Maryland Center of Excellence on Problem Gambling

Statewide Gambling Prevalence in Maryland: 2017

J. Kathleen Tracy, Ph.D.
Director of Research

Louise Maranda, Ph.D.
Statistician

Christina Scheele, M.A.
Project Manager

University of Maryland, Baltimore

STATEWIDE GAMBLING PREVALENCE IN MARYLAND: 2017
TABLE OF CONTENTS

INDEX OF TABLES AND FIGURES

EXECUTIVE SUMMARY

This survey of Maryland households was conducted between August and October of 2017 to assess changes in gambling prevalence in the Maryland population following introduction of casino gambling in 2010. The goal was to obtain updated information about gambling behavior among Marylanders, particularly disordered gambling behavior, and compare 2017 data with results from the baseline evaluation carried out in 2010. With this second iteration of the statewide telephone survey, the state can gain insights about the evolution of disordered gambling after the opening six casinos.

Gambling was defined as participation in at least one of eleven gaming activities, reflecting several forms of betting opportunities. The overall number of gamblers has remained stable in Maryland. In 2017, 87% of all respondents had gambled in the past and of these 19.3% were current gamblers that played at least monthly. Based on data from the 2010 survey, 89.7% of respondents gambled in the past and 21.9% were current gamblers.

Lottery (77.6%) and casino gambling (73.9%) were the most popular forms of gambling in Maryland, followed by horse racing (31.3%), sporting events (29.2%), private games (28.8%) and other forms, such as bingo (26.7%). Almost one quarter (23.6%) of respondents said they gambled at gaming machines outside of a casino. Relatively few respondents gambled on dog races (6.8%), daily fantasy sports (5.6%), or on the Internet (3.4%). These proportions have not changed significantly since 2010.

Marylanders who reported ever gambling in their lifetime, regardless of current gambling status, spent an average of $84 on gambling per month. As the frequency of gambling increased, the average amount spent increased as well. When examining the frequency of gambling among those who gambled in the past year, those who gambled at least once spent a mean of $64 in a typical month; those who gambled monthly spent an average of $134; and those who gambled weekly spent an average of $503. These amounts have not changed significantly since 2010,

except for the disordered gamblers, who have doubled their monthly expenditure, from $230 in 2010 to $503 in 2017.

The most frequent reason given for gambling in Maryland was to win money (70.1%), followed by fun and entertainment (55.8%). This finding was much higher than in 2010 (51.7% and 32.6% respectively). The survey found 0.7% of adults over the age of 18 were problem gamblers, and 1.2% were pathological gamblers. When combined, the prevalence of disordered gambling (problem and pathological) was 1.9%. This prevalence estimate was lower than the prevalence of 3.4% noted in 2010. However, we believe the 2017 prevalence is likely an underestimate of true prevalence of DG due to drastic changes in survey research sampling since 2010. A full explanation of this is provided in Chapter 3.

Associations between disordered gambling and socio-demographic factors were found to be similar in 2017 and 2010 and corresponded with recent published trends for other countries where gambling is legal. The same was true for associations between disordered gambling and substance use (i.e. use of tobacco, alcohol, illicit, and non-medical prescription drugs).

The most important findings from this comparison of 2010 and 2017 survey data were as follows:

1) Over time, Marylanders' gambling habits have not changed appreciably: they spend approximately the same amount of time playing the same types of games, but they now do it at Maryland venues.

2) Monthly casino expenditures have remained constant, except among disordered gamblers, who spent nearly double the amount in 2017 compared to 2010 data.

3) Relatively few respondents reported participation in Internet gambling (which is illegal in Maryland); however, among those who participate in internet gambling, they spend more than twice the amount of money compared to those that engage in other forms of gambling.

4) The proportion of people who knew about treatment options for gambling problems has doubled between 2010 and 2017, but it remained under 50% of all gamblers.

This combined analysis of the 2010 and 2017 data suggests new avenues for disordered gambling research. This includes measuring the effectiveness of gambler education (e.g. informed consent, voluntary exclusion, responsible gaming programs), industry-backed responsible gaming strategies (e.g. automatic payoff, summary of time and money spent), and casino staff awareness training to ensure that gambling prevalence remains stable and that residents of Maryland are able to gamble responsibly.

Part I

Presentation of 2017 Data

CHAPTER 1

Introduction

Gambling is now widely viewed as a socially acceptable form of recreation. For a majority of individuals, gambling is a harmless activity, but for a few, it can become addictive and carry severe negative consequences (Calado & Griffiths, 2016). A standardized population estimate for the prevalence of problem gambling around the world was given as 0.5 to 7.6% (Williams, 2010). According to the latest systematic review, problem gambling is a significant problem in the United States, where it may affect between 2% and 5% of adults. Men are affected more often than women, and problem gambling is found most often within non-white populations with limited ability to recover from gambling losses (Calado & Griffiths, 2016). In terms of severity, pathological gambling seems to be similar to disorders such as alcoholism and drug addiction (Potenza, 2002).

Stressful situations can worsen gambling problems. Furthermore, it is generally believed that increasing exposure to gambling may increase the risk of developing problem or pathological behaviors (Volberg, 2007). However, the particulars of this possible relationship remain poorly understood. Models have been proposed to explain the relationship between gambling availability and the risk of problem gambling (Hodgins, 2006), but definitive research about the topic remains to be carried out. As the public exposure to gambling continues to increase, long-term follow-up studies of the prevalence of problem gambling have started to emerge, mostly in Sweden (Romild, Volberg, & Abbott, 2014) and in New Zealand (Abbott, 2017).

Population prevalence studies of gambling serve several important purposes. They establish the current prevalence of gambling, the prevalence of each form of gambling, personal expenditures on each form of gambling, and the prevalence of problem or pathological gambling. This information is useful in understanding the overall value of gambling to society, the potential negative population impacts of legalized gambling, the estimated number of disordered gamblers in need of treatment, the proportion of gambling revenues derived from problem gambling, and the types of gambling most strongly associated with problem or pathological gambling. Changes

in the prevalence of problem or pathological from one time period to the next and/or differences between the prevalence in one jurisdiction relative to another, provide important information about the incidence of problem gambling, and the potential effectiveness of policies implemented to mitigate gambling's harm (Volberg, 2007).

The Maryland Department of Health (MDH) is tasked with conducting periodic gambling prevalence studies to monitor problem and pathological gambling. The Baseline Maryland Statewide Prevalence Study was published in May 2011 (Shinogle, Norris, Park, Volberg, Haynes, & Stokan, 2011). The data reported herein represent a follow up statewide prevalence study and first observations of the status of gambling behavior since the introduction of casino gambling in Maryland.

In the last decade, Maryland expanded legalized gambling. First, Senate Bill 3, Maryland Educational Trust Fund - Video Lottery Terminals (VLT; 2007 Special Session) was adopted. Then, in 2008 the *Maryland Slot Machines Amendment*, also known as Question 2, was on the November ballot as a legislatively referred constitutional amendment, where it was approved (58.7% in favor). The measure authorized the State to issue up to five video lottery licenses and also approved the placement of 15,000 slot machines at five casino locations throughout the state. At that time, Maryland became the 38th state to allow slots or casino-style gambling. Finally, in 2012, Question 7, also known as the *Gaming Expansion Question*, was on the November general election ballot as a legislatively referred state statute, where it was approved by voters (51.9% in favor). The measure allowed one additional casino to be constructed in Prince George's County and expanded the type of games allowed at existing casinos to include table games such as poker and blackjack.

The first Maryland casino to open under the expanded gambling legislation was the Hollywood Casino Perryville. The Hollywood casino opened in September 2010 in Cecil County. Ocean Downs Casino and Racetrack opened in January 2011 in Worcester County. Maryland Live! Casino in the Arundel Mills commercial district (Anne Arundel County) opened in June 2012,

Rocky Gap Casino Resort (Allegany County) opened in May 2013, and the Horseshoe Casino Baltimore City in August 2014. The final Maryland casino, the MGM National Harbor (Prince George's County), opened in December 2016.

This report provides updated gambling prevalence data and provides comparative analyses between 2010 and 2017 results in an effort to assess the population and public health impacts of expanding legalized casino gambling in Maryland.

Overview of Project and Methods

This report includes an up to date review of epidemiological research on gambling, a presentation of the results of the 2017 survey of Maryland residents' gambling habits, an analysis of the extent to which individuals with gambling problems seek help for those problems, a comparison between the 2010 survey results (before casino gambling became available in Maryland) and the 2017 survey results (after casino gambling became available in Maryland), and suggestions for future directions. This report also provides comparative data for changes in gambling prevalence between the 2010 and 2017 studies.

In the literature, problem and pathological gambling are often used interchangeably, when they actually relate to the severity of a clinical diagnosis. This report examines not only problem and pathological gambling individually, but gambling behaviors as a whole which might lead to a gambling habit or a clinical diagnosis. Throughout this report, problem and pathological gambling behaviors which might lead to a diagnosis will be referred to as disordered gambling (DG) for simplicity of discussion.

The survey of Maryland residents examines the prevalence of DG in relation to socio-demographic factors, including income, education level, place of residence, age, sex, and race in Maryland. The survey also explores DG in relation to gambling frequency, preferred gambling venues, amounts of money spent, debt accumulated, comorbid health conditions, as well as employment, financial, and interpersonal problems.

This study was conducted by the Research Program on Gambling at the University of

Maryland Baltimore's (UMB) Maryland Center of Excellence on Problem Gambling. Dr. J. Kathleen Tracy served as the principal investigator. The UMB research team also included Dr. Louise Maranda, who completed analysis, and Christina Scheele, project manager. The Schaefer Center for Public Policy at the University of Baltimore carried out data collection for the survey under the direction of Dr. Ann Cotton and William Wells.

CHAPTER TWO

Review of the Epidemiological Literature on Gambling

In the past 20 years, Western nations have witnessed a significant expansion in commercial gambling. A gradual expansion of the once tight controls on the industry has led to increased availability, participation and expenditure, and the exponential growth of the industry itself (Reith, 2006). Gambling, also referred to as gaming, has become a more socially acceptable form of recreation and has entered the mainstream of American entertainment. For many, gambling is an enjoyable and harmless activity. But for a small minority, gambling can become addictive and cause severe negative consequences (Calado & Griffiths, 2016). For this reason, disordered gambling (DG) has become a public health concern, particularly in states and municipalities where access to now includes casino gambling.

Gambling Research

Gambling research covers five main areas:

1) Monitoring the prevalence and incidence of DG and measuring possible risk factors influencing these quantities;

2) Understanding the relationship between access/availability of gambling and DG. This includes proximity studies;

3) Quantifying the economic and social impacts of gambling;

4) Analyzing the effect of gambling among vulnerable populations (the elderly, youth, veterans, etc.)

5) Promoting prevention, harm reduction and responsible gaming programs. This area also focuses on quantifying the effects of strategies, policies, interventions and treatments.

Since 2010, much has been published in the gambling literature. Many have attempted to improve the overall quality of their studies, striving to address the methodological shortcomings that were common until 2006.

Prevalence and Incidence Studies:

Numerous research studies worldwide have carried out prevalence studies to monitor their population's rates of problem and pathological gambling (Abbott, Romild & Volberg, 2014; Barbaranelli, Vecchione, Flda, & Podio-Guidugli, 2010; Bastiani, et al, 2011; Bieleman, et al, 2011; Cakici, 2012; Castrén, et al, 2013; Costes, Eroukmanoff, Richard, & Tovar, 2015; Costes, et al, 2011; Department for Social Development [Northern Ireland], 2016; Dowling, et al, 2015; Ekholm, Eidberg, Davidsen, Holst, Larsen, & Juel, 2012; Gainsbury et al, 2014; Goudriaan, 2014; Kincaid, et al, 2013; Kun, Balázs, Arnold, Paksi, et al Demetrovics, 2012; Makarovič, 2010; Meyer, et al, 2015; Mravčík, et al, 2014; National Council on Problem Gambling (NCPG), 2012; NCPG, 2015; Olason, Hayer, Brosowski, & Meyer 2015; Orford, Wardle, Griffiths, Sproston, & Erens, 2010; Raisamo, Mäkelä. Salonen, & Lintonen, 2014; Sassen, Kraus, Bühringer, Pabst, Piontek, & Tagi, 2011; Wan et al, 2012; Wardle, Griffiths, Orford, Moody, & Volberg, 2012; Welte, Barnes, Tidwell, Hoffman, & Wieczorek, 2015; Williams, Lee, & Beck 2013). These studies used many of the screening tools available, and reported lifetime and past-year values that ranged between 0.5% (Germany; Meyer, et al, 2015; Sassen, et al, 2011) and 7.0% (Italy: Barbaranelli, et al, 2010; Bastiani, et al, 2011). Results were consistent with regards to socio-demographic characteristics: DG was more likely to occur among younger men, single or divorced individuals, individuals with a lower level of education, belonging to an ethnic minority, individuals that were unemployed or with a low income. The most frequent gambling activities were lotteries, scratch cards, sports betting and gambling machines. Despite the popularity of such games, the gambling activities most played by problem gamblers were slot machines and Internet gambling games (Calado & Griffiths, 2016).

Understanding the Relationship between Access/Availability and Disordered Gambling:

In the debate over the costs and benefits of gambling, proponents emphasized the economic regeneration, while opponents emphasized the social costs that increased gambling may bring. Unfortunately, the evidence base that is needed to address many of the controversies surrounding the social impacts of gambling remains beset with problems.

Since 2010, hundreds more articles studying the link between gambling availability and problem gambling have been published. While many studies substantiated this availability of exposure theory of problem gambling, others have failed to demonstrate the predicted relationship. As early as 2006, Hodgins (2006) summarized the prevailing models as follows:

1) The relationship between availability of gambling venues and DG is believed to *be linear* (Hodgins, 2006). As the number of opportunities increases, so does the number of people who suffer from DG. This relationship does not appear to change over time.

2) The relationship between availability of gambling venues and DG *follows a saturation curve*. The introduction and expansion of new forms of gambling, most especially electronic gaming machines, initially results in substantially increased levels of DG with particular population sectors, including males and youth, most affected. Over time and in some jurisdictions, problems extend to groups that previously had low levels of participation and gambling problems, such as women and older adults. Over time in some jurisdictions that have experienced prolonged increased availability, prevalence rates have remained constant. The abundance of available data shows that this model fits data from epidemiologic studies most closely (Abbott, 2006; Abbott, Volberg, Bellringer, & Reith, 2004).

3) The relationship between availability of gambling venues and DG *follows a social adaptation pattern*. In this case, the saturation model described above predicts prevalence rates diminishing over time. The reasons for such reductions have yet to be clearly delineated and the extent to which these changes are related to inherent properties of different forms of gambling rather than factors associated with the individuals and groups who develop problems remains to be determined (Hodgins, 2006; Jacques, Ladouceur, & Ferland, 2000).

Of note is the fact that in almost all countries where consecutive prevalence studies have been done, the past-year prevalence of DG has tended to decrease (Calado & Griffiths, 2016).

Quantifying the Economic and Social Impacts of Gambling:

The focus on social costs of gambling has been on 'pathological' or 'problem' gamblers as individuals with particular mental, personality or even physiological problems. This focus tends to draw attention away from the wider effects of gambling on communities and societies as a whole. As such, no recent studies of the impacts of gambling on communities and the relation to factors that involve wider social frameworks, such as socio-economic deprivation can be found.

Analyzing the Effect of Gambling Among Vulnerable Populations:

Since 2010, many reviews have been published about DG among vulnerable populations.

- Tse, Hong, Wang, and Cunningham-Williams (2012) reviewed the literature about gambling among the elderly. The findings reported from the United States, Canada, New Zealand and Sweden vary between 0.2% and 3.8% (past-year prevalence) in gamblers aged 65 years and older.

- Blinn-Pike, Worthy, and Jonkman (2010) and Calado, Alexandre, and Griffiths (2017) reviewed all publications about adolescent problem gambling. Results from North and South America, Asia, Oceania and Europe vary between 0.2% and 5.6% (past-year prevalence) in gamblers up to 21 years of age.

- At the time of this report, a comprehensive review of DG in veterans had yet to be carried out. However, Whiting et al. (2016) explored pre-, peri-, and post-deployment factors associated with DG in veterans. Findings suggest that DG among veterans is related to service experiences, and particularly to life experiences post-deployment.

- Holdsworth, Hing, and Breen (2012) reviewed gambling problems in women. Bowden-Jones (2013) created narratives about women with gambling problems, to guide interventions and inform clinical support.

Promoting Prevention, Harm Reduction and Responsible Gaming Programs:

Numerous scholarly articles have been published about interventions targeting DG. Intervention strategies include: prevention, harm reduction, and responsible gaming.

Ladouceur, Goulet, and Vitaro (2013) reviewed the literature for prevention strategies in adolescents. Results show that prevention programs are generally effective in reducing misconceptions and increasing knowledge about gambling. However, a lack of long-term follow-up of behavioral measures makes it difficult to draw any clear conclusions about the effectiveness of the programs for preventing youth from engaging in gambling.

Tanner, Drawson, Mushquash, Mushquash, and Mazmanian (2017) reviewed harm reduction interventions in gambling, from the perspective of the gambling industry. Harm reduction strategies are policies, programs, and/or interventions that are designed to reduce harms associated with an activity. The harm reduction strategies included: flashing warning messages (of excess time or money spent) at a machine, limiting the maximum bet (to reduce the potential amount of money that can be lost), removing or limiting large note ATMs in the casino, reducing casino operating hours, and/or banning smoking in the casino. Results demonstrate that the effectiveness of harm reduction strategies cannot be reliably quantified based on methodological flaws, such as lack of pre- and post-test measures used, absence of control groups, and inconsistencies in measuring outcomes. Tanner, et al, (2017) conclude that further research is required to form firm conclusions surrounding effectiveness of harm reduction strategies. Future research should employ rigorous prospective experimental designs, appropriate control conditions, and both pre- and post-intervention measures.

Marchica and Derevensky (2016) examined personalized feedback interventions (PFI) for gambling disorders. PFI are brief interventions that provide individuals with information that compares their behavior to that of similar others for a specific activity; individuals describe their behavior, and a professional or automated system (e.g., software) provides feedback regarding whether the individual's behavior is similar to or different from how most people behave. Research

10

suggests that while PFI applied to gambling is still in its infancy, disordered gamblers appear to benefit from programs incorporating PFIs. Further, PFI may also be used as a promising source of prevention for individuals displaying at-risk gambling behaviors. While, evidence is still limited, and additional research needs to be conducted with PFI for gambling problems, the preliminary positive results along with the structure of PFI as a scalable and relatively inexpensive intervention method provides promising support for future studies.

The latest review on responsible gaming (RG), by Ladouceur, Shaffer, Blaszczynski, and Shaffer (2017), examined the peer-reviewed empirical evidence underpinning these strategies. The authors identify five primary RG strategies: self-exclusion programs, tracking gambling behavior, setting gambling limits, warning messages and training of venue employees intervening with problem gamblers. For some individuals RG practices are effective; however, these strategies may not work for every individual. It is for this reason that RG strategies appear promising in reducing gambling behavior; however, without a systematic approach to evaluating the effectiveness of these interventions no definitive conclusions can be made.

Prevalence Research in Maryland

A First Look at Gambling in Maryland, 1989:

The decision to legalize casino gambling, seen as an important revenue generating strategy, was associated with several prevalence research efforts in the decades prior to expanded legalization of casino gambling. The first study of the prevalence of problem and pathological gambling in Maryland was carried out as part of a larger study funded by the National Institute of Mental Health in 1989 (Volberg, 1994; Volberg & Steadman, 1989). It is important to note this evaluation was conducted nearly 20 years before the state of Maryland eventually authorized the expansion of gambling activities to include casino gambling. This early survey assessed respondents' experience with different types of gambling, gambling-related problems, and demographic characteristics. The survey included 750 completed interviews with randomly selected adults and the sampling design was stratified to ensure that inferences could be drawn

between the sample and the population in Maryland aged 18 and over.

Results of the 1989 survey showed that 89% of Maryland respondents had ever gambled and that the average number of lifetime gambling activities was 3.7. Per capita spending on the lottery in 1987 among Maryland respondents was $168. Lifetime gambling participation and mean number of lifetime gambling activities in Maryland were similar to New York, Massachusetts, and New Jersey, the other East Coast states surveyed in the same study, and distinct from Iowa and California. This is likely due to the more heterogeneous and urban nature of the population in these states compared with the West and Midwest, as well as differential access to lotteries, racetracks and casinos (Volberg & Steadman, 1989).

Furthermore, the 1989 survey also showed that 1.5% of the respondents, representing approximately 44,000 Maryland adults, could be classified as probable pathological gamblers. An additional 2.4% of the respondents, representing approximately 70,000 individuals, were classified as subclinical problem gamblers. The prevalence of problem and pathological gambling in Maryland in 1989 was similar to rates on the East Coast and in California and significantly higher than rates in Iowa. Problem and pathological gamblers in Maryland in 1989 were significantly more likely than the general population to be male and non-White, and significantly less likely to have graduated from high school (Volberg & Steadman, 1989).

Pre Casino Gambling Expansion in Maryland, 2010:

In 2010, a second statewide prevalence survey was conducted to establish baseline gambling prevalence prior to the expansion of casino gambling in Maryland. Results showed that almost 90% of respondents at that time had ever gambled in their lifetime. In terms of gambling with in the past year, 15.3% of respondents reported gambling weekly, while 21.9% gambled monthly. In terms of type of gambling, respondents preferred casino gambling (67.5%) and betting on the lottery (67.5%) the most. Participation in other forms of gambling included: sporting events (32.9%), private games (30.2%), horse racing (29.5%), "other forms," (e.g. charity gambling; 27.5%), bingo (24.8%), and slot machines outside of casinos (21.3%). Interesting to note, that

5.8% of respondents participated in dog races and 3.6% in the Internet; both of which were illegal in the state (Shinogle, et al., 2011).

Overall, respondents who gambled spent an average of $188.92 on gambling in a typical month. When this figure is broken down according to gambling frequency in the past year, those who gambled only a few times during the year typically spent $45.79 a month compared to monthly gamblers who spent an average of $148.00 and weekly gamblers who spent an average of $548.97 a month. Most frequently, respondents stated they gambled to win money (51.7%) or for fun and entertainment (32.6%; Shinogle, et al., 2011).

In general, respondents gambled with individuals not related to them and traveled more than 60 miles to partake in their preferred type of gambling. Disordered gamblers, specifically, traveled less, about 6 to 15 miles, to gamble and would spend over 6 hours gambling in a single session. Relatively few respondents, 4.5% were concerned by the amount someone close to them had gambled in the past 12 months. Of those surveyed, over 70% were unaware of services available to individuals with gambling problems. Twenty point seven (20.7) percent of participants were aware of a toll-free helpline and 23.2% were aware that Gamblers Anonymous existed (Shinogle, et al., 2011).

The 2010 survey determined 1.9% of respondents to be problem gamblers and 1.5% to be pathological gamblers. When combined, the prevalence of DG in Maryland was 3.4%. Shinogle, et al. (2011) found the following characteristics being associated with higher odds of being at risk for DG: 18 to 29 years of age, male, single, African-American, or other non-White races. Taken as a whole, the 2010 survey provided the State with valuable baseline information regarding the involvement in gambling behaviors prior to expanding gambling.

Current State of Gambling in Maryland, 2017:

The purpose of the current 2017 survey was to obtain updated information on the extent of DG in Maryland after the expansion of gambling in the state through the introduction of slot machines in 2010, the opening of six casinos between 2010 and 2016, and the introduction of

legalized table game play in each of the six casinos. Results are presented for: 1) the characteristics of Maryland's gamblers, 2) the updated estimate for the prevalence of DG behavior, and 3) the changes in DG among Marylanders brought about by the legalization of gambling. Now that casino gambling has been completely assimilated within the Maryland revenue stream, the goal of this study is to inform the State's actions in developing prevention and treatment services for DG and their families in Maryland.

CHAPTER 3

Methods

In this chapter, methods used to collect and analyze the data for this report including ethical review, questionnaire development, survey procedure, pre-testing, data collection, sample disposition, and response rate are described.

Ethical Review

The research protocol for the 2017 Maryland Problem Gambling Prevalence Survey was reviewed by the University of Maryland, Baltimore's Institutional Review Board. This review ensured that the selection of participants was equitable, participants' privacy was protected, informed consent was obtained, and that appropriate safeguards were in place to protect the security and confidentiality of participants' responses.

Questionnaire Development

The questionnaire for the 2017 prevalence study was based on the previous instrument developed by Norris and Shinogle, for the 2010 Maryland Problem Gambling Prevalence Survey. The instrument included the following sections, amended to improve upon the 2010 version:

Table 3.1 The 2017 Questionnaire

Section	Theme	Outcome
A	Gambling Involvement	Allowing to classify respondents as "Non-Gamblers" and "Gamblers". This series of questions also allowed to measure gambling frequency and obtain details about gambling activities
B	General Gambling Questions	To further investigate attitudes of gamblers with respect to their favorite gambling type, who they prefer to gamble with, as well as the reasons why they choose to gamble
C	NORC DSM-IV Screen for Gambling Problems	A series of 19 questions to be combined according to pre-set guidelines, to classify gamblers as low risk, at risk, problem gamblers and pathological gamblers
D	Attitudes Towards Gambling	Eight questions to better understand the motivations underlying gambling habits in MD
E	Awareness of Resources and Help Available to Marylanders with Gambling Problems	To probe knowledge about support systems and to measure the impact of communication about responsible gambling
F	Alcohol and Drugs	To measure use, frequency and possible problems brought about by these substances
G	Mental Health	Lifetime and past year feelings of depression and anxiety
H	Other Impacts of Gambling	Questions about debt, bankruptcy and incarceration
J	Questions for Non-Gamblers	Probing the reasons why some Marylanders refuse to gamble
K	Demographic Characteristics	Information about marital status, sexual orientation, education level, employment status, age, race/ethnicity, religious preference, household income, time living in Maryland, current zip code, main language spoken and gender

Section A: Gambling Involvement

Respondents were asked if they had ever participated in any one of these activities:

1) Gambling at a casino

2) Using gaming machines outside of a casino

3) Spending money on lottery games

4) Placing bets at horse races

5) Placing bets at dog races

6) Playing bingo outside of a casino

7) Gambling on private games (such as cards, dice or dominos)

8) Betting on sports events

9) Playing Daily Fantasy Sport (added to questionnaire in 2017)

10) Wagering on the computer over the Internet,

11) Any other kind of game.

For each activity, respondents were asked whether they had ever participated in this activity and if they had done so in the past year. Then, for each activity in the past year, respondents were asked how often they had participated, allowing for the following classification:

Table 3.2 Definitions for Frequencies

Frequency	Definition
Weekly (including daily participation)	6 to 30 or more times per month
Monthly	3-5 times per month
Past Year	6 to 12 times per year
Infrequent	1 to 5 times in the past 12 months
Lifetime	Ever gambled, but not at all in the past 12 months

In the analyses, the first two categories (daily and weekly) were combined to reflect frequent gambling to simplify the results tables and avoid sparse data issues. Further questions were asked about the location and the preferred type of each activity.

Section B: General Gambling Participation

For each activity in which a respondent participated during the past year, they were asked to provide further details about their gambling behavior. The survey included questions regarding gambling expenditures, with whom individuals usually gambled with, the duration of time spent gambling, and the distance usually traveled to gamble. Respondents were also asked about their reasons for gambling and their preferred gambling activities. Finally, respondents were asked

questions about first gambling experiences; such as their age and what type of gambling they participated in.

Questionnaire internal controls allowed for the classification of respondents with respect to their overall gambling frequency. The "ever gambled" variable was augmented with a cumulative computation to integrate the information about how frequently individuals gambled. This new classification called "type of gamblers" had three levels:

1) *Non-gamblers* were those who said "no" to all eleven questions about gambling type, combined with those who may have said "yes" to one or more gambling types, but not at all in the past 12 months. Those were considered lifetime gamblers, and were not asked the C series questions leading to a NODS score.

2) *Gamblers* were those who said "yes" to at least one of the eleven gambling types and reported gambling at least once during the past 12 months. These respondents were occasional gamblers who will play up to 12 times in a year.

3) *Frequent gamblers* were those respondents who said "yes" to at least one of the eleven gambling types, and reported that frequency was either daily, weekly, or monthly. These are the individuals that gamble the most—responses suggest up to 30 times per month.

Section C: NORC DSM-IV Screen for Gambling Problems

Many screening tools have been created to measure the proportion of problem gamblers within a population. Those include the South Oaks Gambling screen (SOGS; LeSieur & Blume, 1987), the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001), the American Psychiatric Association's diagnostic criteria for pathological gambling (DSM-IV; American Psychological Association, 1994), the Diagnostic Interview Schedule for pathological gambling (DIS; Winters, Specker, & Stinchfield, 2002), the Diagnostic Interview for Gambling Severity (DIGS; Culleton, 1989), the Gamblers Anonymous Twenty Questions (GA20; Toneatto, 2008), and the Lie/Bet scale (Johnson, Hamer, Nora, Tan, Eisenstein, & Englehart, 1997). For the two

latest Maryland studies, the National Opinion Research Center DSM-IV screen for Gambling problems (NODS) was utilized for its performance in both clinical and survey populations (Gerstein, et al, 1999) and to allow for comparison of 2010 and 2017 results..

A NODS status was assigned to all gamblers using an aggregate of the 17 items established to classify gamblers within the lifetime problems categories. These are as follows:

Table 3.3 Classification Criteria for NODS

Score	NODS Classification
0 Points	Low Risk
1-2 Points	At Risk
3-4 Points	Problem Gambler
5 or More Points	Pathological Gambler

Proportional adjustments were made to account for missing information (respondent does not know the answer to the question or refuses to answer).

Sections D-K

Questions in these sections were stratified using self-explanatory categories. For example, variables such as "year born" and "number of drinks" were categorized following convenient descriptive classes. The list of these questions can be found in Table 3.1.

Survey Procedures

The Schaefer Center for Public Policy of the University of Baltimore (UB), conducted the survey, with additional calling support from Davis Research in Calabasas, CA.

The survey units attempted to contact 119,284 Maryland residents/households during the study period (August to October, 2017) using a dual frame random sample methodology. The samples were acquired from Survey Sampling Incorporated (SSI). A dual frame sample (as opposed to the list-assisted random digit [RDD] landline sample used in 2010) was selected due to the proportion of wireless phones versus landline phones in Maryland. As with all random samples, some numbers needed to be filtered out of the working sample, which included places

of business, nonworking numbers, numbers that were disconnected, and numbers that were associated with a fax or modem. In addition, the wireless frame was more likely to contain numbers that while assigned local area codes, belonged to residents who had moved out of Maryland.

SSI developed the landline sample of households to be contacted by starting with a database of all directory-listed households in the United States. SSI cleaned and validated a file of directory-listed telephone numbers that they obtained from Telcordia (which identified landline numbers). Once the list was obtained, samples were generated through a set of 100 contiguous numbers (also known as a 100-bank) identified by the first two digits of the last four digits of a telephone number.

SSI also developed the wireless sample, where wireless numbers assigned to Maryland addresses were included in the sampling frame. In addition, SSI applied an activity code, which was used to remove phones which were inactive, infrequently used, or assigned to alarm systems, etc. The wireless sample included pre-paid phones as well as phones on calling plans.

Due to the inclusion of wireless numbers in the sample, within household randomization was applied to the landline sample (a sample of household phones) and not to wireless phones (personal devices). Randomization was based on asking to speak with the adult having had the most recent birthdate.

Data Collection

All interviewers received intensive training developed by William Wells, the Schaefer Center Survey Research Manager, and based on the 2010 training information developed by Dr. Volberg on the nature and scope of the study. The rigorous training involved the following procedures:

- All potential interviewers were evaluated on their ability to read a script, where voice quality, inflection, pausing, pace, etc., were considered before extending an offer of employment.

- A two hour course covering the importance of data quality and integrity along with proper survey administration techniques followed the hiring process.

- Exposure to various scenarios that might arise during a live interview along with the proper method for handling these scenarios. The scenarios ranged from how to manage a respondent not answering a question to how to handle an irate respondent.

- Following the training, the interviewers were tested on what they should have learned from the training. Only those interviewers receiving a score of 80% or higher, were offered to continue their training.

- After successfully completing the test, the interviewer was instructed on the use of the Computer Aided Telephone Interviewing (CATI) software.

A second test was then administered by the survey research manager or calling supervisor who served as a respondent in a mock interview. The interviewer was tested on a range of scenarios to ensure that they were handled properly. After interviewers successfully completed this portion of their training, they were ready for project specific training. The interviewer reviewed the survey instrument many times to understand skip patterns, filters, question types, and response categories before administering an actual interview.

Quality control measures were in place to ensure that all interviewers were briefed on the nature of the survey. Supervisors ensured proper calling techniques and data collection procedures.

When interviewers encountered a respondent or household that spoke Spanish, the language barrier was noted, and the record was flagged for follow-up by a Spanish-speaking interviewer. Respondents who indicated a preference for a Spanish interview were also referred to a Spanish-speaking interviewer.

Final Sample Disposition

Data collection for the study began on August 10, 2017 and concluded October 1, 2017.

The final sample disposition and response rates are provided in Table 3.4. A total of 3,810 surveys were collected, with 3,761 surveys completed in entirety.

Table 3.4 Gambling Disposition and Response Rate

Response Type	N	Percent of Sample
Business Number	3,859	3.2
Busy/No Answer/Answering Machine	78,026	65.4
Callback – General	177	0.1
Callback – Scheduled	801	0.7
Complete	3,761	3.2
Fax/Modem/Computer	2,303	1.9
Language Barrier	591	0.5
No Longer At This Number	13	0.0
Non-Working Number/Disconnect	12,548	10.5
Not Qualified (Residence/Age)	1,301	1.1
Partial	264	0.2
Phone Line Problem	643	0.5
Refusal	14,997	12.6
Grand Total	119,284	

Limitations of Telephone Survey

The landscape of telephone survey research has dramatically changed since the 2010 Maryland Statewide Gambling Prevalence Study (Shinogle, et al., 2011), with increased supplanting of landlines with wireless phones. In the seven years between the 2010 and 2017 gambling studies, the changes in wireless phone technology and the use of wireless phones have dramatically increased the substitution of wireless phones for household landline phones. According to the National Health Statistics Reports from the National Center for Health Statistics

at the United States Department of Health and Human Services, the percentage of Maryland adults living in wireless only or mostly households has increased from 39.6% in 2010 (Blumberg, 2011) to 47.5% by the end of 2012 (Blumberg, 2013). While nationally the estimates for wireless phone only households are more recent, they reinforce this same trend: a doubling from 24.9% in 2010 to 50.5% in 2016, according to the National Health Interview Survey from the National Center for Health Statistics (Blumberg, 2017).

While the ability to collect wireless phone samples in research is beneficial (i.e. increased sample size, samples that might not otherwise be reached), such samples are not without their own complications. Since 2010, the American Association for Public Opinion Research (AAPOR) has measured the difficulties with wireless phone samples for research studies. They include:

- Over a third of randomly selected wireless phone numbers reach respondents who are less than 18 years of age and ineligible to participate in research;

- It is inappropriate and impractical to ask for an additional or alternate respondent when an underage cell phone user is contacted – since it isn't a household device;

- Refusals are as much as 20% more likely in wireless phone samples than in landline samples;

- One-third of successful wireless phone interviews were with respondents who were away from their home;

- People see wireless phones as "private" devices for their personal use and are less accepting of unknown calls to their phones;

- Caller ID in wireless phones show a number only, instead of a text identifier as they do in landline phones equipped with caller ID – and every wireless phone is equipped with caller ID;

- Increased survey length due to wireless phone screening questions ("are you in a safe place to talk") and the need to collect information about household telephone

usage for post survey weighting;

- The need to hand-dial wireless phone numbers in compliance with the Telephone Consumer Protection Act (TCPA);

- Lower productivity of wireless phone samples versus landline samples, resulting in more interviewer hours to achieve a completed wireless phone versus landline survey;

- Increased sample cost driven by the need for more wireless phone numbers to reach the same number of completed surveys as landline samples (AAPOR Cell Phone Task Force, 2010).

On its face, there are many strategies to remediate these challenges. The most common is to simply draw dual samples: one from all assigned landline phones, and the other from assigned wireless phones. If wireless phones were used in the same manner as traditional landlines, the problem would be solved with dual frame samples. The fact of the matter is that Americans' relationship with wireless phones is quite different than landline phones. In 2003, Steeh found that people felt differently about their wireless phones than their landline phones. People view their wireless phones as private devices – "…my [cell] phone is for 'personal use', not for annoying people to call me on." (Steeh, 2003). In fact, for many years, wireless phone numbers were not listed in a directory, the way that landline phones were. Today, it is possible to look up wireless phone numbers or search for wireless phone numbers associated with an address or a person, but the pervasive thinking that the devices are "private" has remained.

Taken together, this means that as wireless phones are used in dual frame research, and as the proportion of wireless phones to landline phones increases, the impact of the difference in the way research uses those devices increases. The most noticeable impact is in the time and resources required to obtain the same number of completed interviews via a wireless phone sample. Since the productivity of wireless phone samples is lower than that of landline samples, it takes more hours of interviewer time to achieve a complete wireless phone survey. In addition,

the contact rate for wireless phones (the rate at which an interviewer reaches a person on the phone) is lower for wireless phones, resulting in the necessity for more calls to be made. As interviewer time increases, the cost of the data collection increases. The cost of the overall sample increases – not the unit cost – since more sample is required with less productive wireless phone numbers. Moreover once a person is on the phone, they must be screened for eligibility (geography and age), and the eligibility rate in wireless phone samples is lower than landline samples. These factors increase the time and resources required to implement use of wireless phone numbers into research (AAPOR Cell Phone Task Force, 2010).

As people are increasingly using wireless phones as their only or primary telephone, and since they go anywhere the person is, individuals are less tolerant of unknown calls. As a personal device, the wireless phone exists for the convenience of the user (or subscriber, as wireless phone providers think of users). This difference in relationship versus the traditional landline makes wireless phone users much less likely to answer unknown numbers and if they do answer, more likely refuse to be interviewed. These difficulties increase year by year as the shift to wireless phone mostly and wireless phone only households continues, exacerbated by the comfort in using wireless phones as personal, private devices (AAPOR Cell Phone Task Force, 2010).

Changes over the last seven years that have exponentially increased the resources required to complete wireless phone interviews, as well as the need to use wireless phones in proportion to their incidence in the population are not the only changes impacting telephone surveying. In the last year, technical changes by providers to better serve their subscribers has introduced greater barriers to telephone survey research with wireless phones. Providers such as Verizon, manufacturers such as LG, and operating systems like Android have made strides in 2017 to better serve their providers with alerts that they are receiving a call the "may be fraudulent," "may be a survey," or "may be a telemarketer." Changes such as this is a challenge to reputable telephone research. AAPOR has begun to assemble a task force to study the impact of this type of call alerting or blocking technology in order to lobby the federal government and

industry to mitigate the impact. In practical terms, the providers are doing what their subscribers (the people they are accountable to for revenue) want – stopping the unwanted intrusion into their personal devices by survey researchers (AAPOR Cell Phone Task Force, 2010).

All of these factors impact and therefore bias the selection of what numbers will be sampled, who will be a respondent, the coverage of who can be or is included, and in what proportion wireless vs landline phone owners are able to participate in telephone research. Weighting becomes critical in these situations in order to make up for the coverage, selection, and non-response bias inherent in current telephone research.

Data Analysis Procedures

The first step of the data analysis examined the data distributions of all responses to assess their plausibility. After examining frequency distributions for all of the variables in the questionnaire, respondents' scores on the problem gambling screen (NODS score) were calculated, adjusted for missing responses and stratified. The variable "year born" was transformed into a continuous value for age, and categorized into convenient strata. Expenditures on different types of gambling were summarized as mean, median and range (minimum to maximum) for the different types of gambling. The total sample sizes varied according to the variables shown for two reasons: 1) no weight could be calculated for respondents who refused to provide the year of their birth; and 2) respondents were given the option to refuse to respond or to respond "I don't know" to any of the questions asked.

All analyses were conducted with SPSS version 25 (IBM, Armonk, NY), using survey estimation methods to account for the sample weighting. Weighted frequencies were obtained to estimate Maryland gambling statistics according to demographic, social and economic characteristics of interest. Weight calculations are shown in Chapter 4. Weighted cross-tabulations were produced to break down gambling proportions within key demographic, economic and substance abuse measures (Johnson, 2008). To quantify the association between the probably of problem/pathological gambling and the various risk factors measured in the

survey, saturated logistic models were developed to examine possible associations of interest,

using 20% as the level of significance.

CHAPTER 4

The 2017 Sample

This chapter describes the general characteristics of the 2017 sample and explains the procedures used to proceed with the weighting of the data.

Crude sample proportions

The 2017 dataset, collected between August and October 2017, included information about 3,810 respondents, with the following demographic characteristics:

Table 4.1 Gender Proportions

Gender	N	%
Male	1,692	44.4
Female	1,988	52.2
Transgender	4	0.1
None of These	3	0.1
Rather Not to Say	73	1.9
Total	3,810	100.0

Table 4.2 Age Proportions

Age	N	%
18 to 29	403	10.6
30 to 44	570	15.0
45 to 54	575	15.1
55 to 64	757	19.9
65 to 74	676	17.7
75 +	782	20.5
Refused to Answer	47	1.2
Total	3,810	100.0

Table 4.3 Race and Ethnicity Proportions

Race/Ethnicity	N	%
Non-Hispanic White	2,321	60.9
Black or African American	798	20.9
Hispanic	237	6.2
Asian or Pacific Islander	107	2.8
American Indian	30	0.8
Other	95	2.5
Missing Information	222	5.8
Total	3,810	100.0

Table 4.4 Education Level Proportions

Education level	N	%
Elementary School	32	0.8
Some High School	118	3.1
High School Degree or GED	692	18.2
Less Than 2 Years of College	417	10.9
Associate Degree or Other Degree/ 2 Years in College	582	15.3
Bachelor's Degree	895	23.5
Master's Degree	628	16.5
Postgraduate Degree (PhD, MD, or JD)	319	8.4
Other	3	0.1
Does Not Know	10	0.3
Refused to Answer	68	1.8
Missing Information	46	1.2
Total	3,810	100.0

Table 4.5 Work Status Proportions

Work status	N	%
Working Full-Time	1,726	45.3
Working Part-Time	421	11.0
Not Working Last week	1,550	40.7
Does Not Know	11	0.3
Refused to Answer	56	1.5
Missing Information	46	1.2
Total	3,810	100.0

Table 4.6 Income Level Proportions

Income level	N	%
Up to $15,000	161	4.2
$15,001 to $25,000	173	4.5
$25,001 to $35,000	194	5.1
$35,001 to $50,000	243	6.4
$50,001 to $75,000	422	11.1
$75,001 to $100,000	339	8.9
$100,001 to $125,000	330	8.7
$125,001 to $150,000	230	6.0
Over $150,000	513	13.5
Does Not Know	338	8.9
Refused to Answer	819	21.5
Missing Information	48	1.3
Total	3,810	100.0

Table 4.7 Region Proportions

Region	N	%
Central	1,119	29.4
Eastern Shore	267	7.0
Southern	982	25.8
Western	1,019	26.7
Missing Information	423	11.1
Total	3,810	100.0

Table 4.8 Armed Forces Proportion

Ever Served in the Armed Forces	N	%
Yes	531	13.9
No	3178	83.4
Does Not Know	5	0.1
Refused to Answer	48	1.3
Missing Information	48	1.3
Total	3,810	100

Table 4.9 Religious Affiliation Proportions

Religious Affiliation	N	%
Protestant	1,032	27.1
Roman Catholic	701	18.4
Jewish	158	4.1
Mormon, LDS	16	0.4
Muslim	38	1.0
Hindu	16	0.4
Orthodox (Greek, Russian, Ukrainian)	14	0.4
Christian	766	20.1
Believe in God, No specific Denomination	101	2.7
Agnostic	100	2.6
Atheist	104	2.7
Other	167	4.4
Does Not Know	76	2.0
Refused to Answer	207	5.4
Missing Information	314	1.3
Total	3,810	100.0

Table 4.10 Language Spoken Proportions

Language Spoken at Home	N	%
English	3,480	91.3
Spanish	131	3.4
Other	85	2.2
Does Not Know	4	0.1
Refused to Answer	60	1.6
Missing Information	50	1.3
Total	3,810	100.0

No attempt was made to apply imputation for missing data. Survey data were weighted to account for differential probabilities of selection, response rates, and population coverage rates using the procedures described in the following section.

Weighting Procedures

When surveys are based on data collected through a random selection process such as this one, care must be taken to insure that estimates are not biased. Weighting is the most

common procedure used: calculation of expansion weights is a stepwise procedure that can be thought of as allowing respondents to represent all eligible people from a population (Dargatz & Hill, 1996). Standardization procedures are applied to generate the weights, based on known distributions among the population of interest. Care was exercised to limit the amount of weighting to the minimum required, as to not bring about excessive complexity in the variance structures.

For this 2017 survey, a first level of weighting was applied to account for the selection differences of wireless phones versus landline numbers. A second level of weighting was applied to account for the non-response rates. And finally, a third level of weighting was applied to bring the sample into proportion for age, sex, and race/ethnicity. Weights were developed using the US Census' 2011-2015 American Community Survey estimates (https://factfinder.census.gov/) of the demographic characteristics of the Maryland population.

Table 4.11 Comparison of Key Demographic Characteristics of the Achieved Sample and the Weighted Sample

Variable	Category	Sample	Weighted Sample
Gender	Male	45.9%	46.4%
	Female	54.0%	53.4%
Age	18-24	6.2%	10.1%
	25-34	10.0%	15.1%
	35-44	11.5%	15.7%
	45-54	16.4%	17.1%
	55-64	21.6%	13.2%
	65-74	19.2%	7.7%
	75-84	10.7%	4.2%
	85+	4.4%	16.8%
Race/Ethnicity	Non-Hispanic White	64.7%	59.6%
	Black or African American	22.2%	26.0%
	Hispanic	6.6%	6.3%
	Asian or Pacific Islander	3.0%	4.5%
	Other	3.5%	3.6%

Table 4.12 contains the summary of sample disposition used for the weight calculation. The following paragraph describes the sample weighting steps. Since the wireless and landline phone samples were independently drawn, sample weights were calculated for each sample independently.

Table 4.12. Response Rates and Categories of Final Dispositions for Telephone Numbers

	Final Sample Disposition					
		Landline Sample			**Wireless Sample**	
Label	**Category**	**Count**	**%**		**Count**	**%**
C	Interview Complete	1,818	3.0		1,943	3.3
ER	Interview Eligible, Incomplete	6,254	10.3		9,985	17.0
D	Non-Working	7,228	11.9		5,320	9.1
I	Answering Machine	3,836	6.3		10,575	18.0
J	Ineligible Households	103	0.2		1,211	2.1
NC	Non-Contact	38,368	63.3		28,193	48.0
NR	Non-Residential	2,791	4.6		1,068	1.8
U1	Known Households, Unscreened	180	0.3		411	0.7
	Total	60,578	100		58,706	100
	Resolution Rate: (C+ER+D+J+NR+U1)/(total)	30.3%			33.9%	
	Screener Rate: (C+ER+J)/(C+ER+J+U1)	97.8%			96.9%	
	Interview Rate: C/(C+ER)	22.5%			16.2%	
	CASRO Response Rate: Resolution Rate x Screener Rate x Interview Rate	6.6%			5.3%	

Sample Weighting Steps

Step 1. Base weight

K^{th} telephone number in the released sample A is defined by

$$W_{1k} = 1/\pi$$

Where π = probability of selecting the kth telephone number, which is equal to n/N where n= sample size (released replicates) and N = total telephone numbers on the sampling frame in Maryland.

Step 2. Adjustment for non-resolution of telephone numbers

The proportion of resolved telephone numbers that are working residential numbers (WRN) was determined. Of the selected telephone numbers 39.9% remained unresolved. An adjustment to the weight of resolved cases was necessary to account for cases for which the final disposition codes signified that WRN-status is unknown. In essence, the adjustment made assumed that the rate of WRNs among unresolved numbers was the same as the rate of WRNs among resolved numbers, after controlling for known covariates. The adjusted weight was defined by:

$$W_{2k} = W_{1k}/R_2 \text{ where } R_2 = \text{resolution rate}$$

Step 3. Adjustment for the screener non-response rate

Some of the released telephone numbers were resolved WRNs, with the final disposition code indicating that the screening interview was incomplete. For such cases, it was not known how many, if any, age-eligible population lived in the household. To compensate for such individuals, the weights of the telephone numbers with completed screeners were adjusted. The adjusted weight for the kth number was

$$W_{3k} = W_{2k}/R_3 \quad \text{where } R_3 = \text{screener rate}$$

Step 4. Adjustment for the interview non-response rate

Completed interviews from all the selected individuals were not obtained as expected. To compensate for non-responding individuals, the weights of respondents were adjusted according to completed interviews. The procedure to adjusted weight for the kth individual was

$$W_{4k} = W_{3k}/R_4 \text{ where } R_4 = \text{response rate}$$

Step 5. Post-stratification based on gender, age and ethnicity

       As shown in Table 4.2, the current survey was subject to differential coverage of the population by race/ethnicity and other factors. This pattern appears in almost any census or survey, with some categories of individuals being underreported at a higher rate than other categories. A simple post-stratification scheme was used to reduce bias due to differential coverage. The post-stratified weights were calculated as follows:

$$W_{5k} = W_{4k} \times \sum_{m=1}^{M} \delta_{km} \frac{T_m}{\sum_{j \in A} \delta_{jm} W_{4j}}$$

Where $\delta_{km} = 1$ if the j-th person is in the m-th post-stratum and m=1, ..., 70

       Survey respondents were allowed to refuse to answer questions. When a respondent refused or did not know the response, they were coded as a missing response. If the respondent was coded as missing for a question, they were dropped from the analysis, thus varying the sample size for each table.

CHAPTER 5

Gambling in Maryland (Weighted Analyses)

In this chapter, characteristics of respondents who engaged in any of 11 forms of gambling are presented. Variables of interest include socio-demographic, as well as substance use information. Respondents' attitudes and behaviors for each form of gambling are also presented.

Maryland Population

The first outcome of interest was defined as "Gambler" versus "Non Gambler". This outcome was ascertained by a tally of all positive responses to 11 questions covering all types of gambling available in Maryland, namely:

- Gambling at a casino,

- Using gaming machines outside of a casino,

- Spending money on lottery games,

- Placing bets at horse races,

- Placing bets at dog races,

- Playing bingo outside of a casino,

- Gambling on private games (such as cards, dice or dominos),

- Betting on sports events,

- Playing daily fantasy sport,

- Wagering on the computer over the Internet, or

- Any other kind of game

In 2017, 87.0% of respondents reported that they had ever gambled, meaning they were involved in at least one of the above types of gambling. Respondents classified as "Non Gamblers" (13.0%) responded "No" to all categories of gambling activities.

Respondents were divided according gambling status. The age group with the highest gambling proportion was between 55 and 64 years of age (92.4%), and gamblers were

predominantly male (89.5%). American Indians declared the highest proportion of gambling behavior (93.7%), while Hispanics had the lowest proportion (76.8%). People with income above $75,000 appeared to have high proportions of gamblers (92.7%). Every income level had greater than 89% participation except two categories (under $15,000 and $25,001 to $35,000). No large difference in gambling proportions was visible between education levels, although respondents with a bachelor's degree had participated in gambling behaviors the most frequently (90.1%). A greater percentage of respondents were employed (91.0%).

Tables 5.1 to 5.6 Ever Gambled by Demographic Characteristics.

Table 5.1 Ever Gambled by Age (2017; %)

Age (years)	Ever Gambled		Total
	No	Yes	
18 to 29	22.1	77.9	100.0
30 to 44	11.3	88.7	100.0
45 to 54	9.7	90.3	100.0
55 to 64	7.6	92.4	100.0
65 to 74	9.0	91.0	100.0
75 +	13.4	86.6	100.0

N= 3,763

Table 5.2 Ever Gambled by Gender (2017, %)

Gender	Ever Gambled		Total
	No	Yes	
Male	10.2	89.8	100.0
Female	14.6	85.4	100.0
Transgender	25.0	75.0	100.0

N=3,730

Table 5.3 Ever Gambled by Race or Ethnicity (2017; %)

Race/Ethnicity	Ever Gambled		Total
	No	Yes	
Non-Hispanic White	8.8	91.2	100.0
Black or African American	17.0	83.0	100.0
Hispanic	23.2	76.8	100.0
Asian or Pacific Islander	17.2	82.8	100.0
American Indian	6.3	93.7	100.0
Other	22.4	77.6	100.0

N=3,588

Table 5.4 Ever Gambled by Income (2017; %)

Income	Ever Gambled		Total
	No	Yes	
Up to $15,000	19.5	80.5	100.0
$15,001 to $25,000	8.5	91.5	100.0
$25,001 to $35,000	12.9	87.1	100.0
$35,001 to $50,000	9.3	90.7	100.0
$50,001 to $75,000	11.4	88.6	100.0
$75,001 to $100,000	7.3	92.7	100.0
$100,001 to $125,000	10.7	89.3	100.0
$125,001 to $150,000	6.5	93.5	100.0
Over $150,000	5.5	94.5	100.0

N=2,603

Table 5.5 Ever Gambled by Education Level (2017; %)

Education level	Ever Gambled		Total
	No	Yes	
Elementary School	10.9	89.1	100.0
Some High School	15.7	84.3	100.0
High School Degree or GED	16.4	83.6	100.0
Less Than 2 Years of College	12.0	88.0	100.0
Associate Degree or Other Degree/ 2 Years in College	12.1	87.9	100.0
Bachelor's Degree	9.9	90.1	100.0
Master's Degree	12.3	87.7	100.0
Postgraduate Degree (PhD, MD, or JD)	14.1	85.9	100.0
Other	0.0	100.0	100.0

N=3,686

Table 5.6 Ever Gambled by Employment Status (2017; %)

Employment	Ever Gambled		Total
	No	Yes	
Working Full-Time	9.0	91.0	100.0
Working Part-Time	20.9	79.1	100.0
Not Working Last Week	15.5	84.5	100.0

N=3,697

Zip code information provided by a majority of respondents allowed classification of the respondents with respect to their region of residence. The *Central* region corresponds to respondents from Baltimore City and Baltimore, Harford and Howard Counties. The *Western* region corresponds to respondents from the Allegany, Carroll, Frederick, Garrett, Montgomery

and Washington counties. The *Southern* region corresponds to respondents from the Anne Arundel, Calvert, Charles, Prince George's, and St. Mary's counties. The *Eastern Shore* region corresponds to respondents from the Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester counties. Thirteen percent of respondents either declined to provide their residential zip code, provided a zip code that did not exist, a zip code from outside of Maryland, or had an incomplete set of digits recorded. A comparison of gambling proportions showed that this outcome was evenly distributed among the four regions of the state of Maryland.

Table 5.7 Ever Gambled by Region (2017; %)

Region	Ever Gambled		Total
	No	Yes	
Central	11.3	88.7	100.0
Eastern shore	13.2	86.8	100.0
Southern	14.1	85.9	100.0
Western	11.5	88.5	100.0
Undisclosed	17.7	82.3	100.0

N=3,387

People who smoke were also more likely to gamble, with 95.5% of daily smokers engaging in gambling behaviors. The same was true for alcohol consumption, where 86.3% of daily drinkers also gambled. Such patterns applied for binge drinking (86.7%), as well as the number of drinks in one sitting (84.5% of individuals consuming 16 drinks or more per day were gamblers), and illicit and non-medical prescription drug use (97.7% and 98.6% respectively).

Tables 5.8 to 5.13 Ever Gambled by Substance Use Behaviors

Table 5.8 Ever Gambled by Tobacco Use (2017; %)

Tobacco Use	Ever Gambled		Total
	No	Yes	
Daily (more than 30 times per month)	4.5	95.5	100.0
Several Times a Week (6-29 times per month)	6.3	93.7	100.0
Several Times a Month (3-5 times per month)	3.5	96.5	100.0
Once a Month or Less (6-12 times per year)	2.8	97.2	100.0
Only a Few Days All Year (1-5 times per year)	6.4	93.6	100.0
Never	14.4	85.6	100.0

N=3,745

Table 5.9 Ever Gambled by Alcohol Consumption (2017; %)

Alcohol Consumption	Ever Gambled		Total
	No	Yes	
Daily (more than 30 times per month)	13.7	86.3	100.0
Several Times a Week (6-29 times per month)	4.3	95.7	100.0
Several Times a Month (3-5 times per month)	5.4	94.6	100.0
Once a Month or Less (6-12 times per year)	6.3	93.7	100.0
Only a Few Days All Year (1-5 times per year)	13.9	86.1	100.0
Never	23.2	76.8	100.0

N=3,733

Table 5.10 Ever Gambled by Binge Frequency (2017; %)

Binge Frequency	Ever Gambled		Total
	No	Yes	
Daily (more than 30 times per month)	13.3	86.7	100.0
Several Times a Week (6-29 times per month)	4.0	96.0	100.0
Several Times a Month (3-5 times per month)	0.0	100.0	100.0
Once a Month or Less (6-12 times per year)	4.2	95.8	100.0
Only a Few Days All Year (1-5 times per year)	5.3	94.7	100.0
Never	10.2	89.8	100.0

N=2,623

Table 5.11 Ever Gambled by Number of Drinks (2017; %)

Number of Drinks	Ever Gambled		Total
	No	Yes	
No Drinks	0.0	100.0	100.0
Between 1 and 5 Drinks	8.4	91.6	100.0
Between 6 and 10 Drinks	5.5	94.5	100.0
Between 11 and 15 Drinks	0.0	100.0	100.0
16 or more drinks	15.5	84.5	100.0

N=2,587

Table 5.12 Ever Gambled by Illicit Drug Use (2017; %)

Illicit Drug Use	Ever Gambled		Total
	No	Yes	
Daily (more than 30 times per month)	2.3	97.7	100.0
Several Times a Week (6-29 times per month)	5.1	94.9	100.0
Several Times a Month (3-5 times per month)	1.1	98.9	100.0
Once a Month or Less (6-12 times per year)	2.6	97.4	100.0
Only a Few Days All Year (1-5 times per year)	6.7	93.3	100.0
Never	13.7	86.3	100.0

N=3,738

Table 5.13 Ever Gambled by Non-Medical Prescription Drug Use (2017; %)

Prescription Drug Use	Ever Gambled		Total
	No	Yes	
Daily (more than 30 times per month)	1.4%	98.6%	100.0
Several Times a Week (6-29 times per month)	12.2%	87.8%	100.0
Several Times a Month (3-5 times per month)	13.6%	86.4%	100.0
Once a Month or Less (6-12 times per year)	27.4%	72.6%	100.0
Only a Few Days All Year (1-5 times per year)	10.2%	89.8%	100.0
Never	12.7%	87.3%	100.0

N=3,746

With respect to health status, results showed an increasing gradient of gambling percentage, as the perceived health status diminished. Figure 5.14 shows the proportion of gamblers increasing from 85.0% for individuals with an excellent health, to 95.2% for those who perceived that their health status was poor.

Figure 5.1 Ever Gambled by Health Status (2017)
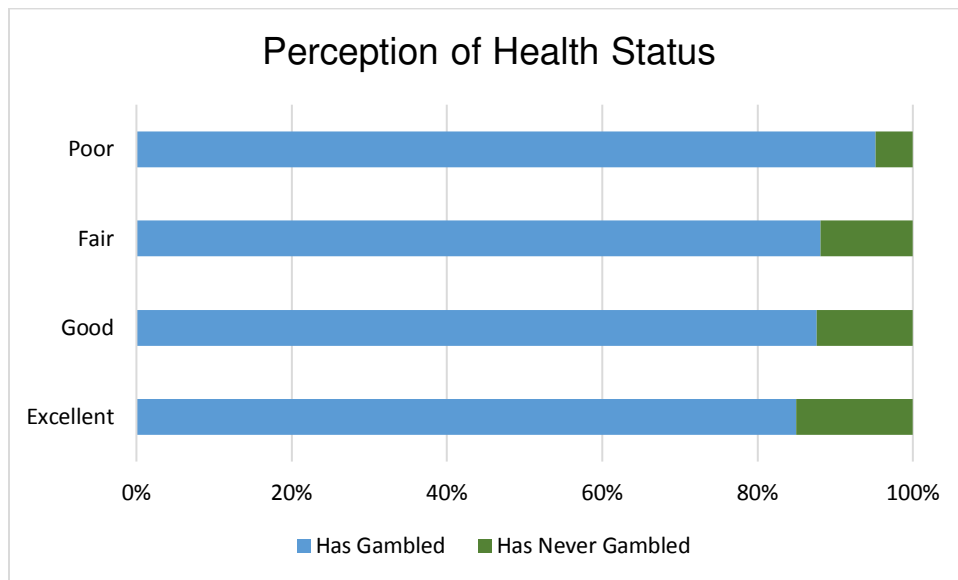
N=3,735

Gambling in Maryland, by type of gambling activity

For the 2017 survey, 87.0% of respondents reported that they had participated in one or more of the 11 gambling activities assessed by the survey. The eleventh choice was "Other", and allowed respondents to report types of gambling that were not considered in the survey. Chart 5.14 below shows the distribution of gamblers according to the number of activities played in the

past 12 months. A small proportion of gamblers participated in only one activity (14.4%), while a majority played between 2 and 5 types of games (60.7%). Only 11.9% of respondents played six or more types of gambling, with 0.2% reported playing ten options offered and zero participants reported playing all eleven types.

Figure 5.2 Proportion of Marylanders Playing One or More Type of Gambling

Gamblers who reported "Other types of gambling not mentioned above" were offered a limited number of alternative choices such as raffles, sweepstakes, dog or cock fights, or baby pools. However, they were not asked to specifically name the type of gambling they were involved in, which did not allow for further analysis of these choices.

Table 5.16 provides the frequency for each of the gambling types. The most common gambling activities for respondents were: lottery (77.6%) and casinos (73.9%). The types of gambling that attracted the fewest gamblers were dog races (6.8%), Daily Fantasy Sports (5.6%) and Internet gambling (3.4%). Relatively low prevalence rates for Daily Fantasy Sports and Internet gambling possibly reflected the fact that online gaming is not legal in Maryland.

Table 5.14 Prevalence by Gambling Type (2017; %)

	Yes	No	Total	N
Lottery	77.6	22.4	100.0	3,397
Casino	73.9	26.1	100.0	3,399
Horse Races	31.3	68.7	100.0	3,390
Sports	29.2	70.8	100.0	3,394
Private Games	28.8	71.2	100.0	3,388
Bingo for Money	26.7	73.3	100.0	3,392
Other	25.4	75.6	100.0	3,386
Gaming Machines Outside a Casino	23.6	76.4	100.0	3,392
Dog Races	6.8	93.2	100.0	3,397
Daily Fantasy Sports	5.6	94.4	100.0	3,387
Internet	3.4	96.6	100.0	3,396

Respondents were asked to describe the frequency at which they played and the gambling types they preferred. *Infrequent* gamblers were those who only gambled 1 to 5 times per year. *Past Year* gamblers were those who had gambled 6 to 12 times in the past year. *Monthly* gamblers were defined as those who gambled 3 to 5 times per month. *Weekly* gamblers were those who gambled more than 6 times per month, including those who gambled daily.

Table 5.15 details the frequency for each of the gambling types. Ever-gamblers were individuals who reported playing a particular type of game, but not in the past year. The highest of these proportions was for dog races (95.5%) and horse races (77.2%), although nationally, access to these types of gambling have decreased as casino gambling has become more common and accessible. Lottery gambling remained the most popular type of gambling, with only 21.4% of players who did not purchase a ticket in the past 12 months, and 10.2% of respondents who bought a ticket each week. Despite the lower number of enthusiasts, the categories that held the highest proportion of weekly gamblers were Internet gamblers (12.6%) and Daily Fantasy Sports players (12.2%).

Table 5.15 Gambling Frequency by Type of Gambling (2017; %)

	N	Ever Gambler	Infrequent	Past Year	Monthly	Weekly
Lottery	2,674	21.2	44.2	14.7	9.8	10.2
Casino	2,544	58.6	31.2	4.7	3.4	2.1
Horse Races	1,226	77.2	18.0	1.9	2.2	0.6
Sports	1,014	42.9	39.2	8.6	5.6	3.8
Private Games	992	44.1	33.6	12.9	5.4	4.0
Other	984	46.2	44.8	4.4	2.3	2.3
Bingo for Money	927	65.8	27.4	3.2	2.4	1.3
Gaming Machines Outside a Casino	791	69.9	21.4	4.4	2.0	2.3
Dog Races	233	95.5	3.3	0.4	0.0	0.8
Daily Fantasy Sports	157	33.4	31.9	8.4	14.2	12.2
Internet	105	50.1	21.8	9.1	6.3	12.6

Table 5.16 below reports the popularity level for each form of gambling and includes the amount of money spent on each type. Although Internet gambling had the lowest participation percentage (3.4%), it was the type of gambling that represented the largest monthly expenditure ($570/month) of all gambling types. This level of monthly expenditure was followed by casino gambling ($181/month), dog races ($264/month) and horse races ($109/month), having a popularity level of 73.9%, 6.8% and 68.7% respectively. All other gambling activities represented expenses under $100 per month, with lottery being the smallest mean expenditure, at $33/month.

Table 5.16 Gambling Popularity and amount Spent (2017)

Gambling Type	Yes (%)	Mean Amount Spent ($/month)	Range ($)
Lottery	77.6	33	0 - 1,000
Machines Outside a Casino	76.4	107	0 - 5,000
Casino	73.9	181	0 - 5,000
Horse Races	68.7	109	0 - 5,000
Sports Outcomes	29.2	100	0 - 5,000
Private Games (cards, dice, etc.)	28.8	82	0 - 5,000
Bingo Outside a Casino	26.7	35	0 - 600
Others	25.4	24	0 - 1,000
Dog Races	6.8	263	2 - 500
Daily Fantasy Sports	5.6	59	0 - 1,000
Internet	3.4	570	0 - 5,000

Gambling Frequency

In this section, aggregate information about gambling type and gambling frequency are presented. Tables 5.17 to 5.23 show gambling frequencies by demographic characteristics. Tables 5.24 to 5.32 show gambling frequencies by substance use and health measures.

Gambling Frequencies by Demographics:

Age was notably related to gambling behavior. Respondents who gambled the most were between 55 and 64 years old (23.1%) followed by the 45 to 54 years old category (22.9%). They were more likely to be males than females (25.6% versus 13.5%) and more likely to be African American (22.2%) or Asians (22.3%).

Table 5.17 Gambling Frequency by Age (%)

Age	Does Not Gamble	Gambles	Gambles Frequently	Total
18 to 29	22.1	66.2	11.7	100.0
30 to 44	11.3	68.4	20.3	100.0
45 to 54	9.7	67.4	22.9	100.0
55 to 64	7.6	69.3	23.1	100.0
65 to 74	9.0	68.9	22.1	100.0
75 +	13.4	67.9	18.7	100.0

Table 5.18 Gambling Frequency by Gender (%)

Gender	Does Not Gamble	Gambles	Gambles Frequently	Total
Male	10.2	64.2	25.6	100.0
Female	14.6	71.9	13.5	100.0
Transgender	25.0	50.0	25.0	100.0

Table 5.19 Gambling Frequency by Race or Ethnicity (%)

Race or Ethnicity	Does Not Gamble	Gambles	Gambles Frequently	Total
American Indian	8.8	72.3	18.9	100.0
Asian or Pacific Islander	17.0	60.7	22.3	100.0
Black or African American	23.2	54.6	22.2	100.0
Hispanic	17.2	74.6	8.2	100.0
Non-Hispanic White	6.3	74.9	18.8	100.0
Other	22.4	61.2	16.5	100.0

The distribution of income among gamblers showed no distinct pattern. Education was related to gambling frequency; 44% of those who gambled frequently had an elementary school education level. Gambling frequency was equally distributed across the employment categories with the highest proportion of non-gamblers in the part time employment group (20.9%).

Table 5.20 Gambling Frequency by Income (%)

Income	Does Not Gamble	Gambles	Gambles Frequently	Total
Up to $15,000	19.5	59.9	20.6	100.0
$15,001 to $25,000	8.5	76.6	15.0	100.0
$25,001 to $35,000	12.9	60.3	26.8	100.0
$35,001 to $50,000	9.3	64.5	26.2	100.0
$50,001 to $75,000	11.4	71.7	17.0	100.0
$75,001 to $100,000	7.3	67.4	25.3	100.0
$100,001 to $125,000	10.7	71.4	17.9	100.0
$125,001 to $150,000	6.5	69.5	24.0	100.0
Over $150,000	5.5	75.3	19.2	100.0
Does Not Know	27.6	58.6	13.8	100.0
Refused to Answer	15.4	67.3	17.3	100.0

Table 5.21 Gambling Frequency by Education Level (%)

Education Level	Does Not Gamble	Gambles	Gambles Frequently	Total
Elementary School	10.9	44.7	44.4	100.0
Some High School	15.7	62.0	22.3	100.0
High School Degree or GED	16.4	61.1	22.5	100.0
Less Than 2 Years of College	12.0	65.5	22.6	100.0
Associate Degree or Other Degree/ 2 Years in College	12.1	65.5	22.4	100.0
Bachelor's Degree	9.9	72.8	17.3	100.0
Master's Degree	12.3	76.9	10.9	100.0
Postgraduate Degree (PhD, MD, or JD)	14.1	68.9	17.1	100.0
Does Not Know	48.3	22.4	29.3	100.0
Refused to Answer	12.8	69.5	17.8	100.0

Table 5.22 Gambling Frequency by Employment Status (%)

Employment Status	Does Not Gamble	Gambles	Gambles Frequently	Total
Working Full-Time	9.0	70.9	20.1	100.0
Working Part-Time	20.9	64.0	15.1	100.0
Not Working Last Week	15.5	65.4	19.1	100.0
Does Not Know	0.0	38.9	61.1	100.0
Refused to Answer	11.7	68.5	19.7	100.0

The proportions of people who gambled frequently was highest for those who did not provide accurate zip code information (21.2%), followed by respondents from the Western region (20.4%). Respondents who had not gambled in the past 12 months were most often from the Southern region (14.1%). Table 5.23 shows the proportions of gamblers in Marylands' four regions.

Table 5.23 Gambling Frequency by Region (%)

Region	Does Not Gamble	Gambles	Gambles Frequently	Total
Undefined	18.1	60.8	21.2	100.0
Central	11.3	69.6	19.1	100.0
Eastern Shore	13.2	70.9	15.9	100.0
Southern	14.1	67.7	18.2	100.0
Western	11.5	68.1	20.4	100.0

Gambling Frequencies by Substance Use and Health:

Respondents who reported frequent gambling tended to smoke (>30%); people who had not gambled in the past 12 months tended to be non-smokers (<7%), while people who never smoked gambled the least often (14.4%). A similar pattern held for alcohol consumption and binge drinking. Those who had 16 or more drinks per day were also heavy gamblers (83.5%).

Table 5.24 Gambling Frequency by Tobacco Use (%)

Tobacco Use	Does Not Gamble	Gambles	Gambles Frequently	Total
Daily (more than 30 times per month)	4.5	63.0	32.5	100.0
Several Times a Week (6-29 times per month)	6.3	62.6	31.1	100.0
Several Times a Month (3-5 times per month)	3.5	58.6	37.9	100.0
Once a Month or Less (6-12 times per year)	2.8	63.1	34.2	100.0
Only a Few Days All Year (1-5 times per year)	6.4	79.5	14.1	100.0
Never	14.4	68.5	17.1	100.0
Does Not Know	24.2	43.5	32.3	100.0
Refused to Answer	27.8	56.1	16.1	100.0

Table 5.25 Gambling Frequency by Alcohol Consumption (%)

Alcohol Consumption	Does Not Gamble	Gambles	Gambles Frequently	Total
Daily (more than 30 times per month)	13.7	61.1	25.2	100.0
Several Times a Week (6-29 times per month)	4.3	71.8	23.8	100.0
Several Times a Month (3-5 times per month)	5.4	73.1	21.4	100.0
Once a Month or Less (6-12 times per year)	6.3	74.0	19.7	100.0
Only a Few Days All Year (1-5 times per year)	13.9	67.9	18.2	100.0
Never	23.2	61.5	15.4	100.0
Does Not Know	10.1	70.2	19.7	100.0
Refused to Answer	22.2	65.4	12.4	100.0

Table 5.26 Gambling frequency by Binge Frequency (%)

Binge Frequency	Does Not Gamble	Gambles	Gambles Frequently	Total
Daily (more than 30 times per month)	13.3	49.3	37.3	100.0
Several Times a Week (6-29 times per month)	4.0	51.5	44.5	100.0
Several Times a Month (3-5 times per month)	0.0	67.0	33.0	100.0
Once a Month or Less (6-12 times per year)	4.2	67.0	28.8	100.0
Only a Few Days All Year (1-5 times per year)	5.3	70.5	24.2	100.0
Never	10.2	71.9	17.9	100.0
Does Not Know	0.0	71.3	28.7	100.0
Refused to Answer	16.6	75.9	7.5	100.0

Table 5.27 Gambling Frequency by Number of Drinks (%)

Number of Drinks	Does Not Gamble	Gambles	Gambles Frequently	Total
No Drinks	0.0	75.1	24.9	100.0
Between 1 and 5 Drinks	8.4	71.4	20.2	100.0
Between 6 and 10 Drinks	5.5	60.8	33.7	100.0
Between 11 and 15 Drinks	0.0	16.5	83.5	100.0
16 or More Drinks	15.5	58.1	26.4	100.0

There appeared to be a minor association between drug use and the frequency of gambling: increasing from 18.0% for those who used these substances rarely, to 22.7% for those who used them daily. The highest proportion among those who had not gambled in the past 12 months was for the category of people who never used drugs (13.7%). Non-medical use of prescription drugs was associated with gambling frequency, especially for those who consumed prescription drugs daily (44.9%).

Table 5.28 Gambling Frequency by Illicit Drug Use (%)

Illicit Drug Use	Does Not Gamble	Gambles	Gambles Frequently	Total
Daily (more than 30 times per month)	2.3	75.1	22.7	100.0
Several Times a Week (6-29 times per month)	5.1	72.8	22.1	100.0
Several Times a Month (3-5 times per month)	1.1	84.6	14.3	100.0
Once a Month or Less (6-12 times per year)	2.6	73.0	24.4	100.0
Only a Few Days All Year (1-5 times per year)	6.7	75.4	18.0	100.0
Never	13.7	67.2	19.1	100.0
Does Not Know	0.0	58.9	41.1	100.0
Refused to Answer	15.1	61.9	23.0	100.0

Table 5.29 Gambling Frequency by Prescription Drug Use (%)

Prescription Drug Use	Does Not Gamble	Gambles	Gambles Frequently	Total
Daily (more than 30 times per month)	1.4	53.7	44.9	100.0
Several Times a Week (6-29 times per month)	12.2	65.6	22.2	100.0
Several Times a Month (3-5 times per month)	13.6	33.3	53.1	100.0
Once a Month or Less (6-12 times per year)	27.4	54.2	18.3	100.0
Only a Few Days All Year (1-5 times per year)	10.2	66.0	23.8	100.0
Never	12.7	68.3	19.0	100.0
Does Not Know	46.8	53.2	0.0	100.0
Refused to Answer	19.1	74.3	6.6	100.0

An inverse relationship existed between frequency of gambling and self-reported health status. As the perception of health status worsened, the proportion of people who gambled in the past 12 months increased.

Table 5.30 Gambling Frequency by Perception of General Health (%)

General Health	Does Not Gamble	Gambles	Gambles Frequently	Total
Excellent	15.0	69.1	15.8	100.0
Good	12.4	66.5	21.2	100.0
Fair	11.9	66.1	22.0	100.0
Poor	4.8	79.6	15.6	100.0
Does not know	5.5	94.5	0.0	100.0
Refused to answer	17.2	64.5	18.2	100.0

Gambling patterns

For respondents who were gamblers, the most common reported reason for gambling was to win money (35.1%). All other reasons (entertainment, fun, social activity) appeared equally important, except "convenience/ease" which was generally not deemed important (55.7%).

Table 5.31 Marylanders' Reasons for Gambling (2017, %)

Reason for Gambling	Very Important	Somewhat Important	Not at All Important
To be Around or With Other People	20.0	26.5	53.2
Because It's Convenient or Easy to Do	12.5	31.3	55.7
To Win Money	35.1	35.0	29.7
For Entertainment or Fun	20.3	35.5	43.8
Because It's Exciting and Challenging	20.0	26.5	53.2

Respondents who gambled preferred to gamble with a spouse/partner/significant other or another family member (30.7%) or with friends, co-workers or neighbors (34.7%). Almost a third of respondents who gambled reported gambling alone (29.8%).

Table 5.32 Whom Marylanders' Gamble with the Most (2017)

Partners	(%)
Alone	29.8
Spouse, Partner or Significant Other	18.8
Other Family Member(s)	11.9
Friend(s), Co-Worker(s), Neighbor(s), Club Member(s)	34.7
Some Other Individual or Group	2.5
Does Not Know	1.3
Refused to Answer	1.0

Almost half of respondents did not travel or traveled less than 5 miles to gamble (48.7%). Modest percentages traveled more than 60 miles (13.6%) to other states (mostly Nevada and Mississippi) or overseas (Caribbean islands, Europe or Asia).

Figure 5.3 Distance Traveled for Gambling (2017)
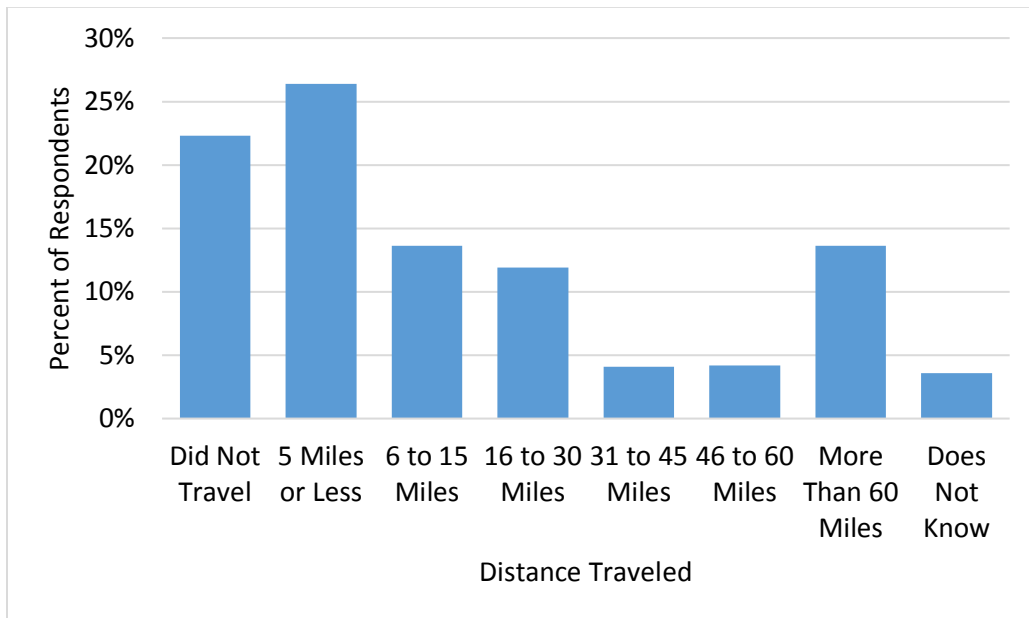
The majority of respondents who gambled (92.3%) spent less than 6 hours gambling in one sitting. Only 4.4% of Maryland gamblers reported spending 6 hours or more involved in their favorite gambling activity; the amount of time spent gambling during a single episode may serve as an indicator of potentially problematic gambling behavior.

Figure 5.4 Marylanders' Gambling Time or Duration (2017)
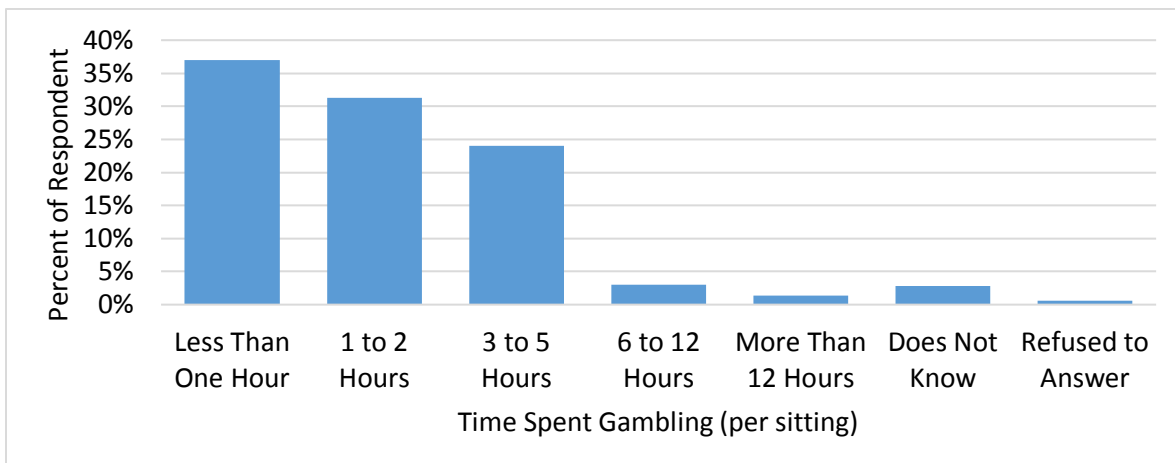
CHAPTER 6

Non-Gamblers in Maryland

In this chapter, data for respondents who were non-gamblers are presented. A total of 405 respondents reported that they had never tried any of the 11 forms of gambling included in the survey. This represented a weighted estimate of 13.0% of the total Maryland population.

As can be seen in figures 6.1 to 6.4, non-gamblers were over-represented in the youngest and oldest age groups. They were mostly female (57.6%) and mostly non-Hispanic whites (39.2%). Most of them earned under $15,000 (7.3%) or between $50,000 and $75,000 per year (10.7%).

Figure 6.1. Age Distribution of Non-Gamblers (2017)
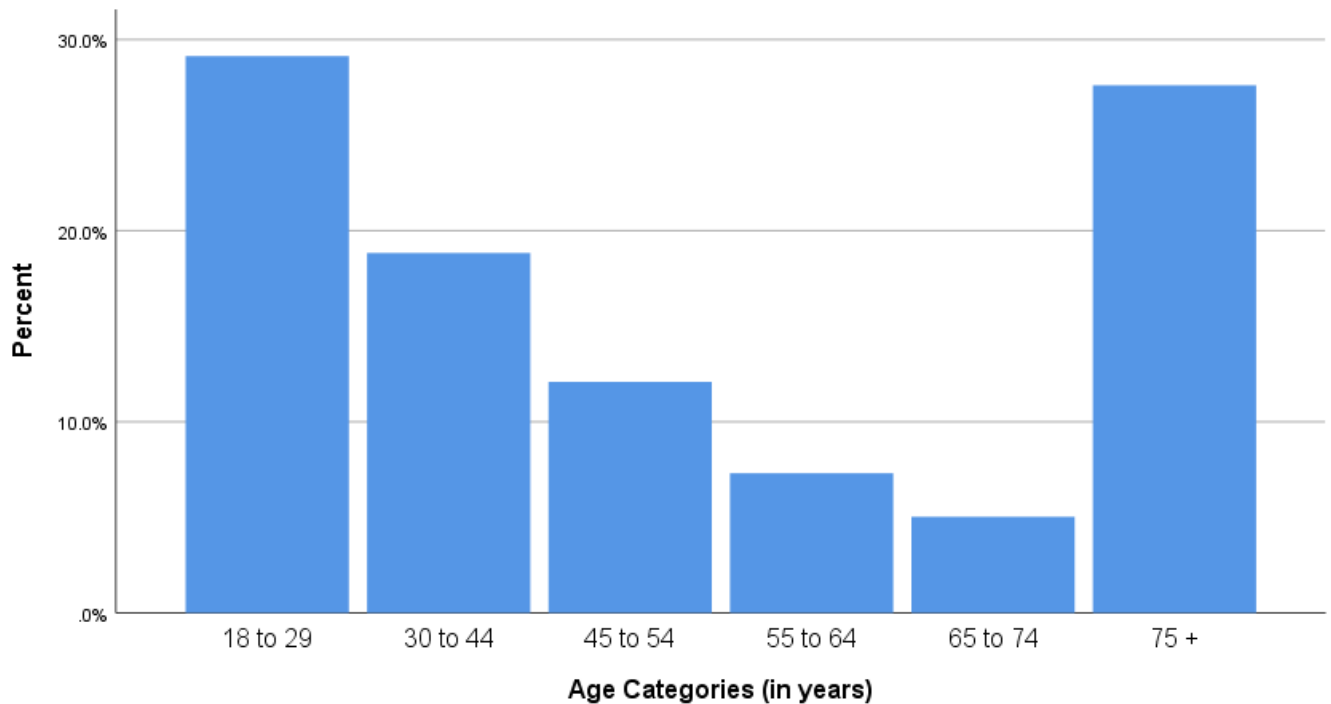
Figure 6.2. Gender Distribution of Non-Gamblers (2017)
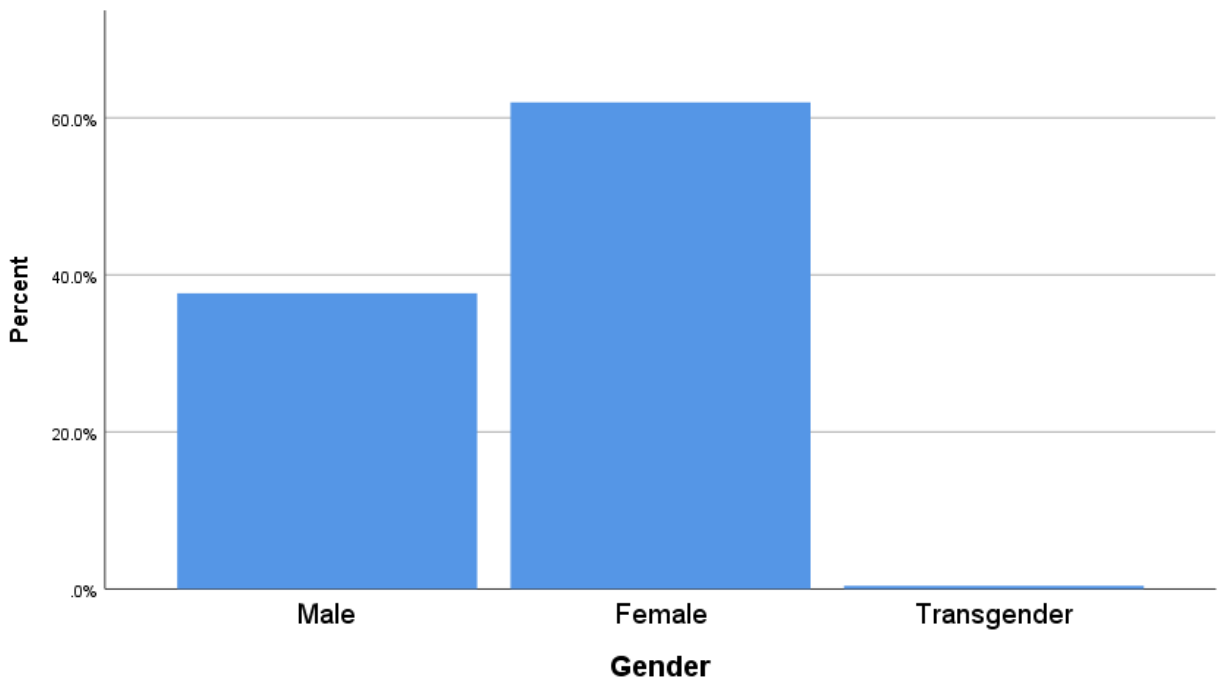
Figure 6.3. Race or Ethnicity Distribution of Non-Gamblers (2017)
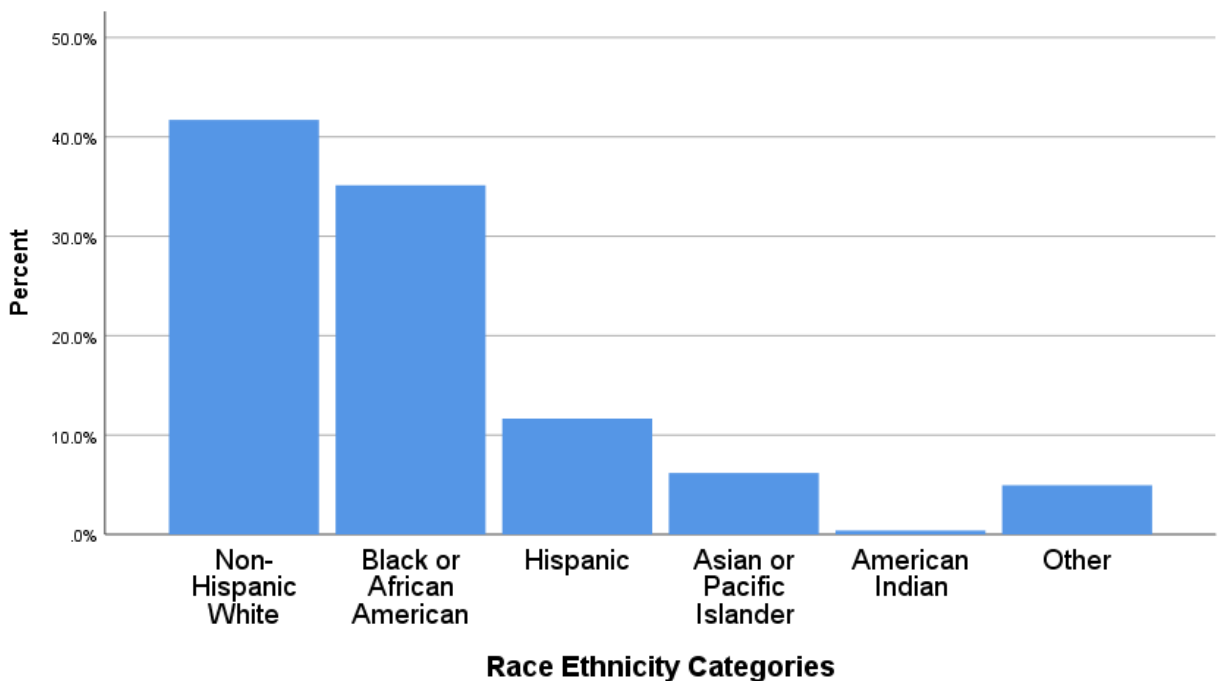
Figure 6.4. Income Distribution of Non-Gamblers (2017)
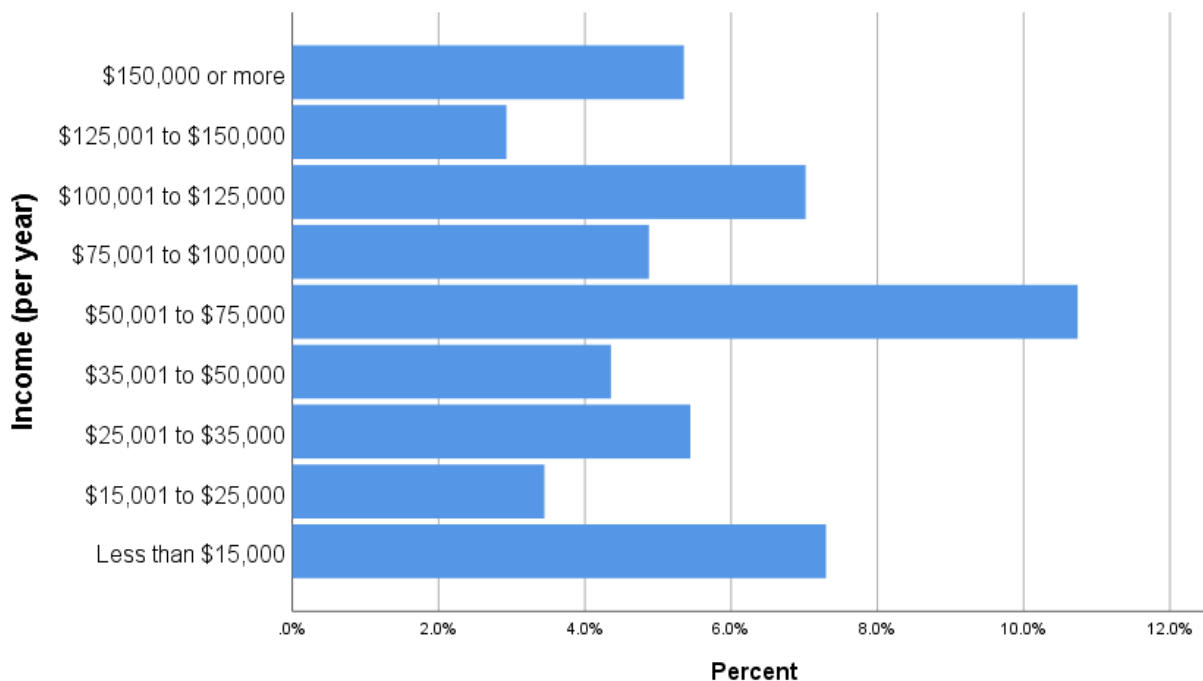
In the 2017 survey, 43.7% of non-gamblers were married, 46.5% of were unemployed, 25.0% were educated at the high school level, and 58.9% had a college or graduate degree. Of those who considered themselves "unemployed", (51.3%) were fully retired from gainful employment. Very few had served in the military (9.3%), almost a third reported their religious affiliation as "Christian" (28.2%) while 22.6% declared themselves "Protestant".

The majority of respondents (86.0%) did not believe distance or convenience to a gambling venue was an important factor. The majority of respondents were simply not interested in gambling (66.2%). While 46.8% considered moral or ethical objections as very important and 61.1% reveled they believed having a fear of losing money was important.

Table 6.1 Opinion about Gambling Among Non-Gamblers (%)

Opinion	Inconvenient, Lives Too Far Away	Moral or Ethical Objections	Fear of Losing Money	Simply Not Interested
Very Important	5.2	46.8%	61.1%	66.2%
Somewhat Important	6.1	15.9%	13.3%	7.6%
Not at All Important	86.0	35.5%	24.6%	24.3%
Does Not Know	2.6	1.6%	0.7%	1.1%
Refused to Answer	0.2	0.2%	0.2%	0.7%

N=405

Chapter 7

Problem and Pathological Gambling in Maryland

In this chapter, the *lifetime* NORC Diagnostic Screen for Gambling Problems (NODS) was used to characterize the proportion of respondents who are at risk for disordered gambling (DG). Respondents were categorized in one of four categories: low risk (NODS score of 0); at risk (NODS score of 1 or 2); problem gambler (NODS score of 3 or 4); or pathological gambler (NODS score 5 or above). Data are presented by key demographics, regions in Maryland and substance use and health measures. Finally, the mean amount of expenditures on each type of gambling for those that did gamble, by the lifetime NODS and overall, are reported.

Prevalence of Gambling Behavior

In epidemiological research, prevalence is a measure of the number of individuals in the population with a disorder at one point in time. Prevalence rates are based on samples rather than the entire population. One important source of uncertainty in making inferences from a sample to the population (the sampling error) is generally presented as a measure of the uncertainty around the estimated value.

Calculations of the size of this variation (sometimes called the confidence interval and sometimes referred to as the margin of error) are based on the percentage of the sample with a particular characteristic and the size of the sample. It is important to emphasize that the numbers discussed below are based on the identified point prevalence estimates and could be substantially smaller or larger, depending on the size of the confidence interval around these estimates. The confidence interval approach is used to estimate the number of respondents who are afflicted with DG.

In the current survey, the NODS score for 1,204 respondents (32.0% of the sample) could not be calculated; the gambling frequency for these individuals during the past 12 months was too low. *Unweighted* estimates from the remaining 2,606 interviewees show that 80.3% of respondents scored as low risk gamblers and 2.5% scored as at risk gamblers. The prevalence of problem

gambling in Maryland was estimated to be 0.7% and the prevalence of pathological gambling was 1.0%. When the percentages of pathological and problem gamblers were combined to create a DG category, the prevalence of DG was 1.7%. The 95% confidence intervals associated with the unweighted proportions were calculated using the Score method with continuity correction and are presented in Table 7.1 (Tobi, 2005).

Table 7.1 Prevalence Estimates for all Gambling Risk Categories,

Using the Confidence Interval Approach

Risk Category	N	Unweighted proportion (%)	95% Confidence Interval
Non Gamblers	405	15.5	[12.2 to 19.5]
Low Risk Gamblers	2,092	80.3	[78.5 to 82.0]
At Risk Gamblers	66	2.5	[0.4% to 10.7]
Problem Gamblers	17	0.7	[0.4 to 23.9]
Pathological Gamblers	26	1.0	[0.1 to 17.5]

Population Estimates

According to the most recent census, the population of Maryland aged 18 and over is 4,668,763 (Maryland State Data Center, 2016). Table 7A.1 shows the estimated number of individuals aged 18 and over in the Maryland population represented by these point estimates of each of the gambling risk categories. Based on these figures, we can expect that in 2017, approximately 46,700 Maryland adults can be classified as lifetime pathological gamblers. Another 32,700 Maryland adults can be classified as lifetime problem gamblers. Taken together, nearly 80,000 Maryland adults have experienced moderate to severe difficulties related to their gambling.

Table 7.2 Population Estimates for All Gambling Risk Categories

Risk Category	Number in Adults Population	95% Confidence Interval
Non Gamblers	723,658	[569,589 to 910,409]
Low Risk Gamblers	3,749,017	[3,664,979 to 3,828,386]
At Risk Gamblers	116,719	[18,675 to 499,558]
Problem Gamblers	32,681	[18,675 to 1,115,834]
Pathological Gamblers	46,688	[4,669 to 817,034]

The confidence interval approach to the estimation of possible Marylanders affected offers a simple insight into gambling problems, but it does not take into account the possible biases brought about by the sampling selection process. As discussed in Chapter 3, wireless phone and landline issues, as well as non-response rates may have a direct impact on the above estimates. That is why the most appropriate estimate of the population prevalence for gambling problems in Maryland is the one generated with a weighted analysis. The prevalence of problem gambling in Maryland is thus estimated to be 0.7% and the prevalence of pathological gambling is 1.2% (Table 7.3). When the percentages of pathological and problem gamblers are combined, the prevalence of DG is 1.9%. While the overall 2017 estimate is lower than the 2010 estimate, the prevalence for pathological gamblers was similar (1.2% vs. 1.9%). It is probable that the 2017 survey underestimates true prevalence because individuals who experience gambling problems also tend to have characteristics (e.g., low income, housing instability, employment challenges) that would make them less likely to have a landline, consistent access to a mobile phone, or to agree to participation. See Chapter 3 for detailed description of limitations that impact current findings.

Table 7.3 Prevalence Estimates for all Gambling Risk Categories,

Using the Weights Approach

Risk Category	N	Weighted proportion
Non Gamblers	405	19.3%
Low Risk Gamblers	2,092	76.3%
At Risk Gamblers	66	2.6%
Problem Gamblers	17	0.7%
Pathological Gamblers	26	1.2%

Gambling Behavior by Demographics

Tables 7.4 to 7.9 present the NODS categories, stratified by demographic characteristics of interest. Those between 30 and 44 years of age had the highest proportion of DG (3.2%). Males were more than twice as likely to be at risk for DG compared to females (2.9% vs. 1.2%). Minority respondents were more likely to be categorized with DG; American Indians had the highest proportion of DG (16.5%), followed by Hispanics (6.8%), Asians (6.1%), and African Americans (3.7%). Lower income individuals were more likely to be at risk gamblers (8.7%), while those earning between $25,000 and $35,000 had highest likelihood of DG (6.3%). Individuals with less than a high school education were more likely to be categorized as DG (35.2%). Employment status did not appear to be related to DG.

Table 7.4 Gambling Behavior by Age (%)

Age	Low Risk	At Risk	Disordered Gamblers	Total
18 to 29	95.8	3.6	0.6	100.0
30 to 44	92.7	4.1	3.2	100.0
45 to 54	93.4	3.9	2.8	100.0
55 to 64	94.2	3.0	2.8	100.0
65 to 74	97.5	1.4	1.0	100.0
75 +	95.9	2.3	1.9	100.0

N=2,085

Table 7.5 Gambling Behavior by Gender (%)

Gender	Low Risk	At Risk	Disordered Gamblers	Total
Male	93.3	3.8	2.9	100.0
Female	96.5	2.3	1.2	100.0
Transgender	66.7	33.3	0.0	100.0

N=2,043

Table 7.6 Gambling Behavior by Race or Ethnicity (%)

Race or Ethnicity	Low Risk	At Risk	Disordered Gamblers	Total
Non-Hispanic White	96.8	2.3	0.8	100.0
Black or African American	90.5	5.8	3.7	100.0
Hispanic	88.7	4.5	6.8	100.0
Asian or Pacific Islander	93.9	0.0	6.1	100.0
American Indian	80.2	3.2	16.5	100.0
Other	94.6	1.2	4.2	100.0

N=2,001

Table 7.7 Gambling Behavior by Income (%)

Income	Low Risk	At Risk	Disordered Gamblers	Total
Up to $15,000	90.5	8.7	0.8	100.0
$15,001 to $25,000	95.5	0.4	4.0	100.0
$25,001 to $35,000	90.4	3.3	6.3	100.0
$35,001 to $50,000	92.3	3.0	4.7	100.0
$50,001 to $75,000	94.3	2.1	3.6	100.0
$75,001 to $100,000	92.1	7.2	0.7	100.0
$100,001 to $125,000	96.0	4.0	0.0	100.0
$125,001 to $150,000	95.3	3.8	0.9	100.0
Over $150,000	94.6	2.1	3.4	100.0
Does Not Know	97.1	1.1	1.8	100.0
Refused to Answer	96.7	2.3	1.0	100.0

N=2,084

\

Table 7.8 Gambling Behavior by Education Level (%)

Education Level	Low Risk	At Risk	Disordered Gamblers	Total
Elementary School	64.8	0.0	35.2	100.0
Some high School	87.3	2.3	10.4	100.0
High School Degree or GED	91.9	5.2	2.9	100.0
Less Than 2 Years of College	94.7	2.3	3.0	100.0
Associate Degree or Other Degree/ 2 Years in College	95.5	2.9	1.7	100.0
Bachelor's Degree	98.0	1.7	0.3	100.0
Master's Degree	96.9	3.0	0.1	100.0
Postgraduate Degree (PhD, MD, or JD)	92.7	6.1	1.2	100.0
Other	100.0	0.0	0.0	100.0

N=2,085

Table 7.9 Gambling Behavior by Employment Status (%)

Employment Status	Low Risk	At Risk	Disordered Gamblers	Total
Working Full-Time	94.5	3.6	2.0	100.0
Working Part-Time	94.4	2.1	3.4	100.0
Not Working Last Week	95.2	2.8	2.0	100.0

N=2,085

Table 7.10 presents the frequency of NODS scores by region. As shown in the table, the highest proportion of DG (3.4%) was observed in the group that declined to give valid zip code information. The Eastern Shore and Southern regions had a higher percentage of DG (3.0% each). The Central and Western regions had the lowest percentage at of DG (2.1% and 0.9% respectively).

Table 7.10 Gambling Behavior by Region (%)

Region	Low Risk	At Risk	Disordered Gamblers	Total
Unidentified	94.0	2.6	3.4	100.0
Central	94.6	3.3	2.1	100.0
Eastern Shore	94.4	2.6	3.0	100.0
Southern	94.3	2.7	3.0	100.0
Western	94.9	4.2	0.9	100.0

N=2,092

Gambling Behavior by Type of Gambling

Another approach to understanding the relationship between gambling behavior and gambling-related problems is to examine the prevalence of DG among individuals who participate in specific types of gambling. Table 7.11 shows the prevalence of low risk, at risk and DG among respondents who have ever participated in specific types of gambling.

While Internet gambling had one of the highest prevalences of DG (3.8%), this form represented a very small proportion of gamblers (3.4%, Table 5.16). People who play bingo or who wager on sports had the highest rates of DG (4.0% and 3.5% respectively). People who bet money at dog races had the lowest likelihood of DG (1.9%).

Table 7.11 Gambling Behavior by Type of Gambling (%)

Type of gambling	N	Low Risk	At Risk	Disordered Gamblers	Total
Casino	1,813	94.1	3.3	2.7	100.0
Gaming Machines Outside a Casino	1,569	93.0	4.0	2.9	100.0
Lottery	1,911	94.3	3.1	2.6	100.0
Horse Races	970	94.6	3.0	2.4	100.0
Dog Races	192	96.1	2.0	1.9	100.0
Bingo	723	90.6	5.4	4.0	100.0
Private Games	802	93.7	3.5	2.9	100.0
Sports	805	91.4	5.1	3.5	100.0
Daily Fantasy Sports	123	94.4	2.9	2.7	100.0
Internet	96	85.5	10.7	3.8	100.0
Other	752	95.2	2.8	2.0	100.0

Gambling Behavior by Substance Use and Health Status Measures

Tables 7.12 through 7.18 present NODS categories by tobacco use, alcohol consumption, drug use, and health status. Smoking daily was highly associated with DG (7.5%). However, this trend was not apparent with the increasing frequency of alcohol consumption in general. As the frequency of binge drinking increased, so did the prevalence of DG (Table 7.14).Unlike binge drinking, the prevalence of DG showed no association with the number of alcoholic drinks

consumed. Any illegal drug use was associated with a higher likelihood of DG. Occasional prescription drug users showed a large proportion of DG (9.7% for only a few times per year), which probably reflects the sparse data in that category. A weak trend between self-reported health status and the likelihood of DG was noted.

Table 7.12 Gambling Behavior by Tobacco use (%)

Tobacco Use	Low Risk	At Risk	Disordered Gamblers	Total
Daily (more than 30 times per month)	87.4	5.1	7.5	100.0
Several times a week (6-29 times per month)	92.2	7.8	0.0	100.0
Several Times a Month (3-5 times per month)	84.1	13.0	2.8	100.0
Once a Month or Less (6-12 times per year)	98.0	2.0	0.0	100.0
Only a Few Days All Year (1-5 times per year)	94.8	5.2	0.0	100.0
Never	96.0	2.4	1.6	100.0

N=2,198

Table 7.13 Gambling Behavior by Alcohol Consumption (%)

Alcohol Consumption	Low Risk	At Risk	Disordered Gamblers	Total
Daily (more than 30 times per month)	93.6	5.2	1.2	100.0
Several times a week (6-29 times per month)	92.0	4.4	3.7	100.0
Several Times a Month (3-5 times per month)	95.0	2.9	2.1	100.0
Once a Month or Less (6-12 times per year)	95.3	3.2	1.5	100.0
Only a Few Days All Year (1-5 times per year)	94.1	2.6	3.4	100.0
Never	96.4	2.4	1.2	100.0

N=2,196

Table 7.14 Gambling Behavior by Binge Frequency (%)

Binge Frequency	Low Risk	At Risk	Disordered Gamblers	Total
Never	95.7	3.1	0.7	100.0
Only a Few Days All Year (1-5 times per year)	94.6	2.1	3.3	100.0
Once a Month or Less (6-12 times per year)	89.1	8.2	2.7	100.0
Several Times a Month (3-5 times per month)	87.5	2.3	10.1	100.0
Several Times a Week (6-29 times per month)	78.8	10.8	10.5	100.0

N=1,677

Table 7.15 Gambling Behavior by Number of Drinks (%)

Number of Drinks	Low Risk	At Risk	Disordered Gamblers	Total
No drinks	100.0	0.0	0.0	100.0
Between 1 and 5 drinks	94.5	3.4	2.1	100.0
Between 6 and 10 drinks	82.9	3.6	13.5	100.0
Between 11 and 15 drinks	100.0	0.0	0.0	100.0
16 or more drinks	89.3	5.9	4.8	100.0

N=1,677

Table 7.16 Gambling Behavior by Illicit Drug Use (%)

Illicit Drug Use	Low Risk	At Risk	Disordered Gamblers	Total
Daily (more than 30 times per month)	83.6	9.8	6.6	100.0
Several times a week (6-29 times per month)	91.3	4.4	4.3	100.0
Several Times a Month (3-5 times per month)	80.6	10.5	8.9	100.0
Once a Month or Less (6-12 times per year)	91.3	6.5	2.2	100.0
Only a Few Days All Year (1-5 times per year)	91.9	5.5	2.6	100.0
Never	95.3	2.7	2.0	100.0

N=2,196

Table 7.17 Gambling Behavior by Non-Medical Prescription Drugs Use (%)

Non-Medical Prescription Drugs	Low Risk	At Risk	Disordered Gamblers	Total
Daily (more than 30 times per month)	78.3	19.1	2.6	100.0
Several times a week (6-29 times per month)	100.0	0.0	0.0	100.0
Several Times a Month (3-5 times per month)	76.4	23.6	0.0	100.0
Once a Month or Less (6-12 times per year)	86.1	13.9	0.0	100.0
Only a Few Days All Year (1-5 times per year)	76.0	14.3	9.7	100.0
Never	95.1	2.7	2.1	100.0

N=2,196

Table 7.18 Gambling Behavior by Health Status (%)

Health Status	Low Risk	At Risk	Disordered Gamblers	Total
Excellent	94.8	2.9	2.2	100.0
Good	95.4	3.2	1.4	100.0
Fair	92.1	3.0	5.0	100.0
Poor	92.0	5.3	2.7	100.0

N=2,196

CHAPTER 8

Risk Factor Analysis for Disordered Gambling in Maryland

After examining all the variables collected during the current survey individually, the next step was to examine factors associated with gambling behavior in more complex analyses. In this chapter, results of multivariate analyses are reported.

Multivariate Analyses

The multivariable extension of the two-way cross-tabulation analysis uses logistic regression analysis as the primary method. Two distinct models were evaluated: one for all at risk gamblers and one for disordered gambling (DG) only. In this kind of etiological model, the most efficient strategy is to fit a saturated model and treat all variables as exposures. Only weights that adjust for non-response rates and wireless versus landline biases were added to the models. The measure of effect is the Odds Ratio (OR), with its associated 95% confidence interval. Odds Ratio values close to 1.0 are the indication of the absence of any relationship between the variable and the outcome. In multivariate logistic regression, the significance level could be relaxed to up to 0.20.

Model 1. At Risk Gamblers (all levels) Versus Low Risk gamblers

The binary outcome of interest was specified using the NODS score achieved to classify individuals as at risk (cases) or low risk (controls). At risk individuals were defined as respondents having a NODS score of "1" or "2." The low risk group was defined as those respondents with a NODS score of 0. The model was fitted with n=1,193 respondents.

Table 8.1 shows the results for the simultaneous associations between each of the variables and the outcome of interest. The reference level is stated along with the variable and should serve as the basis for all interpretations. The region where respondents live was not associated with at risk behavior. Males were almost two times more likely than women to display at risk gambling behavior (OR= 1.62). Middle aged individuals had higher odds of at risk behavior than older individuals (OR for 45 to 54 years old respondents = 2.44). Being married decreased

risk for being at risk of gambling problems. African Americans and American Indians were 2.5

times more likely to display disordered gambling, compared to their non-Hispanic White

counterparts. Being less educated was also associated with at risk behavior. Odds of at risk

behavior increased with income until about $50,000 per year and then tapered off, suggesting

that high income may limit gambling risk. Working part-time was associated with higher odds of

at risk gambling (OR= 2.48). Tobacco, alcohol and illicit drug use were associated with at risk

behavior, but the largest association was with non-medical use of prescription drugs (OR=3.60).

A self-reported "poor" health status was also associated with a higher likelihood of at risk gambling

behavior (OR=2.52).

Table 8.1 Logistic model for all NODS categories

Variable	Odds Ratio	Lower Bound	Upper Bound	*p* value
Region *(Central)*				0.833
Southern	1.23	0.61	2.45	0.567
Eastern Shore	1.26	0.43	3.74	0.675
Western	1.41	0.68	2.91	0.358
Gender *(Female)*				
Male	1.62	0.91	2.87	0.102
Age *(75+)*				0.134
18-29	1.61	0.37	6.98	0.523
30-44	3.16	0.91	11.06	0.071
45-54	2.44	0.69	8.62	0.167
55-64	0.98	0.28	3.42	0.969
65-74	1.36	0.41	4.5	0.610
Marital Status *(Married)*				0.290
Widowed	2.22	0.77	6.44	0.142
Divorced/Separated	1.95	0.88	4.33	0.102
Never Married	1.38	0.65	2.91	0.400
Race/Ethnicity *(Non-Hispanic White)*				0.113
Black/African American	2.53	1.36	4.73	0.004
Hispanic	1.23	0.42	3.58	0.704
Asian/Pacific Islander	1.78	0.19	16.29	0.610
American Indian	2.51	0.2	31.99	0.478
Other	0	0	.	0.998

Education Level *(Graduate Degree)*				0.013
High School or Less	2.81	0.77	10.28	0.118
High School/GED	2.04	0.83	5.03	0.121
College	0.77	0.35	1.69	0.506
Income *(<15,000)*				0.847
$15,001 to $25,000	1.39	0.33	5.91	0.654
$25,001 to $35,000	1.82	0.49	6.82	0.373
$35,001 to $50,000	1.86	0.52	6.66	0.342
$50,001 to $75,000	1.14	0.3	4.31	0.845
$75,001 to $100,000	1.44	0.38	5.43	0.589
$100,001 to $125,000	0.67	0.14	3.17	0.612
$125,001 to $150,000	1.09	0.24	5.01	0.914
Over $150,000	0.97	0.23	4.09	0.966
Employment Status *(Full Time)*				0.084
Part Time	2.48	1.08	5.69	0.032
Not Working	1.15	0.53	2.47	0.731
Tobacco Use *(Never)*				0.433
Daily (more than 30 times per month)	1.58	0.79	3.19	0.200
Several times a week (6-29 times per month)	0.72	0.12	4.29	0.716
Several times a month (3-5 times per month)	3.34	0.87	12.83	0.079
Once a month or less (6-12 times per year)	2.08	0.39	11.18	0.393
Only a few days all year (1-5 times per year)	1.07	0.28	4.13	0.925
Binge Frequency *(Never)*				0.422
Daily (more than 30 times per month)	2.05	0.34	12.32	0.431
Several times a week (6-29 times per month)	3.38	0.81	14.16	0.096
Several times a month (3-5 times per month)	1.94	0.7	5.4	0.202
Once a month or less (6-12 times per year)	0.82	0.28	2.46	0.726
Only a few days all year (1-5 times per year)	1	0.48	2.09	0.991
Illicit Drug Use *(Never)*				
Any Use	1.34	0.62	2.87	0.457
Prescription Drug Use *(Never)*				
Any Prescription Drug Use	3.6	1.44	9	0.006
Health Status *(Excellent)*				0.363
Good	0.94	0.49	1.81	0.861
Fair	1.47	0.66	3.29	0.345
Poor	2.52	0.64	9.92	0.187

Model 2. Problem/Pathological gamblers versus Low Risk gamblers

In the second model, the binary outcome of interest was DG (cases) versus low risk gamblers (controls). Disordered gamblers are defined as respondents having a score of "3" or more; the comparison group was low risk respondents (individuals with a NODS score of 0). The model was fitted with n=1,149 respondents.

Table 8.2 shows the results for the associations between each of the variables associated with DG. Again, the reference level is stated first in the list, and should serve as the basis for all interpretations. In this model, the region where respondents live was associated with the outcome, especially for Eastern Shore residents who are 3.67 times more likely to display DG behavior than residents of the Central region. Males were almost five times more likely than women to display DG behavior (OR= 4.55). Middle-aged individuals had higher odds of DG behavior than people older than 75 years (OR for 45 to 54 years old respondents = 10.14). Being married was associated with decreased risk of DG. Asians, African Americans and American Indians are all more likely to be DG, compared to their non-Hispanic White counterparts (OR=16.50, 5.85 and 3.86 respectively). Lower levels of education are associated with increased risk of DG; odds of DG behavior increased with income until about $50,000 per year and then tapered off for middle income earners, only to increase again for incomes of $100,000 or more. Working part-time was associated with higher odds of DG (OR= 6.10). Tobacco, alcohol and illicit drug use were associated with DG behavior, but no dose-response pattern could be discerned between these variables' levels. The largest association remained with non-medical use of prescription drugs (OR=4.58). Instead of "poor", it is the self-reported "fair" health status that showed the strongest association with a higher likelihood of DG behavior (OR=2.32), reflecting a probable issue of sparse data.

Table 8.2 Logistic model for Disordered Gamblers categories

Variable	Odds Ratio	Lower Bound	Upper Bound	p value
Region *(Central)*				0.436
Southern	1.43	0.4	5.06	0.584
Eastern Shore	3.67	0.63	21.47	0.149
Western	0.93	0.2	4.31	0.924
Gender *(Female)*				
Male	4.55	1.33	15.65	0.016
Age *(75+)*				0.196
18-29	0.29	0.01	14.12	0.531
30-44	5.17	0.31	87.18	0.254
45-54	10.14	0.57	180.05	0.115
55-64	3.42	0.22	52.85	0.379
65-74	3.84	0.25	59.82	0.336
Marital Status *(Married)*				0.780
Widowed	2.22	0.28	17.66	0.451
Divorced/Separated	1.64	0.33	8.22	0.550
Never Married	1.89	0.46	7.67	0.376
Race/Ethnicity *(Non-Hispanic White)*				0.086
Black/African American	5.85	1.72	19.97	0.005
Hispanic	2.77	0.38	20.31	0.316
Asian/Pacific Islander	16.5	0.87	311.9	0.062
American Indian	3.86	0.05	326.63	0.551
Other	0	0	.	0.998
Education Level *(Graduate Degree)*				0.020
High School or Less	14.75	1.34	162.2	0.028
High School/GED	3.01	0.42	21.5	0.271
College	0.97	0.15	6.11	0.972
Income *(<15,000)*				0.354
$15,001 to $25,000	7.68	0.49	120.24	0.146
$25,001 to $35,000	6.19	0.41	92.87	0.187
$35,001 to $50,000	11.32	0.86	149.36	0.065
$50,001 to $75,000	3.53	0.21	60.11	0.383
$75,001 to $100,000	0.7	0.02	21.51	0.840
$100,001 to $125,000	0	0	.	0.995
$125,001 to $150,000	2.28	0.07	70.46	0.638
Over $150,000	2.57	0.11	61.98	0.561

Employment Status *(Full Time)*				0.091
Part Time	6.1	1.21	30.75	0.028
Not Working	2.14	0.54	8.49	0.280
Tobacco Use *(Never)*				0.998
Daily (more than 30 times per month)	1.37	0.4	4.69	0.619
Several times a week (6-29 times per month)	0	0	.	0.998
Several times a month (3-5 times per month)	1.61	0.08	34.5	0.761
Once a month or less (6-12 times per year)	0	0	.	0.998
Only a few days all year (1-5 times per year)	0	0	.	0.998
Binge Frequency *(Never)*				0.058
Daily (more than 30 times per month)	0	0	.	0.999
Several times a week (6-29 times per month)	7.94	0.75	84.32	0.086
Several times a month (3-5 times per month)	11.38	2.12	61.1	0.005
Once a month or less (6-12 times per year)	0.58	0.08	4.23	0.594
Only a few days all year (1-5 times per year)	0.96	0.21	4.54	0.963
Illicit Drug Use *(Never)*				
Any Use	1.31	0.27	6.33	0.737
Prescription Drug Use *(Never)*				
Any Prescription Drug Use	4.58	0.77	27.24	0.095
Health Status *(Excellent)*				0.676
Good	1.18	0.33	4.24	0.800
Fair	2.32	0.53	10.18	0.265
Poor	1.58	0.15	17.13	0.705

CHAPTER 9

Seeking Help for Gambling Problems

In this chapter, results are presented for seeking help for possible gambling problems. Responses about where individuals see information about responsible gambling (RG), if respondents had sought treatment, and if they feel they have been successful at addressing their gambling issues are also reported here.

Seeking Help

All respondents were asked if they had ever sought help for gambling issues. Among the 2,237 gamblers who responded, 0.2% of low risk gamblers, 2.4% of at risk gamblers and 6.8% of disordered gamblers said yes they have sought help. When asked what kind of help they had sought, responses were as follows:

Table 9.1 Type of Help Sought by Gamblers

Type of Help	%
Family Member	12.8
Friend	12.8
Gamblers Anonymous (GA)	50.8
Psychologist or Psychiatrist	13.5
Other Counselor	4.9
Refused to Answer	5.1

Table 9.1 contains only the responses individuals provided for seeking help. Although interviewers had a list of possible treatment types, they were instructed not to prompt a response but rather to record the respondent's answer. Other possible response choices included "family doctor", "treatment program in Maryland," "treatment program outside Maryland," "veterans' administration," "employee assistance program," or "hospital," but none of those were mentioned. It is assumed that choices such as "rabbi," "priest," or "minister" were included in the "other counselor" category. The most common choice was "GA" (50.8%).

When respondents were asked if they had obtained the help they were seeking, only 8 people answered. Of these eight who sought help, six were low risk gamblers and two were either at risk or higher risk for developing DG.

Types of Help Available

Following questions about if gamblers received help, questions were asked about gamblers' awareness of the types of help available to them. Tables 9.2 to 9.4 show the responses to those questions, classified according to the gamblers' level of risk (measured with the NODS score).

Table 9.2 Knowledge about Toll Free Helpline in the Community (%)

Type of Gambler	Yes	No	Does Not Know	Total
Has never gambled	26.6	15.8	57.6	100.0
Low Risk	48.4	12.9	38.7	100.0
At Risk	51.5	14.6	33.9	100.0
Disordered	54.6	26.9	18.6	100.0

N=3,776

Nearly a third of the people who had never gambled were aware of the availability of a toll free helpline (26.6%), while more than half of disordered gamblers knew that such a helpline existed (54.6%). The proportion of respondents who did not know that a toll free helpline was available declined steadily as the level of risk increased (from 57.6% for non-gamblers to 18.6% for DG).

Table 9.3 Knowledge about Gamblers Anonymous (%)

Type of Gambler	Yes	No	Does Not Know	Total
Has never gambled	20.4	24.0	55.6	100.0
Low Risk	38.6	15.6	45.8	100.0
At Risk	38.8	18.7	42.5	100.0
Disordered	44.3	19.7	36.1	100.0

N=3,776

The proportion of respondents who knew about GA increased as the level of risk increased (from 20.4% for non-gamblers to 44.3% for DG). It is important to note that more than one third

of disordered gamblers could not answer the question about GA, while nearly 20% of these responders affirmed that they had no knowledge about the program.

Table 9.4 Knowledge about Outpatient Services, Such as Private Counseling (%)

Type of Gambler	Yes	No	Does Not Know	Total
Has never gambled	21.4	16.0	62.7	100.0
Low Risk	32.5	15.6	51.9	100.0
At Risk	32.4	25.6	42.1	100.0
Disordered	26.5	30.9	42.6	100.0

N=3,776

The proportion of respondents who did not know about private counseling diminished as the level of gambling risk increased. However, percentages of people who know about such outpatient services remains low (less than a third of responses are "yes").

Information about Responsible Gambling

All respondents were asked if they had seen information about problem gambling or how to gamble responsibly. Answers to where they had seen such information are shown in Table 9.5:

Table 9.5 Location of Publicity about Responsible Gambling (%)

Response	Billboards	TV	Radio	Posters Flyers	Online	Newspapers
Yes	34.6	40.4	30.5	21.3	24.9	14.6
No	61.2	55.7	64.7	74.5	71.4	77.3
Does Not know	4.2	3.9	4.8	4.1	3.7	8.1
Refused to Answer	0.1	-	-	-	-	0.1
Total	100.0	100.0	100.0	100	100.0	100.0
N	3,776	3,776	3,776	3,123	3,776	3,776

In order of importance, respondents cited the television as the most common source of information about RG (40.4%), followed by billboards (34.6%), radio (30.5%), online sources (24.9%), posters/flyers (21.3%), and newspapers (14.6%).

Attitudes towards Gambling

All respondents who gamble were asked to answer eight questions designed to describe their general attitudes towards gambling. Responses for people who had ever gambled were stratified according to their level of risk, as determined with their NODS score.

Gamblers were first asked if they thought there are too many opportunities for gambling nowadays (Table 9.6). More than half of individuals agreed, including strongly, while a quarter disagreed. The level of agreement tended to increase slightly, as the NODS score for gamblers increased.

Table 9.6 Gamblers' Responses to

"There are too many opportunities for gambling nowadays" (%)

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	12.1	39.2	18.3	25.1	2.8	2.4	-	100.0
At Risk	15.5	41.9	5.3	29.8	4.5	3.0	-	100.0
Problem	17.7	41.2	22.8	16.1	2.3	-	-	100.0
Pathological	16.5	44.4	4.3	12.2	22.6	-	-	100.0

N=3,379

The second question about gamblers' attitude referred to the right to gamble (Table 9.7). Most respondents agreed with that statement, with 45.4% of pathological gamblers strongly agreeing. Less than 20% of gamblers disagreed with that statement, while very few had no opinion.

Table 9.7 Gamblers' Responses to

"People should have the right to gamble whenever they want" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	15.1	59.1	11.2	11.3	2.2	0.9	0.1	100.0
At Risk	23.9	57.8	6.0	1.9	8.0	-	2.4	100.0
Problem	7.8	67.7	-	13.3	11.2	-	-	100.0
Pathological	45.4	40.8	0.9	12.9	-	-	-	100.0

N=3,380

When asked if gambling should be discouraged (Table 9.8), opinions varied. Approximately 35% of all gamblers endorsed the idea that gambling should be discouraged. Other categories of responses showed no apparent pattern.

Table 9.8 Gamblers' Responses to

"Gambling should be discouraged" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	6.4	25.6	28.7	31.0	6.0	2.0	0.3	100.0
At Risk	5.1	29.2	8.8	44.6	12.3	-	-	100.0
Problem	21.2	35.2	25.0	12.0	0.8	5.7	-	100.0
Pathological	0.7	33.2	11.1	42.7	6.1	6.1	-	100.0

N=3,379

In general, asking gamblers if they thought people gambled sensibly brought about more disagreement than agreement (Table 9.9). Interestingly, the category of gamblers who had the strongest response were the pathological gamblers: nearly 40% of them agreed with the statement, with 21.0% of those agreeing strongly.

Table 9.9 Gamblers' Responses to

"Most people who gamble do so sensibly" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	4.0	35.1	19.8	28.5	6.2	6.4	-	100.0
At Risk	9.1	27.2	10.0	37.1	13.0	2.8	0.8	100.0
Problem	-	27.6	15.6	23.6	32.4	0.8	-	100.0
Pathological	21.0	18.7	0.9	41.8	5.2	12.3	-	100.0

N=3,381

Most gamblers agree that gambling can be detrimental to family life. As the NODS score increased, the proportion that agreed with this notion increased. Less than a quarter of respondents in each gambling category disagreed with the statement.

Table 9.10 Gamblers' Responses to

"Gambling is dangerous for family life" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	10.4	39.7	25.5	19.6	2.4	2.4	0.1	100.0
At Risk	5.4	41.2	18.1	23.7	5.1	4.4	2.2	100.0
Problem	11.7	44.4	31.5	12.4	-	-	-	100.0
Pathological	3.9	61.2	3.9	20.5	6.1	4.3	-	100.0

N=3,380

When asked if gamblers thought gambling activities had a positive impact on society (9.11). A majority of respondents disagreed with the statement, although nearly a third of them agreed with it.

Table 9.11 Gamblers' Responses to

"On balance gambling is good for society" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	1.6	19.5	27.2	38.2	8.3	5.0	0.2	100.0
At Risk	2.5	16.1	13.7	52.9	3.4	10.4	1.0	100.0
Problem	3.1	32.7	1.1	41.6	21.5	-	-	100.0
Pathological	3.3	26.2	14.8	33.6	14.9	7.3	-	100.0

N=3,380

When asked if gambling livens up life (Table 9.12), a majority of gamblers tended to agree, with an additional 15.5% of pathological gamblers agreeing strongly.

Table 9.12 Gamblers' Responses to

"Gambling livens up life" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	2.5	27.6	26.3	33.0	8.3	2.1	0.2	100.0
At Risk	1.7	56.0	12.9	19.1	8.2	2.1	-	100.0
Problem	4.4	64.0	8.4	23.2	-	-	-	100.0
Pathological	15.5	46.9	18.2	19.4	-	-	-	100.0

N=3,379

And finally, the last question about attitudes assessed whether gamblers believe gambling should be banned altogether (Table 9.13). Most gamblers disagreed with this statement, with pathological gamblers having the largest proportion of disagreement (85.4%).

Table 9.13 Gamblers' Responses to

"It would be better if gambling was banned altogether" (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
Low Risk	2.3	8.7	15.0	53.6	18.9	1.5	-	100.0
At Risk	0.7	13.4	13.2	44.0	26.4	2.2	--	100.0
Problem	16.1	17.2	1.6	40.1	25.0	-	-	100.0
Pathological	3.3	11.2	0.0	79.3	6.1	-	-	100.0

N=3,381

Non-gamblers' responses to the same questions revealed different attitudes towards gambling (Table 9.14). A majority of non-gamblers believed there are too many opportunities to gamble nowadays (66.6%) and that gambling in general should be discouraged (59.3%). A majority of non-gamblers, however, believed people should be allowed to gamble whenever they want (61.1%). Many non-gamblers disagreed with the statement that people who do gamble do so sensibly (52.6%), and most believed that gambling is damaging to family life (79.3%). Although most non-gamblers disagreed with the statement that gambling livens up life no clear pattern emerged when asked if gambling should be banned altogether.

Table 9.14 Non-Gamblers Responses to All Attitudes Questions (%)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Does Not Know	Refused to Answer	Total
There are too many opportunities for gambling nowadays (n=401)	24.7	41.9	16.2	11.3	2.4	3.1	0.4	100.0
People should have the right to gamble whenever they want (n=401)	8.5	52.6	16.7	15.4	5.3	0.4	1.2	100.0
Gambling should be discouraged (n=403)	20.7	38.6	21.0	14.9	1.9	2.9	-	100.0
Most people who gamble do so sensibly (n=403)	0.9	19.5	16.8	38.5	14.1	10.3	-	100.0
Gambling is dangerous for family life (n=403)	31.2	48.2	9.8	7.1	1.5	2.3	-	100.0
On balance, gambling is good for society (n=402)	1.2	6.3	14.9	53.2	19.7	3.7	0.9	100.0
Gambling livens up life (n=403)	2.0	10.2	18.6	44.5	17.8	6.4	0.4	100.0
It would be better if gambling was banned altogether (n=404)	12.2	26.6	23.8	28.3	4.9	4.2	-	100.0

Chapter 10

Economic Indicators of Disordered Gambling in Maryland

In this chapter, the measures that were proposed in 2010 to track the impacts of gambling on Marylanders are reported. These measures are graphed over time and stratified over the counties where a casino was opened: Allegany, Anne Arundel, Baltimore City, Cecil, Prince George's, and Wicomico. Comparisons are made with general statistics for the entire state of Maryland.

Behavioral Risk Factor and Surveillance System

Socio-economic information about Marylanders can be found on the Behavioral Risk Factor and Surveillance System (BRFSS) website (http://www.marylandbrfss.org). The free online data tool provides access to county-level information necessary to illustrate the possible change of the most relevant indicators. These graphs should be interpreted with the date of the opening of the casinos in mind:

Table 10.1 Location and Opening Date for Maryland Casinos

Casino	County of Interest	Opening Date
Hollywood Casino Perryville	Cecil	September 27, 2010
Casino at Ocean Downs	Worcester	January 4, 2011
Maryland Live!	Anne Arundel	June 6, 2012
Rocky Gap Casino and Resort	Allegany	May 22, 2013
Horseshoe Casino	Baltimore City	August 26, 2014
MGM National Harbor	Prince Georges	December 8, 2016

Economic Indicators

Low Income

The proportion of Marylanders who earned less than $15,000 per year has hovered around 7.0% since 2009. When studying the six areas with casinos, both the City of Baltimore and Worcester County have seen a large reduction in their prevalence of low earners, although

the 2014 estimate for Worcester County appears to be increasing anew. With a casino opening occurring each year, the curves do not indicate any relationship with the proportion of people earning less than $15,000.

Figure 10.1 Low Income (less than $15,000)
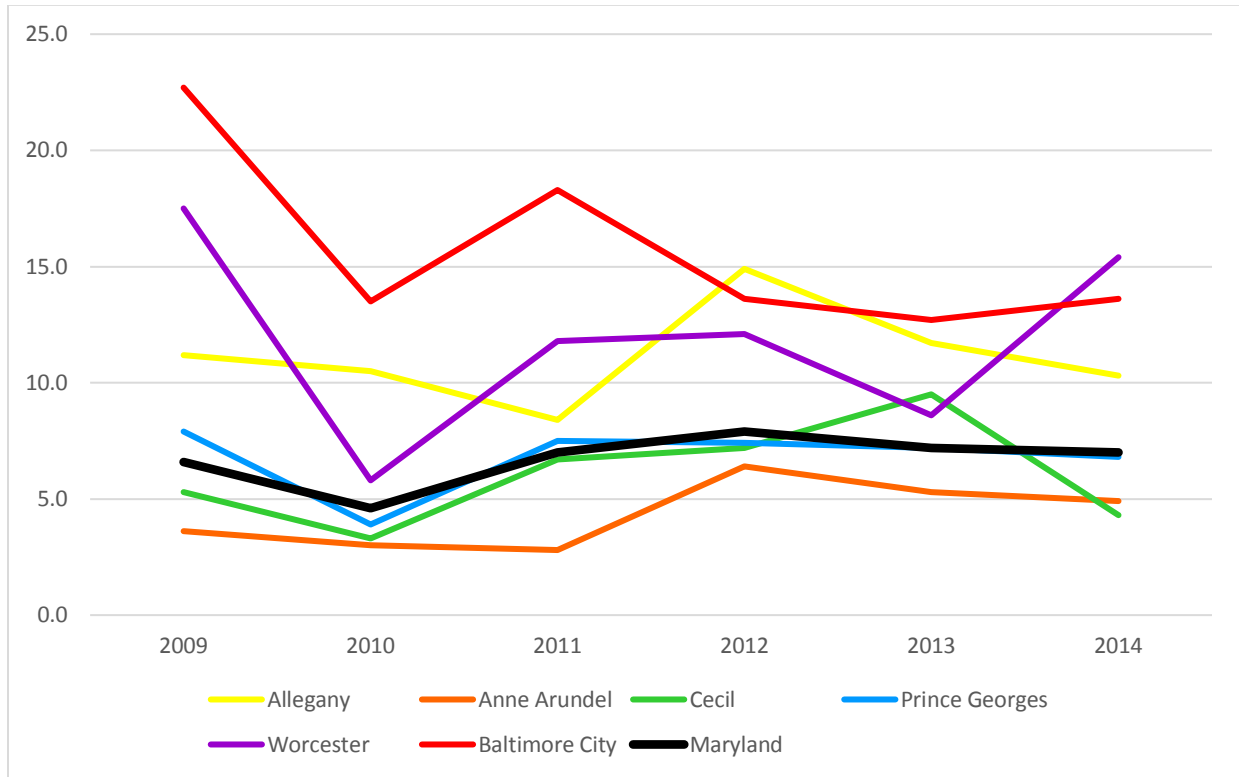
High Income

The proportion of Marylanders who earn more than $75,000 per year has hovered around 43.5% since 2009. Of the six areas with casinos, Anne Arundel County boasts the highest prevalence of high earners, while the City of Baltimore has the least. These curves show very little variability between counties, and remain unchanged over time. The exception is Cecil County that displays an increase in its proportion of high earners in 2013, which happened two years after the opening of the Hollywood Casino Perryville.

Figure 10.2 High Income (more than $75,000)
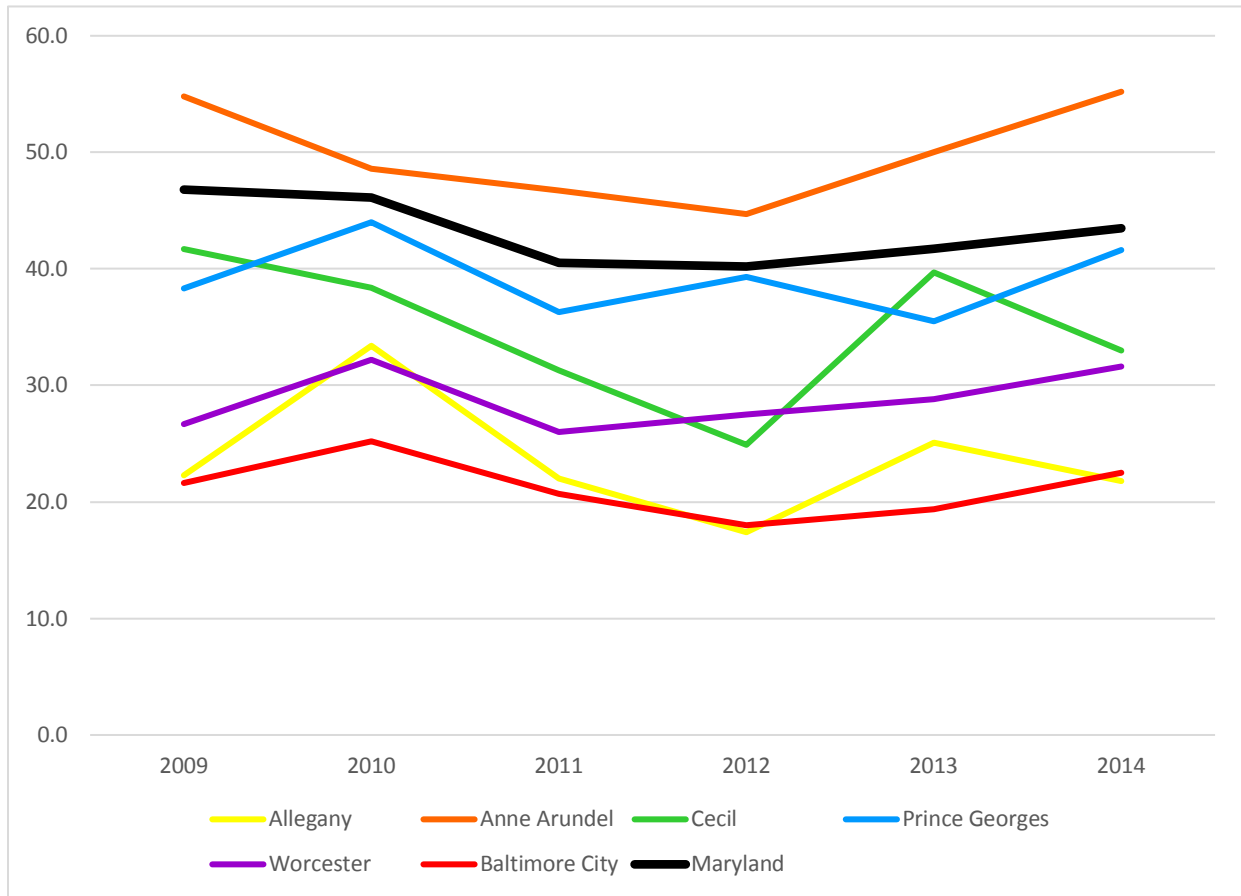
Unemployment rate

The point estimates for the proportion of Marylanders who are unemployed at the time of the survey appear to be declining over time. The City of Baltimore saw a large increase in unemployment in 2011, but this spike had vanished by 2014. Cecil County shows large variations in rate that do not attain the state estimates.

Figure 10.3 Unemployment
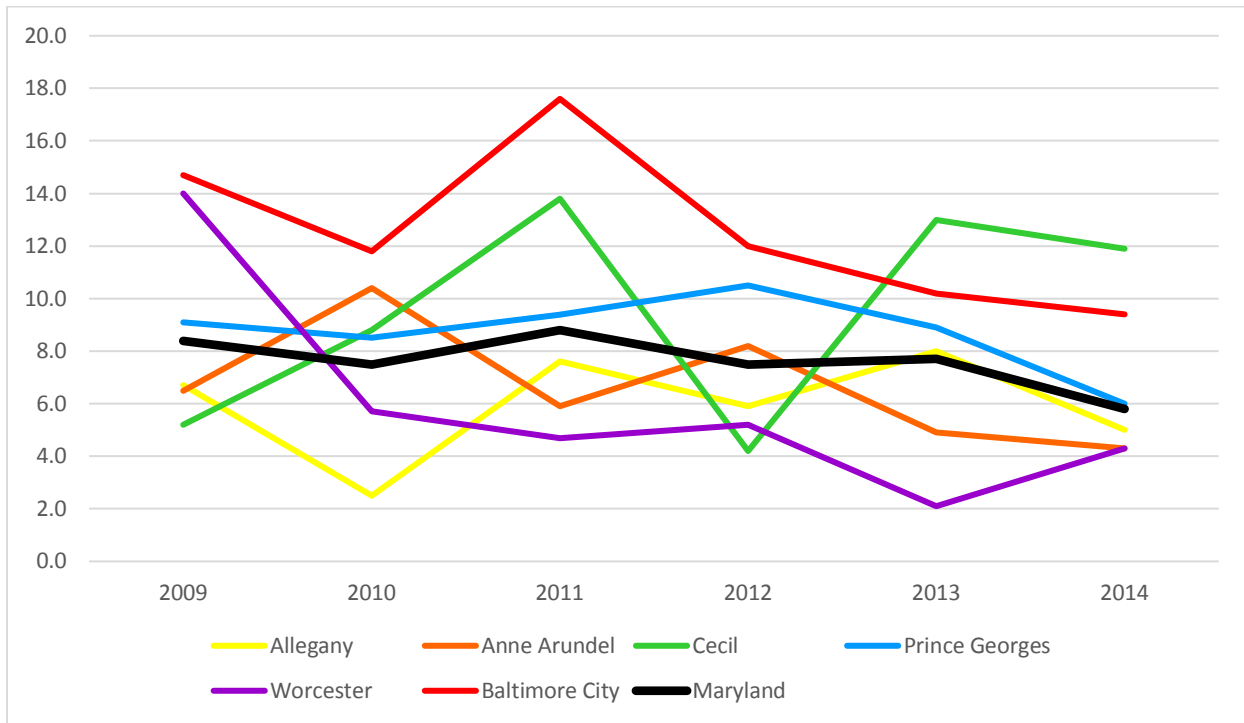
Bankruptcies

Data for bankruptcies per county were obtained from the Rand Corporation online data source (http://www.randstatestats.org). In Maryland, the total number of all types of bankruptcies has declined between 2010 (5.11/1000 Marylanders) and 2015 (3.20/1,000 Marylanders). This trend includes all the counties where a casino was opened. The City of Baltimore saw an increase in bankruptcies between 2011 and 2013, obviously unrelated to the opening of the Horseshoe casino in 2014.

Figure 10.4 Bankruptcies per 1,000 Marylanders
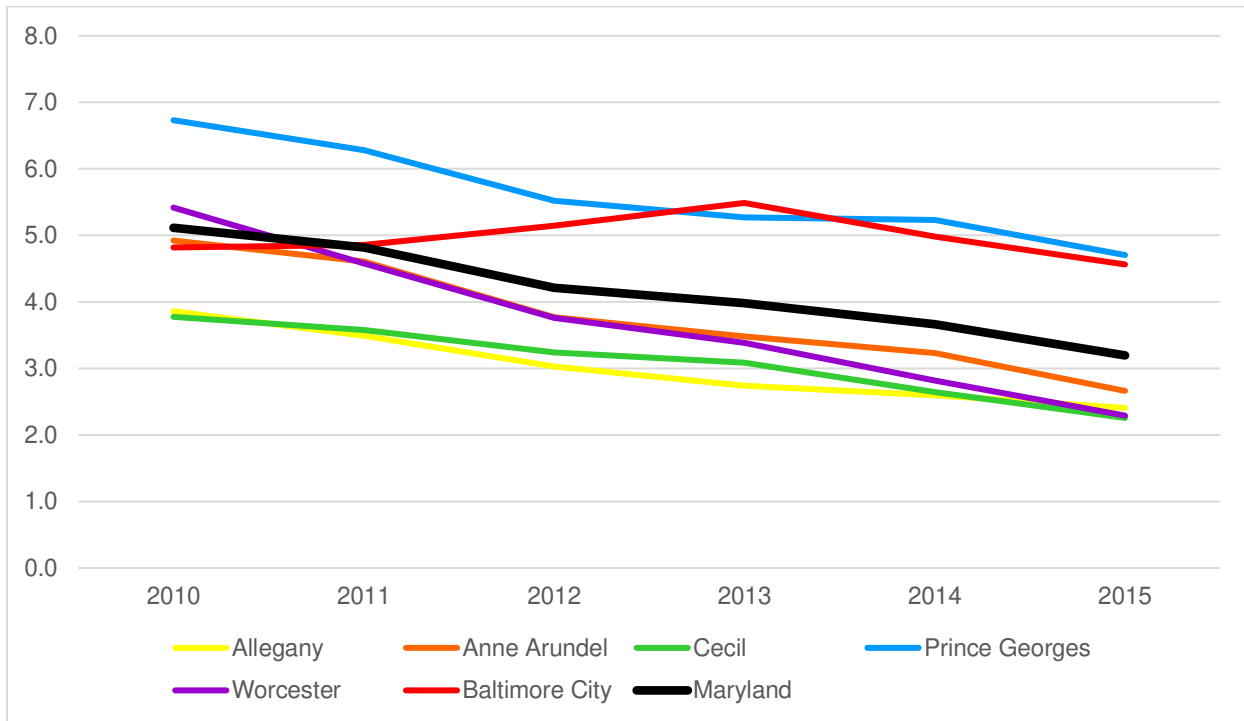
Foreclosures

The information available on the Department of Housing and Community Development is very recent, and pairing it with other sources may introduce biases. Global Maryland estimates show a steady decline for the rate of foreclosures between 2011 (4.43/1,000 Marylanders[j]) and 2017 (3.07/1,000 Marylanders). Data for the counties of interest show inferior rates that decline for the Allegany, Cecil and Worcester counties, while those rates appear steady for Anne Arundel, and increasing for the City of Baltimore and Prince George's county. These trends do not appear to be related to casino openings, as the timing between the increases and the casino openings does not show consistency.

Figure 10.5 Foreclosures
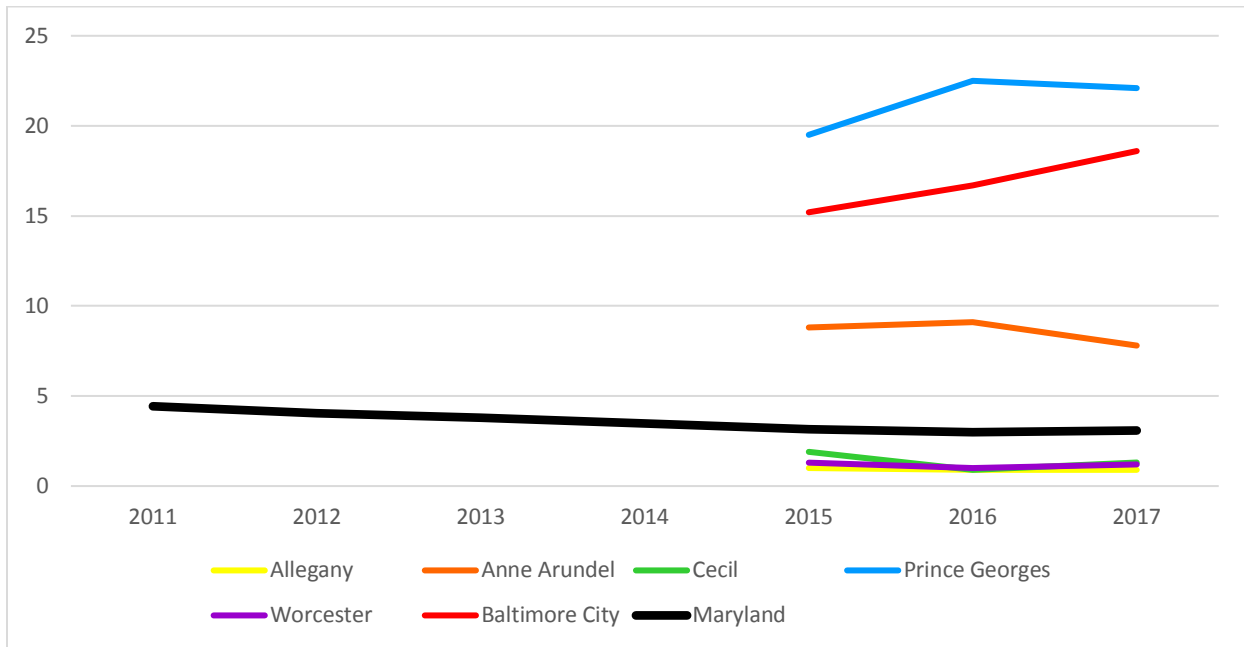
Conclusion

Crime rates could not be investigated in the same manner as Shinogle, et al. (2011). FBI crime statistics are not reported by county, which precludes similar analyses. In view of the above analyses, it is unclear if the chosen indicators can assist in examining the impact of gambling on economic indicators for the state of Maryland. In theory, the indicators examined in this report should allow the state to assess the impact of the introduction of casino gambling on population health, the economy, and crime. However, longitudinal follow-up of survey data may not be sensitive enough to capture subtle fluctuations brought about by the legalization of casinos in Maryland.

PART II

Comparison of 2010 and 2017 Data

CHAPTER 11

Comparing Casino Gambling in Maryland between 2010 and 2017

Gambling, as defined in this report, includes any of 11 different activities (casino gambling, playing at gaming machines outside of a casino, buying lottery, betting at horse or dog races, playing bingo for money, betting on private games or sports outcomes, playing Daily Fantasy Sports, or betting on the Internet). In general prevalence estimates lump all forms of gambling together into the general category of gambling. In this chapter, information pertaining specifically to casino gambling was teased out to investigate the possible impact of legalizing and opening casinos in the state of Maryland.

Frequency of Casino Gambling:

In 2010, 89.7% of the population had engaged in at least one type of gambling. Of these, 67.5% had gambled at a casino. In 2017, 87.0% of the population had engaged in at least one type of gambling. Of these, 73.9% had gambled at a casino. This increase in casino experience could be related to the increased access to gambling venues in Maryland.

All gamblers who had gambled at a casino were asked how often they did so. If they said they had ever gambled in a casino, but not in the past 12 months, these respondents were defined as *ever* gamblers. Those who answered that they had gambled in a casino between one and five days in the past year were qualified as *infrequent* gamblers. Gamblers were further classified as *past year* if they had gambled in a casino once a month or less (6 to12 times per year), *monthly* if they had gambled in a casino several times a month (3 to 5 times per month), and *weekly* if they had gambled in a casino at least six times per month, all the way to daily (30+ times per month). Estimates for frequency of casino gambling are as follows:

Table 11.1 Casino Gambling Frequency for Maryland Respondents (%)

	Ever	Infrequent	Past Year	Monthly	Weekly	Total
2010 (N=4,913)	59.5	32.1	3.6	2.2	2.7	100.0
2017 (N=3,399)	58.9	31.0	4.6	3.4	2.0	100.0
Change	1.0 ↓	3.4 ↓	27.8 ↑	54.5 ↑	25.9 ↓	-

It appears that since 2010, the prevalence of *ever* gamblers and infrequent gamblers has decreased. The amount by which these quantities has decreased appears negligible, which could be interpreted as people who do not enjoy gambling will not be swayed one way or the other to gamble regardless of their proximity to a venue. The prevalence of past year and monthly gamblers has increased after the introduction of casinos in Maryland. In absolute terms, these increases are small, and for past year gamblers, may represent the novelty of a new venue. The prevalence of weekly gamblers decreased between 2010 and 2017, but on a population level, these fluctuations are minimal and do not represent tangible changes of public health significance.

In 2010, the median casino expenditure for respondents was $75 per month. This value decreased to $50 per month among respondents in the 2017 study. Meanwhile, the mean quantity spent by casino gamblers decreased slightly from $219 per month in 2010 to $181 per month in 2017. It must be noted that in 2017, one individual (with a NODS score >5) who reported spending $25,000 in a typical month was considered an outlier and removed from the analysis. The breakdown of monthly casino gambling expenditures according to the disordered gambling scale (NODS) for 2010 and 2017 is shown in Table 11.2. Only disordered gamblers increased their monthly spending.

Table 11.2 Monthly Casino Gambling Expenditures per Month by NODS Category ($)

Year	Low Risk	At Risk	Disordered Gambling (DG)	Overall	N
2010	164	292	578	219	1493
2017	157	214	622	181	950

Location of Casino Visited

Figure 11.3 was built using the location of the casino where respondents gambled. As was expected, the difference between 2010 and 2017 indicates a large shift towards the Maryland casinos—gamblers were more likely to take advantage of gambling closer to home. Connecticut and Pennsylvania appeared to have maintained their casino appeal, where as other states have seen a decrease in the proportion of casino gamblers from Maryland.

Figure 11.1 "In what state was the casino you gambled at located?"
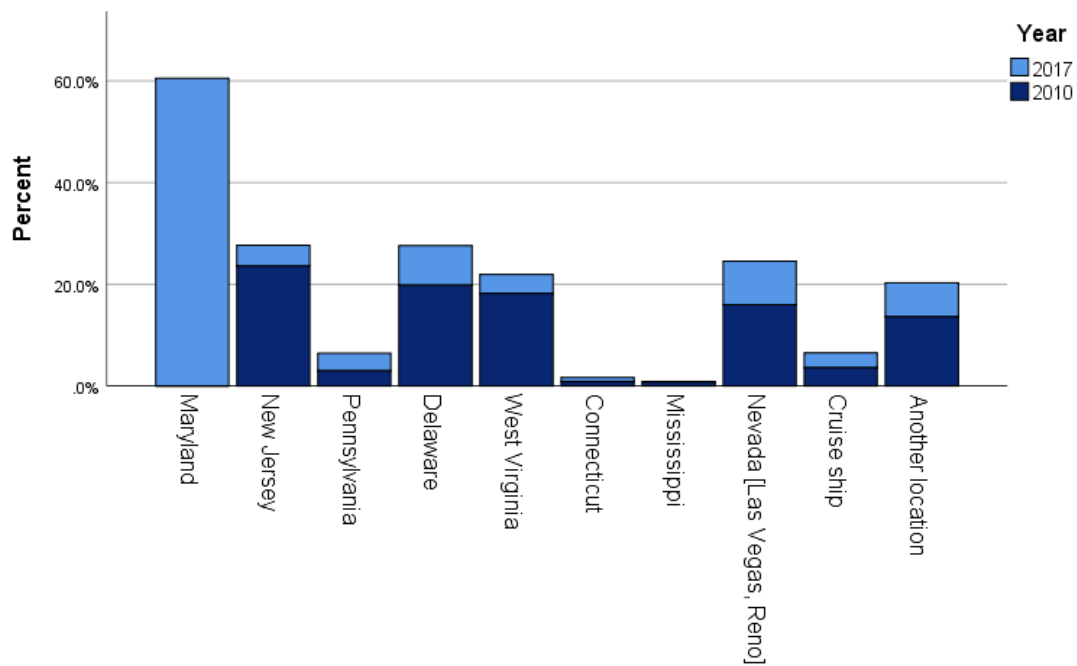
Type of Games Played at Casinos

As evidenced in Figure 11.4, Maryland gamblers go to casinos to mostly play blackjack and slot machines. Preferences for one casino game or another appear to remain unchanged over time.

Figure 11.2 "When you gamble at a casino, what is your favorite game?"
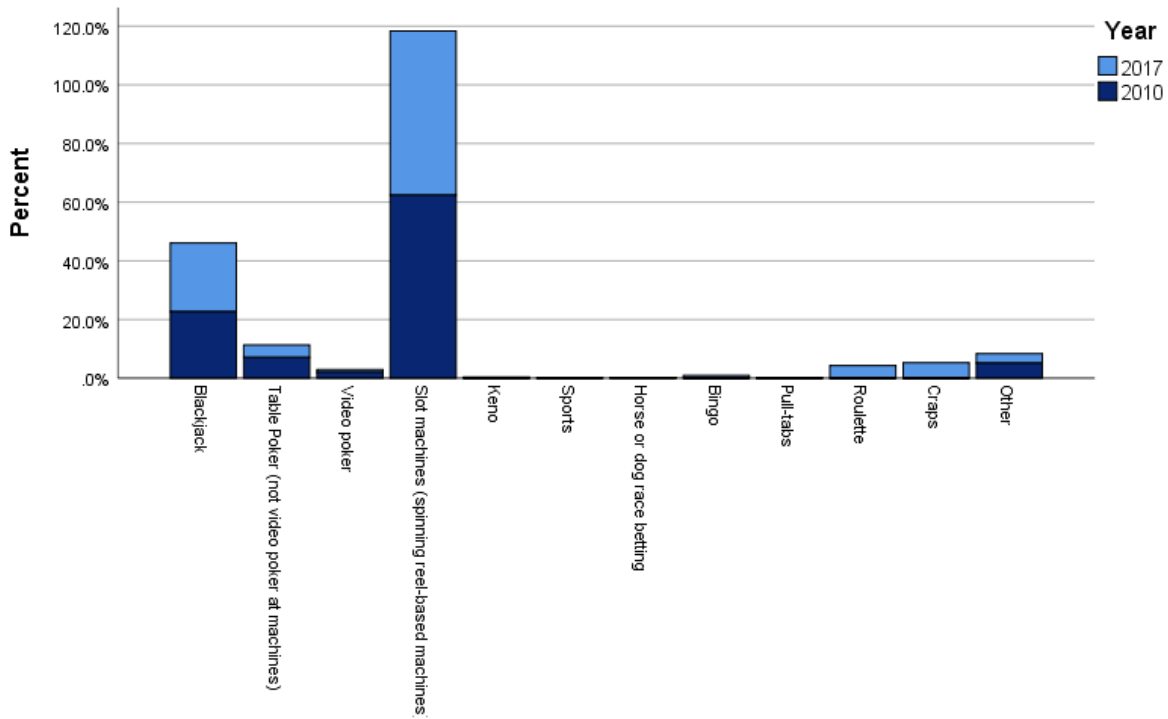
Frequency of Casino Gambling by Demographic Characteristics

Casino gambling appeared to be shifting towards older age groups in 2017 as compared to 2010. From the results of this survey, older individuals participated in casino gambling more than younger gamblers. Reflecting a potential change of interest in type of gambling favored by younger individuals. Researchers have noted an emerging national trend for younger gamblers preferring Internet gambling over casino gambling (Derevensky & Gainsbury, 2016).

Table 11.3 Frequency of Casino Gambling by Age (%)

Age	Non-Gamblers 2010	Non-Gamblers 2017	Infrequent 2010	Infrequent 2017	Past Year 2010	Past Year 2017	Monthly 2010	Monthly 2017	Weekly 2010	Weekly 2017
18-29	42.5	35.8	44.5	58.7	3.2	4.1	2.9	0.5	7.0	0.8
30-44	62.6	56.5	32.2	32.8	2.4	4.6	1.7	3.2	1.1	2.9
45-54	62.1	60.0	29.4	29.4	4.4	4.9	2.2	3.5	1.9	2.2
55-64	61.1	65.0	29.5	25.2	4.3	5.6	1.9	3.3	3.2	0.9
65-74	60.4	66.4	29.9	22.4	5.5	5.4	2.1	4.5	2.1	1.3
75+	69.7	64.3	19.9	25.0	3.9	3.9	4.3	4.4	2.2	2.4

Men gambled more often than women, and this fact did not appear to have changed between the 2010 and 2017 surveys. The ratio of male to female gamblers was equal for the infrequent and past year categories, which speaks of equal attraction for both genders. However, the rate for individuals who gamble more frequently (weekly or monthly) were more often male than female. In 2017, the prevalence of male monthly gamblers had doubled, while the prevalence of female weekly gamblers decreased by half.

Table 11.4 Frequency of Casino Gambling by Gender (%)

	Non-Gamblers		Infrequent		Past Year		Monthly		Weekly	
Gender	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Male	58.1	53.1	32.0	33.5	3.7	5.2	2.4	4.9	3.7	3.4
Female	60.7	64.7	32.2	28.2	3.5	4.1	2.0	2.2	1.6	0.8
Trans	-	0.0	-	100.0	-	0.0	-	0.0	-	0.0

In 2010, the questions about race and ethnicity were not structured in the same way as in 2017, making comparisons less detailed. In 2010, Hispanic gamblers were combined with Whites, and American Indians were included in the "Other" category. Based on 2017 data, it should be noted that 12.2% of American Indians gambled weekly. Non-Hispanic Whites decreased in weekly frequency of gambling, however, were twice as likely to be monthly gamblers in comparison to 2010. Fewer African Americans in 2017 were classified as non-gamblers, whereas the frequency of gambling in each category increased from 2010.

Table 11.5 Frequency of Casino Gambling by Race or Ethnicity (%)

Race or Ethnicity	Non-Gamblers		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Non-Hispanic White	60.6	64.2	29.9	27.5	4.1	3.6	2.1	4.0	2.2	0.7
Black or African American	52.9	46.2	36.6	39.7	3.5	6.7	2.1	2.2	3.7	5.1
Hispanic or Latino	-	49.3	-	43.5	-	2.5	-	4.4	-	0.4
Asian or Pacific Islander	64.4	66.2	28.1	24.9	-	1.9	4.4	2.9	1.3	4.2
American Indian	-	79.0	-	4.0	-	4.8	-	-	-	12.2
Other	64.1	61.5	29.6	27.6	0.7	9.0	2.1	0.1	3.5	1.8

The highest prevalence of weekly casino gamblers was noted among "widowed" and "never married" respondents. The proportion of married respondents who gambled weekly appears to have been stable over time.

Table 11.6 Frequency of Casino Gambling by Marital Status (%)

Marital Status	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Married	62.1	64.5	30.6	27.3	3.4	4.2	2.0	2.5	1.9	1.5
Living as Married	55.4	56.8	32.4	31.5	4.3	9.5	2.9	0.4	5.0	1.8
Widowed	64.0	66.0	27.3	20.4	5.9	5.3	1.6	5.7	1.2	2.7
Divorced	58.7	56.8	32.6	28.4	3.5	5.1	2.9	8.4	2.3	1.3
Separated	67.6	35.8	27.5	45.2	2.9	12.0	1.0	6.5	1.0	0.5
Never Married	49.6	45.6	38.8	45.3	3.5	3.5	2.5	2.3	5.6	3.4
Refused to Answer	61.5	50.9	30.8	40.8	-	4.5	7.7	3.2	-	0.6

The highest prevalence of weekly gamblers was found among the lowest earners in both 2010 and 2017. In 2017, 12.5% of respondents who gambled weekly earned less than $15,000 per year. This percentage had decreased since 2010 when 15.1% respondents gambled weekly. Other proportions of casino gambling frequencies remained stable across income levels and over time.

Table 11.7 Frequency of Casino Gambling by Income level (%)

	Ever-Gamblers		Infrequent		Past Year		Monthly		Weekly	
Income	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Up to $15,000	50.0	60.6	27.8	21.6	4.8	4.2	2.4	1.1	15.1	12.5
$15,001 to $25,000	59.2	62.0	21.4	28.9	4.9	4.0	2.9	0.7	11.7	4.3
$25,001 to $35,000	62.3	42.2	30.3	39.2	1.7	3.7	1.1	12.9	4.6	1.9
$35,001 to $50,000	55.6	46.8	35.8	45.3	4.4	4.5	2.7	1.5	1.4	1.9
$50,001 to $75,000	55.1	59.6	37.8	33.0	2.8	3.1	2.4	1.3	1.8	3.0
$75,001 to $100,000	61.0	59.3	32.0	30.4	3.7	8.5	1.6	-	1.6	1.8
$100,001 to $125,000	60.1	59.5	32.8	26.8	3.4	4.3	2.1	8.2	1.6	1.2
$125,001 to $150,000	59.3	62.3	30.4	29.2	6.7	5.1	1.9	3.5	1.9	0.0
Over $150,000	58.9	59.0	34.0	33.4	2.6	2.5	1.8	3.5	2.6	1.5
Does not know	65.6	57.9	27.7	26.2	2.8	6.3	2.1	8.2	1.8	1.4
Refused to answer	61.8	63.7	30.2	28.3	3.7	5.2	2.6	2.3	1.7	0.6

Around 35% of people with an elementary school education level gambled, both in 2010 and 2017. This proportion increased steadily with higher levels of education in 2010 but not in 2017. Between 2010 and 2017, the proportion of weekly gamblers among respondents with low levels of education fell by more than 30 points.

Table 11.8 Frequency of Casino Gambling by Education level (%)

Education Level	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Elementary School	34.6	37.0	7.7	23.6	0.0	4.1	3.8	15.0	53.8	20.4
Some High School	57.1	64.2	29.4	20.3	2.5	6.6	0.8	8.9	10.1	-
High School Degree or GED	53.3	54.4	33.4	31.8	5.8	5.5	3.9	4.9	3.6	3.4
Less Than 2 Years of College	55.8	54.0	36.6	32.5	5.1	6.5	1.6	3.0	0.9	3.9
Associate Degree or Other Degree/ 2 Years in College	64.4	52.7	28.2	35.2	2.1	5.2	1.9	3.5	3.4	3.4
Bachelor's Degree	58.1	62.0	35.3	31.6	3.0	4.1	1.8	2.1	1.7	0.3
Master's Degree	66.4	66.4	28.7	28.4	2.9	2.3	0.9	2.5	1.1	0.4
Postgraduate Degree (PhD, MD, or JD)	69.8	69.6	25.3	21.8	2.4	3.2	1.6	4.4	0.8	1.0
Other	81.3	32.9	12.5	67.1	-	-	6.3	-	-	-
Does Not Know	100.0	54.1	0.0	25.2	-	20.8	-	-	-	-
Refused to Answer	50.0	49.5	31.8	43.3	4.5	6.6	13.6	-	-	0.7

The highest proportion of casino gamblers were among the unemployed and those who were employed part-time. Between 2010 and 2017, these larger proportions shifted away from the weekly frequency, toward the monthly frequency.

Table 11.9 Frequency of Casino Gambling by Employment Status (%)

Employment Status	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Working Full-Time	57.6	55.7	33.6	34.3	3.6	5.4	2.4	3.0	2.8	1.5
Working Part-Time	63.1	57.7	27.5	31.9	3.2	4.2	1.3	3.2	4.9	2.9
Not Working Last Week	62.0	65.0	30.4	24.8	3.9	3.3	1.9	4.3	1.9	2.7
Does Not Know	60.0	56.6	40.0	41.3	-	2.1	-	-	-	-
Refused to answer	66.7	45.5	33.3	45.2	-	8.5	-	-	-	-

The distribution of gambling behavior by geographical location did not vary between 2010 and 2017. This may indicate that no matter where casinos are located, respondents will find a way to gamble. It may also indicate equal access across the major regions in the state.

Table 11.10 Frequency of Casino Gambling by Region (%)

	Ever Gambler		Infrequent		Past Year		Monthly		Weekly	
Region	**2010**	**2017**	**2010**	**2017**	**2010**	**2017**	**2010**	**2017**	**2010**	**2017**
Central	57.3	56.8	33.8	34.6	3.3	4.1	2.9	2.2	2.7	2.3
Eastern Shore	61.8	62.9	28.0	30.2	4.7	2.5	2.0	2.4	3.5	2.1
Southern	59.0	52.5	34.7	33.2	3.5	6.7	1.5	4.5	1.4	3.2
Western	63.7	69.7	28.1	23.5	4.2	3.5	1.2	2.5	2.8	0.7

Frequency of Casino Gambling by Substance Use and Tobacco Use

The majority of non-gamblers did not consume tobacco and this proportion has remained stable over time. Tobacco use and gambling appeared to be decreasing over time, except for the daily smokers, whose gambling frequency increased over time.

Table 11.11 Frequency of Casino Gambling by Tobacco Use (%)

Tobacco Use	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Daily (more than 30 times per month)	48.7	53.7	36.3	30.3	6.5	5.9	2.8	3.2	5.6	7.0
Several times a week (6-29 times per month)	52.2	34.7	34.8	48.1	2.9	11.0	2.9	6.2	7.2	-
Several Times a Month (3-5 times per month)	51.4	50.9	40.5	22.1	2.7	23.7	5.4	3.2	-	-
Once a Month or Less (6-12 times per year)	31.0	51.9	52.4	41.5	-	-	-	0.2	16.7	6.4
Only a Few Days All Year (1-5 times per year)	57.9	51.4	36.8	40.6	-	4.4	-	3.6	5.3	-
Never	63.0	61.2	30.2	30.2	3.1	3.7	2.1	3.4	1.6	1.4
Does Not Know	50.0	-	50.0	100.0	-	-	-	-	-	-
Refused to Answer	30.0	24.2	70.0	37.7	-	33.2	-	2.7	-	2.3

Prevalence of drinking among non-gamblers remained relatively stable, while the gambling frequency of daily drinkers tended to diminish.

Table 11.12 Frequency of Casino Gambling by Alcohol Consumption (%)

Alcohol Consumption	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Daily (more than 30 times per month)	55.7	65.3	26.0	23.7	1.8	2.3	2.9	3.7	13.6	5.0
Several times a week (6-29 times per month)	56.4	58.1	37.5	32.2	2.7	4.3	1.5	2.3	1.9	3.2
Several Times a Month (3-5 times per month)	60.2	53.6	33.7	37.6	4.4	5.5	0.8	2.3	0.9	0.9
Once a Month or Less (6-12 times per year)	57.5	53.1	35.8	38.9	4.2	4.1	1.3	2.8	1.3	1.1
Only a Few Days All Year (1-5 times per year)	62.0	58.3	30.1	28.5	3.9	4.1	2.7	7.4	1.3	1.7
Never	60.8	67.8	28.5	22.1	3.6	5.4	3.9	2.4	3.2	2.3
Does Not Know	78.9	36.4	21.1	63.6	-	-	-	-	-	-
Refused to Answer	50.0	35.9	40.0	52.2	-	9.2	-	-	10.0	2.6

Respondents who admitted to binge drinking (consuming six or more drinks in one sitting) had decreased their gambling frequency over time. Between 2010 and 2017, the prevalence of past year gamblers has increased for all binge categories, especially for those who binge more often.

Table 11.13 Frequency of Casino Gambling by Occurrence of Alcoholic Binges (%)

	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
Alcoholic Binges	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Daily (more than 30 times per month)	27.3	46.0	15.9	30.1	4.5	1.6	4.5	13.4	47.7	8.8
Several times a week (6-29 times per month)	39.4	27.9	34.8	38.1	3.0	20.6	3.0	0.0	19.7	13.5
Several Times a Month (3-5 times per month)	52.7	38.9	38.2	46.9	6.4	3.7	2.7	4.3	-	6.2
Once a Month or Less (6-12 times per year)	43.8	42.3	47.9	45.9	5.5	4.4	1.4	6.0	1.4	1.4
Only a Few Days All Year (1-5 times per year)	54.2	51.5	38.3	38.1	2.9	6.4	2.6	2.3	2.1	1.6
Never	62.9	61.5	29.8	29.7	3.6	3.6	2.0	3.8	1.7	1.4
Does Not Know	57.7	70.1	19.2	27.2	-	-	3.8	2.7	19.2	-
Refused to Answer	47.6	27.7	38.1	67.6	-	2.5	14.3	-	-	2.2

The gambling category that had increased the most between 2010 and 2017 is the infrequent gambling, in relation to the number of drinks consumed in the last 12 months.

Table 11.14 Frequency of Casino Gambling by Number of Drinks (%)

	Ever-Gambler		Infrequent		Past Year		Monthly		Weekly	
Number of Drinks	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
None	62.9	46.2	26.5	53.8	3.4	-	3.7	-	3.4	-
1 to 5	59.1	57.3	33.5	32.9	3.5	4.4	1.5	3.6	2.3	1.7
6 to 10	48.9	42.5	30.9	40.6	7.4	0.7	6.4	5.2	6.4	11.0
11 to 19	41.7	13.0	16.7	69.3	8.3	-	8.3	17.6	25.0	-
20 or More	57.6	42.4	32.4	47.3	4.3	7.1	4.3	2.4	1.4	0.7

The frequency of illicit drug use remained high in weekly gamblers, but in general the trend has been toward more occasional use with respect to gambling.

Table 11.15 Frequency of Casino Gambling by Illicit Drug Use (%)

Illicit Drug Use	Ever-Gambler		Infrequent		Past year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Daily (more than 30 times per month)	29.8	37.8	24.6	43.0	5.3	7.2	5.3	1.9	35.1	10.1
Several times a week (6-29 times per month)	53.7	48.8	31.7	44.9	2.4	-	2.4	-	9.8	6.3
Several Times a Month (3-5 times per month)	55.2	44.2	37.9	39.9	3.4	15.9	3.4	-	-	-
Once a Month or Less (6-12 times per year)	68.8	68.2	18.8	26.7	6.3	5.1	6.3	-	-	-
Only a Few Days All Year (1-5 times per year)	39.3	48.0	47.5	41.2	0.0	1.8	-	9.0	13.1	-
Never	60.5	60.1	31.8	30.0	3.7	4.5	2.2	3.4	1.9	1.9
Does Not Know	25.0	67.3	50.0	32.7	25.0	-	-	-	-	-
Refused to Answer	43.8	29.2	56.3	51.2	-	11.2	-	8.4	-	-

The non-medical use of prescription drugs appeared to have dramatically diminished between 2010 and 2017, with respect to gambling frequency. The largest increase in gambling frequency could be seen among respondents who did not use any such substance.

Table 11.16 Frequency of Casino Gambling by Prescription Drug Use (%)

Prescription Drug Use	Ever Gambled		Infrequent		Past year		Monthly		Weekly	
	2010	2017	2010	2017	2010	2017	2010	2017	2010	2017
Daily (more than 30 times per month)	42.1	67.2	10.5	20.4	-	-	5.3	8.7	42.1	3.7
Several times a week (6-29 times per month)	13.3	93.3	26.7	-	6.7	-	-	6.7	53.3	-
Several Times a Month (3-5 times per month)	29.4	19.7	64.7	41.0	-	39.3	5.9	-	-	-
Once a Month or Less (6-12 times per year)	30.0	24.2	20.0	47.8	10.0	28.0	-	-	40.0	-
Only a Few Days All Year (1-5 times per year)	58.3	45.2	30.6	28.3	2.8	7.4	-	18.1	8.3	1.0
Never	60.1	59.6	32.1	30.9	3.7	4.3	2.2	3.2	1.9	2.1
Does Not Know	54.5	68.0	36.4	32.0	9.1	-	-	-	-	-
Refused to Answer	41.7	22.9	58.3	68.3	-	8.8	-	-	-	-

Casino Gambling Frequency and NODS score

In 2010, a very large proportion of respondents were categorized as low risk casino gamblers (82.5%). Most said they had tried casino gambling but had not played more than 3 times in the past year, if at all (ever gambled and infrequent categories). More than 2 percent (2.3%) of these non-gamblers were classified as disordered gamblers. One possible explanation for this is that some individuals had recognized a problem with their gambling, and chose to stop playing. The proportion of DG casino gamblers increased steadily as the frequency of casino gambling increased (Shinogle, et al., 2011).

Table 11.17 Casino Gambling Frequency by NODS Category in 2010 (%)

2010	Ever Gambled	Infrequent	Past Year	Monthly	Weekly	Total
Low Risk	89.1	80.5	69.1	56.9	41.8	82.5
At Risk	8.7	16.4	26.4	20.8	12.1	12.7
Problem	1.0	0.6	2.7	4.2	3.3	1.1
Pathological	1.3	2.5	1.8	18.1	42.9	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

N=2,950

In 2017, the frequency of casino gambling by NODS categories remained similar. The vast majority of respondents were still low risk casino gamblers (94.0%) and a much smaller percentage were classified as disordered gamblers (2.7%). Weekly casino gambling increased sharply among respondents with DG. It is important to keep in mind that the increase of visiting a casino could be a result of increased access proximity, however proximity does not appear to influence DG behavior. Overall prevalence of DG gambling *among respondents who play at casinos* decreased from an estimated 4.8% in 2010, to 2.7% in 2017.

Table 11.18 Casino Gambling Frequency by NODS Status in 2017 (%)

2017	Ever Gambled	Infrequent	Past Year	Monthly	Weekly	Total
Low Risk	97.5	95.1	79.6	86.6	57.0	94.0
At Risk	1.6	3.5	14.8	3.4	11.0	3.3
Problem	0.1	1.2	2.0	2.2	7.5	0.9
Pathological	0.8	0.2	3.6	7.9	24.5	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

N=1,831

CHAPTER 12

Summary, Limitations, and Directions for the Future

In 2017 87% of respondents that participated in the gambling prevalence study reported participation in some type of gambling activity including casinos, gambling machines outside of a casino, lottery, dog and horse races, bingo, private games, sports gambling, daily fantasy sports, or computer gambling. The most prevalent forms of gambling in Maryland were purchase of lottery tickets and gambling at casinos. The least prevalent forms of gambling in 2017 were Internet gambling, Daily fantasy sports, and dog races. A majority of respondents participated in multiple forms of gambling—between 2 and 5 different types—and played several times per week. In terms of frequency gambling activities Internet gambling, daily fantasy sports, and the lottery were the highest played activities daily. Although Internet gambling was among the least prevalent forms of gambling, it was played the most frequently by respondents and was the highest monthly expenditure ($570/month). Lottery on the other hand was one of the most prevalent forms of gambling, however, participants spent the least on the lottery ($33/month).

Individuals who gamble on a daily or weekly basis tended to be between 45 and 75 years old, more likely to be male, and were of a minority race or ethnicity. Many of these individuals had a less than high school education level and had an income of less than $15,000 a year. Individuals who smoked tobacco daily and consumed large amounts of alcohol on a daily basis were more likely to gamble than those who did not smoke or consume alcohol.

Respondents who were non-gamblers were either younger than 30 years old or over 75 years old. The majority were women, either non-Hispanic, white or African American, and generally earn less than $25,000. Access to a casino had little influence over non-gamblers' attitudes towards gambling. Moral and ethical issues, the possibility of losing money, and lack of interest were the primary reasons individuals reported not gambling.

Overall gambling prevalence declined between 2010 and 2017 in Maryland, from 89.7% in 2010 to 87.0% in 2017. In 2010, 64.2% of Marylanders were casino gamblers. The prevalence of problem gambling among casino gamblers was 1.1% and the prevalence of pathological gambling was 3.7%. In 2017, 67.4% of Marylanders were casino gamblers, with 0.9% of casino gamblers being problem gamblers and 1.8% being pathological gamblers. In comparison to casino gamblers, the prevalence rates for DG gambling also decreased from 2010. Regardless of gambling activity, in 2010, the prevalence of DG was recorded as 3.4%, where in 2017 the rate was 1.9%.

Using multivariate analyses, DG were younger males and among the minority population. In general, DG were less likely to be married and often earned less than $25,000 per year. These gamblers tended to be less educated and more likely to smoke tobacco, drink alcohol and consume illicit substances.

In terms of treatment for gambling related problems, less than half of gamblers were aware of the different types of assistance. Media campaigns (i.e. television, billboards, radio, online sources, posters or flyers, and newspaper) were the most effective technique for broadening awareness of responsible gaming. Disordered gamblers were least aware of available resources. Half of the disordered gamblers reported being aware of the Toll Free help line. Fewer acknowledged being aware of GA (<40%) and only a third knew about outpatient services, such as private counseling. Slightly less than 10% of gamblers reported seeking help for dealing with gambling issues. When assistance was sought, the majority of individuals went to Gamblers Anonymous. Those who sought treatment received the treatment they were seeking

Attitudes towards gambling in the state were mixed. A majority respondents agreed that individuals should be allowed to gamble as they please, however, half of the respondents believed that there were too many gambling opportunities in the state. Roughly 60% of respondents disagreed that gambling is good for society. Yet a large majority of respondents believed that gambling should not be banned, especially pathological gamblers. Those who agreed the most

with the idea that gambling livens up life were disordered gamblers. At least 40% of respondents disagreed with efforts to discourage gambling, but they also doubted that people gamble responsibly.

A longitudinal analysis of the socio-economic indicators discussed in the 2010 report did not yield much information on the possible impact of gambling. Publicly available information was obtained between 2009 and 2014 and graphed over time (see Chapter 10). This includes the counties where a new casino was opened and for the entire state of Maryland. Trends over time for income, unemployment, bankruptcies and foreclosure rates showed little variability, and no change appeared associated with the timing of casino openings. Because the time window may have affected outcomes further analyses should be done to capture the lag between a casino opening and a change in any of these indicators.

The analysis to compare the 2010 results to the 2017 survey was done *exclusively among casino gamblers* in order to tease out the specific difference due to the legalization of casinos in Maryland. The proportion of gamblers that had played at a casino increased slightly between 2010 and 2017 (67.5% and 73.9% respectively); possibly reflecting the increased proximity to local casinos. Most gambling statistics in the state of Maryland have remained unchanged between 2010 and 2017, with the only noticeable difference being that Marylanders remained in state to gamble instead of leaving the state to do so.

Limitations:

As detailed in Chapter 3 of this report, changes in landline and mobile phone use patterns between the 2010 survey and the 2017 survey ultimately affected the number and characteristics of individuals that were successfully recruited for the 2017 survey. Briefly, wireless phone technology and the use of wireless phones have dramatically greatly reduced use of household landline phones. The percentage of Maryland adults living in wireless only or mostly households increased from 39.6% in 2010 (Blumberg, 2011) to 47.5% by the end of 2012 (Blumberg, 2013).

The ability to collect wireless phone samples offers a solution to this issue, but such samples are not without their own complications including:

- It is inappropriate and impractical to ask for an additional or alternate respondent when an underage cell phone user is contacted – since it isn't a household device;

- Refusals are as much as 20% higher in wireless phone samples than in landline samples;

- People see wireless phones as "private" devices for their personal use and are less accepting of unknown calls to their phones;

- Caller ID in wireless phones show a number only, instead of a text identifier as they do in landline phones equipped with caller ID increasing likelihood that call will not be answered from an unknown caller;

In addition to the impact of changes in landline and mobile phone use, based on research conducted by the Maryland Center of Excellence on Problem Gambling's Research Program on Gambling, individuals who experience gambling problems also tend to have characteristics (e.g., low income, housing instability, employment challenges) that would make them less likely to have a landline or perhaps even consistent access to a mobile phone. Thus, it is probable that individuals experiencing gambling problems were less likely to be reached or to consent to participation if reached. Consequently, it is probable that prevalence estimates for the 2017 survey underestimate the true prevalence.

Directions for the future:

- Decrease the interval between prevalence surveys to better capture subtle changes in economic and health indicators;

- Monitor Internet gambling prevalence and the impact it has on DG;

- Shift the resources allocated to education about responsible gambling away from newspapers and posters/flyers towards television and billboards because a higher

percentage of respondents reported knowledge of public awareness messages communicated via television and billboards;

- Provide resources to get help with DG on casino premises as a small literature suggests that access to responsible gaming resources within casinos may be a valuable harm reduction strategy;

- Establish longitudinal surveys of a range of social and economic factors with findings tested against control groups;

- Carry out studies of the impacts of gambling on particular social groups, the effects on communities, and the relation to factors that involve wider social frameworks, such as socio-economic deprivation;

- Investigate the impact of casinos taking into account the size, location (urban or rural), and local market characteristics;

- Investigate Responsible Gaming (RG) features such as the reduction of the speed of games, the increase of intervals between games, and the reduction of the size of the bets;

- Ensure casino staff awareness of DG characteristics and available resources for RG.

References

AAPOR Cell Phone Task Force. (2010). New considerations for survey researchers when

    planning and conducting RDD telephone surveys in the U.S. with respondents reached

    via cell phone numbers. Retrieved from

    http://www.aapor.org/AAPOR_Main/media/MainSiteFiles/2010AAPORCellPhoneTFRepo

    rt.pdf.

Abbott, M. (2017). Gambling and gambling harm in New Zealand: A 28-year case study.

    International Journal of Mental Health & Addiction, 15(6), 1221-1241.

Abbott, M. W. (2006). Do EGMs and problem gambling go together like a horse and carriage?

    Gambling Research, 18(1), 7-38.

Abbott, M. W., Romild, U., & Volberg, R. A. (2014). Gambling and problem gambling in Sweden:

    Changes between 1998 and 2009. *Journal of Gambling Studies, 30,* 985–999.

    https://doi:10.1007/s10899-013-9396-3.

Abbott, M. W., Volberg, R. A., Bellringer, M., & Reith, G. (2004). A review of research on aspects

    of problem gambling. Retrieved from https://www.gla.ac.uk/media/media_34551_en.pdf.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders.

    (4th ed.). Washington, DC: American Psychiatric Association.

Barbaranelli, C., Vecchione, M., Fida, R., & Podio-Guidugli, S. (2013). Estimating the

    prevalence of adult problem gambling in Italy with SOGS and PGSI. *Journal of Gambling*

    Issues, 28, 1–24. https://doi:10.4309/jgi.2013.28.3.

Bastiani, L., Gori, M., Colasante, E., Siciliano, V., Capitanucci, D., Jarre, P., & Molinaro S.

    (2011). Complex factors and behaviors in the gambling population of Italy. *Journal*

    Gambling Studies, 29, 1–13. https://doi:10.1007/s10899-011-9283-8.

Bieleman, B., Biesma, S., Kruize, A., Zimmerman, C., Boendermaker, M., Nijkamp, R., & Bak,

    T. (2011). Gokken in kaart: Tweede meting aard en omvang kansspelen in Nederland

[Mapping Gambling: Second Measurement on Nature and Extent of Gambling in the

Netherlands]. Retrieved from: http://www.intraval.nl/pdf/MKN_a74.pdf.

Blinn-Pike, L, Worthy, S. L., & Jonkman, J. N. (2010). Adolescent gambling: A review of an

emerging field of research. *Journal of Adolescent Health, 47*(3), 223-236.

Blumberg, S.J., Luke, J. V., Ganesh, N., Davern, M. E., & Boudreaux, M. H. (2012). Wireless

substitution: State-level estimates from the National Health Interview Survey, 2010-2011.

National Health Statistics Reports, 61. Retrieved from

https://www.cdc.gov/nchs/data/nhsr/nhsr061.pdf.

Blumberg, S.J., Ganesh, N., Luke, J. V., & Gonzales, G. (2013). Wireless substitution: State-

level estimates from the National Health Interview Survey, 2012. *National Health*

Statistics Reports, 70. Retrieved from https://www.cdc.gov/nchs/data/nhsr/nhsr070.pdf.

Blumberg, S.J., Luke, J. V., Ganesh, N., Davern, M. E., Boudreaux, M. H., & Soderberg, K.

(2011). Wireless substitution: State-level estimates from the National Health Interview

Survey, January 2007-June 2010. *National Health Statistics Reports, 39*. Retrieved from

https://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf.

Blumberg, S. J. & Luke, J. V. (2017). Wireless substitution: Early release of estimates from the

National Health Interview Survey, July-December 2016. *National Center for Health*

Statistics. Retrieved from

https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf.

Bowden-Jones, H. (2013) Review of women and problem gambling: Therapeutic insights into

understanding addiction and treatment. The British Journal of Psychiatry, 203(2), 156-

158.

Çakici M. (2012). The prevalence and risk factors of gambling behavior in Turkish Republic of

Northern Cyprus. *Anatolian Journal of Psychiatry, 13*(4), 243–249.

Calado, F., & Griffiths, M. D. (2016). Problem gambling worldwide: An update and systematic

    review of empirical research (2000-2015). Journal of *Behavioral Addictions, 5*(4), 592-

    613.

Calado, F., Alexandre, J., & Griffiths, M. D. (2017). Prevalence of adolescent problem

    gambling: A systematic review of recent research (2107). Journal of Gambling Studies,

    33(2), 397-242.

Castrén, S., Basnet, S., Pankakoski, M., Ronkainen, J. E., Helakorpi, S., Uutela, A., Alho, H., &

    Lahti T. (2013). An analysis of problem gambling among the Finnish working-age

    population: A population survey. *BMC Public Health, 13*, 519. https://doi:10.1186/1471-

    2458-13-519

Costes, J. M, Eroukmanoff, V., Richard, J. B., & Tovar, M. L. (2015). Les jeux de hasard et

    d'argent en France en 2014 [Gambling and gambling for money in France in 2014]. Les

    Notes de l'Observatoire des Jeux, 6, 1–9.

Costes, J. M., Pousset, M., Eroukmanoff, V., Le Nezet, O., Richard, J. B., Guignard, R., Beck,

    F., & Arwidson P. (2011). Les niveaux et pratiques des jeux de hasard et d'argent en

    2010 [Levels and gambling practices in 2010]. Lettre Tendances, 77, 1–8.

Culleton, P. P. (1989). The prevalence rates of pathological gambling: A look at methods. *Journal

    of Gambling Behavior, 5*(1), 22-41.

Dargatz, D. A., & Hill, G. W. (1996) Analysis of survey data. *Preventive Veterinary Medicine, 28*

    225-237.

Department for Social Development (Northern Ireland). (2016). Northern Ireland gambling

    prevalence survey, 2010. [data collection]. UK Data Service. SN: 7954,

    http://doi.org/10.5255/UKDA-SN-7954-1

Dowling, N. A., Youssef, G. J., Jackson, A. C., Pennay, D. W., Francis, K. L., Pennay, A., &

    Lubman D. I. (2015). National estimates of Australian gambling prevalence: Findings

from a dual-frame omnibus survey. *Addiction, 111*(3), 420–435.

https://doi:10.1111/add.13176.

Ekholm, O., Eiberg, S., Davidsen, M., Holst, M., Larsen, C. V., & Juel K. (2014). The prevalence

of problem gambling in Denmark in 2005 and 2010: A sociodemographic and

socioeconomic characterization. *Journal of Gambling Studies, 30*, 1–10.

https://doi:10.1007/s10899-012-9347-4.

Ferris, J., & Wynne, H. (2001). The Canadian problem gambling index: Final report. Retrieved

from http://www.ccgr.ca/en/projects/resources/CPGI-Final-Report-English.pdf.

Gainsbury, S. M., Russell, A., Hing, N., Wood, R., Lubman, D. I., & Blaszczynski, A. (2014). The

prevalence and determinants of problem gambling in Australia: Assessing the impact of

interactive gambling and new technologies. *Psychology of Addictive Behaviors, 28*, 769–

779. https://doi:10.1037/a0036207.

Gerstein, D. R., Murphy, S. A., Toce, M. T., Hoffmann, J., Palmer, A., Johnson, R. A., Larison,

C., Chuchro, L., Buie T., Engelman, L., Volberg, R., Harwood, A., Tucker, A.,

Christiansen, E., Cummings, W., & Sinclair, S. (1999). *Gambling impact and behavior*

study: Report to the National Gambling Impact Study Commission. Chicago: National

Opinion Research Center at the University of Chicago. Retrieved from

http://govinfo.library.unt.edu/ngisc/reports/fullrpt.html.

Goudriaan, A. E. (2014). Gambling and problem gambling in the Netherlands. *Addiction, 109,*

1066–1071. https://doi:10.1111/add.12213.

Hodgins, D. (2006). What is the impact of gambling availability on gambling problems?

Conference proceedings from Alberta Gambling Research Institute (AGRI) Conference.

Retrieved from http://hdl.handle.net/1880/47420.

Holdsworth, L., Hing, N., & Breen, H. (2012). Exploring women's problem gambling: A review of

the literature. *International Gambling Studies, 12*(2), 199-213.

IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM
    Corp.

Jacques, C, Ladouceur, R, & Ferland, F. (2000). Impact of availability on gambling: a
    longitudinal study. *Canadian Journal of Psychiatry, 45*, 810-815.

Johnson, R. R., Hamer, R., Nora, R. M., Tan, B., Eisenstein, N., & Englehart, C. (1997). The
    Lie/Bet questionnaire for screening pathological gamblers. *Psychological Reports, 80*(1),
    83-88.

Johnson, D. R. (2008). Using weights in the analysis of survey data. A presentation from the
    Department of Sociology, Population Research Institute, The Pennsylvania State
    University.

Kincaid, H., Daniels, R., Dellis, A., Hofmeyr, A., Rousseau, J., Sharp, C., & Ross, D. (2013). A
    taxometric analysis of problem gambling data from a South African national urban
    sample. *Journal of Gambling Studies, 29*(3), 377–392. https://doi:10.1007/s10899-012-
    9316-y.

Kun, B., Balázs, H., Arnold, P., Paksi, B., & Demetrovics, Z. (2012). Gambling in western and
    eastern Europe: The example of Hungary. *Journal of Gambling Studies, 28,* 27–46.
    https://doi:10.1007/s10899-011-9242-4.

Ladouceur, R., Goulet, A., & Vitaro, F. (2013). Prevention programmes for youth gambling: A
    review of the empirical evidence. *International Gambling Studies, 13*(2), 141-159.

Ladouceur, R., Shaffer, P., Blaszczynski, A., & Shaffer, H. J. (2017). Responsible gambling: A
    synthesis of the empirical evidence. *Addiction Research and Theory, 25*(3), 225-235.

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new
    instrument for the identification of pathological gamblers. *American Journal of Psychiatry
    144*(9), 1184-1188.

Macarovič, M. (2010). Towards the patterns of problem gambling in Slovenia. *Research and
    Discussion, 3*, 21-48.

Marchica, L., & Derevensky, J. L. (2016). Examining personalized feedback interventions for

gambling disorders: A systematic review. *Journal of Behavioral Addictions, 5*(1), 1-10.

Maryland Behavioral Risk Factor Surveillance System (BRFSS). Retrieved from

http://www.marylandbrfss.org/cgi-bin/broker.exe.

Meyer, C., Bischof, A., Westram, A., Jeske, C., de Brito, S., Glorius, S., … Rumpf H. J. (2015).

The "Pathological Gambling and Epidemiology" (PAGE) study program: Design and

fieldwork. *International Journal of Methods in Psychiatric Research, 24*, 11–31.

https://doi:10.1002/mpr.v24.1.

Mravčík, V., Černý, J., Leštinová, Z., Chomynová, P., Grohmannová, K., Licehammerová, Š.,

Ziegler, A., & Kocarevová, V. (2014) Hazardní hraní v České republice a jeho dopady

[Gambling in the Czech Republic and its impacts]. Retrieved from

www.mfcr.cz/assets/cs/media/Prezentace_2014-10-09_Viktor-Mravcik.pdf.

National Council on Problem Gambling. (2012). *Report of survey on participation in gambling*

activities among Singapore residents, 2011. Retrieved from

https://www.ncpg.org.sg/en/pdf/2011_NCPG_Gambling_Participation_Survey_23_Feb_

2012.pdf.

National Council on Problem Gambling. (2015). *Report of survey on participation in gambling*

activities among Singapore residents, 2014. Retrieved from

https://www.ncpg.org.sg/en/pdf/2014 NCPG Gambling Participation Survey_FINAL.pdf.

Olason, D. T., Hayer, T., Brosowski, T., & Meyer G. (2015). Gambling in the mist of economic

crisis: Results from three national prevalence studies from Iceland. *Journal of Gambling*

Studies, 31, 759–774. https://doi:10.1007/s10899-015-9523-4.

Orford. J., Wardle. H., Griffiths. M., Sproston. K., & Erens, B. (2010). PGSI and DSM-IV in the

2007 British Gambling Prevalence Survey: Reliability, item response, factor structure

and inter-scale agreement. *International Gambling Studies, 10*, 31–44.

https://doi:10.1080/14459790903567132.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002).

      Gambling: An addictive behavior with health and primary care implications. *Journal of*

      General Internal Medicine, 17(9), 721–732.

Raisamo, S. U., Mäkelä, P., Salonen, A. H., & Lintonen, T. P. (2014). The extent and distribution

      of gambling harm in Finland as assessed by the Problem Gambling Severity Index.

      European Journal of Public Health, 25(4), 716–722. https://doi:10.1093/eurpub/cku210.

Rand State Statistics. Retrieved from http://www.randstatestats.org/.

Reith, G. (2006). *Research on the social impacts of gambling.* Retrieved from

      https://www.gla.ac.uk/media/media_34552_en.pdf.

Romild, U., Volberg, R., & Abbott, M. (2014). The Swedish longitudinal gambling study

      (Swelogs): Design and methods of the epidemiological (EP-) track. *International Journal*

      of Methods in Psychiatric Research. 23(3), 372-386.

Sassen, M., Kraus, L., Bühringer, G., Pabst, A., Piontek, D., & Taqi Z. (2011). Gambling among

      adults in Germany: Prevalence, disorder and risk factors. *Sucht, 57,* 249–257.

      https://doi:10.1024/0939-5911.a000115.

Shinogle, J., Norris, D. F., Park, D., Volberg, R., Haynes, D., & Stokan, E. (2011). Gambling

      prevalence in Maryland: A baseline analysis. Retrieved from

      https://drive.google.com/file/d/0B1fIgYd1KEWHcDVrd2hPcDE2TU0/view.

Steeh, C. (2003). Results of an unpublished Georgia State Univeristy research study. In AAPOR

      Cell Phone Task Force. (2010). New considerations for survey researchers when

      planning and conducting RDD telephone surveys in the U.S. with respondents reached

      via cell phone numbers. Retrieved from

      http://www.aapor.org/AAPOR_Main/media/MainSiteFiles/2010AAPORCellPhoneTFRepo

      rt.pdf.

Tanner, J., Drawson, A. S., Mushquash, C. J., Mushquash, A. R., & Mazmanian, D. (2017)

>   Harm reduction in gambling: A systematic review of industry strategies. *Addiction*

>   *Research and Theory, 25*(6), 485-494.

Toneatto, T. (2008). Reliability and validity of the Gamblers Anonymous twenty questions.

>   *Journal of Psychopathology and Behavioral Assessment, 30*(1), 71-78.

Tse, S., Hong, S., Wang, C., & Cunningham-Williams, R. M. (2012) Gambling behavior and

>   problems among older adults: A systematic review of empirical studies. *Journals of*

>   *Gerontology Series B: Psychological Sciences & Social Sciences, 67B*(5), 639-652.

United States Census Bureau. 2011-2015 American Community Survey 5-year estimates.

>   Retrieved from

>   https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk.

Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: Implications

>   for public health. *American Journal of Public Health, 84*(2), 237-241.

Volberg, R. (2007). Population surveys. In G. J. Smith, D. C. Hodgins, & R. J. Williams (Eds.),

>   *Research and measurement issues in gambling studies* (33–51). Oxford: Elsevier.

Volberg, R. A., & Steadman, H. J. (1989). Prevalence estimates of pathological gambling in New

>   Jersey and Maryland. *American Journal of Psychiatry, 146,* 1618-1619.

Wan, H. K., Wah, C. J., Chun, J. H. L., Kuen, S. W., Hang, T. Y. H., & Pui, D. W. S. (2012). The

>   study on Hong Kong people's participation in gambling activities. Retrieved from

>   http://www.hab.gov.hk/file_manager/en/documents/policy_responsibilities/others/gamblin

>   g_report_2011.pdf.

Wardle, H., Griffiths, M. D., Orford, J., Moody, A., & Volberg, R. (2012). Gambling in Britain: A

>   time of change? Health implications from the British Gambling Prevalence Survey 2010.

>   *International Journal of Mental Health and Addiction, 10,* 273–277. doi:10.1007/s11469-

>   011-9319-4

Welte, J. W., Barnes, G. M., Tidwell, M., Hoffman, J. H., & Wieczorek, W. F. (2015). Gambling

    and problem gambling in the United States: Changes between 1999 and 2013. *Journal*

    of Gambling Studies, 31, 695–715. https://doi:10.1007/s10899-014-9471-4.

Whiting, S. W., Potenza, M. N., Park, C. L., McKee, S. A., Mazure, C. M., & Hoff, R. A. (2016).

    Investigating veterans' pre-, peri-, and post-deployment experiences as potential risk

    factors for problem gambling. *Journal of Behavioral Addictions, 5*(2), 213-220.

Williams, R. J., Lee, C. K., & Back, K. J. (2013). The prevalence and nature of gambling and

    problem gambling in South Korea. *Social Psychiatry and Psychiatric Epidemiology, 48,*

    821–834. https://doi:10.1007/s00127-012-0580-z.

Williams, R. J., Volberg, R. A., & Stevens, R. M. G. (2010). The population prevalence of

    problem gambling: Methodological influences, standardized rates, jurisdictional

    differences, and worldwide trends. Retrieved from http://hdl/handle.net/10133/3068.

Winters, K. C., Specker, S., & Stinchfield, R. (2002). Measuring pathological gambling with the

    Diagnostic Interview for Gambling Severity (DIGS). In J. J. Marotta, J. A. Cornelius, & W.

    R. Eadington (Eds.), The downside: Problem and pathological gambling (pp. 143–148).

    Reno, NV: University of Nevada.