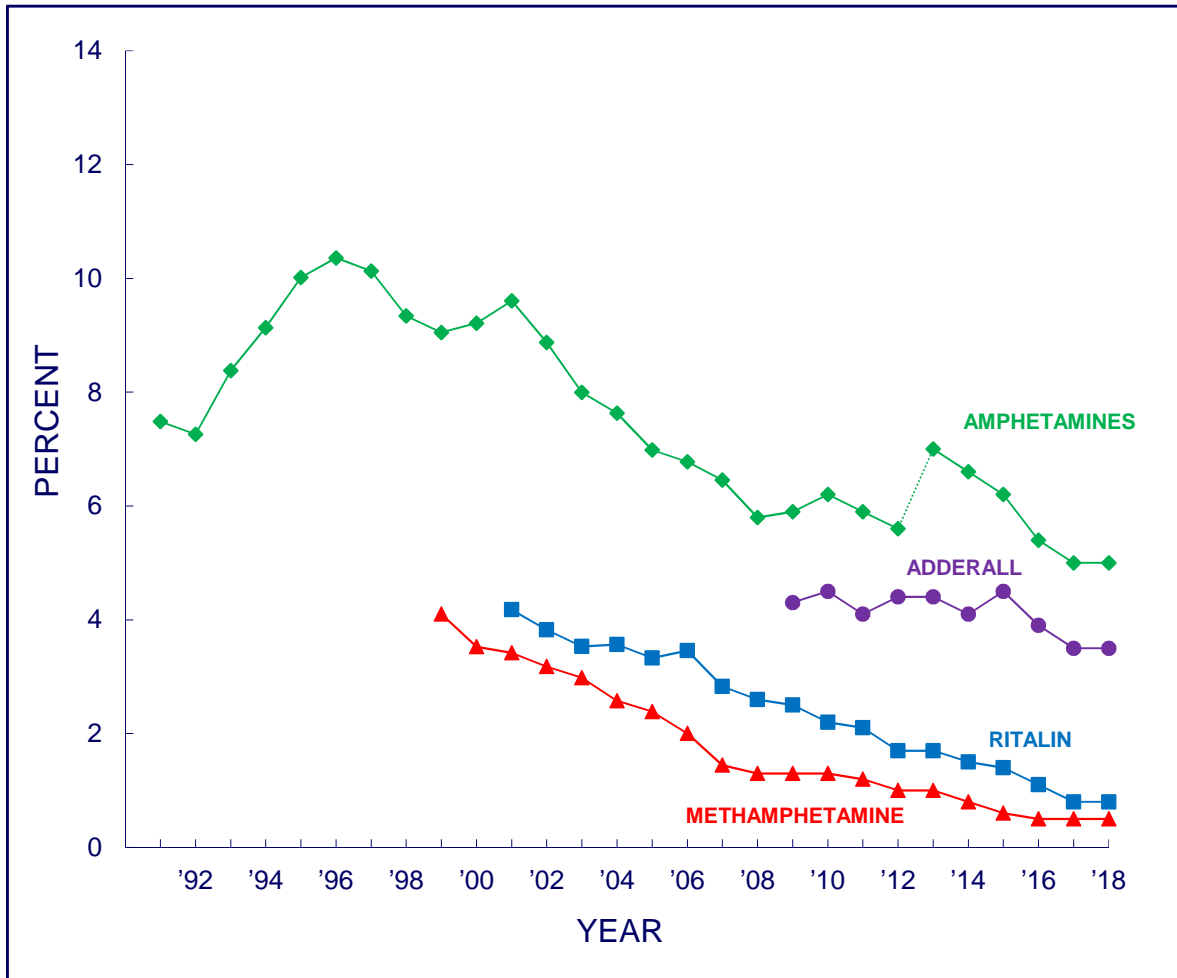
Source. The Monitoring the Future study, the University of Michigan.

FIGURE D-5
HEROIN AND NARCOTICS OTHER THAN HEROIN
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

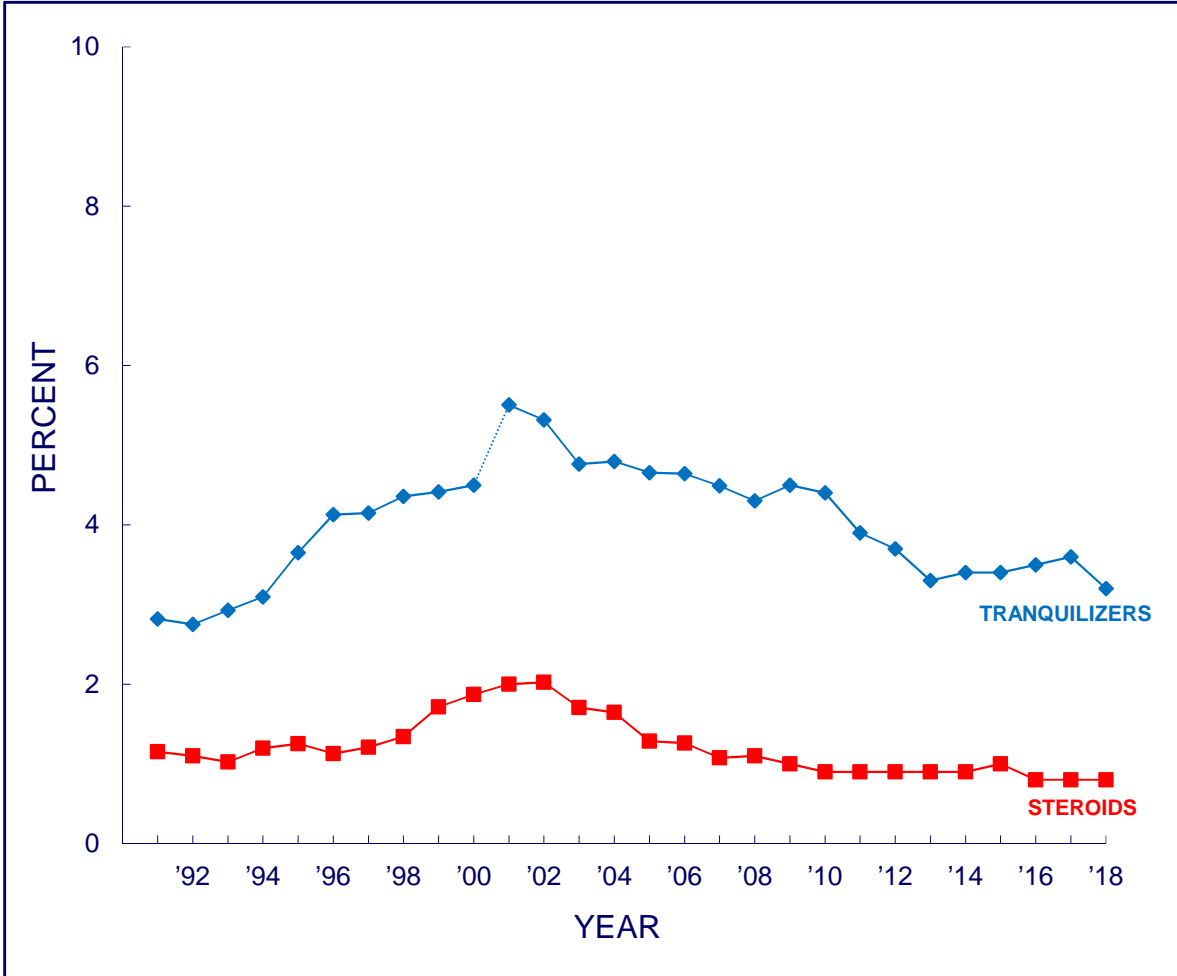
FIGURE D-6
STIMULANT DRUGS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects. Beginning in 2013, a revised set of questions on use of amphetamines was introduced. From 2013 on, data points are based on the revised questions.

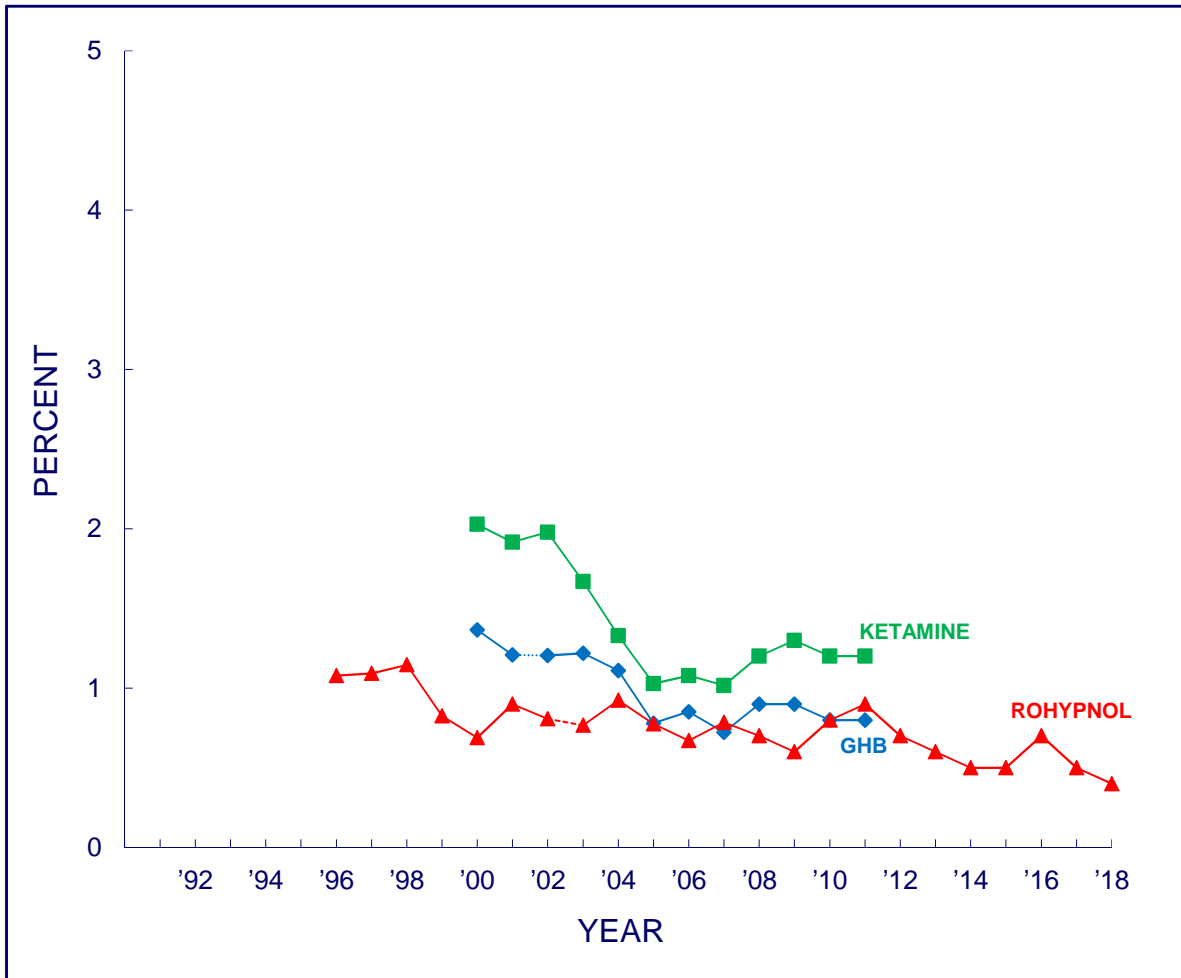
FIGURE D-7
TRANQUILIZERS AND STEROIDS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects. Beginning in 2001, a revised set of questions on use of tranquilizers was introduced in which Xanax replaced Miltown in the list of examples. From 2001 on, data points are based on the revised questions.

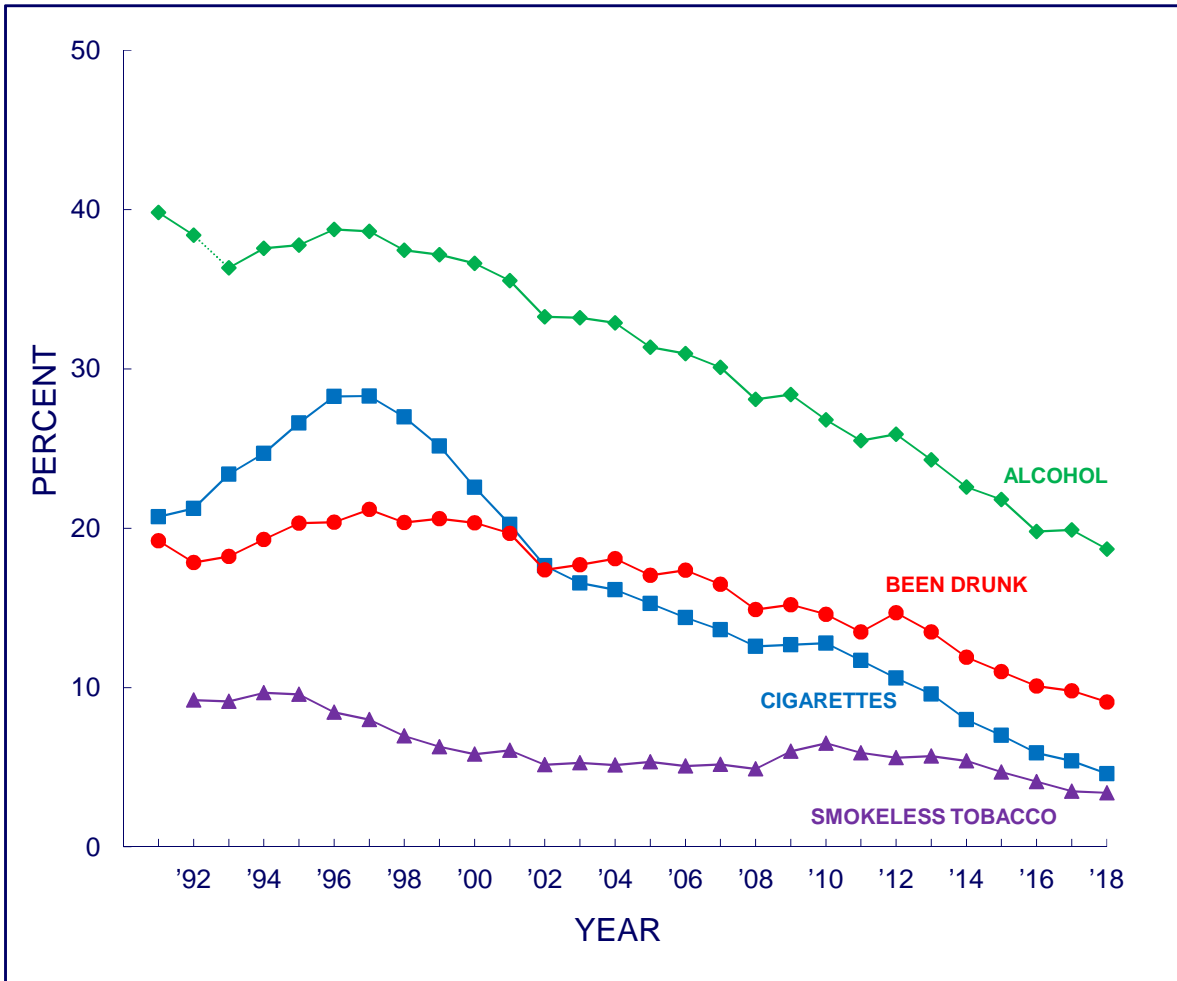
FIGURE D-8
CLUB DRUGS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects. Beginning in 2002, for 12th graders only, the lifetime and 30-day questions on Rohypnol were eliminated from the questionnaire. As a result, the 2001 and 2002 data are not entirely comparable because of the change in context of the question about annual use. Questions on use of GHB and Ketamine were discontinued in 2012.

FIGURE D-9
ALCOHOL AND TOBACCO
Trends in 30-Day Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects. Beginning in 1993, a revised set of questions on use of alcohol was introduced in which a drink was defined as more than just a few sips. From 1993 on, data points are based on the revised questions.



**Monitoring the Future website:
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