Recommended CSTE Indicators for Suicide among American Indians and Alaska Natives

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ACKNOWLEDGEMENTS

CONTENTS

ACRONYMS

AI/AN	American Indian/Alaska Native
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CSTE	Council of State and Territorial Epidemiologists
ED	Emergency Department
HCUP	Healthcare Cost and Utilization Project
IHS	Indian Health Service
NSDUH	National Survey on Drug Use and Health
NVDRS	National Violent Death Reporting System
NVSS	National Vital Statistics System
RAD	Restricted Access Database
RDAS	Restricted-use Data Analysis System
RPMS	Resource and Patient Management Service
SAMHSA	Substance Abuse and Mental Health Administration
SEDD	State Emergency Department Database
SID	State Inpatient Database
SRF	Suicide Reporting Form
TEC	Tribal Epidemiology Center
UIHI	Urban Indian Health Institute
WISQARS	Web-based Injury Statistics Query and Reporting System
YRBS	Youth Risk Behavior Survey
YRBSS	Youth Risk Behavior Surveillance System

INTRODUCTION

The subject of suicide is complex. Suicide has multiple causes at the individual, family, relationship, community, and societal level. Recent data from the U.S. Centers for Disease Control and Prevention (CDC) show that suicide is the tenth leading cause of death among U.S. residents and is one of just three leading causes of the death that are increasing.[1] Suicide rates have risen nearly 30 percent since 1999. About half of suicide decedents in CDC's 2018 nationwide study of trends in suicide rates did not have a known mental health condition, underscoring the need to understand a variety of risk factors for suicide. Suicide takes a huge toll at every level of our society. Suicides and self-harm (a primary risk factor for suicide) cost the nation approximately $70 million per year in direct medical and work loss costs.[2]

The vast majority of suicide decedents are White,[2] however in 2015, the suicide rate for American Indians and Alaska Natives (AI/AN) in the 18 states participating in the National Violent Death Reporting System (NVDRS) was 21.5 per 100,000, more than 3.5 times higher than rates among other racial/ethnic groups.[3] The rates of suicide in this population have been increasing since 2003. Among AI/AN, suicide is the second leading cause of death among youth ages 10–24.[4] While there is a body of literature on suicidal behavior and risk factors in the general population, research within AI/AN communities is comparatively limited.[5] Additionally, surveillance of injury, behavioral health, and substance use among AI/AN populations is limited.

The Council of State and Territorial Epidemiologists (CSTE) Tribal Suicide Workgroup identified the need to develop a resource guide of suicide indicators using data sources specific to AI/AN populations to fill these gaps. Data on suicide, including behaviors, events, and risk factors particular to AI/AN will allow public health practitioners and mental health specialists to understand trends and develop effective programs and policies to address disparities in suicide among AI/AN. This document builds off the work and approach offered in the 2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health and focuses on data that are currently collected from surveys, hospitalization and emergency department data systems, and vital statistics registries.

Intended users of this resource include public health professionals working with AI/AN communities on reducing substance abuse, improving mental health, and preventing suicide. The intent of this document is to identify and describe indicators of suicidal behavior and associated mental health and substance abuse risk factors that can be used for routine surveillance. Protective factors specific to AI/AN communities, such as cultural connectivity; easy access to a variety of clinical interventions and support for seeking help; family and community support; and restricted access to lethal methods of suicide are also critical for understanding suicide risk and suicide prevention.[5] Incorporating protective factors into surveillance systems is challenging however because many protective factors are difficult to measure and existing data sources do not adequately describe these factors.

While this document describes indicators for AI/AN as one group, there is considerable variability among tribes in terms of suicide rates[4] and risk factors for suicide that should be considered when using data sources and estimates pertaining to AI/AN.[6]

BACKGROUND

AI/AN Population

The term American Indian/Alaska Native encompasses many ethnic and cultural groups, tribes, and traditions. The definition used by the Office of Management and Budget, which applies to estimates produced by the U.S. Census Bureau underlying the key health datasets described in this resource, defines an American Indian or Alaska Native as a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.[7] There are approximately 2.6 million people living in the United States who identify as American Indian or Alaska Native alone, and 6-7 million who identify as AI/AN in combination with one or more other races[8]. In 2016, Alaska had the greatest proportion of residents (19.9 percent) who identified as American Indian or Alaska Native, alone or in combination, followed by Oklahoma (13.7 percent), New Mexico (11.9 percent), South Dakota (10.4 percent), and Montana (8.4 percent).[9] Approximately 71 percent of AI/AN live in urban areas.[10]

Challenges with AI/AN Data Discovery

Collecting and analyzing surveillance data on AI/AN presents several unique challenges. There are 567 tribal entities currently recognized and eligible for funding and services from the Bureau of Indian Affairs[11], but the AI/AN population is spread among those living on and off reservations, in rural areas, and in urban centers. AI/AN living in remote rural areas may have to travel long distances to access the nearest health care facility. About 20 percent of AI/AN lack any form of health insurance and 26 percent of AI/AN live in poverty.[9]

AI/AN continue to endure significant cultural and personal trauma related to historical forced relocation, the removal of children who were sent to boarding schools, and the prohibition of local languages, cultural traditions, and religious practices. Historical trauma is widely considered to be a major risk factor for suicide affecting multiple generations of AI/AN. Other risk factors for suicide that are related to historical trauma include feeling disconnected from family and community, feelings of discrimination and racism, and high rates of depression and alcohol abuse.[12] Many of these factors vary significantly by tribe and are not consistently measured. Whether an individual has directly experienced trauma or not, it is thought to play a role in AI/AN mistrust of government agencies and health seeking behaviors. Further, many AI/AN seek and more frequently trust the services of traditional healers over physician-administered care.[13]

Racial Misclassification and Data Linkage

Surveillance data collected for suicide among AI/AN populations, including information captured on death records and for hospitalization and emergency department admissions, are known to have data quality issues related to race. Race misclassification occurs when the physician or medical examiner/coroner incorrectly records the race category for the patient or decedent. As a result, statistics for suicide and other health outcomes for AI/AN have been significantly underestimated.[14] Record linkage between multiple data sources can vastly improve data quality for AI/AN. For example, a 2008-2012 study conducted by the Northwest Tribal Epidemiology Center linked the death certificates of AI/AN in Idaho, Oregon, and Washington with data from the Northwest Tribal Registry and identified an additional 33 deaths (a correction in age-adjusted mortality by 17 percent) that were not captured in state vital statistics registries.[15] When feasible and applicable to the population being studied, mortality records should be linked to records captured in the Indian Health Service (IHS) patient registration database, which contains medical information about AI/AN individuals who are members of federally recognized tribes and who use IHS services. The CSTE Tribal Linkage Toolkit and HCUP Race and Ethnicity Data Improvement Toolkit are two valuable resources that provide information on data linkage strategies, linkage software, and key protocols such as data sharing agreements and confidentiality pledges.

Another aspect of race misclassification is the focus in national surveys on single-race AI/AN identification. By some estimates, 44 percent of AI/AN identify with multiple racial groups.[16] Most national surveys limit racial categories to single-race designations, with all others categorized as "mixed-race". A recent study using Behavioral Risk Factor Surveillance System (BRFSS) data assessed mental health status in a national sample of multiracial AI/AN adults compared to adults who identify exclusively as either AI/AN or White. AI/AN adults who identified as multiracial reported a higher lifetime prevalence of diagnosed depressive disorder, more days of poor mental health, and more frequent mental distress compared to both single race AI/AN and single race White respondents.[17]

Challenges with Data Access and Sharing

There are several issues to be aware of when exploring datasets for AI/AN suicide surveillance. Many AI/AN live within multiple, overlapping governmental jurisdictions of states, counties, tribes, and reservations. For example, the Confederated Tribes of the Goshute Reservation spans both Nevada and Utah; Navajo Nation spans Arizona, New Mexico, and Utah; and the Standing Rock Sioux Tribe spans North and South Dakota.[18] Tribes and reservations, which have their own sovereign governing bodies, may be located within or across counties and states, and they may or may not be served by the IHS. Data sharing for hospitalizations or deaths occurring in neighboring states is a common data surveillance challenge in that data on residents seeking care across state lines may not be counted in their home state. Similarly, a suicide occurring in overlapping boundaries may be counted twice, by an IHS official or by the county medical examiner. To obtain accurate data on suicidal behavior for specific tribes or reservations, it may be necessary to collect data across jurisdictions and health care systems, which are usually not connected.[19]

METHODOLOGY

This guide was developed to complement the *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.[19]

To develop the list of suicide indicators specific to AI/AN, the following activities were undertaken:

- A literature review on suicide behavior and risk factors for suicide among AI/AN;
- A review of the 2017 CSTE Tribal Suicide Workgroup - Indicator Prioritization Survey to identify the top three priority indicators under Alcohol Indicators, Other Drug Indicators, and Mental Health Indicators;
- A review of the *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health* and research to identify the availability of suicide-relevant data for AI/AN populations for each indicator at the national or subnational level;
- Preparation of a draft and final list of indicators based on input from the Tribal Suicide Workgroup.

The 13 indicators are grouped into three categories: (1) suicide prevalence, (2) suicide ideation and attempts, and (3) substance abuse and mental health.

Each indicator is described by the following elements: data source, demographic group, geographic level, numerator, denominator, measure/frequency, period for case definition, additional data items (e.g., stratification variables), background, significance, limitations of the data resource, related indicators, data access, and additional notes as relevant. Background provides an overview of the current statistics related to the indicator, for example, the current rate of binge drinking among AI/AN youth. Significance describes why the indicator is important to track for AI/AN suicide. Related indicators pertain to relevant Healthy People 2020 indicators that closely align with the indicators provided in this guide, and the section about How to Access Data outlines the process, cost, and other considerations for obtaining indicator data. In cases where local level data are available, it has been noted, along with guidance on how to obtain the data.

SUMMARY OF SUICIDE INDICATORS FOR SURVEILLANCE AMONG AI/AN POPULATIONS

Indicator #	Indicator	Measure of Frequency to be Reported/Data Source
Indicator Group: Suicide Prevalence		
1.	Suicide rate	Annual/Fatal Injury Reports Annual/National Violent Death Reporting System (NVDRS)
Indicator Group: Suicide Ideation and Attempts		
2.A.	Suicidal thoughts (adults)	Annual prevalence/National Survey on Drug Use and Health (NSDUH)
2.B.	Suicidal thoughts (students)	Biennial prevalence/Youth Risk Behavior Survey (YRBS)
3.	Plans to commit suicide (students)	Biennial prevalence/Youth Risk Behavior Survey (YRBS)
4.	Suicide attempts (students)	Biennial prevalence /Youth Risk Behavior Survey (YRBS)
5.	Received medical attention for a suicide attempt (students)	Biennial prevalence /Youth Risk Behavior Survey (YRBS)
6.	Emergency department visits for intentional self-harm	Annual number of ED admissions/ State hospital discharge database or emergency department database
Indicator Group: Substance Abuse and Mental Health		
7.	Hospital discharges for mental disorders; all, mood and depressive disorders, schizophrenic disorders, all mental disorders EXCEPT drug- and alcohol-induced mental disorders.	Annual rate of hospital discharge/State hospital discharge database
8.	Serious adult mental illness in the past year	Annual prevalence/National Survey on Drug Use and Health (NSDUH)
9.	Depressive episodes in the past year	Biennial prevalence/National Survey of Drug Use and Health (NSDUH)
10.A.	Binge drinking (adults)	Annual prevalence/Behavioral Risk Factor Surveillance System (BRFSS)

Indicator #	Indicator	Measure of Frequency to be Reported/Data Source
10.B.	Binge drinking (students)	Biennial prevalence/Youth Risk Behavior Survey (YRBS)
11.	Drug overdose mortality, all drugs	Annual mortality/Death certificate data from vital statistics agencies
12	Illicit drug or alcohol dependence or abuse in the past year	Annual prevalence/ National Survey of Drug Use and Health (NSDUH)
13.	Hospitalizations attributable to or associated with drugs with potential for abuse and dependence (Admissions for which drug use is the primary reason, per the admitting physician)	Annual rate of hospital discharge/State hospital discharge database

AI/AN DATA SOURCES AND LIMITATIONS

Suicide-related surveillance data for AI/AN populations include national, regional, state, and local sources, each with advantages and disadvantages depending on the purpose of the data, how it was collected, and the level of granularity needed to support specific public health efforts. When applicable and feasible, linking data from multiple datasets can greatly improve estimates.
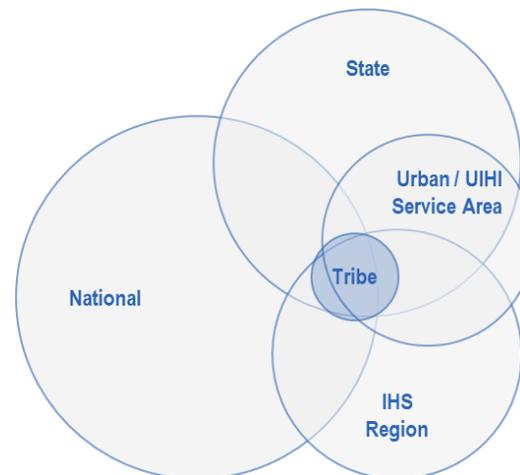
National Sources

The following national data sources can provide useful perspectives on the needs of the greater AI/AN population (i.e., nationally- and state-aggregated statistics, with the potential to drill down to county level where numerator data are large enough for statistical reliability); however, it should be noted that the U.S. Census and national suicide-related datasets categorize data by single racial groups, (e.g., AI/AN, White) and by one non-specific "other" or "multiple race" category.[21] The data in this guide refer to individuals who identify only as AI/AN and not to those who identify as multiracial AI/AN.

Fatal Injury Reports based on National Vital Statistics System (NVSS)

The underlying data source for CDC Fatal Injury Data are death certificates collected by the National Vital Statistics System (NVSS) operated by the National Center for Health Statistics and

accessed through CDC WISQARS (Web-based Injury Statistics Query and Reporting System), an interactive, online database that is open to the public.[22] NVSS provides death counts and death rates for the U.S. and by state, county, age, race, Hispanic ethnicity, sex, leading cause of death, injury intent, and injury mechanism categories.[23]

Limitations. State- and county-level data for the years since 2007 are subject to more restrictive reporting rules to protect against disclosure of personally identifiable information. Counts of less than 10 are suppressed for subnational geographic regions.[23]

National Violent Death Reporting System (NVDRS)

The National Violent Death Reporting System (NVDRS) is a state-based surveillance system (also accessed through WISQARS) that links data from law enforcement, coroners and medical examiners, vital statistics, and crime laboratories to assist each participating state in designing and implementing tailored prevention and intervention efforts. NVDRS collects information about homicides, suicides, deaths by legal intervention (excluding executions), and deaths of undetermined intent. Reports can be generated that include demographic data as well as information on the circumstances surrounding the death/suicide such as a history of mental health problems or recent financial, employment, or relationship stressors. Due to the richness of these data, NVDRS is critical for informing prevention strategies and tracking progress in reducing suicides.[24]

Detailed NVDRS information about circumstances preceding death (e.g., history of depressive mood, experiencing a personal crisis within the past two weeks preceding death, history of attempts, and disclosure of intent to die) can be accessed through the Restricted Access Database (RAD). The RAD is available to researchers who meet specific criteria, including having a doctoral level degree, holding a research position or faculty appointment, and working for an institution that is a research organization, government agency, or institution of higher education.[25]

For information on submitting a proposal for access to the RAD, contact nvdrs-rad@cdc.gov.

To obtain the NVDRS coding manual and other NVDRS related materials, visit the NVDRS Technical Assistance page.

Limitations. There are several limitations to using NVDRS for tribal suicide surveillance. First, while NVDRS-funded states are encouraged to work with tribes to collect and include appropriate data, state coroners/medical examiners may or may not get death certificates for deaths that occur on tribal lands. Second, due to the complexity of acquiring data from multiple data sources, there is a lag in data acquisition that may vary by data source. Therefore, the system cannot provide "real-time" surveillance and tracking. And third, NVDRS data come from a sample of CDC-funded states, therefore the data are not generalizable to all persons in the United States.[25,26]

National Survey on Drug Use and Health (NSDUH)

The National Survey on Drug Use and Health (NSDUH) (formerly known as the National Household Survey on Drug Abuse) is an important source of data on use of illegal drugs,

prescription drugs, alcohol, and tobacco, and mental disorders and treatment. Surveys are conducted annually in-person with residents of households who are U.S. civilians, older than 12 years old, and not institutionalized in all 50 states. State-level data rely on a two-year rolling average. The survey is sponsored by the Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration (SAMHSA).[27]

Data for AI/AN populations are available through the restricted-use data analysis system (RDAS). See http://datafiles.samhsa.gov/info/analyze-data-nid6. To conduct AI/AN analyses by state, a user can filter the race/ethnicity variable specifically by AI/AN and simultaneously control the analyses by a specific state.

Recent data for some indicators can also be found in the American Indian or Alaskan Native 2016 NSDUH Summary Sheet, see https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.

Limitations. *NSDUH may underestimate mental health and substance abuse because some populations are excluded from data collection. For example, institutionalized individuals or homeless people not living in shelters are at risk for mental health conditions but are not included in the survey. Significant time can elapse before data are available for inclusion in a state-level surveillance summary, since reported state-level data rely on a two-year rolling average, data reflect the respondent's experience for a full 12 months before the interview date, and it can be 6 to 12 months after the date of the last interview before the data are cleaned and analyzed. As with any sample survey, issues with data item validity and over- or under-estimation of indicators may occur. Small samples in sub-state areas may limit ability to make sub-state area estimates, especially in less populous states or rural areas.[20]*

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a state based, random-digit-dial landline and cellular telephone survey of noninstitutionalized, civilian U.S. adults aged 18 years and older that is conducted monthly in all states, the District of Columbia, and U.S. territories. BRFSS collects data on health conditions and behaviors, including binge drinking.[28] The CDC sponsors BRFSS and publishes extensively using the data. However, not all BRFSS publications include data for AI/AN. In some cases, it is necessary to download and use the public-use file or contact CDC directly to understand the availability and limitations of the AI/AN data. See BRFSS Prevalence Trends and Data, https://www.cdc.gov/brfss/brfssprevalence/index.html.

Limitations. *BRFSS data are self-reported and subject to recall bias, social desirability response bias, and nonresponse bias. This may be particularly true for excessive alcohol consumption.[28]*

Youth Risk Behavior Survey (YRBS)

The Youth Risk Behavior Surveillance System (YRBSS) monitors select health risk and protective measures among youth in the United States. The YRBSS includes the administration of the Youth Risk Behavior Survey (YRBS) to a sample of 9th through 12th grade students. The YRBS is conducted every two years, typically during the spring semester. CDC conducts the national YRBS, which provides data on U.S. high school students in public and private schools. All 50 states

and the District of Columbia were included in the sampling frame for the 2017 national YRBS, although Puerto Rico, the trust territories, and the Virgin Islands were not included in the sampling.[29] The national YRBS data available on the CDC web site do not include state or region identifiers since the sampling is not designed to provide data representative at the state or region level. However, data with state identifiers may be available upon request using the YRBS Data Request Form.

State, territorial, tribal government, and local YRBS are administered by departments of health/education and provide data representative of mostly public high school students. The state, territory, tribal government, and local YRBS data are not subsets of the national YRBS, but the same survey methodology and core questionnaire are used.[30] In 2017, 46 states, three territories, and over 20 large urban school districts participated in a YRBS.

The table below shows the four states that did not administer a CDC YRBS in 2017, but did administer a youth behavior survey of their own, modeled after the CDC YRBS.

State	Youth Behavior Survey	Grades Covered	Entity to Contact
Minnesota	Minnesota Student Survey	Grades 5, 8, 9, 11	Minnesota Department of Health
Oregon	Oregon Healthy Teens	Grades 8 and 11	Oregon Health Authority
Washington	Healthy Youth Survey	Grades 6, 8, 10, 12	Washington State Department of Health
Wyoming	Prevention Needs Assessment	Grades 6, 8, 10, 12	Wyoming Survey & Analysis Center at the University of Wyoming

Three tribal governments—the Cherokee Nation, Winnebago Tribe, and Navajo—conducted a YRBS in 2017, and the data are available on the YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to the data files.[31]

The table below shows recent high school YRBS participation history, data quality, and data availability by tribal government and year.

Tribal Government	2011	2013	2015	2017
Cherokee Nation	●	●	○	●
Navajo Nation	○	—	○	●
Nez Perce Tribe	●	—	—	—
Winnebago Tribe	●	●	○	●

- •   Weighted. Overall response rate was at least 60 percent.
- °   Unweighted. Data represent only the students who completed the survey.
- —   Did not participate.

Adapted from: *CDC, YRBS Participation History, Data Quality, and Data Availability. June 2018. Retrieved from* [*https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf*](https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf).

Since 1991, the YRBS has included four questions directly related to suicide-related behavior. The questions ask whether high school students have (1) seriously considered attempting suicide; (2) made a plan about how they would attempt suicide; (3) attempted suicide; and (4) attempted suicide that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse.[32]

Limitations. *Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN. Precision can be improved by combining multiple years of national YRBS data. However, state YRBS data are not available when a state did not conduct a YRBS or did not have sufficient responses to weight the data.[32] YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. In 2008, 15 percent of AI/AN young adults aged 16 to 24 years had dropped out of school.[34] Furthermore, about 8 percent of AI/AN students attend schools operated/funded by the Federal Bureau of Indian Education or by individual Tribes, so YRBS data may not be representative of those students.[34] Other limitations to consider include that YRBS data are only collected biennially and that students self-report behaviors on the YRBS so the extent of underreporting or overreporting cannot be determined.* [32]

Local, State, and Regional Sources

Local, state, and regional data sources include state-based hospital discharge and emergency department data, as well as data collected by tribal entities. In most cases, access to state-collected data requires a fee, although some states provide deidentified public-use datasets for free. Data collected by tribal entities offer the most granular, community-specific information, however they provide limited data on most of the suicide-related indicators included in this guide.

Hospital Inpatient and Emergency Department Databases

Hospital inpatient discharge data and emergency department (ED) data from most states can be accessed through the Health Care Utilization Program (HCUP), developed by the Agency for Healthcare Quality and Research (AHRQ). The State Inpatient Database (SID) includes inpatient discharge records from community hospitals in participating states, and encompass hospital inpatient files from all patients, including individuals covered by Medicare, Medicaid, or private insurance, as well as those who are uninsured. Together, the SID encompass about 97 percent of all U.S. community hospital discharges. Some states include discharges from specialty facilities, such as acute psychiatric hospitals.[35] The State Emergency Department Databases (SEDD) are a

set of longitudinal state-specific emergency department databases that capture discharge information on all emergency department visits that do not result in an admission.[36] Together these databases can provide data for several tribal suicide indicators described in this guide.

Few studies have assessed the utility of syndromic surveillance systems for the rapid identification of emerging trends in suicide behavior. Researchers interested in the use of "real-time" hospitalization and/or ED data to rapidly identify potential suicide-related patterns should check on the data elements reported in their state, such as demographic information, chief complaint, and coded diagnoses, to further assess the applicability of this data source for suicide-related inquiry.

Limitations. *Data from federal hospitals (e.g., U.S. Veterans Administration, Department of Defense and IHS hospitals) and from specialty facilities (e.g., psychiatric care centers) may or may not be included in state-based datasets. ED data may not be available in all states; currently 36 states are included in the SEDD. Access to the HCUP family of databases, or to individual state health department data, is not typically free of charge, and may require the use of data sharing agreements. Comparability among states may be affected by differences in states' medical examiner/coroner protocols. States have different laws regarding the way race/ethnicity data are documented in medical records.*

Indian Health Service (IHS)

IHS services are administered through a system of 12 Area Offices and 170 IHS and tribally managed service units.[37] IHS collects information on suicide, including ideation with intent and plan, attempts, and completed suicides, and combination suicide/homicide through the Suicide Reporting Form (SRF) within the Resource Patient Management System (RPMS).[38] AI/AN residing within an IHS service area comprised about 56 percent of all AI/AN residing in the U.S in 2017. However, not all AI/AN who are eligible to receive services from IHS facilities seek care from these facilities.[39] Additionally, use of the SRFs varies among service areas. In some areas, the SRF is used extensively, while in others it is significantly underused.[19] Therefore, the data from RPMS are specific only to those communities served by tribal care facilities that consistently use the system. RPMS data quality has been shown to be questionable because each site determines its own policies and procedures for SRF data collection, entry, exportation, and analysis; it is unknown if sites are following their policies and procedures, and what type of training each site has had on the SRF.[40] These data are not published or otherwise publicly available. They are available at the local health care facility level or area level and only by those who have been granted access to the RPMS database(s).[38] More information on RPMS data access can be found on the RPMS Behavioral Health website https://www.ihs.gov/rpmsbh; specific questions are directed to support@ihs.gov.

The IHS system only has 46 hospitals, which are generally small and provide limited services. Some areas (e.g., California) do not have IHS hospitals or may have only a few hospitals serving relatively large populations (e.g., Bemidji and Nashville).[39] Hospital inpatient data related to suicide risk factors and behaviors may be limited from these facilities. For more information including healthcare facilities, availability and completeness of suicide surveillance data, and staff contact information, it is best contact IHS directly:

Headquarters	California Area	Oklahoma City Area
Alaska Area	Great Plains Area	Phoenix Area
Albuquerque Area	Nashville Area	Portland Area
Bemidji Area	Navajo Area	Tucson Area

Tribal Epidemiology Centers (TECs)

Tribal Epidemiology Centers (TECs) provide culturally-competent public health services to improve the health and well-being of tribal community members and reduce health inequities faced by AI/AN populations. TECs work in partnership with Tribes, the IHS, federal agencies, state agencies, academic institutions, and other organizations. The mission of TECs is to improve the health of AI/AN populations by (1) identifying and understanding health problems and disease risks, (2) strengthening public health capacity, and (3) developing solutions for disease prevention and control.

There are 12 TECs nationwide. Some TECs provide up-to-date community health data profiles that are specific to the tribes in that area, although data availability varies with each TEC.[41] Select examples of data produced or compiled by TECs related to suicide indicators are provided below:

ANTEC

The Alaska Native Tribal Epidemiology Center (ANTEC) compiles data on various Alaska Native health indicators statewide and regionally in Alaska. Factsheets include, but are not limited to, information on Suicide Mortality, Leading Causes of Death, Adult Binge Drinking, Adolescent Binge Drinking, and Adverse Childhood Experiences. The ANTEC also produces the Alaska Native Health Status Report.[42]

CTEC

The California Tribal Epidemiology Center (CTEC) produces Community Health Profiles for California Tribes and Indian Health Programs that include information on mental health and alcohol abuse, along with many other health indicators.[43]

NWTEC

The Northwest Tribal Epidemiology Center (NWTEC) has published linkage-corrected data on suicide hospitalizations and deaths in Idaho, Oregon, and Washington. Data are available in the Mental Health & Suicide sections of the AI/AN Community Health Profile reports.[44]

RMTEC

The Rocky Mountain Tribal Epidemiology Center (RMTEC) produced the 2018 Substance Abuse, Poor Mental Health, and the Social Determinants of Health report. This report examines the social determinants of health as they relate to substance abuse and mental health conditions for 79 counties in Montana and Wyoming and eight American Indian reservation communities. RMTEC also produced the Surveillance Report: Substance Use and Mental Health which documents substance use and mental health surveillance needs among Montana and Wyoming tribes and urban Indian communities.[45]

UIHI

The Urban Indian Health Institute (UIHI) produces various health data reports related to urban AI/AN populations from national data sources, including findings on Reported Health and Health-Influencing Behaviors Among Urban American Indians and Alaska Natives and a Community Health Profile using a national aggregate of data collected across 34 Urban Indian Health Program (UIHP) service areas.[1] Urban AI/AN data are also available through an online dashboard.[46]

One of the core functions of TECs is to provide requested technical assistance to AI/AN tribes, tribal organizations, and urban AI/AN organizations in the development of local health service priorities and incidence and prevalence rates of disease and other illness in the community.[47] A TEC may be able to assist with suicide data acquisition from IHS healthcare facilities.

Contact information for TEC Directors can be found at https://tribalepicenters.org/contact.

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[1] The Urban Indian Health Program (UIHP) consists of 34 non-profit 501(c)(3) programs nationwide. The programs are funded through grants and contracts from the IHS, under Title V of the Indian Health Care Improvement Act, PL 94-437, as amended. Approximately 45 percent of the UIHPs receive Medicaid reimbursement as Federally Qualified Health Centers (FQHC) and others receive fees for service under Medicaid for allowable services.

Limitations. *Many, but not all, states and AI/AN tribes in the United States are covered by TECs. Furthermore, TECs differ in the amount and types of data they collect, which is dependent on the TEC's organizational structure, divisions, tribal populations, mission, and goals.[19]*

Urban Indian Health Institute (UIHI)

The UIHI is one of 12 TECs funded by the IHS and is focused on the nationwide urban AI/AN population. UIHI data on suicide are limited to overall prevalence rates and a few substance abuse and mental health indicators drawn from national datasets, surveys, and data collection systems described elsewhere in this resource guide (i.e., BRFSS, YRBS, NVSS, NSDUH). Data are available through a publicly-available Tableau-based dashboard (http://www.uihi.org/urban-indian-health/data-dashboard). As described above, local-level data in the form of Community Health Profiles are publicly available UIHP sites across 19 states, serving individuals in approximately 100 counties where over 1.2 million AI/AN reside. In addition to sociodemographic data, each Profile displays overall suicide rates by gender and age group. For example, 2017 Community Health Profiles describe suicide mortality in service areas including Seattle, WA, Albuquerque, NM, Great Falls, MT, and Detroit, MI.[48]

Limitations. *Suicide data often exists in such limited numbers that UIHI can only report nationally aggregated data. National surveillance data provided through the dashboard may or may not include patients served directly at UIHPs.[19,48]*

Access. *Other suicide-related data from UIHI may be available through a data request. To request data from UIHI, contact http://www.uihi.org/resources/technical-assistance/*

Tribal Surveillance Systems

Whenever possible, community-based data and statistics should be used for tribal suicide surveillance.[5] Two such systems are described below. Tribally-based surveillance systems have several distinct advantages: access to real-time data that may aid identification of emerging suicide clusters, trends, and characteristics; identification of characteristics and patterns that are unique to that AI/AN community; and establishment of an important management role and control for the AI/AN community, which can foster culturally relevant interventions.[26]

At the time of this writing, no comprehensive assessment of currently available tribal surveillance systems had been conducted. To learn more about whether such data exist for a specific tribe, interested parties should contact tribes directly. Contact information for the federally recognized tribes is published by the Bureau of Indian Affairs and can be found by clicking on the "Tribal Leaders Directory" link at http://www.indianaffairs.gov/DocumentLibrary/index.htm.

Maniilaq Association (Alaska)

The Maniilaq Association, a small tribal health and social service nonprofit organization serving 12 federally-recognized tribes in remote Northwest Alaska, developed the first-recorded tribal suicide surveillance system in an indigenous region, starting in 1990. The suicide-related data captured include demographics, suicide method, and the number of deaths and attempts, as well data on situational factors like substance use/misuse, counseling history, employment loss, and

relationship break-ups. Use of these robust surveillance data coupled with culturally-specific prevention campaigns and other efforts have contributed to a significant decline in rates of suicide in this community, particularly among Alaska Native youth under the age of 25.[49]

White Mountain Apache Tribe (Arizona)

In 2001, the White Mountain Apache Tribe in Arizona created the Celebrating Life surveillance system for reporting suicide death, attempts, ideation, self-injury, and binge substance use. Through a tribal resolution, suicide-related data are routinely collected by community members who provide reports on behavioral risk factors which are corroborated by local police, first responders, IHS, and others. Trained community health workers follow up on each report for referral and treatment. Population data are provided through IHS estimates for the White River Service Unit.[50] Data from 2007-2012 show a 40 percent decrease in suicide compared to the previous six-year period, including a 60 percent decrease for adults aged 25-34 years and a 37 percent decrease for young adults aged 20-24 years.[51]

REFERENCES

1. Kochanek KD, Murphy S, Xu J, et al. Mortality in the United States, 2016. *NCHS Data Brief*. 2017 Dec;(293):1-8.

2. Stone DM, Simon TR, Fowler KA, et al. Vital Signs: Trends in State Suicide Rates - United States, 1999-2016 and Circumstances Contributing to Suicide - 27 States, 2015. *Morb Mortal Wkly Rep*. 2018 June;67(22):617-624.

3. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. *Morb Mortal Wkly Rep*. 2018 Mar;67(8):237-242.

4. Suicide Prevention Resource Center. Suicide among racial/ethnic populations in the U.S.: American Indians/Alaska Natives. Waltham, MA: Education Development Center, Inc.; 2013.

5. U.S. Department of Health and Human Services. *To Live to See the Great Day that Dawns: Preventing Suicide by American Indian and Alaska Native Youth and Young Adults*. DHHS Publication SMA (10)-4480, CMHS-NSPL-0196, Printed 2010. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2010.

6. Novins DK, Beals J, Roberts RE, et. al. Factors associated with suicide ideation among American Indian adolescents: does culture matter? *Suicide Life Threat Behav*.1999 Winter;29(4):332-46.

7. U.S. Census Bureau. 2018. About: Race. https://www.census.gov/topics/population/race/about.html. Accessed June 9, 2018.

8. U.S. Census Bureau; American Community Survey, 2016. Selected Population Profile in the United States, 2016 American Community Survey 1-Year Estimates.

9. U.S. Census Bureau. 2017. Facts for Features: American Indian and Alaska Native Heritage Month: November 2017.

10. U.S. Census Bureau. (2010). Census 2010 American Indian and Alaska Native Summary File; Table: PCT2; Urban and rural; Universe Total Population; Population group name: American Indian and Alaska Native alone or in combination with one or more races.

11. Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs: A Notice by the Indian Affairs Bureau. Federal Register 2016;(81(86):26826.

12. U.S. Department of Health and Human Services. *To Live to See the Great Day That Dawns: Preventing Suicide by American Indian and Alaska Native Youth and Young Adults*. DHHS Publication SMA (10)-4480, CMHS-NSPL-0196, Printed 2010. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2010.

13. Walls, ML, Johnson, KD, Whitbeck, LB, et. al. Mental Health and Substance Abuse Services Preferences among American Indian People of the Northern Midwest. *Community Ment Health J*. 2006 Dec; 42(6): 521–535.

14. Jim, MA, Arias, E, Seneca, DS, et. al. Racial misclassification of American Indians and Alaska Natives by Indian Health Service Contract Health Service Delivery Area. *Am J Public Health*. 2014 June; 104(Suppl 3): S295–S302.

15. Northwest Portland Area Indian Health Board Suicide Among American Indians & Alaska Natives in the Northwest. A Review of Death Certificate Records from 2008-2012. Portland, OR: Northwest Tribal EpiCenter, 2015. Retrieved from http://www.npaihb.org/download/resource_type/report/Northwest-AIAN-SuicideFactSheet_2015.pdf.

16. Norris T, Vines PL, Hoeffel EM. 2012. American Indians and Alaska Native population: 2010. Washington, DC. Retrieved from https://www.census.gov/history/pdf/c2010br-10.pdf.

17. Asdigian NL, Bear UR, Beals J, Manson SM, Kaufman CE. Mental health burden in a national sample of American Indian and Alaska Native adults: differences between multiple-race and single-race subgroups. *Soc Psychiatry Psychiatr Epidemiol*. 2018 May;53(5):521-530.

18. Centers for Disease Control & Prevention, Office for State, Tribal, Local and Territorial Support. Federally Recognized Tribes fact sheet https://www.cdc.gov/tribal/documents/tribes/Federally-Recognized-Tribes-Nov2017.pdf. Accessed June 9, 2018.

19. Accessing Data About Suicidal Behavior Among American Indians and Alaska Natives. HHS SAMHSA Suicide Prevention Resource Center. Accessed May 15, 2018 at https://www.sprc.org/sites/default/files/migrate/library/Accessing%20Data%20about%20Suicidal%20Behavior%20among%20American%20Indians%20and%20Alaska%20Natives.pdf.

20. Council of State and Territorial Epidemiologists (CSTE). *Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*. Substance use and mental health subcommittee, Atlanta, Georgia. (2017 Revision). Retrieved from http://www.cste.org/members/group.aspx?id=87616.

21. Suicide Prevention Resource Center. (2013). Suicide among racial/ethnic populations in the U.S.: American Indians/Alaska Natives. Waltham, MA: Education Development Center, Inc.

22. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (June 14, 2107). Retrieved from https://www.cdc.gov/injury/wisqars/facts.html.

23. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (Feb 19, 2017). Retrieved from https://webappa.cdc.gov/sasweb/ncipc/dataRestriction_inj.html.

24. Crosby AE, Mercy JA, Houry, D. The National Violent Death Reporting System: Past, Present, and Future. *Am J Prev Med*. 2016 Nov; 51(5 Suppl 3): S169–S172.

25. National Center for Injury Prevention and Control, Division of Violence Prevention. National Violent Death Reporting System Frequently Asked Questions. (September 18, 2017). Retrieved from https://www.cdc.gov/violenceprevention/nvdrs/faqs.html.

26. Substance Abuse and Mental Health Services Administration. Suicide Clusters within American Indian and Alaska Native Communities: A review of the literature and recommendations. HHS Publication No. SMA17-5050. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2017.

27. Center for Behavioral Health Statistics and Quality. (2018). 2016 National Survey on Drug Use and Health: Methodological Resource Book (Section 13, Statistical Inference Report). Substance Abuse and Mental Health Services Administration, Rockville, MD.

28. Kanny D, Naimi TS, Liu Y, et al. Annual Total Binge Drinks Consumed by U.S. Adults. 2015. *Am J Prev Med*. 2018;54(4):486–496.

29. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 14, 2018). Youth Risk Behavior Surveillance System (YRBSS) Overview. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/overview.htm.

30. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 14, 2018). YRBSS Frequently Asked Questions. Retrieved at https://www.cdc.gov/healthyyouth/data/yrbs/faq.htm#top5

31. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf

32. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (Aug. 2016). YRBS Questionnaire Content. Retrieved at https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/YRBS_questionnaire_content_1991 -2017.pdf.

33. U.S. Department of Education, National Center for Education Statistics. Institute of Education Sciences. (2008). Status and trends in the education of American Indians and Alaska Natives. Retrieved from https://nces.ed.gov/pubs2008/2008084.pdf.

34. Faircloth, S. C., & Tippeconnic, J. W., III. (2010, January 10). The Dropout/Graduation Crisis Among American Indians and Alaska Native Students. Retrieved June 7, 2018, from https://www.civilrightsproject.ucla.edu/research/k-12-education/school-dropouts/the-dropout-graduation-crisis-among-american-indian-and-alaska-native-students-failure-to-respond-places-the-future-of-native-peoples-at-risk.

35. HCUP Databases. Healthcare Cost and Utilization Project (HCUP). April 2017. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved at www.hcup-us.ahrq.gov/sidoverview.jsp.

36. State Emergency Department Databases (SEDD). Healthcare Cost and Utilization Project (HCUP). May 2018. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved at www.hcupus.ahrq.gov/news/exhibit_booth/sedd_brochure.jsp.

37. Indian Health Service, IHS Profile. (May 2018). Retrieved from https://www.ihs.gov/newsroom/factsheets/ihsprofile.

38. Indian Health Service, Office of Information Technology. RPMS Suicide Reporting Form. [PowerPoint slides]. Retrieved from https://www.ihs.gov/rpmsbh/includes/themes/responsive2017/display_objects/documents/SuicideReportingForm.pdf.

39. Congressional Research Service. The Indian Health Service (IHS): An Overview. Jan. 12, 2016.

40. Great Lakes Inter-Tribal Council, Inc. Suicidal Behaviors Among American Indian/Alaska Native Populations: Indian Health Service Resource Patient Management System Suicide Reporting Form Aggregate Database Analysis, 2003-2012 funded by the Indian Health Service, Division of Behavioral Health. Lac du Flambeau, WI: Great Lakes Inter-Tribal Epidemiology Center, Great Lakes Inter-Tribal Council, Inc.; 2013.

41. Indian Health Service. *Tribal Epidemiology Centers.* Retrieved June 1, 2018 from https://www.ihs.gov/epi/tecs/tecs/

42. Alaska Native Epidemiology Center. *Health Data.* Retrieved June 11, 2018 from http://anthctoday.org/epicenter/

43. California Tribal Epidemiology Center. *Reports.* Retrieved June 11, 2018 from https://crihb.org/ctec/

44. Northwest Portland Area Indian Health Board. Improving Data & Enhancing Access – Northwest (IDEA-NW)/Tribal Registry Project. Retrieved from http://www.npaihb.org/idea-nw.

45. Rocky Mountain Tribal Leader Council. Retrieved June 11, 2018 from http://www.rmtec.org/

46. Urban Indian Health Institute. *Reports.* Retrieved June 11, 2018 from http://www.uihi.org/

47. Tribal Epidemiology Centers (2018). 7 Core Functions of Tribal Epidemiology Centers. Retrieved from: https://tribalepicenters.org/7-core-functions.

48. Urban Indian Health Institute. (2018). http://www.uihi.org.

49. Wexler, Lisa & Barnett, Jodi & Trout, Lucas & Moto, Roberta. Making a difference: How Northwest Alaska is working to reduce youth suicide. *Northern Public Affairs*. March 2018.

50. Cwik, M.F. Evaluation of the White Mountain Apache Suicide Surveillance and Prevention System. 7th International Meeting on Indigenous Child Health March 31, 2107. Retrieved from https://www.cps.ca/uploads/imich/B32Cwik.pdf.

51. Cwik, et al. Decreases in Suicide Deaths and Attempts Linked to the White Mountain Apache Suicide Surveillance and Prevention System, 2001–2012. *Am J Public Health.* 2016;106(12): 2183-2189.

Indicator Group: Suicide Prevalence

Indicator 1: Suicide Rate

Data Source(s)	CDC Fatal Injury Reports and National Violent Death Reporting System (NVDRS), both available through the CDC Web-based Injury Statistics Query and Reporting System (WISQARS). Mortality data for both datasets are from the National Vital Statistics System (NVSS) at CDC's National Center for Health Statistics.
Demographic Group	AI/AN residents
Geographic Level	Fatal Injury Reports are available at the national and state level. The NVDRS database provides national-level estimates and estimates for the 27 CDC-funded NVDRS states (as of 2015, the year for which most current data on suicide are available) (AK, AZ, CO, CT, GA, HI, KS, KY, MA, MD, ME, MI, MN, NC, NH, NJ, NM, NY, OH, OK, OR, RI, SC, UT, VA, VT, WI).
Numerator	Number of suicide injury deaths among AI/AN *with International Classification of Disease 10th Revision* codes: X60-X84, Y87.0, U03.
Denominator	Midyear resident population of the same year. Fatal Injury Reports and NVDRS use year 2000 Bureau of Census data for population estimates.
Measure	Death rate per 100,000 population, crude and age-adjusted rates (to the year 2000 U.S. standard population, calculated annually.
Period for Case Definition	Rate calculated annually for resident deaths occurring during a calendar year.
Additional Data Items	Stratify by age group (age range 5-14, 15-24, 25-44, 45-64, 65-74, 75+) and sex, and geographic subarea if feasible given number of events for jurisdiction.
Background	Suicide ranks as the eighth leading cause of death for the total AI/AN population and is the sixth leading cause for AI/AN males.[3] Among those aged 15-24 years, the suicide rate among AI/AN is more than four times the suicide rate of White youth and young adults in this age group. These AI/AN rates have been adjusted to compensate for misreporting of AI/AN race on state death certificates.[3]

Significance	To the extent that effective, evidence-based strategies are implemented in tribal communities, suicide rates can be expected to fall, and this change will be reflected in this indicator.
Limitations of Indicator	Medical examiners or coroners may misclassify intentionality of death. Suicide rates vary significantly by IHS service region[4,5] and can vary by tribe[6]; caution should be taken when comparing rates across jurisdictions.
Limitations of Data Resource	Violent death data are currently provided for 27 NVDRS states and, therefore, are not nationally representative. Tribal affiliation is not collected in NVDRS; thus, the results might not be generalizable across all AI/AN communities. Miscoding of AI/AN on death certificates can significantly underestimate mortality rates.
Related Indicator	MHMD-1: Reduce the suicide rate. See http://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	Suicide data from Fatal Injury Reports are publicly available at http://www.cdc.gov/injury/wisqars/fatal.html. Data from NVDRS are available online through CDC's WISQARS (Web-based Injury Statistics Query and Reporting System). If possible, death records should be linked to records captured in tribal registries to correct racial misclassification. Local-level suicide rates for Urban Indian Health Program service areas are publicly available through annually published Community Health Profiles. (http://www.uihi.org/urbanindian-health-organization-profiles).
Notes	None.

References

1. Centers for Disease Control and Prevention. Fatal Injury Data. Accessed May 15, 2018 at https://www.cdc.gov/injury/wisqars/fatal.html. Last updated February 5, 2018.
2. National Center for Injury Prevention and Control, Division of Violence Prevention. National Violent Death Reporting System. Accessed June 13, 2018. https://www.cdc.gov/ViolencePrevention/NVDRS/ Last updated September 18, 2017.
3. Indian Health Focus: Injuries 2017 Edition. US Department of Health and Human Services, Indian Health Service.
4. Espey DK, Jim MA, Cobb N, et al. Leading Causes of Death and All-Cause Mortality in American Indians and Alaska Natives. *Am J Public Health*. 2014 June; 104(Suppl 3): S303–S311.
5. Herne MA, Bartholomew ML, Weahkee RL. Suicide Mortality Among American Indians and Alaska Native, 1999-2009. *Am J Public Health*. 2014 June; 104(Suppl 3): S336–S342.
6. Mullany B, Barlow A, Goklish N, et al. Toward understanding suicide among youths: Results from the White Mountain Apache tribally mandated suicide surveillance system, 2001–2006. *Am J Public Health*. 2009 Oct; 99(10), 1840–1848.

Indicator Group: Suicide Ideation and Attempts

Indicator 2A: Percent of AI/AN adults reporting having serious thoughts of suicide in the past year

Data Source(s)	National Survey of Drug Use and Health (NSDUH). See restricted-use data analysis system (RDAS) (link provided below) to conduct AI/AN analyses by state.
Demographic Group	AI/AN aged ≥18 years.
Geographic Level	Nationwide and state-level when numbers are sufficiently large.
Numerator	AI/AN aged ≥18 years who responded that they had thought seriously about trying to kill themselves at any time during the past 12 months.[1]
Denominator	AI/AN aged ≥18 years (excluding those who refused to answer, had missing answers, or answered "don't know/not sure").
Measure	Two-year prevalence with 95 percent confidence intervals. States should combine two survey years (example 2013-2014, 2014-2015) to provide stable state-level estimates. State estimates provided by SAMHSA are developed using a small area estimation procedure in which state-level NSDUH data from 2 survey years are combined with local-area county and census block group/tract-level data from the state. This model-based methodology provides more precise estimates of state-level substance use than those based solely on the sample, particularly for smaller states.[2]
Time Period for Case Definition	Past year.
Additional Data Items	Due to small numbers it is likely not possible to stratify by age.
Background	According to the 2016 NSDUH, 3.9 percent (54,000) of AI/AN ≥18 years reported having serious thoughts of suicide in the past year. This was similar to the national average (4 percent).[3]

Significance	Recent data show that a third of AI/AN suicide decedents had a history of suicidal thoughts or a plan.[4] Individuals who die from suicide represent a fraction of those who consider or attempt suicide.[5] Individuals are likely to have thought about suicide before attempting suicide. In 2016, about one-fourth of all U.S. adults who had serious thoughts of suicide made suicide plans, and about 1 in 7 adults who had serious thoughts of suicide made a suicide attempt.[1]
Limitations of Indicator	This indicator relies on self-report and has a long recall period. Estimates do not reflect information from adults whose suicide attempts in the past year were fatal.
Limitations of Data Resource	The indicator captures information on the U.S. civilian, non-institutional population aged 12 or older. NSDUH excludes homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails and hospitals. Significant time can elapse before data are available for inclusion in a surveillance summary, since reported data rely on a two-year rolling average, data reflect the respondent's experience for a full 12 months before the interview date, and it can be 6 to 12 months after the date of the last interview before the data are cleaned and analyzed. The data reported by SAMHSA are derived from a long-running annual face-to-face household survey with high response rates and extensive quality checking, and current data are directly comparable to those from 2002 and later and appear consistent with those of other surveys of the same topics. As with any sample survey, issues with data item validity and over- or under-estimation of parameters of interest may arise. Small numbers of subjects in sub-state areas limit ability, to make sub-state area or race/ethnicity estimates, especially in less populous states.
Related Indicator	MHMD-1 Reduce the suicide rate. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	See RDAS to conduct AI/AN analyses by state. Filter the race/ethnicity variable specifically by AI/AN and simultaneously control the analyses by a specific state. http://datafiles.samhsa.gov/info/analyze-data-nid6. Recent data can also be found in the American Indian or Alaskan Native 2016 NSDUH Summary Sheet, see https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.
Notes	None.

References

1. Substance Abuse and Mental Health Services Administration (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR1-2016/NSDUH-FFR1-2016.htm. Accessed June 10, 2018.

2. Substance Abuse and Mental Health Services Administration. 2014-2016 National Surveys on Drug Use and Health: Guide to Substate Tables and Summary of Small Area Estimation Methodology Available at https://www.samhsa.gov/data/sites/default/files/NSDUHsaeMethodology2016/NSDUHsaeMethodology2016.htm. Accessed June 25, 2018.

3. Substance Abuse and Mental Health Administration. 2016. American Indian or Alaskan Native (AIAN) 2016 NSDUH Summary Sheet. Retrieved from https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.

4. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. *Morb Mortal Wkly Rep*. 2018 Mar;67(8):237-242

5. Crosby AE, Han B, Ortega LA, et al. Suicidal thoughts and behaviors among adults aged ≥18 years—United States, 2008-2009. *Morb Mortal Wkly*. 2011 Oct;60(13), 1-22.

Indicator 2B: Percent of AI/AN students reporting having serious thoughts of suicide in past year

Data Source(s)	CDC, High School Youth Risk Behavior Survey (YRBS)
Demographic Group	AI/AN high school students (grades 9-12)
Geographic Level	National, state, or greater resolution if feasible given number of events for AI/AN. YRBS High School data in 2017 were collected at the national and state level (except for MN, OR, WA, and WY), along with three territories (Guam, Northern Mariana Islands, and Puerto Rico) and over 20 large urban school districts. Notably, the Cherokee Nation, Winnebago Tribe, and Navajo also participated in the 2017 YRBS.[1]
Numerator	AI/AN students in grades 9-12 who reported they seriously considered attempting suicide (during the 12 months before the survey).[2]
Denominator	AI/AN students in grades 9-12 (excluding those who refused to answer or had missing answers).[2]
Measure	Biennial (odd years) prevalence with 95 percent confidence interval.
Time Period for Case Definition	Past year.
Additional Data Items	Stratify by location, sex, grade, and sexual orientation if feasible given number of events reported by AI/AN youth.
Background	Compared to the overall U.S. population, AI/AN youth engage in significantly higher rates of fatal and nonfatal suicidal behavior. 2017 YRBS data indicate that 19.0 percent of AI/AN high school students seriously considered attempting suicide; nationally, 17.2 percent of high school students seriously considered attempting suicide.[3] In a study of suicidal ideation among over 200 American Indian youth with an average age of 12 years, 9.5 percent had current suicidal ideation. Notably females were twice as likely than their male counterparts to have suicidal ideation. Alcohol and drug use, along with enculturation and perceived discrimination have been shown to correlate with suicidal ideation for AI/AN youth.[4]
Significance	Suicide ideation is a clear precursor of suicidal behavior. Successful efforts to prevent youth suicide should also seek to understand suicide ideation.
Limitations of Indicator	This indicator relies on self-report and has a long recall period. Suicide-related stigma may result in underreporting.

Limitations of Data Resource	Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN.[2] Precision can be improved by combining multiple years of national YRBS data. While all 50 states and the District of Columbia are including in the sampling frame of the national 2017 YRBS, not all states and territories administered a YRBS. In 2017, 46 states, three territories, and three tribal governments (Cherokee Nation, Winnebago Tribe, and Navajo) conducted a YRBS. YRBS data are not available when a state did not achieve sufficient responses to weight the data. Students self-report behaviors on the YRBS, and the extent of underreporting or overreporting cannot be determined. YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. YRBS data are collected biennially.[5]
Related Indicator	MHMD-1 Reduce the suicide rate MHMD-2 Reduce suicide attempts by adolescents MHMD-6 Increase the proportion of children with mental health problems who receive treatment. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	YRBS is publicly available at no cost through CDC: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm. YRBS Youth Online Data Analysis Tool allows users to analyze data by AI/AN and create customizable tables, maps, and graphs. YRBS data are also available in two file formats: Access® and ASCII. The Access and ASCII data can be downloaded and used as is. Additionally, SAS® and SPSS® programs are provided to convert the ASCII data into SAS® and SPSS® datasets for use in those packages. Data are available for 1991, 1993, 1995, 1997, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017.
Notes	The Cherokee Nation and Winnebago Tribe participated in the YRBS in 2009, 2011, 2013, 2015, and 2017. The Navajo participated in the YRBS in 2017. The Cherokee Nation, Winnebago Tribe, and Navajo data are available on YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to data files.[1]

References

1. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf
2. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). 2017 YRBS Data User's Guide. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_YRBS_Data_Users_Guide.pdf
3. Centers for Disease Control and Prevention. 2017 High School Youth Risk Behavior Survey Data. Accessed June 26, 2018 at https://nccd.cdc.gov/Youthonline/App/Default.aspx
4. Yoder KA, Whitbeck LB, Hoyt DR, et al. Suicidal ideation among American Indian youths. *Arch Suicide Res*. 2006;10(2):177-90.
5. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System – 2013. MMWR 2013;62 (No. 1). https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Indicator 3: Percent of AI/AN students having made suicide plans in past year

Data Source(s)	CDC, High School Youth Risk Behavior Survey (YRBS)
Demographic Group	AI/AN high school students (grades 9-12)
Geographic Level	National, state, or greater resolution if feasible given number of events for AI/AN. YRBS High School data in 2017 were collected at the national and state level (except for MN, OR, WA, and WY), along with three territories (Guam, Northern Mariana Islands, and Puerto Rico) and over 20 large urban school districts. Notably, the Cherokee Nation, Winnebago Tribe, and Navajo also participated in the 2017 YRBS.[1]
Numerator	AI/AN students in grades 9-12 who reported making a plan about how they would attempt suicide (during the 12 months before the survey).[2]
Denominator	AI/AN students in grades 9-12 (excluding those who refused to answer or had missing answers).[2]
Measure	Biennial (odd years) prevalence with 95 percent confidence interval.
Time Period for Case Definition	Past year.
Additional Data Items	Stratify by location, sex, grade, and sexual orientation if feasible given number of events reported by AI/AN youth.
Background	Compared to the overall U.S. population, AI/AN youth engage in significantly higher rates of fatal and nonfatal suicidal behavior, although 2017 YRBS data indicate a similar prevalence between AI/AN high school students and high school students nationally in making a plan about how they would commit suicide (13.7 percent for AI/AN and 13.6 percent nationally) Notably, 21.7% of Alaska AI/AN high school students, 20.1% of Navajo high school students, and 15.9% of Cherokee Nation high school students reported making a suicide plan in 2017.[3]
Significance	Analysis of data from the Emergency Department Safety Assessment and Follow-up Evaluation indicates that suicidal intent or plans were predicative of future suicidal behavior.[4]
Limitations of Indicator	This indicator relies on self-report and has a long recall period. Suicide-related stigma may result in underreporting.
Limitations of Data Resource	Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN.[2] Precision can be improved by combining multiple

	years of national YRBS data. While all 50 states and the District of Columbia are including in the sampling frame of the national 2017 YRBS, not all states and territories administered a YRBS. In 2017, 46 states, three territories, and three tribal governments (Cherokee Nation, Winnebago Tribe, and Navajo) conducted a YRBS. YRBS data are not available when a state did not achieve sufficient responses to weight the data. Students self-report behaviors on the YRBS, and the extent of underreporting or overreporting cannot be determined. YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. YRBS data are collected biennially.[5]
Related Indicator	MHMD-1 Reduce the suicide rate MHMD-2 Reduce suicide attempts by adolescents MHMD-6 Increase the proportion of children with mental health problems who receive treatment. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	YRBS is publicly available at no cost through CDC: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm. YRBS Youth Online Data Analysis Tool allows users to analyze data by AI/AN online and create customizable tables, maps, and graphs. YRBS data are also available in two file formats: Access® and ASCII. The Access and ASCII data can be downloaded and used as is. Additionally, SAS® and SPSS® programs are provided to convert the ASCII data into SAS® and SPSS® datasets for use in those packages. Data are available for 1991, 1993, 1995, 1997, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017.
Notes	The Cherokee Nation and Winnebago Tribe participated in the YRBS in 2009, 2011, 2013, 2015, and 2017. The Navajo participated in the YRBS in 2017. The Cherokee Nation, Winnebago Tribe, and Navajo data are available on YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to data files.

References

1. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf
2. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). 2017

YRBS Data User's Guide. Retrieved from
https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_YRBS_Data_Users_Guide.pdf

3. Centers for Disease Control and Prevention. 2017 High School Youth Risk Behavior Survey Data. Accessed June 26, 2018 at https://nccd.cdc.gov/Youthonline/App/Default.aspx

4. Arias SA, Miller I, Camargo CA Jr, et al. Factors Associated with Suicide Outcomes 12 Months After Screening Positive for Suicide Risk in the Emergency Department. *Psychiatr Serv*. 2016 Feb;67(2):206-13.

5. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System – 2013. MMWR 2013;62 (No. 1).
    https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Indicator 4: Percent of AI/AN students reporting having attempted suicide in past year

Data Source(s)	CDC, High School Youth Risk Behavior Survey (YRBS)
Demographic Group	AI/AN high school students (grades 9-12)
Geographic Level	National, state, or greater resolution if feasible given number of events for AI/AN. YRBS High School data in 2017 were collected at the national and state level (except for MN, OR, WA, and WY), along with three territories (Guam, Northern Mariana Islands, and Puerto Rico) and over 20 large urban school districts. Notably, the Cherokee Nation, Winnebago Tribe, and Navajo also participated in the 2017 YRBS.[1]
Numerator	AI/AN students in grades 9-12 who reported attempted suicide at least once in the past 12 months.[2]
Denominator	AI/AN students in grades 9-12 (excluding those who refused to answer or had missing answers).[2]
Measure	Biennial (odd years) prevalence with 95 percent confident intervals.
Time Period for Case Definition	Past year.
Additional Data Items	Stratify by location, sex, grade, and sexual orientation if feasible given number of events reported by AI/AN youth.
Background	Compared to the overall U.S. population, AI/AN youth engage in significantly higher rates of fatal and nonfatal suicidal behavior. 2015 YRBS data indicate that 15.0 percent of AI/AN high school students have attempted suicide; nationally, 8.6 percent of high school students have attempted suicide.[3] A study of White Mountain Apache tribe youth aged 15-24 found that from 2001 to 2006, the ratio of suicide attempts to suicides was 36:1. In 2006, 38 percent of the Apache youths who made a suicide attempt had previously attempted suicide. In this study, Apache youth most commonly reported the reason for suicide attempts being: (1) conflict with family members, (2) conflict with boyfriend or girlfriend, or (3) the suicide or loss of a loved one.[4]
Significance	Although the correlation between suicide attempts and suicide deaths may differ based on method, gender, and other population characteristics, successful efforts to prevent suicide should also reduce suicide attempts.

Limitations of Indicator	This indicator relies on self-report and has a long recall period. Suicide related stigma may result in underreporting. Estimates do not reflect information from students whose suicide attempts in the past year were fatal.
Limitations of Data Resource	Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN.[2] Precision can be improved by combining multiple years of national YRBS data. While all 50 states and the District of Columbia are including in the sampling frame of the national 2017 YRBS, not all states and territories administered a YRBS. In 2017, 46 states, three territories, and three tribal governments (Cherokee Nation, Winnebago Tribe, and Navajo) conducted a YRBS. YRBS data are not available when a state did not achieve sufficient responses to weight the data. Students self-report behaviors on the YRBS, and the extent of underreporting or overreporting cannot be determined. YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. YRBS data are collected biennially.[5]
Related Indicator	MHMD-1 Reduce the suicide rate MHMD-2 Reduce suicide attempts by adolescents MHMD-6 Increase the proportion of children with mental health problems who receive treatment. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	YRBS is publicly available at no cost via CDC: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm. YRBS Youth Online Data Analysis Tool allows users to analyze data by AI/AN online and create customizable tables, maps, and graphs. YRBS data are also available in two file formats: Access® and ASCII. The Access and ASCII data can be downloaded and used as is. Additionally, SAS® and SPSS® programs are provided to convert the ASCII data into SAS® and SPSS® datasets for use in those packages. Data are available for 1991, 1993, 1995, 1997, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017.

Notes	The Cherokee Nation and Winnebago Tribe participated in the YRBS in 2009, 2011, 2013, 2015, and 2017. The Navajo participated in the YRBS in 2017. The Cherokee Nation, Winnebago Tribe, and Navajo data are available on YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to data files. This indicator is specific to AI/AN populations but otherwise parallels Indicator 14 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*

References

1. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf

2. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). 2017 YRBS Data User's Guide. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_YRBS_Data_Users_Guide.pdf

3. Centers for Disease Control and Prevention. 2015 High School Youth Risk Behavior Survey Data. Accessed May 15, 2018 at https://nccd.cdc.gov/Youthonline/App/Default.aspx

4. Mullany B, Barlow A, Goklish N, et al. Toward understanding suicide among youths: results from the White Mountain Apache tribally mandated suicide surveillance system, 2001-2006. *Am J Public Health*. 2009 Oct;99(10):1840-8.

5. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System – 2013. MMWR 2013;62 (No. 1). https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Indicator 5: Received medical attention for a suicide attempt (students)

Data Source(s)	CDC, High School Youth Risk Behavior Survey (YRBS)
Demographic Group	AI/AN high school students (grades 9-12)
Geographic Level	National, state, or greater resolution if feasible given number of events for AI/AN. YRBS High School data in 2017 were collected at the national and state level (except for MN, OR, WA, and WY), along with three territories (Guam, Northern Mariana Islands, and Puerto Rico) and over 20 large urban school districts. Notably, the Cherokee Nation, Winnebago Tribe, and Navajo also participated in the 2017 YRBS.[1]
Numerator	AI/AN students in grades 9-12 who reported attempting suicide in the past 12 months that resulted in injury, poisoning, or overdose that had to be treated by a doctor or nurse.[2]
Denominator	AI/AN students in grades 9-12 (excluding those who refused to answer or had missing answers).[2]
Measure	Biennial (odd years) prevalence with 95 percent confidence interval.
Time Period for Case Definition	Past year.
Additional Data Items	Stratify by location, sex, grade, and sexual orientation if feasible given number of events reported by AI/AN youth.
Background	Compared to the overall U.S. population, AI/AN youth engage in significantly higher rates of fatal and nonfatal suicidal behavior. 2015 YRBS data indicate that of 4.0 percent of AI/AN students have attempted suicide that resulted in injury, poisoning, or overdose that had to be treated by a doctor or nurse; nationally, 2.8 percent of students attempted suicide that resulted in injury, poisoning, or overdose that had to be treated by a doctor or nurse.[3]
Significance	Suicidal behavior results in significantly more nonfatal injuries than in suicide deaths; it is estimated that there are 13 nonfatal events for every suicide-related fatality.[4] This indicator provides a more comprehensive description of morbidity associated with suicide.
Limitations of Indicator	This indicator relies on self-report and has a long recall period. Suicide related stigma may result in underreporting.

Limitations of Data Resource	Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN.[2] Precision can be improved by combining multiple years of national YRBS data. While all 50 states and the District of Columbia are including in the sampling frame of the national 2017 YRBS, not all states and territories administered a YRBS. In 2017, 46 states, three territories, and three tribal governments (Cherokee Nation, Winnebago Tribe, and Navajo) conducted a YRBS. YRBS data are not available when a state did not achieve sufficient responses to weight the data. Students self-report behaviors on the YRBS, and the extent of underreporting or overreporting cannot be determined. YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. YRBS data are collected biennially.[5]
Related Indicator	MHMD-1 Reduce the suicide rate MHMD-2 Reduce suicide attempts by adolescents MHMD-6 Increase the proportion of children with mental health problems who receive treatment. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	YRBS is publicly available at no cost through CDC: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm. YRBS Youth Online Data Analysis Tool allows users to analyze data by AI/AN online and create customizable tables, maps, and graphs. YRBS data are also available in two file formats: Access® and ASCII. The Access and ASCII data can be downloaded and used as is. Additionally, SAS® and SPSS® programs are provided to convert the ASCII data into SAS® and SPSS® datasets for use in those packages. Data are available for 1991, 1993, 1995, 1997, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017.
Notes	The Cherokee Nation and Winnebago Tribe participated in the YRBS in 2009, 2011, 2013, 2015, and 2017. The Navajo participated in the YRBS in 2017. The Cherokee Nation, Winnebago Tribe, and Navajo data are available on YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to data files.[1]

References

1. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf
2. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). 2017 YRBS Data User's Guide. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_YRBS_Data_Users_Guide.pdf
3. Centers for Disease Control and Prevention. 2015 High School Youth Risk Behavior Survey Data. Accessed May 15, 2018 at https://nccd.cdc.gov/Youthonline/App/Default.aspx
4. Carmona, R.H. U.S. Department of Health and Human Services, U.S. Public Health Service, Surgeon General. (June 2015). Suicide Prevention Among Native American Youth. Retrieved from https://www.surgeongeneral.gov/news/testimony/t06152005.html
5. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System – 2013. *MMWR* 2013;62 (No. 1). https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Indicator 6: Proportion and number of emergency department visits for intentional self-harm

Data Source	Emergency department (ED) database
Demographic Group	AI/AN residents
Geographic Level	State and geographic subarea if feasible given number of events and data suppression rules for jurisdiction.
Numerator	ED admissions, from civilian, acute care, nonfederal hospitals, with any primary diagnosis of intentional self-injury International Classification of Disease 9th Revision Clinical Modification (ICD-9-CM) codes E950-E958 or first-listed valid E-code in secondary diagnosis field. Note: Corresponding ICD10-CM codes are T36 to T65 inclusive where 6th digit is 2, and X71 to X83 inclusive, as first-listed diagnosis.
Denominator	Midyear resident population for the same calendar year.
Measure	Annual number of ED admissions. Annual rate of ED admissions per 10,000: crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).
Time period for case definition	Calendar year.
Additional Data Items	Stratify by age group (5-14, 15-24, 25-44, 45-64, 65-74, 75+), sex, ethnicity, and geographic subarea if feasible given number of events for jurisdiction.
Background	Suicide attempts are highly correlated with suicide mortality[1,2] and suicides among AI/AN have been increasing since 2003.[3] An analysis focusing only on completed suicides will miss important suicide morbidity and the opportunity to identify specific mechanisms of self-harm that may be useful for prevention strategies.
Significance	Successful efforts to prevent suicides should also prevent suicide attempts. The relationship between attempts and completed suicides may differ by tribe/subpopulation and by method.

Limitations of Indicator	ED utilization may vary widely by tribe/geographic area. Data from Apache adolescent medical records indicate 82% were in contact with the local ED the year before a suicide attempt, compared to 22% of Alaska Native youth[4]. Only self-injury presentations to the ED are included; persons who do not seek medical care are not counted. Intentionality may be misclassified by clinicians. This indicator does not perfectly measure suicide attempts: for example, injury may be intentional but not intended to result in death. Sequelae of intentional self-injury (E959) are not included in this measure to reduce duplicate counts for individual suicide attempts. However, this convention may exclude persons who did not initially visit the ED for their injury. There is little experience to date in most jurisdictions for systematic examination of this indicator.
Limitations of Data Resource	Quality of information on race and ethnicity may be poor, as it may be collected using visual inspection rather than asking the patient or may not be recorded in the chart[5]. E-codes may not be documented for every visit when ICD-9-CM is used. There is little experience so far on possible quality issues in facilities using ICD10-CM. Residents who are treated in other geographic areas are not captured. Federal facilities (e.g., Veterans Administration, Department of Defense, Indian Health Service hospitals) sometimes do not have data-sharing agreements with local areas, so visits to such facilities would be missed in some states, but not others, if they were included in the analysis.
Related Indicator	MHMD-1: Reduce the suicide rate. MHMD2: Reduce suicide attempts by adolescents. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	The State Emergency Department Databases (SEDD) capture discharge information on all emergency department visits that do not result in an admission. The SEDD is available for purchase from the online HCUP Central Distributor: www.hcup-us.ahrq.gov/tech_assist/centdist.jsp. Each state database is sold separately.[6]
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 13 from 2017 *Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Brent DA., Baugher M, Chen T, et al. Age- and sex-related risk factors for adolescent suicide. *J Am Acad Child Adolesc Psychiatry*. 1999 Dec;38(12):1497-505.
2. Olfson M, Wall M, Wang S, et al. Suicide after deliberate self-harm in adolescents and young adults. *Pediatrics*, 2018 Apr;141(4).
3. Suicide Prevention Resource Center. Suicide among racial/ethnic populations in the U.S.: American Indians/Alaska Natives. Waltham, MA: Education Development Center, Inc.; 2013.

4. Ballard ED, Tingey L, Lee A, et al. Emergency Department Utilization among American Indian Adolescents who made a Suicide Attempt: A Screening Opportunity. *J Adolesc Health*. 2014 Mar; 54(3): 357–359.
5. Hirshon JM, Warner M, Irvin CB, et al. Research Using Emergency Department–related Data Sets: Current Status and Future Directions. *Acad Emerg Med*. 2009 Nov; 16(11): 1103–1109.
6. State Emergency Department Databases (SEDD). Healthcare Cost and Utilization Project (HCUP). May 2018. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/news/exhibit_booth/sedd_brochure.jsp.

Indicator Group 3: Substance Abuse and Mental Health

> **Indicator 7:** Hospital discharges for mental disorders; all, mood and depressive disorders, schizophrenic disorders, all mental disorders EXCEPT drug- and alcohol-induced mental disorders.

Data Source(s)	State hospital discharge database.
Demographic group	AI/AN
Geographic Level	State, county, or higher resolution if feasible given number of events for jurisdiction.
Numerator	Hospitalizations, discharged from civilian, non-federal acute care hospitals, attributable to a mental disorder with primary diagnosis of a mental disorder (International Classification of Disease 9th Clinical Modification (ICD-9-CM) codes 290-319, ICD10-CM codes F10 to F48), total and three sub indicators: mood and depressive disorders (ICD-9-CM 296 and 311; ICD10-CM F30 to F39), schizophrenic disorders (ICD-9-CM 295; ICD10-CM F20 to F29), and all mental disorders EXCEPT drug- and alcohol-induced mental disorders (ICD-9-CM 290, 293-302, 306-319); ICD10-CM F20 to F48).
Denominator	Midyear resident population for the same calendar year.
Measure	Annual number of hospital discharges. Annual rate of hospital discharge per 10,000: crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population)
Time period for case definition	Calendar year.
Additional Data Items	Stratify by age group, sex, race, ethnicity, and geographic subarea if feasible given number of events for jurisdiction.

Background	Mental disorders are a known risk factor for suicide in the general population[1] and ranked second of the ten leading causes for hospitalizations among AI/AN aged 5-14 and 15-24 in 2016.[2] Recent data on the prevalence of specific mental disorders among AI/AN are limited, but evidence suggests AI/AN are at increased risk for a range of mental disorders due to historic trauma and low utilization rates for mental health services.[3,4]
Significance	Better understanding of AI/AN hospitalization rates for mental disorders can inform prevention programs that should have an impact on these rates and suicide mortality.
Limitations of Indicator	Severity of illness resulting in hospital admission varies by locale based on local mental health systems. Admissions with one of the designated codes present only as a secondary diagnosis are excluded from the numerator. Changes in insurance reimbursement policies, or changes in recommendations for psychiatric diagnosis, may increase or decrease hospitalization rates without reflecting changes in true disease burden. Self-harm is not included.
Limitations of Data Resource	Statewide hospital discharge data generally do not cover federal hospitals, such as Veteran's Administration and IHS, and the quality of race/ethnicity coding varies across states.[5] Record linkage has been shown to substantially improve accuracy of AI/AN in hospital discharge datasets.[6] Out-of-jurisdiction admissions by jurisdiction residents are typically not included in jurisdiction databases. Completeness and quality of ICD-9-CM and ICD10-CM coding are limiting factors for any indicator based on administrative data. Comparability cannot be assured over the transition from ICD-9-CM-coded to ICD10-CM-coded hospital discharge data.
Related Indicator	MHMD-4 Reduce the proportion of persons who experience major depressive episodes. MHMD-6 Increase the proportion of children with mental health problems who receive treatment. MHMD-9Increase the proportion of adults with mental health disorders who receive treatment. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	The State Inpatient Database (SID) includes inpatient discharge records from community hospitals in 48 states and encompass hospital inpatient files from all patients, including individuals covered by Medicare, Medicaid, or private insurance, as well as those who are uninsured. The SID is available for purchase from the online HCUP Central Distributor: www.hcupus.ahrq.gov/tech_assist/centdist.jsp. Each state database is sold separately.[7]

Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 12 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Chesney E, Goodwin GM, Fazel S Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry*. 2014 Jun; 13(2): 153–160.
2. Indian Health Focus: Injuries 2017 Edition. US Department of Health and Human Services, Indian Health Service.
3. American Psychiatric Association, Division of Diversity and Health Equity. Mental Health Disparities: American Indian/Alaska Natives. https://www.psychiatry.org/File%20Library/Psychiatrists/Cultural-Competency/Mental-Health-Disparities/Mental-Health-Facts-for-American-Indian-Alaska-Natives.pdf. Accessed June 1, 2018.
4. U.S. Department of Health and Human Services. *To Live to See the Great Day That Dawns: Preventing Suicide by American Indian and Alaska Native Youth and Young Adults*. DHHS Publication SMA (10)-4480, CMHS-NSPL-0196, Printed 2010. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2010.
5. Andrews, RM Statewide Hospital Discharge Data: Collection, Use, Limitations, and Improvements. *Health Serv Res*. 2015 Aug; 50(Suppl 1): 1273–1299.
6. Bigback, KM, Hoopes M, Denkovchik J, et al. Using Record Linkage to Improve Race Data Quality for American Indians and Alaska Natives in Two Pacific Northwest State Hospital Discharge Databases. *Health Serv Res*. 2015 Aug; 50(Suppl 1): 1390–1402.
7. HCUP Databases. Healthcare Cost and Utilization Project (HCUP). April 2017. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp.

Indicator 8: Serious adult mental illness in the past year

Data Source / System / Provider	National Survey of Drug Use and Health (NSDUH). See restricted-use data analysis system (RDAS) (link provided below) to conduct AI/AN analyses by state.
Demographic Group	AI/AN aged ≥18 years.
Geographic Level	Nationwide and state-level when numbers are sufficiently large.
Numerator	AI/AN adults (≥18 years) with serious mental illness (SMI). Adults with any mental illness (AMI) were defined as having any mental, behavioral, or emotional disorder in the past year that met Diagnostic and Statistical Manual of Mental Disorders, 4th Edition criteria (excluding developmental disorders and a substance use disorder). Adults with AMI were defined as having SMI if they had any mental, behavioral, or emotional disorder that substantially interfered with or limited one or more major life activities.[1]
Denominator	AI/AN aged ≥18 years (excluding those who refused to answer, had missing answers, or answered "don't know/not sure").
Measure	Two-year prevalence with 95 percent confidence intervals. States should combine two survey years (example 2013-2014, 2014-2015) to provide stable state-level estimates. State estimates provided by SAMHSA are developed using a small area estimation procedure in which state-level NSDUH data from 2 survey years are combined with local-area county and census block group/tract-level data from the state. This model-based methodology provides more precise estimates of state-level substance use than those based solely on the sample, particularly for smaller states.[2]
Period for Case Definition	Past year.
Additional Data Items	Due to small numbers it is likely not possible to stratify by age.
Background	According to the 2016 NSDUH, 4.9 percent (68,000) of AI/AN ≥18 years reported having a serious mental illness (SMI) in the past year. This was similar to the national average (4.2 percent).[3]
Significance	Studies show associations between AI/AN suicide behaviors and depression, hopelessness, and PTSD.[4] Recent data on AI/AN suicide decedents found 28 percent had a current mental health problem and 37 percent had depressed mood.[5]

Limitations of Indicator	This indicator relies on multiple NSDUH questionnaire items. It relies on self-report and has a long recall period. Classification of respondents does not come from a clinician's diagnosis. The indicator captures information on the U.S. civilian, non-institutional population aged 12 or older. NSDUH excludes homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails and hospitals.
Limitations of Data Resource	Significant time can elapse before data are available for inclusion in a surveillance summary, since reported data rely on a two-year rolling average, data reflect the respondent's experience for a full 12 months before the interview date, and it can be 6 to 12 months after the date of the last interview before the data are cleaned and analyzed. The data reported by SAMHSA are derived from a long-running annual face- to-face household survey with high response rates and extensive quality checking, and current data are directly comparable to those from 2002 and later and appear consistent with those of other surveys of the same topics. As with any sample survey, issues with data item validity and over- or under-estimation of parameters of interest may arise. Small numbers of subjects in sub-state areas limit ability, to make sub-state area or race/ethnicity estimates, especially in less populous states.
Related Indicator	MHMD-4.2 Reduce the proportion of adults aged 18 and older who experience major depressive episodes. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	See RDAS to conduct AI/AN analyses by state. Filter the race/ethnicity variable specifically by AI/AN and simultaneously control the analyses by a specific state. http://datafiles.samhsa.gov/info/analyze-data-nid6. Recent data can also be found in the American Indian or Alaskan Native 2016 NSDUH Summary Sheet. See https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 17 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Substance Abuse and Mental Health Services Administration (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from

https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR1-2016/NSDUH-FFR1-2016.htm Accessed June 10, 2018.

2. Substance Abuse and Mental Health Services Administration. 2014-2016 National Surveys on Drug Use and Health: Guide to Substate Tables and Summary of Small Area Estimation Methodology Available at https://www.samhsa.gov/data/sites/default/files/NSDUHsaeMethodology2016/NSDUHsaeMethodology2016.htm. Accessed June 25, 2018.

3. Substance Abuse and Mental Health Administration. 2016. American Indian or Alaskan Native (AIAN) 2016 NSDUH Summary Sheet. Retrieved from https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.

4. Alcántara and Gone. Reviewing suicide in Native American communities: situating risk and protective factors within a transactional-ecological framework. *Death Stud*. 2007 May-Jun;31(5):457-77.

5. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. *Morb Mortal Wkly Rep*. 2018 Mar;67(8):237-242

Indicator 9: Depressive episodes in the past year

Data Source(s)	National Survey of Drug Use and Health (NSDUH). See restricted-use data analysis system (RDAS) (link provided below) to conduct AI/AN analyses by state.
Demographic Group	AI/AN aged ≥18 years.
Geographic Level	Nationwide and state-level when numbers are sufficiently large.
Numerator	AI/AN aged ≥18 years who answered question items positively, meeting Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) inclusion criteria, for major depressive episode(MDE) in the past year. NSDUH uses different age-adapted questions based on the DSM-IV to ask adults and adolescents about their experiences with MDE. Adults and adolescents were defined as having an MDE if they had a period of 2 weeks or longer in the past 12 months when they experience a depressed mood or loss of interest or pleasure in daily activities, and they had at least some additional symptoms, such as problems with sleep, eating, energy, concentration and self-worth.[1]
Denominator	AI/AN aged ≥18 years (excluding those who refused to answer, had missing answers, or answered "don't know/not sure").
Measure	Two-year prevalence with 95 percent confidence intervals. States should combine 2 survey years (example 2013-2014, 2014-2015) to provide stable state-level estimates. State estimates provided by the SAMHSA are developed using a small area estimation procedure in which state-level NSDUH data from 2 survey years are combined with local-area county and census block group/tract-level data from the state. This model-based methodology provides more precise estimates of state-level substance use than those based solely on the sample, particularly for smaller states.[2]
Period for Case Definition	Past year.
Additional Data Items	Due to small numbers it is likely not possible to stratify by age.
Background	According to the 2016 NSDUH, 8.7 percent (120,000) of AI/AN ≥18 years reported having a MDE in the past year. This was similar to the national average (6.7 percent).[3]

Significance	Studies show associations between AI/AN suicide behaviors and depression and hopelessness.[4] Recent data on AI/AN suicide decedents found 28 percent had a current mental health problem and 37 percent had depressed mood.[5] A study of high school Navajo found suicide attempt was associated with history of mental health problems and weekly consumption of hard alcohol.[6]
Limitations of Indicator	This indicator relies on multiple NSDUH questionnaire items. It relies on self-report and has a long recall period. Classification of respondents does not come from a clinician's diagnosis. The indicator captures information on the U.S. civilian, non-institutional population aged 12 or older. NSDUH excludes homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails and hospitals.
Limitations of Data Resource	Significant time can elapse before data are available for inclusion in a surveillance summary, since reported data rely on a two-year rolling average, data reflect the respondent's experience for a full 12 months before the interview date, and it can be 6 to 12 months after the date of the last interview before the data are cleaned and analyzed. The data reported by SAMHSA are derived from a long-running annual face-to-face household survey with high response rates and extensive quality checking, and current data are directly comparable to those from 2002 and later and appear consistent with those of other surveys of the same topics. As with any sample survey, issues with data item validity and over- or under-estimation of parameters of interest may arise. Small numbers of subjects in sub-state areas limit ability to make sub-state area estimates, especially in less populous states.
Related Indicator	MHMD-4.2: Reduce the proportion of adults aged 18 and older who experience major depressive episodes. See https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives
How to Access Data	See RDAS to conduct AI/AN analyses by state. Filter the race/ethnicity variable specifically by AI/AN and simultaneously control the analyses by a specific state. http://datafiles.samhsa.gov/info/analyze-data-nid6. Recent data can also be found in the American Indian or Alaskan Native 2016 NSDUH Summary Sheet, see https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 15 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Substance Abuse and Mental Health Services Administration (2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data. Accessed June 10, 2018.

2. Substance Abuse and Mental Health Services Administration. 2014-2016 National Surveys on Drug Use and Health: Guide to Substate Tables and Summary of Small Area Estimation Methodology Available at https://www.samhsa.gov/data/sites/default/files/NSDUHsaeMethodology2016/NSDUHsaeMethodology2016.htm. Accessed June 25, 2018.

3. Substance Abuse and Mental Health Administration. 2016. American Indian or Alaskan Native (AIAN) 2016 NSDUH Summary Sheet. Retrieved from https://www.samhsa.gov/data/report/2016-nsduh-race-and-ethnicity-summary-sheets.

4. Alcántara and Gone. Reviewing suicide in Native American communities: situating risk and protective factors within a transactional-ecological framework. *Death Stud*. 2007 May-Jun;31(5):457-77.

5. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. *Morb Mortal Wkly Rep*. 2018 Mar;67(8):237-242.

6. Grossman DC, Milligan BC, Deyo RA. Risk factors for suicide attempts among Navajo adolescents. *Am J Public Health.* 1991;81(7):870–4.

Indicator 10.A.: Binge drinking (adults)

Data Source(s)	CDC, Behavioral Risk Factor Surveillance System (BRFSS)	
Demographic Group	AI/AN residents aged ≥18 years.	
Geographic Level	Nationwide and state-level. In 2016, binge drinking prevalence data for AI/AN are displayed on the BRFSS portal for 17 states (AL, AK, AZ, CO, FL, KS, MI, MN, MT, NE, NH, NJ, NY, PA, TX, VA, WA).	
	Prevalence of binge drinking	**Frequency of binge drinking among binge drinkers**
Numerator	AI/AN adults aged ≥18 who report having ≥ 5 drinks (men) or ≥ 4 drinks (women) on ≥ 1 occasion during the past 30 days.	Total number of binge drinking episodes among binge drinkers (AI/AN adults aged ≥18 who report having ≥ 5 drinks (men) or ≥ 4 drinks (women) on ≥ 1 occasion during the past 30 days).
Denominator	AI/AN adults aged ≥18 who report having a specific number, including zero, of drinks on one occasion during the past 30 days (excluding those who refused to answer, had missing answers, or answered "don't know/not sure").	AI/AN adults aged ≥18 years who report having ≥ 5 drinks (men) or ≥ 4 drinks (women) on ≥ 1 occasion during the past 30 days.
Measure	Annual prevalence: crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population) with 95 percent confidence intervals.	Average monthly binge drinking episodes per binge drinker annualized.
Period for Case Definition	Past 30 days.	
Additional Data Items	Stratify by age and geography if numbers are sufficiently large.	

Background	In 2015, a total of 17.1 percent of all U.S. adults (37.4 million) reported binge drinking. The prevalence of binge drinking was significantly higher among Whites (19.2 percent) and AI/AN (17.9 percent) compared with other race/ethnicity groups. Although more than two-thirds of binge drinks (73 percent) were consumed by Whites, AI/AN had the highest annual number of total binge drinks (100.5 binge drinks/adult) and AI/AN who binge drink report more frequent (77.7 episodes/year) binge drinking than Whites (54 episodes/year). Among AI/AN, almost half of those who report drinking report binge drinking (43.7 percent) compared with about a third of White counter parts (31.9 percent). Among AI/AN adults who report drinking or binge drinking, total number of binge drinks is higher (256.3 and 573.8 respectively) compared with White counter parts (147.6 and 486.7 respectively). AI/AN had the highest total binge drinks per binge drinker per year (573.8 binge drinks annually).[1]
Significance	A recent study found that almost half of AI/AN suicide decedents consumed alcohol in the hours preceding death, compared with one-quarter of White counterparts. Substance abuse problems other than alcohol were not significantly different between AI/AN and White decedents; however, AI/AN decedents had 1.8 times the odds of a reported alcohol problem compared with White decedents.[2] An older study looked at trends from 1980-1998 and found heavy alcohol consumption to be an important factor in more than two-thirds of suicides completed among American Indians in New Mexico.[3]
Limitations of Indicator	Research suggests that disparities in binge drinking are not well characterized by any single binge drinking measure.[1,5] Prevalence of binge drinking is more commonly reported, however, frequency of binge drinking among binge drinkers adds additional insight into the magnitude of the disparity of binge drinking among AI/AN. This indicator does not convey the specific amount of alcohol consumed.
Limitations of Data Resource	As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from non-coverage (e.g., college campuses or the military), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias). To address some of these potential concerns, BRFSS began including cell phone-only users in the 2011 data collection. Due to changes in sampling and weighting methodology, 2011 is a new baseline for BRFSS, and comparison with prior year data is inappropriate. BRFSS may underestimate binge drinking. A recent study using BRFSS data found that self-reports identify only 22 percent–32 percent of presumed alcohol consumption in states, based on alcohol sales.[4]

Related Indicator	SA-14 Reduce the proportion of persons engaging in binge drinking of alcoholic beverages.
	SA-14.3 Reduce the proportion of persons engaging in binge drinking during the past 30 days—adults aged 18 years and older.
	SA-15 Reduce the proportion of adults who drank excessively in the previous 30 days. See https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse/objectives
How to Access the Data	Prevalence data are publicly available at the BRFSS website: https://www.cdc.gov/brfss/. The data to calculate a variety of measures of binge drinking are available in the public use file.
	For more detailed analysis see recent publications using the data or contact CDC directly. Dr. Dafna Kanny, Senior Scientist, Alcohol Program, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (DKanny@cdc.gov).
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 1 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Kanny D, Naimi TS, Liu Y. Annual Total Binge Drinks Consumed by U.S. Adults, 2015. *Am J Prev Med.* 2018;54(4):486–496.
2. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. *Morb Mortal Wkly Rep*. 2018 Mar;67(8):237-242.
3. May PA, Van Winkle NW, Williams MB, et al. Alcohol and suicide death among American Indians of New Mexico: 1980-1998. *Suicide Life Threat Behav.* 2002 Fall;32(3):240-55.
4. Nelson DE, Naimi TS, Brewer RD, et al. U.S. state alcohol sales compared to survey data, 1993–2006. *Addiction*. 2010; 105:1589–96.
5. Kanny D, Liu Y, Brewer RD, et al. Binge drinking—United States, 2011. *MMWR Suppl*. 2013;62(3):77–80.

Indicator 10.B.: Binge drinking (students)

Data Source(s)	CDC, High School Youth Risk Behavior Survey (YRBS)
Demographic Group	AI/AN high school students (grades 9-12)
Geographic Level	National, state, or greater resolution if feasible given number of events for AI/AN. YRBS High School data in 2017 were collected at the national and state level (except for MN, OR, WA, and WY), along with three territories (Guam, Northern Mariana Islands, and Puerto Rico) and over 20 large urban school districts. Notably, the Cherokee Nation, Winnebago Tribe, and Navajo participated in the 2017 YRBS.[1]
Numerator	AI/AN students in grades 9-12 who reported drinking 4 or more drinks of alcohol in a row (if they were female) or 5 or more drinks of alcohol in a row (if they were male), within a couple of hours on at least 1 day during the 30 days before the survey.[2]
Denominator	AI/AN students in grades 9-12 (excluding those who refused to answer or had missing answers).[2]
Measure	Biennial (odd years) prevalence with 95 percent confidence interval.
Time Period for Case Definition	Past 30 days.
Additional Data Items	Stratify by location, sex, grade, and sexual orientation if feasible given number of events reported by AI/AN youth.
Background	While drinking patterns among AI/AN vary significantly, AI/AN youth report consuming alcohol more frequently and in greater quantities and typically at younger ages than other U.S. youth. This has significant health consequences, including suicide risk.[3] 2017 YRBS data indicates that 20.6 percent of AI/AN high school students drank four/five or more drinks of alcohol in a row within a couple of hours at least 1 day during the 30 days before the survey; nationally, 13.5 percent of high school students drank four/five or more drinks of alcohol in a row.[4] A study of White Mountain Apache tribe youth aged 15-24 found that from 2007 to 2010, 64 percent of Apache youth were drunk or high at the time of suicide death; 75.7 percent were drunk or high during suicide attempt; 49.4 percent were drunk or high during suicidal ideation; and 49.4 percent were drunk or high during non-suicidal self-injury.[5]
Significance	Culturally appropriate and evidence-based interventions to reduce AI/AN youth binge drinking may lower the risk of suicide attempts and deaths.
Limitations of Indicator	This indicator relies on self-report and students may be hesitant to report illegal and potentially stigmatized behavior.

Limitations of Data Resource	Because of the small numbers of AI/AN students who participate in a national YRBS, the estimates may lack precision and caution should be used when analyzing and interpreting these data. In the 2017 data, a weighted percentage of 0.5 of students who completed the YRBS identified as AI/AN.[2] Precision can be improved by combining multiple years of national YRBS data. While all 50 states and the District of Columbia are including in the sampling frame of the national 2017 YRBS, not all states and territories administered a YRBS. In 2017, 46 states, three territories, and three tribal governments (Cherokee Nation, Winnebago Tribe, and Navajo) conducted a YRBS. YRBS data are not available when a state did not achieve sufficient responses to weight the data. Students self-report behaviors on the YRBS, and the extent of underreporting or overreporting cannot be determined. YRBS is administered only to youth who attend school, so youth not enrolled in a high school program or who have not completed high school are not represented. YRBS data are collected biennially.[6]
Related Indicator	SA-14.1 Reduce the proportion of persons engaging in binge drinking during the past month – adolescents aged 12 to 17 years. See https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse/objectives
How to Access Data	YRBS is publicly available at no cost through CDC: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm. YRBS Youth Online Data Analysis Tool allows users to analyze data by AI/AN and create customizable tables, maps, and graphs. YRBS data are also available in two file formats: Access® and ASCII. The Access and ASCII data can be downloaded and used as is. Additionally, SAS® and SPSS® programs are provided to convert the ASCII data into SAS® and SPSS® datasets for use in those packages. Data are available for 1991, 1993, 1995, 1997, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017.
Notes	The Cherokee Nation and Winnebago Tribe participated in the YRBS in 2009, 2011, 2013, 2015, and 2017. The Navajo participated in the YRBS in 2017. The Cherokee Nation, Winnebago Tribe, and Navajo data are available on YRBS Youth Online portal. However, these sites have not given CDC permission to distribute their data files for additional data analysis; users should contact the Cherokee Nation, Winnebago Tribe, and Navajo directly to arrange access to data files.[1] This indicator is specific to AI/AN populations but otherwise parallels Indicator 2 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*

References

1. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). YRBS Participation History, Data Quality, and Data Availability. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_hs_participation_history.pdf
2. Centers for Disease Control and Prevention, Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (June 2018). 2017YRBS Data User's Guide. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/2017_YRBS_Data_Users_Guide.pd
3. Friese B and Grube J. Differences in drinking behavior and access to alcohol between Native American and white adolescents. *J Drug Educ*. 2008;38(3):273-84.
4. Centers for Disease Control and Prevention. 2015 High School Youth Risk Behavior Survey Data. Accessed May 15, 2018 at https://nccd.cdc.gov/Youthonline/App/Default.aspx
5. Barlow A, Tingey L, Cwik M, et al. Understanding the relationship between substance use and self-injury in American Indian youth. *Am J Drug Alcohol Abuse*. 2012 Sep;38(5):403-8
6. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System – 2013. MMWR 2013;62 (No. 1). https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Indicator 11: Drug overdose mortality, all drugs

Data Source(s)	Death certificate data from vital statistics agencies accessed through CDC WONDER. Population estimates from the U.S. Census Bureau.
Demographic group	AI/AN residents
Geographic Level	National, state, and county (note: very few counties have statistically stable rates for AI/AN; most data at the county level are suppressed).
Numerator	Deaths among AI/AN with *International Classification of Disease 10th Revision* codes as the underlying cause of death among residents during the calendar year: • X40–X44, accidental poisoning by drugs; • X60–X64, intentional self-poisoning by drugs; • X85, assault by drug poisoning and; • Y10–Y14, drug poisoning of undetermined intent. Deaths should also be tabulated on a drug-specific basis, using the T codes below to assign deaths to selected specific drugs. Unspecified drug type should be included as a category. Drug categories include opium (T40.0), heroin (T40.1), other opioids including codeine and morphine (T40.2), methadone (T40.3), other synthetic narcotics (T40.4), cocaine (T40.5), other and unspecified narcotics (T40.6), cannabis (T40.7), lysergide (T40.8), other unspecified psychodysleptics (T40.9), benzodiazepines (T42.4), and psychostimulants with abuse potential (T43.6). Also stratify by T50.9, other and unspecified drugs, medicaments and biological substances, if it is present and none of the T codes listed above are present. Deaths may be counted more than once if more than one drug was involved in the death; numerator needs both underlying cause and multiple cause files.
Denominator	Midyear resident population for the same calendar year.
Measure	Death rate per 100,000 population, crude and age-adjusted rates (to the year 2000 U.S. standard population, calculated annually.
Time period for case definition	Calendar year.
Additional Data Items	Stratify by age group (age range: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+), sex, and geographic subarea if feasible given number of events for jurisdiction. T-codes are used to assign numerator records to specific drug types.

Background	Death rates resulting from unintentional poisoning, which includes accidental drug overdose, rose among both AI/AN and White populations from 1990-2009; however, from 2005-2009, poisoning death rates were approximately two times higher among AI/AN than Whites. Alaska had the highest poisoning death rate per 100,000 (33.8) for the AI/AN population, followed by the Southern Plains (29.2) and the Pacific Coast (27.1).[1] A study of drug overdose mortality in 28 states from 2010-2012 showed the death rate for AI/AN increased from .9 to 1.4 per 100,000 for heroin and remained steady at 6.2 per 100,000 for prescription opioid pain relievers.[2]
Significance	Rates of drug overdose mortality among AI/AN are relatively low compared to other race/ethnic groups but have nevertheless increased across multiple drug categories: non-prescription opioids, heroin and synthetic opioids (excluding methadone), cocaine and psychostimulants with abuse potential.[3] It is not known how many drug overdose deaths may be considered suicide because, absent a documented history of depression or a suicide note, these deaths tend to be documented as "undetermined"[4]. However, there is some evidence that the proportion of opioid-overdose deaths that are suicides is considerable.[5,6]
Limitations of Indicator	Both underlying-cause and multiple-cause death certificate files are needed for these analyses. Death records often lack specificity as to the exact drug responsible for the death. Deaths suspected to be due to these drugs are typically medical examiner or coroner cases, and the extent of laboratory analysis varies by jurisdiction. Records indicating that the death is due to overdose with an unknown or unspecified drug are an issue in many states, and these should be tabulated separately. Nationally, 22 percent of 2013 death certificates for persons dying of drug poisoning lacked information on the type(s) of drug involved,[7] and this varied considerably among the states. Information about drug type may not be fully comparable across jurisdictions. Multiple drugs are often involved in a drug overdose death, and each death should be tabulated according to each drug mentioned on the death certificate. For example, approximately 16 percent of drug-poisoning deaths involving heroin also involve opioid analgesics.[8] In deaths involving opioids, substances such as tranquilizers and alcohol may be important cofactors in causing death, with only modest doses of the opioid.
Limitations of Data Resource	Miscoding of AI/AN on death certificates can significantly underestimate mortality rates. Records for deaths of greatest interest for this indicator are often particularly delayed because of further laboratory testing by the medical examiner or coroner. Death rates are flagged as unreliable when the rate is calculated with a numerator of 20 or less.

Related Indicator	SA-12 Reduce drug-induced deaths. See https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse/objectives IVP-9 Prevent an increase in poisoning deaths. See https://www.healthypeople.gov/2020/topics-objectives/topic/injury-and-violence-prevention/objectives
How to Access Data	CDC WONDER data are publicly available at http://wonder.cdc.gov. AI/AN population data from U.S. Census Bureau are publicly available at https://factfinder.census.gov.If possible, death records should be linked to records captured in tribal registries to correct racial misclassification.
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 6 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Murphy T, Pokhrel P, Worthington A, et. al. Unintentional Injury Mortality Among American Indians and Alaska Natives in the United States, 1990–2009. *Am J Public Health*. 2014 June; 104(Suppl 3): S470–S480.

2. Rudd RA, Paulozzi LJ, Bauer MJ, et. al. Increases in heroin overdose deaths - 28 States, 2010 to 2012. *Morb Mortal Wkly Rep*. 2014 Oct 3;63(39):849-54.

3. Seth P, Scholl L, Rudd RA, Bacon S. Overdose Deaths Involving Opioids, Cocaine, and Psychostimulants — United States, 2015–2016. *Morb Mortal Wkly Rep*. 2018;67:349–358.

4. Oquendo M and Volkow N. Suicide: A Silent Contributor to Opioid-Overdose Deaths. *N Engl J Med.* 2018; 378:1567-1569.

5. Braden JB, Edlund MJ, Sullivan MD. Suicide deaths with opioid poisoning in the United States: 1999-2014. *Am J Public Health.* 2017;107:421-426.

6. Bohnert KM, Ilgen MA, Louzon S, et al. Substance use disorders and the risk of suicide mortality among men and women in the US Veterans Health Administration. *Addiction.* 2017;112:1193-1201.

7. Centers for Disease Control and Prevention. NCHS Data on Drug Poisoning Deaths, NCHS Fact Sheet, June 2015. Available at http://www.cdc.gov/nchs/data/factsheets/factsheet_drug_poisoning.htm. Accessed May 31, 2018.

8. Hedegaard H, Chen LH, Warner M. Drug-poisoning deaths involving heroin: United States, 2000–2013. NCHS Data Brief, No. 190. Hyattsville, MD: National Center for Health Statistics; 2015.

Indicator 12: Illicit drug or alcohol dependence or abuse in the past year

Data Source(s)	National Survey of Drug Use and Health (NSDUH). See restricted-use data analysis system (RDAS) (link provided below) to conduct AI/AN analyses by state.
Demographic Group	AI/AN aged ≥12 years.
Geographic Level	Nationwide and state-level when numbers are sufficiently large.
Numerator	AI/AN aged ≥12 years who answered question items positively, meeting Diagnostic and Statistical Manual of Mental Disorders, 4th Edition inclusion criteria, for dependence on or abuse of alcohol or illicit drugs in the past year. Illicit drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants and methamphetamines, and nonmedical use of prescription pain relievers, tranquilizers, stimulants, or sedatives.[1]
Denominator	AI/AN aged ≥12 years (excluding those who refused to answer, had missing answers, or answered "don't know/not sure").
Measure	Two-year prevalence with 95 percent confidence intervals. States should combine two survey years (e.g., 2013-2014) to provide stable state-level estimates. State estimates provided by SAMHSA are developed using a small area estimation procedure in which state-level NSDUH data from 2 survey years are combined with local-area county and census block group/tract-level data from the state. This model-based methodology provides more precise estimates of state-level substance use than those based solely on the sample, particularly for smaller states .[2]
Period for Case Definition	Past year.
Additional Data Items	Due to small numbers it is likely not possible to stratify by age.
Background	This is a summary measure (see note below) of dependence on or abuse of alcohol, drugs or both. It documents the overall abuse/dependence burden on society of all of these agents, whether used separately or together. 2016 NSDUH data find 12 percent of AI/AN reported illicit drug or alcohol dependence or abuse in the past year.[3]

Significance	Several studies have found associations between AI/AN suicide behavior and substance abuse/dependence.[4] Recent data show half of AI/AN suicide decedents consumed alcohol in the hours preceding death and more than a quarter (27.7 percent) abused alcohol. More than one in ten had a substance abuse problem that was not alcohol.[5] A study of White Mountain Apache found high co-occurrence of self-injury and substance use among young adults aged 15-24 years.[6] A study of American Indians in New Mexico found heavy alcohol use was an important factor in more than two-thirds of suicides.[7] In a study of Alaska Natives in Northwest Alaska between 2001 and 2009, about 60 percent of those exhibiting suicidal behavior (attempts and deaths) had a history of substance abuse.[8]
Limitations of Indicator	This is an overall summary measure of dependence on or abuse of either alcohol, drugs or both. It relies on multiple NSDUH questionnaire items, which are self-reported with a long recall period. The indicator captures information on the U.S. civilian, non-institutional population aged 12 or older. NSDUH excludes homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails and hospitals. It hides regional variations in relative importance of various drugs and of alcohol, but documents the overall burden on society and on the healthcare system of abuse and/or dependence on all these agents together.
Limitations of Data Resource	Reported data rely on a two-year rolling average and reflect respondents' recalled experience for the full twelve months before the interview date. Data collected during the two-year period ending in December of one year are reported approximately one year later. Thus, the earliest events captured in the data reported each year may have occurred up to three years before the data become available. The data reported by SAMHSA are derived from a long-running, annual, face-to-face household survey with high response rates and extensive quality checking. As with any sample survey, issues with data item validity and over- or under-estimation of parameters of interest may arise. Small numbers of subjects in sub-state areas limit ability to make sub-state area estimates, especially in less populous states. The NSDUH questionnaire underwent a partial redesign in 2015 to improve the quality of the NSDUH data and to address to changing needs of policymakers and researchers, resulting in lack of availability of some indicators, including those pertaining to illicit drugs, for 2014 and 2015.
Related Indicator	SA-19: Reduce the past-year nonmedical use of prescription drugs. SA-13: Reduce past-month use of illicit substances. SA15: Reduce the proportion of adults who drank excessively in the previous 30 days. See https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse/objectives

How to Access the Data	See RDAS to conduct AI/AN analyses by state. Filter the race/ethnicity variable specifically by AI/AN and simultaneously control the analyses by a specific state. http://datafiles.samhsa.gov/info/analyze-data-nid6.
Notes	There are seven possible dependence criteria for specific drugs:[1] 1. spent a lot of time engaging in activities related to use of the drug; 2. used the drug in greater quantities or for a longer time than intended; 3. developed tolerance to the drug; 4. made unsuccessful attempts to cut down on use of the drug; 5. continued to use the drug despite physical health or emotional problems associated with use; 6. reduced or eliminated participation in other activities because of use of the drug; 7. experienced withdrawal symptoms when respondents cut back or stopped using the drug. For most drugs, dependence is defined as meeting three or more of these seven criteria. However, experiencing withdrawal symptoms is not included as a criterion for some illicit drugs based on Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria. For these substances, dependence is defined as meeting three or more of the first six criteria. Respondents who used (or misused) a specific illicit drug in the past 12 months and did not meet the dependence criteria for that drug were defined as having abuse were defined as meeting the abuse criteria for that drug if they reported one or more of the following: 1. problems at work, home, and school because of use of the drug; 2. regularly using the drug and then doing something physically dangerous; 3. repeated trouble with the law because of use of the drug; and 4. continued use of the drug despite problems with family or friends. This indicator is specific to AI/AN populations but otherwise parallels Indicator 9 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health*.

References

1. Substance Abuse and Mental Health Services Administration (2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data. Accessed June 10, 2018.

2. Substance Abuse and Mental Health Services Administration. 2014-2016 National Surveys on Drug Use and Health: Guide to Substate Tables and Summary of Small Area Estimation Methodology Available at https://www.samhsa.gov/data/sites/default/files/NSDUHsaeMethodology2016/NSDUHsaeMethodology2016.htm. Accessed June 25, 2018.

3. Substance Abuse and Mental Health Services Administration (SAMHSA)'s restricted online data analysis system (RDAS). National Survey on Drug Use and Health: 2-Year R-DAS (2015 to 2016), //rdas.samhsa.gov/#/survey/NSDUH-2015-2016-RD02YR/crosstab/?row=UDPYILAL&column=NEWRACE2&weight=DASWT_1&filter=NEWRACE2%3D3&results_received=true

4. Alcántara C and Gone JP. Reviewing suicide in Native American communities: situating risk and protective factors within a transactional-ecological framework. *Death Stud*. 2007 May-Jun;31(5):457-77.

5. Leavitt RA, Ertl A, Sheats K, et al. Suicides Among American Indian/Alaska Natives - National Violent Death Reporting System, 18 States, 2003-2014. Morb Mortal Wkly Rep. 2018 Mar;67(8):237-242.

6. Barlow A, Tingey L, Cwik M, et al. Understanding the relationship between substance use and self-injury in American Indian youth. *Am J Drug Alcohol Abuse*. 2012 Sep;38(5):403-8.

7. May PA, Van Winkle NW, Williams MB, et al. Alcohol and suicide death among American Indians of New Mexico: 1980-1998. Suicide Life Threat Behav. 2002 Fall;32(3):240-55.

8. Wexler L, Silveira ML, Bertone-Johnson E. Factors associated with Alaska Native fatal and nonfatal suicidal behaviors 2001–2009: Trends and implications for prevention. *Archives of suicide research*. 2012;16(4):273-86.

Indicator 13: Hospitalizations attributable to or associated with drugs with potential for abuse and dependence, all drugs and each specified drug – A and B (7 sub-indicators)

Data Source(s)	State hospital discharge database.
Demographic group	AI/AN residents.
Geographic level	State, county, or higher resolution if feasible given number of events in jurisdiction.
Numerator	Method A — Hospitalizations attributable to drugs with potential for abuse and dependence, excluding alcohol and substances that cause adverse effects in therapeutic use. A case may be identified using either the principal (first-listed) diagnosis [specific International Classification of Disease 9th Revision, Clinical Modification (ICD-9-CM) codes are listed in Table 1 below] or the first-listed, valid cause-of-injury code (listed in the Table 2). Records with a first-listed ICD-9-CM code of E930-E949 are excluded.
	Method B — (Calculate method B if method A is complete) Hospitalizations associated with drugs with the potential for abuse and dependence, all drugs (excluding cases listing only alcohol and substances that cause adverse effects in therapeutic use without mention of other drugs of interest), and separately for several key drugs of interest. Records are included if any of the below lists of ICD-9-CM diagnosis codes, or E-codes, for drug-related events are present, in either the primary or any secondary diagnoses fields. Note that if more than one drug code is present for an admission, that event will be counted once for each drug code.
	For both methods — All hospitalizations of jurisdiction residents occurring in acute care, non-federal in-state hospital settings are included. Excluded are those with unknown age, out-of-jurisdiction residence, unknown state of residence, non-acute care or federal hospital admission, and admission only for short stays or observation visits.
	Both methods A and B should be calculated separately for the following drugs using the codes and logic in Table 3: 1) Heroin poisoning, 2) Cocaine poisoning, 3) Prescription opioid poisoning, 4) Benzodiazepine-based tranquilizer poisoning, 5) Amphetamine poisoning, 6) Cocaine abuse and dependence, and 7) Opioid abuse and dependence.

	Note that in states where emergency department (ED) visits and hospital discharges are combined in a single database, the same record selection criteria can be applied to hospital ED visits that do not result in hospitalization as to hospital admissions/discharges.
Denominator	Midyear resident population for the same calendar year.
Measure	Annual number of hospital discharges. Annual rate of hospital discharge per 10,000: crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population)
Time period for case definition	Calendar year.
Additional Data Items	Stratify by age group (age range: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+), sex, , ethnicity, and geographic subarea if feasible given number of events for jurisdiction. Stratify also by drug type, and admission to hospital (with or without ED visit) vs. just ED visit.
Background	The most recent data available for the general population show an estimated 260,000 hospitalizations for non-fatal, unintentional drug poisoning. Prescription opioid pain relievers were formerly driving the crisis, but by 2015 they shared equal measure with heroin, synthetic opioids other than methadone (mostly illicit fentanyl), and—increasingly—cocaine and methamphetamines.[1] Drug poisoning data for AI/AN are much more limited, but nevertheless demonstrate the need for better surveillance and prevention strategies, given that substance abuse is broadly considered a risk factor for suicide.[2] Data from 2009 show AI/AN adults have higher rates of past-month illicit drug use than the national average, and illicit drug use nearly doubled for AI/AN aged 12 years and older.[3]
Significance	Coupled with drug overdose mortality (although not a perfect match), this indicator presents a more complete assessment of the burden of drug use and abuse among AI/AN. Tracking overall and drug-specific trends provides critical insight into patterns of use and may inform targeted prevention strategies.
Limitations of Indicator	Method A captures admissions for which drug use is the primary reason, per the admitting physician. Thus, it does not capture admissions for which drug use may be an ancillary or indirect reason, e.g., a motor vehicle crash injury caused by drug-impaired driving. This indicator is only as good as the recognition, documentation and coding of drug use and drug-related diagnoses by hospital staff, all of which are known to vary. It documents definitively those cases in which drug use is the main impetus for the admission. Method B assesses hospitalizations in which the admitting physician has identified an issue with drugs with a potential for dependence or abuse, whether or not drug use is the primary reason for admission. For

	example, it would count an admission for vehicle crash injuries in which acute drug dependence or abuse was present and coded as a secondary diagnosis. It gives a fuller picture of the hospitalization experience of the population of people who use or abuse drugs, but some of the hospitalizations it captures may not be caused by drug use or abuse in any significant way. This indicator is only as good as the recognition, documentation and coding of drug use and drug-related diagnoses by hospital staff, all of which are known to vary.
Limitations of Data Resource	Discharges from federal hospitals (e.g., U.S. Veterans Administration, Department of Defense, and Indian Health Service hospitals) and from specialty facilities (e.g., psychiatric care centers) may or may not be included in the hospital discharge database, depending on state law and local data agreements. The quality of race/ethnicity coding varies across states[4], although record linkage has been shown to substantially improve accuracy of AI/AN in hospital discharge datasets.[5] Out-of-jurisdiction admissions by jurisdiction residents are typically not included in jurisdiction databases. Completeness and quality of ICD-9-CM and ICD-10-CM coding are limiting factors for any indicator based on administrative data. Comparability cannot be assured over the transition from ICD-9-CM-coded to ICD-10-CM-coded hospital discharge data.
Related Indicator	IVP-10: Prevent an increase in nonfatal poisonings. See https://www.healthypeople.gov/2020/topics-objectives/topic/injury-and-violence-prevention/objectives
How to Access Data	The State Inpatient Database (SID) includes inpatient discharge records from community hospitals in 48 states and encompass hospital inpatient files from all patients, including individuals covered by Medicare, Medicaid, or private insurance, as well as those who are uninsured. The SID is available for purchase from the online HCUP Central Distributor: www.hcupus.ahrq.gov/tech_assist/centdist.jsp. Each State database is sold separately.[6]
Notes	This indicator is specific to AI/AN populations but otherwise parallels Indicator 7 from *2017 Recommended CSTE Surveillance Indicators for Substance Abuse and Mental Health* resource.

References

1. Centers for Disease Control and Prevention. Annual Surveillance Report of Drug-Related Risks and Outcomes — United States, 2017. Surveillance Special Report 1. Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Published August 31, 2017. Accessed June 13, 2018 from https://www.cdc.gov/drugoverdose/pdf/pubs/2017 cdc-drug-surveillance-report.pdf.

2. Suicide Prevention Resource Center, & Rodgers, P. (2011). Understanding risk and protective factors for suicide: A primer for preventing suicide. Newton, MA: Education Development Center, Inc.

3. Substance Abuse and Mental Health Services Administration. NS-DUH Series H-38A, HHS Publication No. SMA 10–4856 Findings. Office of Applied Studies; Rockville, MD: 2010. Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of National Findings.

4. Andrews RM. Statewide Hospital Discharge Data: Collection, Use, Limitations, and Improvements. *Health Serv Res*. 2015 Aug; 50(Suppl 1): 1273–1299.

5. Bigback KM, Hoopes M, Denkovchik J, et. al. Using Record Linkage to Improve Race Data Quality for American Indians and Alaska Natives in Two Pacific Northwest State Hospital Discharge Databases. *Health Serv Res*. 2015 Aug; 50(Suppl 1): 1390–1402.

6. HCUP Databases. Healthcare Cost and Utilization Project (HCUP). April 2017. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp.

Table 1. ICD-9-CM codes and corresponding diagnoses for hospitalizations attributable to drugs with potential for abuse and dependence.

(Note: Tables 1, 2 and 3 will be updated by the CSTE Alcohol and Other Drugs workgroup with ICD10-CM code sets).

ICD-9-CM Code	Diagnosis
292.0	Drug-induced mental disorders – Drug withdrawal
304[.00-.93]	Drug dependence
305[.20-.23]	Nondependent abuse of drugs – cannabis abuse
305[.30-.33]	Nondependent abuse of drugs – hallucinogen abuse
305[.40-.43]	Nondependent abuse of drugs – sedative, hypnotic or anxiolytic abuse
305[.50-.53]	Nondependent abuse of drugs – opioid abuse
305[.60-.63]	Nondependent abuse of drugs – cocaine abuse
305[.70-.73]	Nondependent abuse of drugs – amphetamine or related acting sympathomimetic abuse
305[.80-.83]	Nondependent abuse of drugs – antidepressant type abuse
305[.90-.93]	Nondependent abuse of drugs – other, mixed, or unspecified drug abuse
648 [.30-.34]	Drug dependence in pregnancy
760.72	Noxious influences affecting fetus or newborn via placenta or breast milk: narcotics
760.73	Noxious influences affecting fetus or newborn via placenta or breast milk: hallucinogenic agents

760.75	Noxious influences affecting fetus or newborn via placenta or breast milk: cocaine
779.5	Drug withdrawal syndrome in newborn
965[.00-.09]	Poisoning by opiates and related narcotics
967[.0-.9]	Poisoning by sedatives and hypnotics
969.4	Poisoning by benzodiazepine-based tranquilizers
969.6	Poisoning by psychodysleptics (hallucinogens)
969[.70-.79]	Poisoning by psychostimulants
970.81	Poisoning by other specified central nervous system stimulants – cocaine

Table 2. External cause of injury codes (E-codes) and corresponding causes for hospitalizations attributable to drugs with potential for abuse and dependence.

(Note: Tables 1, 2 and 3 will be updated by the CSTE Alcohol and Other Drugs workgroup with ICD10-CM code sets).

E-code	Cause
E850.0	Accidental poisoning by heroin
E850.1	Accidental poisoning by methadone
E850.2	Accidental poisoning by other opiates and related narcotics
E851	Accidental poisoning by barbiturates
E852[.0-.9]	Accidental poisoning by other sedatives and hypnotics
E853.2	Accidental poisoning by benzodiazepine-based tranquilizers
E854.1	Accidental poisoning by psychodysleptics
E854.2	Accidental poisoning by psychostimulants
E950.1	Suicide and self-inflicted poisoning by barbiturates
E950.2	Suicide and self-inflicted poisoning by other sedatives and hypnotics
E980.1	Poisoning by solid or liquid substances, undetermined whether accidentally or purposely inflicted: barbiturates
E980.2	Poisoning by solid or liquid substances, undetermined whether accidentally or purposely inflicted: other sedatives and hypnotics

Table 3. Criteria for counting hospitalizations in association with specific drugs.

(Note: Tables 1, 2 and 3 will be updated by the CSTE Alcohol and Other Drugs workgroup with ICD10-CM code sets).

Sub-indicator*	Codes
Heroin poisoning	First-listed valid ICD-9-CM code 965.01 or first-listed valid E-code is E850.0
Cocaine poisoning	First -listed valid ICD-9-CM code 970.81
Prescription opioid poisoning	First -listed valid ICD-9-CM code is 965.00, 965.02 or 965.09, or first-listed valid E-code is E850.1 or E850.2
Benzodiazepine-based tranquilizer poisoning	First -listed valid ICD-9-CM code is 969.4 or first-listed valid E-code is E853.2
Amphetamine poisoning	First -listed valid ICD-9-CM code is 969.72
Cocaine abuse or dependence	First -listed valid ICD-9-CM code is 304.2 or 305.6
Opioid abuse or dependence	First -listed valid ICD-9-CM code is 304.0, 304.7, or 305.5

For all sub-indicators, exclude if first-listed E-code is E930-E949.

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Recommended CSTE Indicators for Suicide among American Indians and Alaska Natives