

Gambling and Problem Gambling in WA State

2021 WA State Adult Problem Gambling Prevalence Study Results

Engrossed Substitute Senate Bill 5092; Section 215(35); Chapter 334; Laws of 2021

June 30, 2022

Legislative summary

Engrossed Substitute Senate Bill 5092 (2021), Section 215(35):

\$500,000 of the problem gambling account—state appropriation is provided solely for the authority to contract for a problem gambling adult prevalence study. The prevalence study must review both statewide and regional results about beliefs and attitudes toward gambling, gambling behavior and preferences, and awareness of treatment services. The study should also estimate the level of risk for problem gambling and examine correlations with broader behavioral and mental health measures. The health care authority shall submit results of the prevalence study to the problem gambling task force and the legislature by June 30, 2022. Note: The legislature approved extending the due date to October 31, 2022.

Background

In 2019, the Washington State Gambling Commission (WSGC) commissioned a report about gaps and possible needs in problem gambling services. A key finding of the report was that the lack of recent prevalence data for Washington State prevented the researchers from accurately predicting how many adults might need problem gambling treatment services. In response to this concern, the 2020 Legislature passed a budget proviso to appropriate additional funding from the state problem gambling account to conduct a new prevalence study. While the Legislature approved funding for the new survey in 2020, the 2021 Legislature approved a request from the Washington State Health Care Authority (HCA) to move the due date and funding authorization forward by one year, due to the COVID-19 pandemic.

The attached report, produced by Gemini Research, presents the methods, results, and conclusions of the study, as well as limitations and recommendations for further study.

Contact

For information about this report contact Roxane Waldron, Problem Gambling Program Manager, Division of Behavioral Health and Recovery, Health Care Authority, (360) 867-8486, roxane.waldron@hca.wa.gov.

GEMINI RESEARCH

Gambling and Problem Gambling in Washington State

2021 Washington State Adult Problem Gambling
Prevalence Study Results

Report to the Washington State
Health Care Authority

Rachel A. Volberg, PhD
President
PO Box 1375
Northampton, MA 01061

30 September 2022

Acknowledgements

The Washington State Health Care Authority, Division of Behavioral Health and Recovery (DBHR) would like to thank the following for their contributions to the 2021 Washington State Adult Problem Gambling Prevalence Survey:

Primary funding

- Washington State Legislature
- Evergreen Council on Problem Gambling

Additional funding

- Washington State Problem Gambling Program

Research partners and advisors

- Dr. Hilarie Cash, reSTART Life
- Maureen Greeley, Evergreen Council on Problem Gambling
- Ryan Keith, Health Care Authority
- Rose Krebill-Prather, Social & Economic Sciences Research Center, Washington State University
- Dr. Ty Lostutter, University of Washington
- Ethan Meade, Uncommon Solutions, Inc.
- Kent Miller, Social & Economic Sciences
- Marna Miller, Washington State Institute for Public Policy
- Rebecca Xie, Washington State Institute for Public Policy
- Justice Nii-Ayitey, Social & Economic Sciences Research Center, Washington State University
- Felix Rodriguez, Health Care Authority
- Tana Russell, Evergreen Council on Problem
- Dr. Rachel Volberg, Gemini Research
- Roxane Waldron, Health Care Authority

Additional acknowledgements

- Washington State Survey Respondents
- Washington State Gambling Commission, Commissioners, ex officio members, and Staff
- Roxane Waldron, Washington State Health Care Authority, Division of Behavioral Health and Recovery, who provided valuable information about the history and background of the survey and about the deliberations of the Problem Gambling Task Force

Land acknowledgement

We would like to acknowledge that the Washington State Health Care Authority is on the lands of the Nisqually and Squaxin Island Tribes.

Suggested Citation

Volberg, R.A. (2022). *Gambling and Problem Gambling in Washington State: 2021 Washington State Adult Problem Gambling Prevalence Survey Results*. Report to the Washington State Health Care Authority. Northampton, MA: Gemini Research, Ltd. August 2022.

Executive Summary

Background

Prevalence studies of gambling serve several important purposes. They establish the current prevalence of overall gambling participation, the prevalence of participation in different types of gambling, and the prevalence of problem gambling. This information, in turn, is useful in understanding the overall recreational value of gambling to society, the negative social impacts of providing legalized gambling, and the number of individuals with gambling problems that would benefit from treatment.

In 2019, the Washington State Gambling Commission (WSGC) commissioned a report about gaps and possible needs in problem gambling services. A key finding of the report was that the lack of recent prevalence data for Washington State prevented the researchers from accurately predicting how many adults might be in need of problem gambling treatment services. In response to this concern, the 2020 Legislature passed a budget proviso to appropriate additional funding from the state problem gambling account to conduct a new prevalence study. While the Legislature approved funding for the new survey in 2020, the 2021 Legislature approved a request from the Washington State Health Care Authority (HCA) to move the due date and funding authorization forward by one year, due to the COVID-19 pandemic.

Methods

The 2021 Washington State Adult Problem Gambling Prevalence Study was completed in several stages. In the first stage of the project, staff from several Washington State agencies, along with representatives from the Evergreen Council on Problem Gambling and the University of Washington worked to finalize the questionnaire. In the second stage of the project, Washington State University's Social and Economic Sciences Research Center (SESRC) programmed the questionnaire for computer-assisted web interviewing (CAWI) and a self-administered paper-and-pencil questionnaire (SAQ) was created. All materials were translated into Spanish by the Academy of Languages Institute. In the third stage of the project, the surveys were administered to approximately 49,000 households and completed by 9,413 respondents between July 2021 and early September 2021 resulting in a 19% response rate.

The fourth stage of the project involved data cleaning and weighting to increase confidence in generalizing results to the adult population of Washington State. The final stage of the project entailed data analysis by the Washington State Institute of Public Policy (WSIPP) and submission of a report to HCA, followed by additional analyses by SESRC and Gemini Research. Based on all the data analysis completed, Gemini Research produced this final 2021 prevalence study report on behalf of HCA for submission to the Washington State Legislature.

Key Findings

Attitudes and Awareness

Nearly two-thirds of Washington State adults (64%) believed that the current availability of gambling in the state was fine. Nearly one-third of Washington State adults (31%) reported that gambling was too widely available while only a small percentage (4.6%) reported that gambling was not available enough. Among adults who gambled, a higher percentage (71%) reported that the current availability was fine, while 21% reported that gambling was too widely available.

The majority of Washington State residents (68%) believed that the harms of gambling outweighed the benefits while 25% believed that the benefits and harms of gambling were about equal and 7.5%

believed that the benefits of gambling outweighed the harms. Gamblers were more likely than non-gamblers to believe that the benefits of gambling outweigh the harms, while people experiencing gambling problems were more likely to believe that the harms of gambling outweigh the benefits.

Awareness of problem gambling outreach was highest for television and radio sources while awareness of other sources was much lower. Awareness of services for those experiencing gambling problems was highest for Gamblers Anonymous and the state's problem gambling helpline. Awareness of clinical services, whether provided by community or Tribal behavioral health programs or the Washington State problem gambling program, was much lower.

Gambling in Washington State

In the present study, 43.5% of Washington State adults acknowledged participating in one or more gambling activities in the past year. This rate of past-year gambling participation is far below past-year participation rates in recent gambling studies conducted in Washington State and many other jurisdictions, and likely reflects people's willingness and ability to gamble at brick-and-mortar venues during the pandemic, especially during the pandemic lockdown in 2020.

Past-year participation among Washington State adults was highest for lottery games, Tribal casinos, and pull-tabs, bingo and raffles. Participation in all other types of gambling was 5% or less. Past-year gambling participation rates differed significantly by gender, age, ethnicity, marital status, education, employment and military service. Men were significantly more likely than women to have gambled in the past year as were people aged 35 to 64, compared to younger and older individuals and employed people compared to both retired and unemployed/other people. With respect to education, those with advanced degrees were the least likely to have gambled in the past year while those with some college were the most likely to have gambled in the past year. Never married people were less likely to have gambled in the past year as were non-Hispanic individuals and those with no military service.

Problem Gambling in Washington State

In problem gambling prevalence surveys, individuals are classified on the basis of their responses to a valid and reliable problem gambling instrument. The Problem Gambling Severity Index (PGSI) was used to assess problem gambling in Washington State; the PGSI has been the dominant instrument used to assess problem gambling prevalence worldwide since 2005.

Among all Washington State adults, 56.5% did not gamble in the past year, and 43.5% did report gambling (35% reported no difficulties due to gambling, 7.5% were classified as gamblers at low risk for problem gambling, and 1.5% of Washington State adults were classified as moderate-risk to severe risk). Those individuals at moderate-to-severe risk of problem gambling are referred to throughout this report as 'problem gamblers.' Overall, the past-year prevalence of problem gambling among all adults in Washington State in 2021 was within the range of prevalence rates identified in other states.

Based on the point prevalence estimates and their associated confidence intervals, we estimate that approximately 90,000 Washington State adults could be classified as problem gamblers (PGSI = 5+) in 2021. The exact number ranges from 66,000 to 108,000 individuals (point estimate of 1.5%, confidence interval of 1.1% to 1.8%). Based on research on help-seeking behavior by gamblers, we estimate that about 9,000 Washington State adults experiencing moderate-to-severe gambling problems might seek help for these problems.

Gender was not correlated with either gambling or problem gambling among all adults in Washington State. Black, Indigenous, and People of Color (BIPOC, or Non-White) were less likely than Whites to be classified as non-problem gamblers, and were more likely to be classified as at low risk (as compared to no risk) for problem gambling. Overall gambling participation was highest among adults aged 35-64, while younger and older adults were more likely to be classified as non-gamblers. Washington State adults with some college or with a high school diploma or less were more likely to gamble and to be classified as problem gamblers compared to those with advanced degrees. Washington State adults experiencing unemployment were more likely to be classified as problem gamblers compared with retired individuals. Individuals with military service were more likely to gamble or to be classified as low-risk gamblers compared to those without military experience.

Comparing Gamblers and Problem Gamblers

In considering how best to develop and refine policies and programs for people experiencing gambling problems, it is important to direct these efforts in an effective and efficient way. The most effective efforts at prevention, outreach, and treatment are targeted at individuals who are at the greatest risk of experiencing problem gambling.

Gambling Participation: Past-year lottery play was correlated with race/ethnicity and education, with White non-problem gamblers and those without an advanced degree more likely to have played the lottery while problem gamblers without an advanced degree were more likely to have played the lottery than problem gamblers with advanced education. Gambling at Tribal casinos was correlated with employment status, with unemployed problem gamblers more likely to have engaged in this type of gambling compared to problem gamblers who were employed or retired. Online gambling was correlated primarily with age, such that problem gamblers aged 65 and over were less likely to have engaged in this activity compared with younger problem gamblers. Traveling out-of-state to gamble was correlated with employment status, with low-risk unemployed gamblers less likely to have done this and unemployed problem gamblers more likely compared to employed and retired individuals in the same risk category.

Problem Gambling: Since over half of Washington State adults had not done any gambling in the past year, the prevalence of problem gambling among gamblers was substantially higher than among all adults (3.5% compared to 1.5%). No significant differences were found between non-problem gamblers, low-risk gamblers and problem gamblers in Washington State when taking gender, age or military experience into consideration. There were also no significant differences between these groups with respect to age.

Significant differences between gambling groups were detected for race/ethnicity, educational status and employment status. BIPOC/Non-White were less likely to be non-problem gamblers compared with Whites (71% compared to 81%) and more likely to be low-risk gamblers (24% versus 16%). Individuals with advanced degrees were significantly less likely than individuals with some college or less education to be low-risk gamblers and problem gamblers and more likely to be non-problem gamblers. Finally, individuals classified as unemployed/other were more likely to be problem gamblers compared to retired individuals (6.1% versus 1.7%).

Correlates of Gambling Problems: Problem gambling is known to be associated with other mental health issues including mood disorders and substance use disorders. Gamblers who had used tobacco in the past year were less likely to be non-problem gamblers and low-risk gamblers compared with gamblers who had not used tobacco in the past year. Gamblers who had used cannabis in the past year

were more likely to be problem gamblers compared with gamblers who had not consumed cannabis in the past year. Gamblers who had used hallucinogens in the past year were more likely to be problem gamblers compared with gamblers who had not engaged in this behavior in the past year.

Among gamblers, there was no significant difference in the risk of experiencing gambling problems for those who had consumed or not consumed alcohol in the past year; however, gamblers who acknowledged having an alcohol or drug problem were significantly more likely to be classified as problem gamblers compared with gamblers who did not acknowledge having alcohol or drug problems. Finally, individuals who had gambled and also acknowledged having behavioral issues or dependencies in the past year were more likely to be classified as problem gamblers compared to gamblers who did not report behavior problems. Gamblers who reported having difficulties with depression, anxiety or other mental health problems were more likely to be classified as problem gamblers compared to gamblers who did not report these mental health problems.

Online Gambling and Online Gaming

In the past decade, there has been tremendous growth nationally and worldwide in the number of opportunities to gamble online as well as a convergence of online gaming and online gambling. In the legislative proviso that funded the new prevalence survey in Washington State, the Problem Gambling Task Force (PGTF) was asked to identify additional areas for consideration needed to reduce the number of people impacted by gambling problems. In response, the PGTF requested that the prevalence study also collect data on participation in online gambling and gaming to provide up-to-date information about the scope of these activities in Washington State.

To capture this information, respondents were asked to identify their online activities in two separate sections of the questionnaire. First, in the series of questions about the gambling activities respondents had participated in during the past year, all survey respondents were asked if they had gambled online (Question 21). In a later section of the questionnaire, all survey respondents were asked about specific online gaming and gambling activities they had participated in during the past year. Based on responses in the later section with questions about specific online activities (rather than the single question about online gambling), a new typology was created and applied to all adults in Washington State.

The new typology included the following groups: ‘Gambled Online’ means that one or more activities selected by the respondent are clearly defined as a gambling activity. ‘Gamer Only’ means that the respondent only participated in activities online that are clearly gaming and do not appear to have an element of gambling at all. ‘Gamed Online’ describes the area of convergence where one or more activities that the respondent selected could be defined by some as gambling.

Among those respondents who reported earlier in the survey that they had gambled online (‘online gambler’),¹ almost three quarters (73%) were also classified as having participated in Online Gambling activities, based on their responses to the later section of the survey. Another 12% of ‘online gamblers’ did not indicate that they had participated in any of the listed online activities in the later part of the survey. A small proportion of ‘online gamblers’ (6.7%) indicated that they had only participated in activities defined as ‘Gaming Online’ and another 8.6% indicated that they had played games on an electronic device in the past year—defined as ‘Gamer Only.’

¹ ‘Online gambler’ means that the respondent answered Yes to Question 21: ‘In the past 12 months, have you gambled online?’

Among all Gamblers (including both online and brick-and-mortar only gamblers), 30.8% reported they had gambled online, 19.6% selected 'Gamer Only' activities, and 9.6% selected activities that fall into the 'grey area.' For respondents who answered 'No' to Question 21 (non-online gamblers and non-gamblers combined), 22.4% selected online activities that fall into the 'Gambled Online' category, while another 7.9% selected online activities that fall into the 'Gamed Online' category (see Table 9 in the report). In all, these findings suggest that adults who participated in online gambling and/or online gaming activities were not always aware that these activities have an element of gambling.

Two additional significant findings are: (1) among gamblers, 11.5% report gambling online in the past 12 months, despite the fact that online gambling is illegal in Washington State, and (2) these 'online gamblers'² have three times the risk for moderate-to-severe problem gambling compared to the population of all gamblers (10.3% versus 3.5%).

Demographics: Since all respondents were asked questions about online gambling/gaming, results are reported for all adults rather than just for gamblers. Men were more than twice as likely as women to have gambled online and more likely to have gamed online. Women were almost twice as likely as men to have only played games on an electronic device. Whites were more likely than People of Color to have only played games on an electronic device while People of Color were more likely than Whites to have gambled online. Respondents aged 18 to 34 were more likely to have gambled and gamed online than older adults while respondents aged 35 to 64 were more likely to have only played games on an electronic device compared with those aged 65 and over. There were no differences between education groups in online gambling, online gaming, or only playing games on an electronic device. Retired adults were less likely than employed or unemployed/other adults to have gambled or gamed online. Respondents with military service were less likely than those without any military service to have gambled online and to have played games on an electronic device.

Problem Gambling: The PGSI was only administered to respondents who had participated in one or more conventional gambling activities in the past year. Given the substantial overlap between conventional online gambling and online gambling/gaming, it is helpful to examine the prevalence of problem gambling among respondents who had engaged in conventional online gambling. Among 'online gamblers,' the prevalence of moderate-to-severe problem gambling (10.3%) was substantially higher compared to all gamblers (3.5%). Additionally, 'online gamblers' were at almost four times the risk for problem gambling compared to gamblers who only gambled at brick-and-mortar venues (10.3% as compared to 2.6%).³

Future Directions

There is much more to be learned through additional analyses of the Washington State data, additional research activities to supplement these findings, and subsequent iterations of this survey. For example, more work is needed to understand the behaviors and attitudes of online gamblers/gamers. Separately, it would be interesting to code and analyze responses to open-ended questions in the survey to better understand gambling activities beyond those specified in the survey and to describe the possible relationship between types of gambling and types of health insurance in Washington State.

² Responded 'Yes' to Question 21: 'In the past 12 months, have you gambled online?'

³ Brick-and-mortar means 'land-based' and includes commercial card rooms, Tribal casinos, horseracing, Lottery, pull tabs, bingo, etc.

Topics that require deeper analyses, using multivariate approaches, include identifying relationships between attitudes toward gambling and participation in specific gambling activities as well as relationships between clusters of similar gambling activities and demographics. Multivariate analyses would also be useful to assess the relationships between risky and problem gambling and demographics, gambling involvement, and comorbid conditions. These analyses could help identify risk factors that remain predictive of at-risk and problem gambling status after controlling for underlying relationships in the data.

Additional research activities would add depth to the findings presented in this report. For example, it would be interesting to conduct a survey using a low-cost, opt-in online panel to examine help-seeking behavior for gambling problems in greater depth. By analyzing a dataset with a high proportion of problem gamblers, we could learn much more about their desire for treatment, treatment-seeking behavior, and the barriers they face in seeking treatment. Another way to gain a better understanding about help-seeking by individuals experiencing gambling problems would be to screen for gambling problems among individuals seeking help for problems with alcohol, drugs and mental health.

Finally, it would be advisable to conduct a replication of the Washington State Adult Problem Gambling Survey in 3 to 5 years. Measuring the same behaviors and using the same methods employed in the Washington State Adult Problem Gambling Survey at subsequent points in time will be useful in monitoring changes over time in gambling attitudes, awareness of problem gambling services, gambling participation, and problem gambling prevalence in the state.

Table of Contents

List of Tables	x
List of Figures	x
Abbreviations and Acronyms	xi
INTRODUCTION	1
Definitions	1
Overview of Gambling Prevalence Research	3
Convergence Between Online Gambling and Online Gaming	6
Previous Gambling Prevalence Research in Washington State (1992-2003)	7
2021 Washington State Adult Problem Gambling Prevalence Study	9
METHODS	11
Ethical and Peer Review	11
Questionnaire Development and Description	11
Data Collection Procedures	13
Sample Response Rate	13
Weighting of the Dataset	14
Reporting	15
Limitations to the Analysis	15
Impact of the COVID-19 Pandemic on Survey Results	16
RESULTS	18
All Adults—Attitudes Towards Gambling and Awareness of Services	18
All Adults—Gambling Behavior and Demographics	21
All Adults—Problem Gambling	24
All Gamblers—Comparing Gamblers by Gambling Type	30
The Overlap of Gaming Online and Gambling Online	35
SUMMARY AND CONCLUSIONS	42
Notable Findings	42
Strengths and Limitations of the Study	44
Future Directions	45
Conclusion	47
WORKS CITED	48
APPENDIX A: HERE21 RESEARCH QUESTIONS	54
APPENDIX B: CALIBRATING THE PROBLEM GAMBLING SEVERITY INDEX (PGSI)	55
APPENDIX C: ADDITIONAL TABLES	57

List of Tables

Table 1: Previous Gambling Prevalence Surveys Conducted in Washington State	9
Table 2: Demographics of 2021 Prevalence Survey Sample (unweighted and weighted)	14
Table 3: Past-year Gambling Participation in Washington State†	22
Table 4: Classification of Respondents on the PGSI.....	25
Table 5: Comparing Problem Gambling Surveys Across States (past 5 years).....	26
Table 6: Past-year Gambling Participation Among Gamblers†	31
Table 7: Classification of Gamblers on the PGSI	32
Table 8: Gambling Involvement and Gambling Types	34
Table 9: Online Gambling/Gaming Among All Gamblers.....	37
Table 10: Classification of Online Gamblers (Q21 only) on the PGSI	41
Table 11: Demographic Groups with High Levels of Past-year Gambling Participation	43
Table B-1: Classification Accuracy of the PGSI Using Different Scoring Thresholds	56
Table C-1: Demographics of Lottery Players.....	57
Table C-2: Demographics of Tribal Casino Gamblers.....	58
Table C-3: Demographics of Pull-tabs, Bingo and Raffle Players	59
Table C-4: Demographics of Online Gamblers (Q21 only)	60
Table C-5: Demographics of Out-of-State Gamblers*	61
Table C-6: Demographics of Commercial Card Room Players	62
Table C-7: Demographics of Horseracing Bettors.....	63
Table C-8: Demographics of Other Gamblers*	64
Table C-9: Demographics by PGSI Status for All Adults	65
Table C-10: Demographics by PGSI Status for All Gamblers	67
Table C-11: Correlates of Gambling Problems Among Gamblers	68
Table C-12: Demographics of Online Gamblers, Gamers and Non-Gambling Gamers.....	70

List of Figures

Figure 1: Beliefs about Gambling Availability in Washington State.....	19
Figure 2: Beliefs about Gambling Benefits/Harms in Washington State	19
Figure 3: Awareness of Problem Gambling Outreach.....	20
Figure 4: Awareness of Problem Gambling Resources	21
Figure 5: Demographics of Gambling Types	28
Figure 6: Demographics of Online Gamblers and Gamers.....	39

Abbreviations and Acronyms

AAPOR – American Association of Public Opinion Research

BBGS – Brief Biosocial Gambling Screen

CATI – Computer Assisted Telephone Interview

CAWI – Computer Assisted Web Interview

DSM – Diagnostic and Statistical Manual of Mental Disorders
Includes DSM-III (1980), DSM-III-R (1987), DSM-IV (1994) and DSM-5 (2013)

ECPG – Evergreen Council on Problem Gambling

EGM – Electronic Gambling Machine

HCA – Washington State Health Care Authority

HCA/DBHR – Division of Behavioral Health and Recovery Prevention within HCA

IGRA – Indian Gaming Regulatory Act of 1988

NODS – NORC DSM-IV Screen for Gambling Problems (Gerstein, Volberg, Harwood, & Christiansen, 1999)

PGSI – Problem Gambling Severity Index; a validated assessment tool of nine questions from the longer Canadian Problem Gambling Index (Ferris & Wynne, 2001)

PGTF – Washington State Problem Gambling Task Force

PPGM – Problem and Pathological Gambling Measure (Williams & Volberg, 2014)

SAQ – Self Administered Questionnaire

SESRC – Social and Economic Sciences Research Center, Washington State University

SOGS – South Oaks Gambling Screen (Lesieur & Blume, 1987)
Includes SOGS-R (Revised) (Abbott & Volberg, 1996)

WSGC – Washington State Gambling Commission

WSIPP – Washington State Institute for Public Policy

WSIRB – Washington State Institutional Review Board

INTRODUCTION

The gambling studies field has changed considerably over the last four decades. In the 1980s and early 1990s, when the first state-wide surveys of gambling and problem gambling were carried out, policy makers were simply interested in finding out how many people experiencing gambling problems there were in the population in order to fund and design treatment services for those with gambling-related difficulties. Since then, the goals for gambling prevalence research have become more complex and of interest to many more audiences.

Population surveys of gambling have become an essential component in establishing and monitoring legal gambling.⁴ Results of these surveys can be used to shape public awareness campaigns using targeted messages to prompt changes in attitudes and behavior in vulnerable subgroups in the population. Population surveys can also inform the development of treatment services for individuals with gambling problems, through identification of the number and characteristics of individuals likely to seek help. Population surveys have the potential to improve how gambling problems are identified and how communities respond. Finally, population surveys have value in advancing understanding of the risk factors associated with gambling problems—information needed in the development of evidence-based gambling interventions, regulations, and policies.

Population prevalence studies of gambling serve several important purposes. They establish the current prevalence of overall gambling participation, the prevalence of participation in each form of gambling, and the prevalence of problem gambling. This information, in turn, is useful in understanding the overall recreational value of gambling to society, the negative social impacts of providing legalized gambling, the number of individuals with gambling problems that would benefit from treatment, and the types of gambling most strongly associated with problem gambling. Changes in the prevalence of problem gambling from one time period to the next provide important information about changes in problem gambling and the potential effectiveness of policies implemented to mitigate gambling harms (Volberg, 2007; Williams & Volberg, 2012).

Definitions

Gambling is a broad concept that includes diverse activities, undertaken in a wide variety of settings, appealing to different types of people, and perceived in various ways. In this report, we define gambling as “staking money or something of material value on an event with an uncertain outcome in the hope of winning additional money and/or material goods” (Volberg et al., 2017). This definition includes activities that are typically identified as gambling (i.e., electronic gaming machines, casino table games, sports betting, private wagering, bingo, horse race betting) as well as activities about which there is sometimes less public consensus (i.e., raffles, lottery tickets).

The concepts of gambling and gambling participation exist on a continuum. Individuals who do not gamble (non-gamblers) are located at one end of this continuum and individuals who experience problems as a result of their gambling are located at the opposite end of this continuum. Our view of gambling problems is highly dynamic; individuals can move in and out of points along this continuum at different times in their lives. For example, a non-gambler could begin gambling, a person at low risk for

⁴ (Volberg, 2004; Volberg & Wray, 2013; Young, 2013)

problem gambling could move into a higher risk level, or a person with severe gambling problems could move into a lower risk level.

Problem gambling typically refers to individuals who experience difficulties limiting money and/or time spent on gambling and negative consequences arising from this impaired control. The definition of problem gambling used in this report is “difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community.” This definition incorporates both the notion of an underlying condition as well as its consequences (Neal, Delfabbro, & O’Neil, 2005: 125).

From a public health perspective, individuals who are at considered to be at moderate or even lower risk for problem gambling are of as much concern as gamblers who meet criteria for Gambling Disorder. This is because they represent a much larger proportion of the population than those at highest risk for Gambling Disorder. These individuals are also of interest because of the possibility that their gambling-related difficulties may become more severe over time. Another important factor is that the gambling behavior of people who are at risk for developing problems may be more easily influenced by changes in social attitudes and public awareness (Shinogle et al., 2011).

Gambling Disorder (previously called Pathological Gambling) has been recognized as a psychiatric condition since 1980 when it was included for the first time in the *Diagnostic and Statistical Manual* (DSM-III) (American Psychiatric Association, 1980). In 2013, with the publication of the fifth edition of the manual, changes were made to the placement of the disorder within the manual as well as to the diagnostic criteria in recognition of the shared genetic, physiological and psychological similarities between Gambling Disorder and substance use disorders (Rash, Weinstock, & Van Patten, 2016). The changes included (1) moving the disorder from a section of the manual titled “Impulse Control Disorders Not Elsewhere Classified” to a different section titled “Substance-related and Addictive Disorders,” (2) dropping the criterion related to illegal activities, and (3) reducing from 5 to 4 the number of criteria required to meet diagnosis (American Psychiatric Association, 2013).

In epidemiological research, individuals are generally categorized as at-risk, problem, or pathological (now called ‘disordered’) gamblers on the basis of their score on one of the many instruments developed to identify individuals with gambling-related difficulties.⁵ Because these instruments were developed at different points in time and used different clinical diagnostic criteria, they use different terms to classify gamblers, including problem gamblers, pathological gamblers, and disordered gamblers. To limit confusion about these terms, we use problem gambling throughout this report as an umbrella term that encompasses the full range of loss of control as well as gambling harms and consequences that an individual may experience.

Except when referring to research results (published or produced for this report), the phrase ‘persons/individuals experiencing gambling problems’ is used throughout the report. This ‘person-centered’ language is being used more frequently to avoid using a potentially stigmatizing term and replacing use of the term ‘problem gambler’ in the gambling studies field.

⁵ (Abbott & Volberg, 2006; Stinchfield, Govoni, & Frisch, 2007; Williams & Volberg, 2014)

Overview of Gambling Prevalence Research

Research Completed Prior to 2015

Over the past 40 years, numerous U.S. states, Canadian provinces, and global jurisdictions have commissioned population prevalence studies to examine the prevalence of gambling and problem gambling. Williams, Volberg, and Stevens (2012) identified approximately 200 prevalence surveys that were completed between 1975 and 2011. In the U.S., reports estimate between 78% and 86% of adults have gambled in their lifetimes, 63% to 82% in the past year.⁶ A majority of these adults gamble only occasionally and for recreation. However, a proportion of those who gamble will experience negative impacts on their lives and those around them, including with relationships, school or work, and at times even, resulting in serious adverse consequences such as unemployment, divorce, bankruptcy, criminal charges, and homelessness.⁷ It is worth noting that the surveys reviewed in the 2012 study were largely carried out before the rapid international expansion of online gambling and all were completed before the COVID-19 pandemic.

Based on the 2012 study, the prevalence of disordered and sub-threshold problem gambling varies widely among jurisdictions, due primarily to differing sampling methodologies, assessment tools, and methods of analysis, as well as cultural and geographically based differences. In their review, Williams and colleagues (2012) reported that the standardized past year rate of problem gambling, which includes gambling disorder at the most severe end of the continuum, ranged from 0.5% to 7.6%, with a mean of 2.3%.

Researchers have published six national population prevalence studies of problem gambling in the U.S.⁸ Two meta-analyses have reported on state and regional prevalence data.⁹ In addition, 31 states have commissioned prevalence studies, with higher rates of gambling problems typically reported in states with greater gambling availability (Williams et al., 2012). Based on the 2012 review, prevalence rates of problem and disordered gambling among all adults in the U.S. range from 0.9% to 8.1%, with an average rate of 2.2%. Overall, in the U.S., rates of problem and disordered gambling rose during periods of rapid gambling expansion in the 1980s and 1990s and then leveled off¹⁰ although higher prevalence rates have been identified among individuals living in closer proximity to gambling venues.¹¹

In the most recent national study, Welte and colleagues (2015) compared the results of two telephone surveys conducted with U.S. adults in 1999-2000 and in 2011-2013. The researchers reported that past-year gambling decreased from 82.2% to 76.9% over the 12-year period and that only internet gambling participation increased during that time, from 0.3% to 2.1%. The authors noted that problem gambling increased significantly among men (4.2% to 6.8%) but decreased slightly among women (2.9% to 2.5%) over this time. Rates of problem gambling were highest among younger adults (aged 18 to 30) and among those in the lowest socioeconomic group (Welte et al., 2015).

⁶ (Gerstein et al., 1999; Kessler et al., 2008; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002)

⁷ Although treatment-seeking among individuals experiencing gambling problems is low, individuals do not always wait until they have experienced the most adverse consequences before needing or seeking help.

⁸ (Gerstein et al., 1999; Kallick, Suits, Dielman, & Hybels, 1979; Kessler et al., 2008; Petry, Stinson, & Grant, 2005; Welte, Barnes, Tidwell, Hoffman, & Wieczorek, 2015) (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001)

⁹ (National Research Council, 1999; Shaffer, Hall, & Vander Bilt, 1997)

¹⁰ (Horváth & Paap, 2012; Welte et al., 2015; Williams et al., 2012)

¹¹ (Gerstein et al., 1999; Shaffer, LaBrie, & LaPlante, 2004; Welte, Barnes, Wieczorek, Tidwell, & Hoffman, 2007; Welte, Wieczorek, Tidwell, & Parker, 2004)

Research Completed Since 2015

Much of the research reviewed to this point was carried out in the late 1990s and early 2000s. Very few states funded prevalence surveys between 2000 and 2015. Surveys carried out more recently, between 2017 and 2021, are reviewed below. As noted above, each state selected the assessment tool(s) and/or criteria to be used in its survey to determine risk levels for those who gamble. Assessment tools used by the states mentioned below include the following:

- PGSI (Problem Gambling Severity Index, based on the Canadian Problem Gambling Index)¹²
- NODS (NORC DSM-IV Screen for Problem Gambling)
- PPGM (Problem and Pathological Gambling Measure)
- DSM-5 criteria (Diagnostic and Statistical Manual of Mental Disorders)

New Jersey: In 2013, New Jersey legalized Internet gambling and commissioned a series of annual reports to understand the demographics and player patterns of online gamblers in the state. The first state-wide survey of past-year gambling and problem gambling was carried out in 2015 and sought to evaluate the effects of the availability of online gambling on gambling behavior and problem gambling severity (Nower, Volberg, & Caler, 2017). The survey was composed of two ‘arms,’ including a dual-frame telephone survey (landline and cell phones) of 1,500 adults aged 18 and over and an opt-in online panel survey of 2,134 adult residents of New Jersey. The PGSI was used as the measure of problem gambling in both arms of the study. In presenting the data in their report, the researchers were careful to provide results for both a combined, weighted dataset and separately for each of the two samples. Past-year gambling participation in the combined dataset was 69.8% with 5.3% of adults gambling exclusively online, 19.2% gambling at both online and land-based venues, and 75.5% gambling only at land-based venues. The past-year prevalence of problem gambling (PGSI 8+) in the combined dataset was 9.0% with a significantly higher rate of problem gambling (13.5%) among the online panelists compared to the telephone sample (0.6%). The rate of problem gambling in New Jersey was significantly higher among men compared to women, adults under the age of 55 compared to older adults, and Hispanics and Asian/Others compared to Whites. Problem gamblers in this study had high rates of tobacco use, binge drinking, illicit drug use, problems with drugs or alcohol, other behavioral disorders, and serious mental health problems. The telephone survey arm of the study achieved a response rate of 5.3%, indicating that caution is needed in interpreting the results.

Maryland: After introducing video lottery terminals (VLTs) and casino-style gambling at six locations between 2007 and 2012, a prevalence survey was carried out in Maryland in 2017 (Tracy, Maranda, & Scheele, 2017). A dual-frame telephone survey (landline and cell phones) was completed with nearly 4,000 Maryland residents aged 18 and over with results comparable to a prevalence survey completed in 2010 (Shinogle et al., 2011). Past-year participation in gambling was 87%, slightly lower than the 89.7% identified in 2010. The study utilized the NODS, a measure of gambling problems based on the DSM-IV, to assess problem gambling prevalence. The prevalence rate of problem and pathological gambling among all respondents was 1.9% which was significantly lower than the 3.4% rate identified in 2010. A multivariate analysis identified the predictors of problem gambling in Maryland as male gender, middle age, minority racial or ethnic status, lower education and household income, use of tobacco, alcohol and illicit drugs, non-medical use of prescription drugs, and self-reported health status rated fair or poor. As with the New Jersey survey, these results should be interpreted with caution given the 6.6% response rate.

¹² The PGSI is the assessment tool used in the 2021 Washington State Adult Problem Gambling Prevalence Study. Detailed information on the PGSI and the scoring method used for this survey can be found in the Methods section and Appendix A of this report.

Kansas: Another gambling survey was carried out in 2017 in Kansas as a follow-up to a survey completed in 2012. This survey was multimodal with eligible respondents invited to complete online or using a paper questionnaire. The sample size was small (n=1,755) and the response rate was not reported. The researchers did not use a validated problem gambling measure and, in contrast to most gambling surveys, only asked about gambling participation in the past 30 days. The monthly gambling participation rate was 48% with lottery purchases and slot machines at casinos as the most popular types of gambling. Among all adults, the researchers reported the prevalence rate of ‘moderate risk’ gambling as 10.1% and the ‘high risk’ rate of gambling as 2.7%. However, it is difficult to know how these rates compare with other surveys since the problem gambling measure was a mix of items from the NODS and the PGSI. In the wake of the explosion of fantasy sports betting in the U.S. in 2016, it is notable that the rate of participation in fantasy sports betting in Kansas was nearly 7% (Learning Tree Institute, 2017).

Iowa: In 2018, a gambling prevalence survey was carried out in Iowa (Park, Losch, Muilenberg, & Zubrod, 2019). This followed the approval of seven new casinos in Iowa which was already home to 19 commercial casinos and four Tribal casinos. A dual-frame telephone survey (landline and cell phones) was completed with nearly 2,000 Iowa residents aged 18 and over; a response rate of 26.3% was achieved. The survey in Iowa employed the PGSI to assess problem gambling. The past year gambling participation rate was 73.8% and the researchers found that 6% of their sample had bet on sports in the past year, 5% had bet on fantasy sports, and less than 1% had bet on daily fantasy sports. The prevalence of problem gambling (PGSI 8+) among all adults was 0.8% while 13.6% of the respondents had a score of one or more on the PGSI. Multivariate predictors of problem gambling in the Iowa survey included male gender, being under 65, non-White, employed, with less than a high school diploma, and less than \$75,000 in annual household income. Other predictors of problem gambling included tobacco use and a low score on a quality of life measure.

Minnesota: Minnesota funded a gambling prevalence survey in 2019 among adults aged 18 and over. The survey was offered both online and via a paper questionnaire and achieved a response rate of 25%. Based on a large sample (n=8,512), the researchers found that 67% of respondents had gambled in the past year. The study used the PPGM to assess problem gambling prevalence and the rate for all adults was 1.3% while the at-risk rate was 3.8%. Correlates of problem gambling in this survey included being aged 35 to 64 and having lower education and lower household income. Correlates of problem gambling in this study included a substance use disorder, being overweight or obese, having fair or poor mental health, and using tobacco. In this study, 6% of respondents had gambled online in the past year, including on sports, fantasy sports, slot machine games, and casino table games (Streich, Anton, & Bosch, 2020).

New York State: New York State funded a gambling prevalence survey in 2020 during the COVID-19 pandemic (RTI International, 2021). This survey was offered online and via a paper questionnaire and achieved a response rate of 28% and a sample size of 3,845 adults. The topic of the survey was described as “recreation” rather than gambling which likely led to a more representative sample. Given the pandemic lockdown, it is not surprising that only 29.4% of respondents had gambled in the past year. Using questions based on the nine DSM-5 criteria, the problem gambling prevalence rate (scoring on any of the nine questions) among all adults was 4.3% and the correlates of problem gambling were identified as male gender, living in New York City or the mid-Hudson region, between the ages of 18 and 24, and being Black/African American.

Illinois: Another post-COVID gambling prevalence survey was carried out in Illinois in 2021 (Carliner et al., 2021). The researchers describe an unusual procedure for sampling respondents, with one sample of Illinois adults (n=2,029) recruited using conventional methods and a sample of “frequent gamblers” made up of monthly gamblers in the first sample along with a mixed group of individuals in treatment for gambling problems and community volunteers. The PPGM was used to assess problem gambling. The survey was prompted by the authorization of legal sports betting, six new full-service casinos, casino games at racetracks, and expanded video gambling in Illinois. The past year gambling participation rate was 68.4% and the problem gambling prevalence rate was 3.8% among all adults. The researchers noted that COVID-19 protocols likely affected both data collection and gambling behavior. Among frequent gamblers, they found that 40.4% of recreational gamblers participated in 1-2 types of gambling while 50.3% at-risk gamblers participated in 3-5 types of gambling and 61.7% of problem gamblers participated in 6 or more types of gambling.

Convergence Between Online Gambling and Online Gaming

In the past decade, there has been tremendous growth in the number of opportunities to gamble online. Using technology such as e-tablets, mobile phones, desktop and laptop computers, individuals have constant access to gambling. Online casino-style gambling, online poker, esports, and online sports betting are examples of the types of gambling options online. In Washington State, these activities remain illegal.¹³

In addition, there has been a convergence of online gaming and online gambling, referred to as the ‘gamblification’ of online gaming. It is now common for a game that can be accessed from a mobile device or personal computer to start out as ‘free play’ but then, as the user continues to play, elements of gambling are introduced. Examples of this include ‘loot boxes’ or other types of rewards that require the player to either spend money or additional time and effort to ‘unlock.’ Because the player is contributing something of value (remuneration) to receive a reward (prize), and there is an element of chance (the player does not know what they will receive), this is a ‘grey area’ where gaming and gambling overlap. Often, the financial expenditure is conducted as a ‘microtransaction’ during which the player pays a relatively small amount (\$1 for example) to receive the prize (which is always virtual). The prize may also be an opportunity to move up to the next level (‘leveling up’) of the game more quickly than when playing for free. Even relatively small microtransactions can quickly add up to hundreds and even thousands of dollars a month.

In the legislative proviso that established the Problem Gambling Task Force (PGTF), in addition to ensuring that the prevalence study was conducted, and performing a gap analysis, the committee was also to:

‘(e) Identify additional problem gambling areas for consideration and any actions needed to ensure the state and/or regulatory agencies are effectively addressing

¹³ According to Julie Lies, Tribal Liaison with the Washington State Gambling Commission, online gambling (which is illegal in Washington State) should be differentiated from legal sports wagering at Tribal casinos: *‘On premises mobile gaming’ is allowed for Tribes related to sports wagering only. On premises means, ‘physically present on the premises of that tribe’s gaming facility’ and includes the Gaming Facility and adjacent or adjoining amenities such as hotels, restaurants, conference or entertainment spaces, common areas, parking lots, garages, or other improved area. Customer cannot place bets until they are within the premises.’* This legal gambling option was not yet available at Tribal casinos at the time that the prevalence survey data was collected, so is not reflected in this report.

problem gambling in an attempt to reduce the number of persons impacted by this disorder.'

With the knowledge that (1) online gaming often includes elements of gambling and access to online games continues to grow, (2) online gambling is growing rapidly, and (3) online gambling was illegal in Washington State at the time of the survey,¹⁴ the PGTF made the decision to collect data on participation in online gambling and gaming (including activities in the 'grey area') to share with the Legislature. The purpose of collecting and sharing this data with legislators is to provide up-to-date information about the scope of illegal online gambling in Washington State, as well as activity occurring in the 'grey area' of the convergence between online gaming and online gambling. With this information, the Legislature will be better informed if and/or when considering the impacts of online illegal gambling on Washington State adult residents, as well as whether any additional resources should be allocated to ensure that problem gambling treatment is available to affected individuals and their loved ones. While the PGTF's recommendations to the Legislature (due in November 2022) may include suggestions for next steps in addressing this topic, recommendations on the topic are outside of the scope of this report.

Previous Gambling Prevalence Research in Washington State (1992-2003)

The first gambling prevalence survey carried out in Washington State was conducted in 1992 (Volberg, 1993b). The survey was funded by the Washington State Lottery and built on work carried out in other parts of the country as well as internationally.¹⁵ At the time, the only validated measure of problem gambling was the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987) which was revised in 1990 to include an assessment of past-year as well as lifetime problem gambling (Abbott & Volberg, 1996). In all of these surveys, respondents were contacted and interviewed by telephone. The number of interviews completed in each jurisdiction was determined by balancing available resources and desired confidence intervals.

In 1992, when the first survey of gambling and problem gambling was carried out in Washington State, there were already substantial legal opportunities for gambling available to the state's residents. The Washington State Lottery offered several products, including a large-jackpot game, daily games and instant or scratch tickets. There was on-track and off-track betting on horse and dog races, commercial gambling opportunities on pull-tabs and card games, and charitable wagering on pull-tabs, bingo, and raffles. After the Indian Gaming Regulatory Act of 1988 (IGRA) was enacted, several Tribes established compacts with Washington State and two Tribes operated casinos with table games such as poker and blackjack.

The 1992 Washington State survey included 1,502 residents aged 18 and over. The survey found that 91% of the respondents had gambled at some time in their lives; those who had ever gambled were most likely to be White, over the age of 30, high school graduates, and to have annual household incomes over \$25,000. The lifetime prevalence rate of 'probable pathological gambling' (the most severe classification of the SOGS) was 1.5% among all adults while the past-year prevalence rate was 0.9% among all adults. Individuals who scored as lifetime problem or probable pathological gamblers were more likely than the

¹⁴ Legal sports wagering at Tribal casinos did not become available until after the data collection phase of the 2021 study, so any reported online gambling in the survey was illegal at that time.

¹⁵ (Abbott & Volberg, 1991, 1992; Baseline Market Research, 1992; Christiansen/Cummings Associates, 1992; Ladouceur, 1991; Polzin et al., 1998; Stuefen, Volberg, & Madden, 1991; Volberg & Steadman, 1988, 1989, 1992)

general population to be men, under the age of 30, non-White and unmarried. Based on weekly involvement and monthly expenditures, wagering on sports, non-Tribal bingo, and the Lottery's Daily Game were the types of gambling most closely associated with problem gambling in Washington State (Volberg, 1993b).

In 1998, the Washington State Lottery funded a replication of the baseline prevalence survey (Volberg & Moore, 1999b). In the intervening years, legal gambling in the region had expanded substantially. Within Washington State, the lottery had added a daily keno game as well as two new large-jackpot games. The number of commercial card rooms had expanded and some of these establishments had grown large enough to be called 'mini-casinos.' There were now 17 Tribes with approved compacts in Washington State and at least 28 Tribal gaming facilities operating, although some of these only offered bingo. Finally, electronic gambling machines had recently started operating in Washington State.

The main purpose of the 1998 survey was to examine changes in the prevalence of gambling problems among adults in Washington State since 1992. The 1998 survey included 1,501 residents aged 18 and over. The survey found that 89% of the respondents had gambled at some time in their lives; those who had ever gambled were most likely to be between the ages of 25 and 54, to have graduated from high school and/or attended some college, to be working full time, and to have annual household incomes over \$25,000. The lifetime prevalence rate among all adults of 'probable pathological gambling' was 1.3% and the past year rate was 0.5%. Individuals who scored as lifetime problem gamblers or probable pathological gamblers were more likely than the general population to be men, under the age of 25, non-White or Hispanic, and never married. However, when compared to lifetime problem gamblers and probable pathological gamblers in 1992, those in 1998 were significantly more likely to be men, under the age of 25, and non-White or Hispanic, to have graduated from high school, and to be working full time or going to school.

In addition to the two adult gambling surveys, Washington State also funded surveys of adolescent gambling in 1993 and 1999 (Volberg, 1993a; Volberg & Moore, 1999a). Both surveys assessed gambling and gambling problems among adolescents aged 13 to 17 along with other risky behaviors including alcohol and drug use. While participation in all forms of gambling was illegal for individuals under the age of 18 in Washington State, both surveys found that the majority of the adolescent respondents had gambled in the past, primarily on card, dice or board games with friends or family, games of personal skill, and sports. Based on a version of the SOGS revised for adolescents, 0.9% of the adolescent respondents were classified as problem gamblers in 1999. Problem gambling prevalence was unchanged from the earlier survey in 1993 and was highest among male adolescents, among those who worked, and among those whose parents gambled.

One more assessment of adult gambling behavior and the prevalence of problem gambling was carried out in Washington State in 2003 (Mancuso, Gilson, & Felver, 2005). This assessment was included in the 2003 Washington State Needs Assessment Household Survey funded by a grant from the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA). Telephone interviews with 6,713 adult household residents were completed by Washington State University's Social and Economic Sciences Research Center (SESRC). Lifetime gambling participation and problem gambling prevalence were not assessed in the 2003 survey; instead the past-year version of the NORC DSM-IV Screen for Gambling Problems (NODS) (Gerstein et al., 1999) was used to assess gambling problems.

The 2003 survey found that 54% of Washington State adults had gambled in the past year. While this is a significant difference from the results in 1998, some portion of the difference is likely due to differences

in the assessment of gambling behavior as well as in survey methodology. In addition to the fact that the 2003 assessment was embedded in a larger health survey, the number of types of gambling assessed in the survey was limited to seven activities, including casino gambling, lotteries, bingo, playing golf, pool or cards for money, sports betting, horserace betting and other gambling. In contrast, the 1992 Washington State prevalence survey included questions about 19 different gambling activities while the 1998 survey asked about 16 different gambling activities.¹⁶

In the 2003 survey, problem and pathological gambling were highest among Washington State residents aged 25 to 64 years, those residing in rural counties, and among American Indian, African American and multi-race respondents.¹⁷ As in many other jurisdictions, individuals experiencing gambling problems in Washington State in 2003 were twice as likely to smoke cigarettes in the past year, nearly three times as likely to use illicit drugs other than marijuana, and twice as likely to need alcohol or drug treatment compared to adults without a gambling problem. In contrast to other gambling surveys, the prevalence of problem and pathological gambling in Washington State in 2003 did not differ by gender or poverty status.

The following table summarizes information about the three adult gambling prevalence surveys that were carried out in Washington State, prior to the most recent 2021 prevalence survey. Since the SOGS-R and the NODS typologies both distinguish between ‘pathological gambling’ and ‘problem gambling,’ the columns presenting lifetime and past-year prevalence rates include information on both of these rates.

Table 1: Previous Gambling Prevalence Surveys Conducted in Washington State¹⁸

	Sample Size	PG Measure	Lifetime Gambling	Past Year Gambling	Lifetime PG Prevalence	Past Year PG Prevalence
1992	1,502	SOGS-R	91%	80%	1.5% / 3.5%	0.9% / 1.9%
1998	1,501	SOGS-R Fisher DSM-IV	89%	74%	1.3% / 3.7%	0.5% / 1.8%
2003	6,713	NODS (DSM-IV)	N/A	54%	N/A	0.5% / 0.7%

2021 Washington State Adult Problem Gambling Prevalence Study

Over the decade leading up to 2019, the Washington State Gambling Commission (WSGC), the State Problem Gambling Program (HCA/DBHR), and the Evergreen Council on Problem Gambling (along with other stakeholders) had expressed concern about the need for up-to-date gambling and problem gambling prevalence rates. To address this issue, in 2019, WSGC commissioned a report about the gaps and possible needs in problem gambling services. A key finding of the report was that since the most recent full prevalence study was completed over two decades prior (1998), the lack of recent prevalence rates for Washington State prevented the researchers from accurately predicting how many adults might be in need of problem gambling treatment services.¹⁹ In response to this concern, the 2020

¹⁶ Studies that have assessed gambling behavior with a singular question or a small number of questions produce participation rates 30% to 60% lower than studies that assess participation in a more detailed manner (Chhabra, Lutz, & Gonnerman, 2005; Petry et al., 2005; Sommers, 1988)

¹⁷ The sample size in the 2003 survey was large enough to establish problem gambling prevalence rates separately for each of these groups.

¹⁸ Prevalence rates are among all adults.

¹⁹ (Lostutter, Philander, T., & Larimer, 2019)

Legislature added a budget proviso to appropriate additional funding from the state problem gambling account to conduct a new prevalence study.²⁰

Reasons for initiating this study included:

- Since the last full prevalence study over two decades ago, gambling has moved into the modern era, and the population of Washington State has increased substantially and is more diverse;
- Several state agencies as well as partner organizations have recognized the need for an updated prevalence study that reflects how people are gambling today (brick-and-mortar and online);
- There is a need for accurate and current prevalence rates for both gambling and problem gambling/Gambling Disorder (DSM-5) to inform the larger effort by the joint legislative Problem Gambling Task Force (PGTF) to address whether the State PG Program is meeting the current and anticipated needs of Washington State; and
- Nationally and within the State, there is increasing recognition that gambling disorders should be integrated into other mental health and substance use disorder services, including prevention, outreach, awareness, education, workforce development, assessment and treatment.

Below are some of the similarities and differences between the 2021 survey and the most recent prevalence survey in 1998:

- Different data collection methods (online and paper versus telephone)
- 2021 survey was conducted during the COVID-19 pandemic
- Since 1998, online gambling, though illegal in Washington State, has become a significant portion of gambling throughout the nation and the world
- 2021 survey had an additional focus on the collecting on gaming online, gambling online, and the 'grey area' where these activities converge
- 2021 survey included questions about participation in trading cryptocurrency and gambling with cryptocurrency
- 1998 survey included questions about the amount of money spent on specific gambling activities; the 2021 survey asked about frequency of gambling activities

The following section, Methods, provides greater detail about how the survey was developed and administered, and how the data analyses were completed.

²⁰ The amount of the appropriation was \$500,000, from the existing funds in the state problem gambling account.

METHODS

The 2021 Washington State Adult Problem Gambling Prevalence Study was completed in several stages. In the first stage of the project, staff from HCA, SESRC and WSIPP along with representatives from the Evergreen Council on Problem Gambling, Gemini Research, and the University of Washington worked together to finalize the questionnaire. In the second stage of the project, SESRC programmed the questionnaire for computer-assisted web interviewing (CAWI) and created a self-administered paper-and-pencil questionnaire (SAQ) and related advance materials. All materials were submitted to the Academy of Languages Institute for certified translation into Spanish. In the third stage of the project, the surveys were administered to approximately 49,000 households and completed by 9,413 respondents between July 2021 and early September 2021 resulting in a 19% response rate.

The fourth stage of the project involved data cleaning and dataset weighting by SESRC to increase confidence in generalizing results to the adult population of Washington State. The final stage of the project entailed data analysis by WSIPP and submission of a report to HCA, followed by additional analyses by SESRC and Gemini Research. Based on all the data analysis completed, Gemini Research produced this final 2021 prevalence study report on behalf of HCA for submission to the Washington State Legislature.

Ethical and Peer Review

The Washington State Institutional Review Board (WSIRB) determined that the project was exempt from human research review pursuant to federal regulation 45 CFR 46 in accordance with the Washington State Agency Policy and Protection of Human Research Subjects, Chapter IV.

Questionnaire Development and Description

Based on the broad language in the legislative proviso that appropriated funding for the Prevalence Study, the Problem Gambling Task Force's (PGTF) Research and Data Workgroup oversaw the development of the study's overarching research questions (see Appendix A).²¹

Following an exemption from WSIRB, an ad-hoc committee was formed to develop the survey questionnaire. Members met weekly from April through May 2021 and included Dr. Rachel Volberg (Gemini Research), Rose Krebill-Prather (WSU-SESRC), Maureen Greeley and Tana Russell (ECPG), Felix Rodriguez (HCA), and Roxane Waldron (HCA). Also present for several of the meetings were Dr. Ty Lostutter (UW), Madeline Barch (WSIPP), and Ethan Meade (Uncommon Solutions, Inc.).

The proviso language and the research questions were used as the basis for designing the survey items, including the flow of the questionnaire. Additionally, the PGTF decided to add a section that included questions about online gaming, online gambling, and the 'grey area' where these activities overlap.²²

²¹ The original proviso in the 2020 Supplemental Operational Budget was superseded by an updated version in 2021, due to the delays caused by the COVID-19 pandemic in conducting human subject research. The only change was to update the due date for the final study to June 30, 2022 (and subsequent approval for an extension to Oct 31, 2022).

²² The proviso that established the PGTF directed the group to investigate and report out on any additional emerging issue(s) that impact problem gamblers. The PGTF identified online gaming and gambling as areas of

Dr. Rachel Volberg and colleagues conducted the last two full Washington State Adult Problem Gambling Prevalence studies. With her guidance and the input of all members, and in accordance with the proviso that initiated the prevalence study, the following domains were developed for the survey questions:

- Beliefs and attitudes towards gambling
- Gambling behavior and preferences
- Awareness of problem gambling treatment services
- Level of risk for problem gambling
- Correlates with broader behavioral health and mental health measures
- Online gambling: Prevalence, methods and overlap with online gaming
- Demographics (including age, gender, ethnicity/race, military status, employment status, marital status, region of the state)

Concerns were raised that including ‘gambling’ or ‘problem gambling’ in the title of the questionnaire could significantly bias the results of the survey. Extensive experimental work that Dr. Volberg and colleagues have carried out has demonstrated that survey description (‘gambling’ versus ‘health and recreation’) has a large impact on whether eligible respondents agree to participate in gambling surveys. The mechanism for this effect is that gamblers and problem gamblers are intrinsically more interested in ‘gambling’ surveys and therefore participate at much higher rates than non-gamblers, while those who gamble little or not at all are less likely to participate in a survey described in this way (Williams & Volberg, 2009).

Over several months, the ad-hoc committee refined the questions and the survey flow, with a final version delivered to the survey lab at WSU-SESRC in mid-June 2021. The survey, referred to as *HERE21* (Health and Recreation Survey 2021) launched in the first week of July, 2021.

Measuring Problem Gambling

Many instruments exist for the population assessment of problem gambling. Worldwide, the most commonly used instruments are the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987), the Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001) and various scales based on the DSM-IV diagnostic criteria for pathological gambling.²³ One or more of these instruments were used in 95% of adult problem gambling prevalence surveys carried out internationally between 1975 and 2012 (Williams et al., 2012). The reliability of these instruments is well-established by their consistent evidence of internal consistency and test-retest reliability. However, there has been some criticism of their conceptual underpinnings and validity.²⁴

In Washington State, the PGSI was utilized to assess the prevalence of problem gambling. Research has shown that the PGSI has excellent reliability with a Cronbach’s alpha of .84 and a test-retest reliability of .78 (Ferris & Wynne, 2001). Content validity was established for the PGSI by means of feedback from gambling experts. In a study of the classification accuracy of the four most frequently used problem gambling instruments, the PGSI demonstrated good concurrent validity with the three other instruments as well as associations with gambling frequency and gambling expenditure (Williams & Volberg, 2014).

concern and requested that information be provided to the legislature on prevalence rates to inform possible future consideration and discussion.

²³ (Fisher, 2000; Gerstein et al., 1999; Kessler et al., 2008; Petry et al., 2005)

²⁴ (Govoni, Frisch, & Stinchfield, 2001; Neal et al., 2005; Stinchfield et al., 2007; Svetieva & Walker, 2008; Williams & Volberg, 2009)

In presenting problem gambling prevalence data for Washington State, we have adopted an approach that improves the performance of the instrument and the distinctiveness of the low-risk, moderate-risk, and problem gambling groups recognized in the conventional PGSI typology.²⁵ Rather than distinguish between non-problem gamblers (PGSI=0), low-risk gamblers (PGSI=1-2), moderate-risk gamblers (PGSI=3-7), and problem gamblers (PGSI=8+), the alternative scoring method splits both the low-risk and moderate-risk groups to produce a typology of non-problem gamblers (PGSI=0), low-risk (PGSI=1-4) and moderate-risk/problem gamblers (PGSI=5+). Throughout this report, the moderate-to-severe risk/problem gambling group will be referred to as ‘problem gamblers.’ Additional information and details about the development of the PGSI and the research supporting the alternative scoring method is provided in Appendix B.

Data Collection Procedures

The survey launched in July 2021 and ended in September 2021. The survey was sent to 52,000 households based on a random weighted USPS-address-based sample. Of those, approximately 3,000 envelopes were returned as undeliverable, for a total of approximately 49,000 households.²⁶

Each sampled address followed a sequence of contacts until a completed survey was obtained, or some other final status (e.g., no response or other) was determined. Mailings were scheduled approximately two weeks apart to give respondents enough time to receive and complete the questionnaire either online or on a paper survey so that SESRC could remove completed cases from follow-up mailings.

All survey households were initially mailed an invitation letter to participate in the survey online. The letter contained a \$1 pre-incentive which is a well-established method for increasing survey responses (Robbins & Hawes-Dawson, 2020). Two weeks later, if the household had not completed the survey online, a hard-copy questionnaire (SAQ) was mailed with a self-addressed stamped envelope. Two more postal follow-up reminder mailings, a postcard, and a final reminder letter were mailed to non-respondents. Near the end of the data collection period, the response rate for Spanish-speaking households was lower than expected and the decision was made to send an additional paper survey mailing to Spanish households that had not yet completed the survey. This sequence maximized the opportunity for the survey to be self-administered, which is known to reduce the potential for bias.

Sample Response Rate

A survey’s response rate refers to the proportion of eligible individuals in the sample who actually complete a survey. The response rate is an important indicator of the potential for bias in surveys because it is possible that individuals who choose not to complete a survey may differ from those who do in meaningful ways.

Response rates are calculated according to industry standards published by the American Association for Public Opinion Research (AAPOR). Based on 9,413 survey responses from 49,000 surveys, the response rate for the Washington State survey was 19.2%. This was within the range of the anticipated response

²⁵ (Currie, Hodgins, & Casey, 2013; N. V. Miller, Currie, Hodgins, & Casey, 2013; Williams & Volberg, 2014)

²⁶ Envelopes were addressed to ‘Adult (18+) who most recently had a birthday’ (rather than to known individuals).

rate of 18%-20%. Details of the calculation of the response rate are provided in the SESRC data collection report.²⁷

Weighting of the Dataset

The goal of a survey is to generate unbiased estimates of behaviors in the target population. A standard approach is to weight the data so as to align the sample more closely with the target population; this approach was followed with the Washington State survey data. Although 9,413 questionnaires were returned, 9,249 questionnaires (98.2%) were considered complete with all items through Question 24 answered. This cutoff was considered the point at which questionnaires contained enough information to be included in the weighting process. A detailed description of the weighting procedures is provided in the SESRC data collection report.

Table 2: Demographics of 2021 Prevalence Survey Sample (unweighted and weighted)

		Unweighted N	Weighted N
Gender			
	Men	41.6	49.5
	Women	58.4	50.5
Race			
	White	84.8	77.8
	POC	15.2	22.2
Age group			
	18-34 years	14.2	30.2
	35-64 years	49.1	50.2
	65+ years	36.7	19.6
Education			
	High school or less	10.9	31.6
	Some college	28.9	34.8
	BA degree	32.9	21.4
	Advanced degree	27.2	12.3

Table 2 presents information about the demographic characteristics of the unweighted and weighted sample. Demographic information for the unweighted sample was extracted from Table A12 in the SESRC methodological report while information for the weighted sample was extracted from Exhibit 3 in the WSIPP report. The comparison is helpful to understand the impact of weighting on the results of the survey. As is generally the case with surveys, this table shows that women, Whites, older adults, and those with higher levels of education were more likely to participate in the survey. The weighted data represent adjustments made to accurately reflect the demographics of the Washington State adult population.

²⁷ Krebill-Prather, R. L., McCall, J., & Miller, K. (2021). *Washington State adult problem gambling prevalence study: Data report*. Retrieved from Pullman, WA: Social and Economic Sciences Research Center, Washington State University.

Reporting

Rates presented in tables and graphs are based on samples rather than the entire population. Even when a sample is representative of the population from which it is drawn, an identified value—such as the prevalence rate—is still an estimate and can be different, even if only slightly, from the ‘true’ value. One important source of uncertainty in generalizing from a sample to the population—sampling error—is generally presented as a measure of the uncertainty around the identified value. This measure is called the confidence interval and it is a gauge of how certain we are that the result we have identified is accurate. The conventional size of the confidence interval is 95% which means that, if a researcher drew 100 samples from the same population, the identified value would fall between the lowest and highest values of the confidence interval 95 out of 100 times.

Generally speaking, narrower confidence intervals are considered more reliable because the identified value will not be very different in other samples drawn from the same population. As sample size increases, confidence intervals typically narrow. Conversely, as sample size decreases, confidence intervals widen. While the overall size of the sample for the Washington State Adult Problem Gambling Prevalence Survey is large, there are some groups in the sample that are quite small. In particular, because the prevalence of problem gambling tends to be low, readers are urged to treat estimates based on this and other small groups with caution and to pay particular attention to the confidence intervals surrounding these estimates. Where possible, we have identified statistically significant findings from the survey using **boldface** in the tables in Appendix C.

Limitations to the Analysis

Several key variables were constructed using multiple items from the 2021 Washington State Adult Problem Gambling Prevalence Survey data. After the WSIPP report was completed, the research team recognized that additional analysis was needed to be fully responsive to the legislative mandate for the study. In developing these additional analyses, the research team carefully reviewed the data and realized that some key coding decisions had been made by WSIPP that were not identified in that report.

First, in cleaning the survey data, SESRC identified 101 cases with at least one missing response to Questions 17-24 (assessing participation in specific types of gambling) that were classified as ‘Gambler’ even though all of the other questions answered in this section were “Not at all.” Changing these respondents to ‘Non-gambler’ could create confusion since the results would be slightly different from those reported by WSIPP. Rather than change the existing groups, we chose to identify the issue and report it as a limitation.

Second, SESRC identified 306 cases that were classified as ‘Gambler’ but were missing responses to the problem gambling questions. Some of these respondents were appropriately classified but some were not gamblers, having not endorsed any of the gambling items (Questions 17-24). Identification of this issue highlights the importance of understanding the assumptions that underlie coding decisions in analyzing survey data. Again, classifying these respondents properly could create confusion since the results would be different, albeit only slightly, from those reported by WSIPP. We have therefore chosen to identify the issue and report it as a limitation rather than change the classification of respondents.

Finally, SESRC identified 115 cases of Gamblers who did not answer all of the nine PGSI items. The majority of these cases (n=93 or 80.9%) answered 8 of the 9 PGSI items and the remainder (n=22)

answered between 1 and 7 PGSI items. Since these individuals did not answer all of the PGSI items, they may have been classified in a lower severity category than if they had answered all of the items. Rather than impute responses or drop these individuals from the analysis, we have chosen to identify the issue and report it as a limitation. Given the size of the overall sample, changing the classification of respondents with respect to gambling participation or the problem gambling typology would have resulted in only minor differences in reported rates (<1%).

Impact of the COVID-19 Pandemic on Survey Results

In Spring 2020, the Legislature approved funding for the new Adult Problem Gambling Prevalence study, with the bill language stating that the study was to be completed and the final report delivered by June 30, 2021. However, due to the COVID-19 pandemic, the 2021 Legislature approved a request from the Health Care Authority (HCA) to move the due date and funding authorization forward by one year, to June 30, 2022, with the expectation that the pandemic would abate before the survey was launched. Responsibility for managing all aspects of the project was assigned to the State Problem Gambling Program within the Division of Behavioral Health and Recovery at the Health Care Authority. Although the pandemic had not yet abated and recognizing the likely impacts of conducting the study during the pandemic, HCA/DBHR decided that, rather than lose the appropriated funding (and the opportunity to conduct the survey), the prevalence study data collection should proceed in Summer 2021. The updated prevalence rates of gambling and problem gambling were of paramount importance for the work that the Problem Gambling Task Force (PGTF) would require to complete its legislative mandate.

The size of the effect of the pandemic on the 2021 Washington State Adult Problem Gambling Prevalence Survey findings is unknown at this time, although consideration of impacts identified in other jurisdictions may be helpful. In 2021, Oregon conducted a COVID-impact study on gambling, alcohol use, and other behaviors. In that study, the researchers found that 33% of individuals who gambled changed their gambling frequency (the proportion that decreased their gambling was 1.6 times greater than the proportion that increased their gambling) (Marotta, Yamagata, Irrgang, & Reohr, 2021). In a 2020 study conducted in Australia, gambling participation dropped significantly from April 2019 (pre-pandemic) to May 2020 (during the first three months of the pandemic) (Biddle, 2020). In the 2003 Washington State Household Needs Survey (in which gambling was included), 54% of adult household residents gambled, while 46% did not (Mancuso et al., 2005). In the 2021 Washington State survey, only 43.5% respondents reported gambling, while 56.5% did not.

Listed below are known or suspected impacts of the COVID-19 pandemic that may have affected the survey data:

- All brick-and-mortar facilities²⁸ including commercial card rooms, Tribal casinos, and horseracing, were closed for several months during the “past 12 months” period asked about in the survey;
- Rates of self-reported online gambling may have increased during the lockdown period for COVID-19, due to the closing of workplaces and more time spent at home and online; and
- Commercial and Tribal brick-and-mortar facilities did not all re-open at the same time. This may have affected the percentage of brick-and-mortar gambling overall, as well as the percentage of adults who gambled in Washington State during the “past 12 months” period (roughly Summer

²⁸ Not including locations where lottery tickets can be purchased, such as grocery stores, mini-marts, gas stations, etc. Lottery tickets can be purchased at over 3,600 locations in Washington State but there are no online sales of lottery tickets.

2020-Summer 2021, depending on when the survey was completed between July and September 2021); and

- Other impacts that may become clearer in the future.

Until more COVID-19 gambling impact reports are conducted, the extent of the impact remains an open question.

RESULTS

In this section of the report, we present results from the 2022 survey of gambling behavior and problem gambling prevalence in Washington State. We first examine attitudes towards gambling in Washington State; we then present findings on gambling behavior and the demographics of gamblers as well as those who participated in specific types of gambling in the past year. Next, we focus on problem gambling prevalence and the demographic characteristics of individuals experiencing gambling problems in Washington State in 2021. We also examine the level of gambling involvement of problem gamblers. This is followed by a consideration of the overlap between problem gambling and alcohol, tobacco, and other substance use as well as mental health and behavioral health issues.²⁹ Our final focus in the Results section is on online gaming and gambling, which has not previously been assessed in Washington State.

In the first three sections (Attitudes, Gambling Participation, and Problem Gambling), the focus is on the entire adult population of Washington State. The next three sections are focused more narrowly on past-year gamblers and, in particular, on differences between non-problem gamblers, low-risk gamblers, and problem gamblers. The final focus of the Results section of the report is the online gambling and online gaming behavior of Washington State adults.

All Adults—Attitudes Towards Gambling and Awareness of Services

In this section, we review information on attitudes towards gambling in Washington State and awareness of outreach and services for people experiencing gambling problems. All respondents in the survey were asked questions about the availability of gambling in Washington State and whether or not they believed gambling was harmful. Information about attitudes towards gambling is taken from the WSIPP report and includes only the weighted sample (Exhibits 12 and 13).

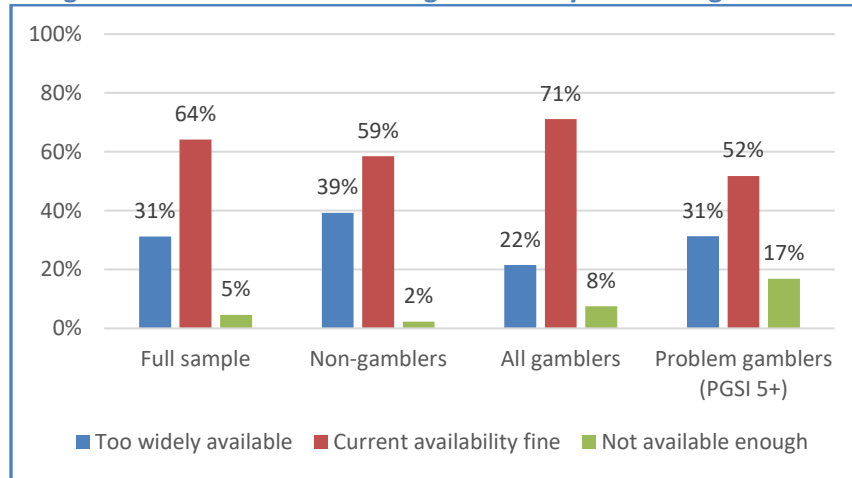
Beliefs about Gambling Availability

Figure 1 shows that the majority of Washington State residents (64.2%) believed that the current availability of gambling in the state was fine, with 31.2% reporting that it was too widely available and 4.6% reporting that gambling was not available enough. Figure 1 also shows that gamblers and those experiencing gambling problems were more likely than non-gamblers to believe that gambling was not available enough in Washington State.³⁰ In addition, among adults who gambled, a higher percentage (71%) reported that the current availability is fine, while 21% reported that gambling was too widely available.

²⁹ ‘Behavioral health issues’ are those that are not as yet included in the current edition of the DSM (DSM-5), such as online shopping, online porn addiction, Internet Use Disorder, Gaming Disorder, or similar.

³⁰ As of this writing, all online gambling in Washington State remains illegal.

Figure 1: Beliefs about Gambling Availability in Washington State

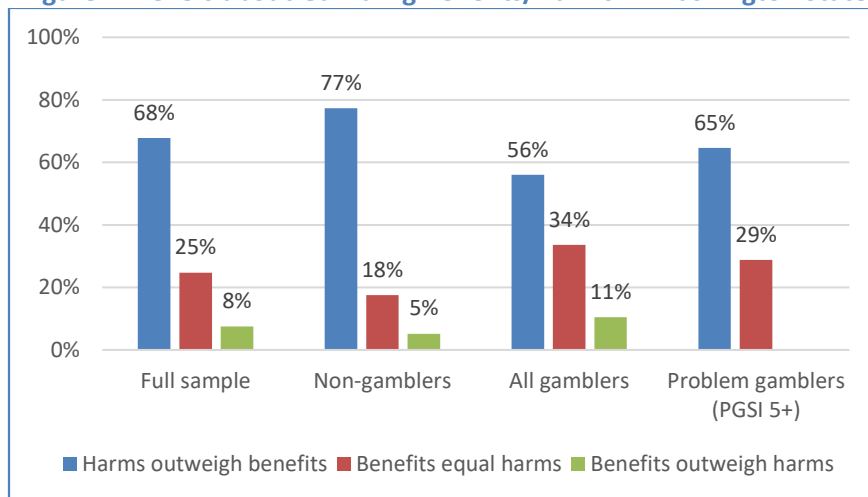


Beliefs about the availability of gambling in Washington State differed significantly across some subgroups in the population. Men were more likely than women to believe that gambling was not available enough in Washington State while women were more likely than men to believe that gambling was too widely available. Adults aged 18 to 34 were less likely than those aged 65 and over to believe gambling was too widely available and more likely to believe that the current availability was fine. Overall, adults who gamble, and especially those at risk for problem gambling, were more likely to say that gambling is not available enough as compared with adults who haven't gambled in the past 12 months.

Beliefs about Gambling Harm

Figure 2 shows that the majority of Washington State residents (67.8%) believed that the harms of gambling somewhat or far outweighed the benefits while 24.7% believed that the benefits and harms of gambling were about equal and 7.5% believed that the benefits of gambling somewhat or far outweighed the harms.

Figure 2: Beliefs about Gambling Benefits/Harms in Washington State



*The number of problem gamblers that believed the benefits of gambling somewhat or far outweighed the harms is too small to report.

Overall, gamblers were more likely to believe that the benefits of gambling outweigh the harms, compared to adults who do not gamble. Conversely, problem gamblers were more likely than either non-gamblers or adults who gambling without difficulties to believe that the harms of gambling outweigh the benefits. While not shown here, men were more likely than women to believe that the benefits of gambling outweighed the harms while women were more likely to believe the opposite was true.

Awareness of Problem Gambling Services

All respondents in the survey were also asked whether they had seen or heard information about problem gambling and whether they were aware of services for problem gamblers in Washington State. Information about awareness of services is taken from the WSIPP report and includes only the weighted sample (Exhibits 8 and 11).

Figure 3 shows the proportion of Washington State adults who reported that they had heard or seen information about problem gambling from a range of sources. Television and radio were the most common sources of information about problem gambling. Hearing about problem gambling from other sources, including articles, brochures and other people, was much lower. As reported by WSIPP, women, People of Color, Hispanics, and individuals aged 18 to 34 were significantly less likely to recall hearing about problem gambling through the broadcast sources (television and radio) compared to other groups in the population. Women, White respondents, and individuals aged 35 and older were significantly less likely than other groups in the population to have heard about problem gambling through outreach channels other than television and radio.

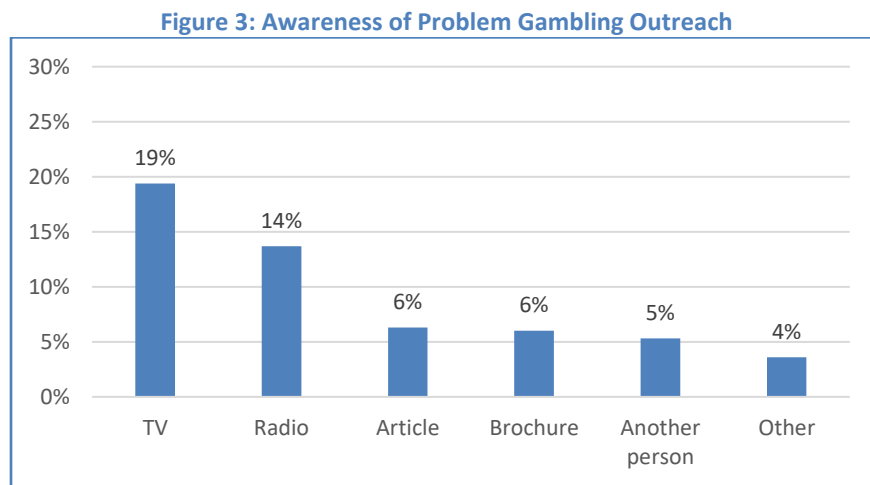
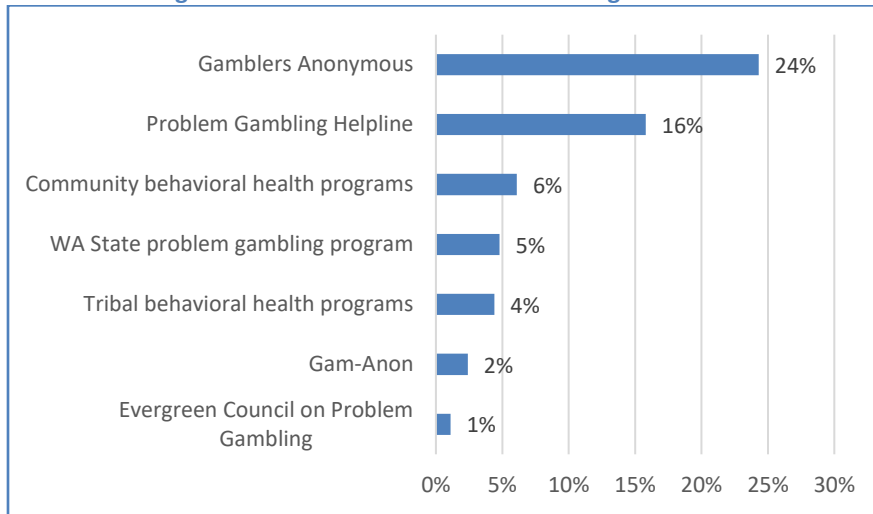


Figure 4 shows the proportion of Washington State adults who indicated that they were aware of a variety of resources for problem gamblers and their families. Resources included support groups, clinical services, and the state’s problem gambling helpline. Gamblers Anonymous and the problem gambling helpline were the most common resources identified by Washington State adults for people experiencing gambling problems. Awareness of clinical services, whether provided by community or Tribal behavioral health programs or the Washington State problem gambling program, was much lower and even fewer Washington State adults indicated an awareness of Gam-Anon, a self-help fellowship for individuals affected by the gambling problem of another person, or of the Evergreen Council on Problem Gambling, the state’s longtime nonprofit organization offering programs and services for problem gambling throughout the Pacific Northwest.

Figure 4: Awareness of Problem Gambling Resources



All Adults—Gambling Behavior and Demographics

This section examines gambling participation among adults in Washington State. To assess the full range of gambling available to Washington State residents, the survey included questions about eight different activities. At the beginning of the gambling participation section of the questionnaire, all respondents were given the same definition of gambling to assure comprehension and comparability of the results:

We define gambling as betting money, material goods, or other items of value on an event with an uncertain outcome in the hopes of winning additional money, material goods, or other items of value. It includes things such as lottery tickets, scratch tickets, bingo, slot machines, casino table games, card games, betting against a friend on a game of skill or chance, betting on horse-racing or sports, investing in high-risk stocks, trading cryptocurrency, online gambling, etc.

Respondents were then asked detailed questions about their participation in specific gambling activities, including whether they had:

- Purchased lottery tickets
- Gambled at a commercial card room
- Gambled at a Tribal casino
- Gambled on horseracing either at the racetrack or through pari-mutuel (off-track) betting
- Gambled online
- Gambled using pull-tabs, bingo, or raffles
- Done other types of gambling or played other games of chance
- Traveled out of state to gamble

Frequency of past-year participation was assessed for each gambling type. Respondents were also asked about the main reason they gambled and whether the COVID pandemic had an impact on their overall gambling behavior in the past year.

Overall Gambling Participation

The last national gambling survey carried out in 2013 found that 77% of U.S. residents aged 18 or older had gambled in the past year, down from 82% about a decade earlier (Welte et al., 2015).³¹ In the present study, 44.7% of Washington State adults acknowledged participating in one or more gambling activities in the past year. This rate of past-year gambling participation is far below past-year participation rates in recent gambling studies administered in Washington State and many other jurisdictions, and likely reflects people’s willingness and ability to gamble at brick-and-mortar venues during the pandemic, especially during the required lockdown of several months in 2020.

Table 3 presents information about past-year participation for all of the types of gambling included in the survey among all adults in Washington State. The table shows that past-year participation among Washington State adults was highest for lottery games, Tribal casinos, and pull-tabs, bingo and raffles. Participation in all other types of gambling was 5.1% or less with the exception of ‘Other.’ One possible reason for the higher than usual rate of ‘other gambling’ in the Washington State survey may be that responses include private betting among friends and family as well as other types of gambling (e.g., betting on illegal animal fights, mahjonn or other informal card or dice games, underground casinos) that were not asked about separately in the survey. (Some respondents may also have selected ‘Other’ because they may be participating in esports, online sports wagering, and/or fantasy or daily fantasy sports and were uncertain if these activities should be included in ‘online gambling.’)

Table 3: Past-year Gambling Participation in Washington State†

		Unweighted N	Weighted N	%Yes 95% CI
Q17	Lottery	2814	3001	32.6 (31.2, 34.0)
Q19	Tribal casinos	1188	1407	15.3 (14.2, 16.4)
Q22	Pull-tabs, bingo, raffles	717	814	8.9 (8.0, 9.7)
Q21	Online*	348	469	5.1 (4.4, 5.8)
Q24	Out of state	372	411	4.5 (3.9, 5.1)
Q18	Commercial card rooms	276	384	4.2 (3.5, 4.8)
Q20	Horseracing	109	128	1.4 (1.1, 1.7)
Q23	Other	806	967	10.5 (9.6, 11.5)

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

*The participation rate for Online reflects only those who answered Q21 and not any of the later questions about online gaming/gambling.

† Respondents could select multiple gambling activities so the total participation rate does not add up to 100%.

As shown in Exhibit 3 in the WSIPP report (M. Miller & Xie, 2022), past-year gambling participation rates differ significantly by gender, age, ethnicity, marital status, education, employment and military service. Men were significantly more likely than women to have gambled in the past year as were people aged 35 to 64, compared to younger and older individuals and employed people compared to both retired and unemployed/other people. With respect to education, those with advanced degrees were the least likely to have gambled in the past year while those with some college were the most likely to have

³¹ Respondents in the national survey were asked about their participation in “Internet gambling” in the past year.

gambled in the past year. Never married people were significantly less likely to have gambled in the past year as were non-Hispanic individuals and those with no military service.

Demographics of Specific Gambling Activities

In this section we review the demographic characteristics of Washington State adults who participated in specific types of gambling in the past year. Detailed demographic tables are presented in Appendix C and only the statistically significant results are presented in the body of the report.³²

Lottery (Q17)

Table C-1 in Appendix C presents information about the demographic characteristics of individuals who purchased lottery tickets and other lottery products in the past year. This table shows lottery participation among Washington State adults differed significantly by age, education, employment, and military service. Adults aged 35 and older were more likely to have played the lottery in the past year compared with those 18 to 34. Those with less than a college degree were more likely to have played the lottery in the past year than individuals with a college or advanced degree. Employed individuals were more likely to have played the lottery in the past year than unemployed individuals, and those with a history of military service were more likely to have played the lottery in the past year than those without any military service.

Tribal Casinos (Q19)

Table C-2 in Appendix C presents information about the demographic characteristics of individuals who gambled at a Tribal casino in the past year. This table shows that people who gambled in Tribal casinos differed significantly by education and employment. Tribal casino gamblers were more likely to have attended some college or to have a high school diploma or less education and less likely to have a college or advanced degree. Casino gamblers in Washington State were also more likely to be employed rather than unemployed.

Pull-tabs, Bingo or Raffles (Q22)

Table C-3 in Appendix C presents information about the demographic characteristics of people who gambled using pull-tabs, bingo and raffle in the past year. This table shows that pull-tab, bingo and raffle players differed significantly by education and employment. Pull-tab, bingo and raffle players in Washington State were less likely to have an advanced degree and more likely to have attended college or have a high school diploma or less. Pull-tab, bingo and raffle players in Washington State were also more likely to be employed and less likely to be retired.

Online (Q21)

Table C-4 in Appendix C presents information about the demographic characteristics of people who identified themselves as online gamblers in the past year. These were individuals who endorsed the item in the gambling participation section of the questionnaire that asked specifically about online gambling (and, if they had done any type of gambling in the past year, were routed through the problem gambling section of the questionnaire). This table shows that online gamblers differed significantly from other adults in Washington State by age and employment. Online gamblers were more likely to be aged 18 to 34 and less likely to be 35 and older. Online gamblers were also more likely than other adults in Washington State to be employed rather than retired.

³² Differences between groups are identified only when the overall test for group differences is statistically significant based on a chi-square test with an alpha of 0.05 or less. The p-values for the tests are presented in the tables.

Out of State (Q24)

Table C-5 in Appendix C presents information about the demographic characteristics of gamblers who reported traveling out of Washington State in the past year to gamble. This table shows that out-of-state gamblers differed significantly by education and employment from gamblers who did not report traveling out of state to gamble. Out-of-state gamblers were more likely to have some college education rather than an advanced degree and were also more likely to be either employed or retired rather than unemployed.

Commercial Card Rooms (Q18)

Table C-6 in Appendix C presents information about the demographic characteristics of commercial card room players in Washington State. This table shows that Washington State adults who had gambled at a card room in the past year differed significantly from other Washington State adults by age and employment status. Adults aged 18 to 34 were more likely to have gambled at a card room compared with older adults. Those with college or advanced degrees were less likely to have gambled at a card room in the past year than individuals with less than a college degree. Employed individuals were more likely to have gambled at a card room in the past year than retired individuals.

Horseracing (Q20)

Table C-7 in Appendix C presents information about the demographic characteristics of horserace bettors in Washington State over the past year, including at racetracks, pari-mutuel, and off-track betting. This table shows that horserace bettors differed significantly only by race. Horserace bettors in Washington State were more likely to be White and less likely to be a person of color although the difference only just achieves statistical significance.

Other (Q23)

Table C-8 in Appendix C presents information about the demographic characteristics of individuals who, in the past year, engaged in ‘other’ types of gambling not listed above in Washington State. This might include culturally specific types of gambling such as mah-jongg or other social card games, as well as more stigmatized types of gambling such as illegal animal fights or underground casinos. This table shows that these individuals differed significantly from Washington State adults who had not engaged in these types of gambling by gender, age, education, and employment: they were more likely to be men, and less likely to be aged 65 and over. They were also less likely to have either an advanced educational degree or a high school diploma and were more likely to be employed rather than retired.

All Adults—Problem Gambling

In this section of the report, we examine the prevalence of problem gambling in Washington State in 2021, identify the likely number of individuals who are at moderate-to-severe risk for gambling problems/Gambling Disorder (DSM-5) in the state (‘problem gamblers’) and examine their demographic characteristics.

Problem Gambling Prevalence

In epidemiological research, prevalence is a measure of the number of individuals in the population with a disorder at one point in time. In epidemiology, prevalence differs from incidence, which is a measure of the number of new cases that arise over a specific period of time. Problem gambling prevalence refers to the percentage of individuals who meet the criteria for problem gambling within the past 12 months. In problem gambling prevalence surveys, individuals are classified on the basis of their responses to a valid and reliable problem gambling instrument.

As noted earlier, the Problem Gambling Severity Index (PGSI)³³ has been the dominant instrument used to assess problem gambling prevalence worldwide since 2005 (Williams et al., 2012). Desirable features of the PGSI are that (1) it includes the concept of harm to others and oneself as an important criterion for classifying problem gambling, and (2) individuals with gambling problems are classified at differing levels of severity. As noted in the Methods section, we have chosen to present PGSI results using an alternate classification approach that results in better alignment of the results of the screen with clinical assessments of problem gambling. Additional information is provided in Appendix A.

Table 4 presents information about the distribution of Washington State adults across the PGSI typology. The table shows that, among all adults, 56.5% did not gamble in the past year (non-gamblers); 34.5% were gamblers who gambled in the past year without any difficulties (PGSI=0); 7.5% were at low risk gambling for problem gambling (PGSI=1-4); and 1.5% of Washington State adults were classified as problem gamblers (moderate-to-severe risk; PGSI=5+). We have collapsed the moderate-risk and problem gambler groups, due to their small size as well as the known similarities in their gambling behavior.

Table 4: Classification of Respondents on the PGSI

Risk level	Unweighted N	Weighted N	% 95% CI
Non-Gamblers	5319	4974	56.5 (55.0, 58.0)
Non-problem gambler (PGSI = 0)	2901	3031	34.5 (33.0, 35.9)
Low risk gambler (PGSI = 1-4)	481	657	7.5 (6.6, 8.4)
Problem gamblers (PGSI = 5+)	85	136	1.5 (1.1, 1.8)
Total	8786	8798	
Missing	463		
Total	9249		

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

It is important to note that individuals who fall into the ‘low-risk’ gambler category are reporting thoughts and/or behaviors that, for some, may lead to crossing into the ‘moderate-to-severe’ risk category. And some ‘low-risk’ gamblers will remain at that risk level while others may move into the ‘no-risk’ category or even into the ‘non-gambling’ category.

While the size of the ‘problem gambler’ group is small (n=136 weighted), it is notable that the majority of these individuals (58.8%) scored 8 or more on the PGSI which puts them in the most severe group of the conventional PGSI typology. In the 1998 Washington State study, only 21.7% of the individuals who were classified as past-year problem gamblers (SOGS-R 3-4) or ‘probable pathological gamblers’ (SOGS-R 5+) were in the more severe group. The 2021 result is interesting since it suggests that a larger majority of problem gamblers in Washington State than usual have severe gambling problems and may require more intensive treatment.

Comparing Washington to Other States

It is helpful to compare the prevalence of problem gambling in Washington State with prevalence rates identified in U.S. states where surveys have been conducted recently. It is important to note that these prevalence rates have not been adjusted to account for substantial differences in survey methods that

³³ The PGSI is from the longer Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001).

make cross-study comparisons difficult (Williams et al., 2012). Table 5 presents information about problem gambling prevalence in states where surveys have been carried out in the past five years (since 2017). Overall, this table shows that the past-year prevalence of problem gambling among all adults in Washington State in 2021 is well within the range of prevalence rates identified in these other states.

Table 5: Comparing Problem Gambling Surveys Across States (past 5 years)

State	Year	Sample Size	Data Collection Mode	PG Measure	PG Rate
New Jersey	2017	1,526	Land/cell phones	PGSI	0.6
Iowa	2018	1,825	Land/cell phones	PGSI	0.8
Minnesota	2019	8,512	Online/paper	PPGM	1.3
Washington	2021	9,249	Online/paper	PGSI	1.5
Maryland	2017	3,761	Land/cell phones	NODS	1.9
Kansas	2017	1,755	Online/paper	Not Applicable	2.7
Illinois	2021	2,029	Online	PPGM	3.8
New York	2020	3,845	Online/paper	DSM-5	4.3

Population Estimates

According to the United States Census Bureau, the population of Washington State in 2020 was 7,705,821 with 78% aged 18 and over, representing an adult population of 6,010,120.³⁴ Based on the point estimates and confidence intervals presented in Table 4, we estimate that approximately 90,000 Washington State adults could be classified as problem gamblers (PGSI = 5+) in 2021. The exact number ranges from 66,000 to 108,000 individuals (point estimate of 1.5%, confidence interval of 1.1% to 1.8%). An additional 7.5% of Washington State adults were classified as gamblers at risk, representing between 397,000 and 505,000 individuals (confidence interval of 6.6% to 8.4%).

A recent meta-analysis of help-seeking behavior identified in population prevalence surveys determined that, globally, about 0.23% of the general population has sought help for gambling problems. This represents about 1 in 25 people with moderate gambling problems and 1 in 5 people with severe gambling problems (Bijker, Booth, Merkouris, Dowling, & Rodda, 2022). Applied to Washington State, the global estimate translates to about 14,000 adult individuals experiencing moderate-to-severe gambling problems seeking professional or informal help for these problems.

Demographics of Non-Gamblers, Gamblers and Problem Gamblers

Figure 5 presents information about the demographics of all Washington State adults by level of risk for problem gambling based on the PGSI typology (for the subgroups of ‘non-gamblers,’ ‘non-problem gamblers,’ ‘low-risk gamblers,’ and ‘problem gamblers.’ The percentages listed are among all adults unless otherwise noted for all of the demographic categories.³⁵ It is important to emphasize that despite the appearance of the graphs, not all differences between subgroups rise to the level of statistical significance. Table C-9 in Appendix C presents information about the size of key subgroups for all adults in the sample and past-year prevalence rates within each subgroup, with statistically significant findings in **boldface**.

³⁴ [WASHINGTON: 2020 Census](#)

³⁵ Demographic categories in the questionnaire included gender, age, race/ethnicity, marital status, educational status, employment status, and military status.

Gender: The first panel of Figure 5 shows differences by gender among all adults. Surprisingly, no statistically significant differences in PGSI status by gender were detected. This means that gender was not correlated with either gambling or problem gambling in Washington State. While this is surprising in the context of the broader gambling research literature, gender was also not associated with problem gambling status in the 2003 health survey in Washington State that included gambling questions (Mancuso et al., 2005) or in the 2019 survey in Minnesota (Streich et al., 2020). Internationally, prevalence surveys in the past ten years have established that women’s overall levels of gambling harm and rates of female problem gambling prevalence are increasing more quickly than for males (McCarthy, Thomas, Bellringer, & Cassidy, 2019).

Race/ethnicity: The second panel of Figure 5 show differences for all adults by race and ethnicity (collapsed into a combined variable). Again, despite the differences within the graph, the only statistically significant difference is that people identifying as White were more likely to fall into the ‘non-problem gambler’ category than People of Color.³⁶ Due to the higher and lower confidence intervals being equal, this finding should be treated with caution.

Age: The third panel of Figure 5 shows differences for all adults by age group. The two statistically significant findings related to age are that: (1) both adults aged 18-34 and those aged 65 and over were more likely than adults aged 35-64 to be non-gamblers, and (2) adults aged 35-64 years were more likely than both adults aged 18-34 and those aged 65 and over to be non-problem gamblers.

Educational status: The fourth panel of Figure 5 shows differences in problem gambling prevalence by educational status. Individuals with an advanced degree were most likely to be non-gamblers and less likely to be non-problem gamblers or problem gamblers than individuals with some college or with a high school diploma or less (but not less likely than those with a college degree).

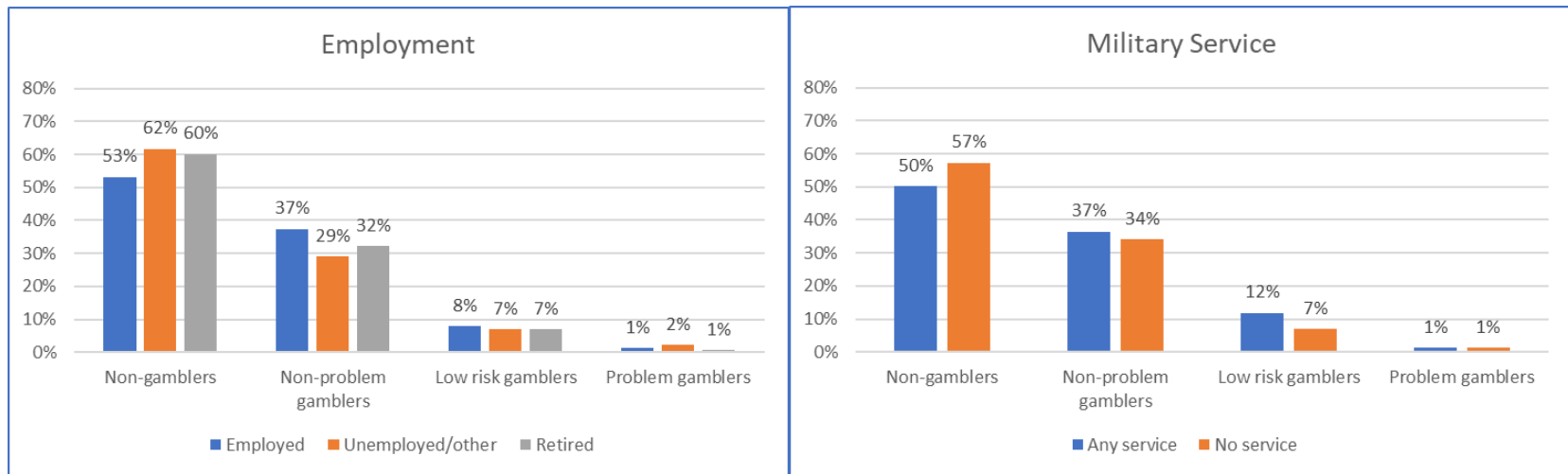
Employment status: The fifth panel of Figure 5 shows differences in problem gambling prevalence by employment status. While ‘other’ has been combined with ‘unemployed’ for analytic purposes, this category can include self-employed individuals as well as some other types of employment. Employed individuals were less likely to be non-gamblers than retired and unemployed/other individuals and more likely to be non-problem gamblers than retired and unemployed/other individuals. Retired individuals in Washington State were less likely to be classified as problem gamblers than unemployed/other individuals.

Military status: The final panel of Figure 5 shows differences among all adults based on military status (any military service/no military service). This panel shows (as does Table C-9 in Appendix C) that individuals with any military service were less likely to be non-gamblers and more likely to be low-risk gamblers than those without military service.

³⁶ Racial categories in the questionnaire included White or Caucasian, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian/Alaska Native/Tribal, and Other.

Figure 5: Demographics of Gambling Types





All Gamblers—Comparing Gamblers by Gambling Type

In considering how best to develop and refine policies and programs for people experiencing gambling problems, it is important to direct these efforts in an effective and efficient way. The most effective efforts at prevention, outreach, and treatment are targeted at individuals who are at the greatest risk of experiencing problem gambling. Since the purpose of this section of the report is to examine vulnerable individuals, our focus here is on differences between individuals who gamble, with and without problems, rather than on the entire sample of Washington State adults.

People who gamble recreationally and are not at risk for problem gambling, along with those at lower risk, far outnumber individuals in the population who experience serious negative impacts from gambling. Given the much greater size of the former groups, some might argue that these individuals need not be examined as closely as those who experience gambling problems. However, there is good evidence that many non-problem gamblers and low-risk gamblers, on occasion, experience a loss of control over their gambling involvement or harm related to their gambling without developing more serious problems. There is also evidence that impaired control and subsequent problem development are a common and predictable consequence of regular, high-intensity gambling rather than something confined to a small minority of “mentally disordered individuals” (Dickerson, Haw, & Shepherd, 2003).

For precisely these reasons—the size of the non-problem and low-risk groups and the common experience of loss of control—particular attention needs to be paid to these groups. This is both to better understand characteristics common among the majority of people who gamble without problems and to understand characteristics shared by gamblers at risk of developing problems. Identifying common characteristics among these groups is a critical first step in understanding the factors that might place a person at greater risk of, or protect a person from developing, a gambling problem.

Overall Gambling Participation Among Gamblers

In this section of the report, our focus is on past-year gamblers rather than on the entire adult population of Washington State. Table 6 shows past-year gambling participation rates among gamblers in Washington State, as opposed to the entire adult population. When compared to Table 3, it is clear that past-year participation in every type of gambling is more than two times higher among past-year gamblers compared to the Washington State adult population.

Table 6: Past-year Gambling Participation Among Gamblers†

		Weighted N	%	95% CI
Q17	Lottery	3001	73.5	(71.4, 75.5)
Q19	Tribal casinos	1407	34.5	(32.3, 36.7)
Q22	Pull-tabs, bingo, raffles	814	20.0	(18.1, 21.8)
Q21	Online*	469	11.5	(9.9, 13.1)
Q24	Out of state	411	10.1	(8.8, 11.4)
Q18	Commercial card rooms	384	9.4	(8.0, 10.9)
Q20	Horseracing	128	3.1	(2.4, 3.9)
Q23	Other	967	23.8	(21.8, 25.8)

¹ Weighted N is the total number of respondents who answered the question weighted to the WA population.

² Percentages and 95% CI are calculated using the weighted N.

*The participation rate for Online includes only those who answered Q21 and not any of the later questions about online gaming/gambling.

† Respondents could select multiple gambling activities so the total participation rate will not add up to 100%.

Participation in Specific Gambling Activities Among Gamblers

While not presented in detail in this report, there are substantial differences in the demographic characteristics of gamblers at increasing levels of problem severity who participated in specific types of gambling in the past year.

Lottery: White non-problem gamblers were far more likely to have played the lottery (82.0%) compared with non-problem gamblers of color (70.7%). Non-problem gamblers without an advanced degree were significantly more likely to have played the lottery than non-problem gamblers with an advanced degree. Problem gamblers without an advanced degree were also significantly more likely to have played the lottery in the past year compared with those with an advanced degree.

Tribal casinos: The one significant difference among gamblers who gambled in the past year at Tribal casinos was that unemployed problem gamblers were far more likely to have engaged in this activity (14.4%) compared to problem gamblers who were employed or retired (4.2%; 3.0% respectively).

Pull-tabs/bingo/raffles: For pull-tabs, bingo and raffles, People of Color who were non-problem gamblers (58.5%) were significantly less likely than White non-problem gamblers (78.6%) to have participated in this type of gambling in the past year.

Online gambling: The one significant difference among gamblers who gambled online in the past year (based on Question 21 in the gambling participation section of the questionnaire) was that problem gamblers who aged 65 and over (0.3%) were significantly less likely to have engaged in this activity compared with younger problem gamblers (15.4% among those aged 18-34; 7.1% among those aged 35-64).

Out-of-state travel to gamble: For those who traveled out of state to gamble in the past year, unemployed low-risk gamblers were significantly less likely to have done this (11.5%) compared with employed low-risk gamblers (31.7%) and retired low-risk gamblers (40.0%). However, the opposite was true for problem gamblers: 37.1% of unemployed problem gamblers traveled out of state to gamble in

the past year compared with 5.8% of employed problem gamblers and 2.1% of retired problem gamblers.

Card rooms/horseracing/'other': There were no significant demographic differences among individuals at different levels of risk who gambled at commercial cardrooms or on horseracing in the past year. Among those who participated in 'Other' types of gambling in the past year, People of Color who were non-problem gamblers (50.4%) were significantly less likely than White non-problem gamblers (74.6%) to have engaged in this activity; conversely, low-risk gamblers of color (37.5%) were significantly more likely than White low-risk gamblers (19.5%) to have engaged in this activity in the past year.

Problem Gambling Prevalence Among Gamblers

Table 7 shows the prevalence of problem gambling among adult gamblers (non-problem, low-risk, and problem) in Washington State. Since over half of the survey respondents had not done any gambling in the past year, the prevalence of problem gambling (moderate-to-high risk) among gamblers was substantially higher than among all adults (3.5% among gamblers as compared to 1.5% among all adults).

Table 7: Classification of Gamblers on the PGSI

Risk level	Unweighted N	Weighted N	% 95% CI
Non-problem gambler (PGSI = 0)	2901	3031	79.3 (77.2, 81.3)
Low risk gambler (PGSI = 1-4)	481	657	17.2 (15.3, 19.1)
Problem gamblers (PGSI = 5+)	85	136	3.5 (2.6, 4.5)
Total	3467	3824	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Demographics of Gamblers and Problem Gamblers

In this section, we compare the demographic characteristics of non-problem, low-risk and problem gamblers in Washington State. In contrast to the comparisons among all adults, there are relatively few statistically significant differences between these subgroups when limited to all gamblers. Table C-10 in Appendix C presents information about the size of key subgroups for all gamblers in the sample and past-year prevalence rates within each subgroup, with statistically significant findings in **boldface**.

No significant differences were found between non-problem gamblers, low-risk gamblers and problem gamblers in Washington State when taking gender, age or military experience into consideration. There were also no significant differences between these groups with respect to age although the rate of problem gambling among adults aged 18-34 (5.4%) was higher than among adults aged 35-64 (2.6%) and adults aged 65 and over (3.3%).

Significant differences between gambling groups were detected for race/ethnicity, educational status and employment status. People of Color were less likely to be non-problem gamblers compared with Whites (70.5% compared to 81.1%) and more likely to be low-risk gamblers (23.7% versus 15.9%). While People of Color were more likely to be problem gamblers than Whites, the difference in rates was not statistically significant. Individuals with advanced degrees were significantly less likely than individuals with some college or less education to be low-risk gamblers and problem gamblers and more likely to be

non-problem problem gamblers. Finally, individuals classified as unemployed/other were more likely to be problem gamblers compared to retired individuals (6.1% versus 1.7%).

Gambling Involvement Among Gamblers

Gambling involvement is defined as the number of types of gambling activities in which an individual participates; high involvement in gambling is positively related to problem gambling.³⁷ This is likely because individuals who participate in many types of gambling are more likely to find some types of gambling that they particularly like which then increases their risk of developing a gambling problem.

Some researchers have suggested that the relationship between specific types of gambling and problem gambling is greatly weakened when controlling for involvement.³⁸ Including the number of gambling formats in a multivariate model, however, has significant limitations in discriminating whether particular types of gambling are more or less harmful. This is because extensive involvement in gambling is a major aspect of problematic gambling behavior. It is also the reason that the number of gambling formats tends to be the strongest predictor of problem gambling when using such models. Indeed, other variables will tend not to add much discriminative value when an aspect of a disorder – i.e., involvement – is used to predict the disorder.

Using data from the first wave of a Swedish longitudinal study, Binde, Romild, and Volberg (2017) explored the relationship between problem gambling, types of gambling and gambling involvement. These analyses found a strong relationship between involvement and intensity (e.g., amount of time and money spent gambling). In addition, these researchers found that, while many individuals experiencing a gambling problem regularly participate in multiple forms of gambling, half of the individuals experiencing a gambling problem in their Swedish study participated regularly in only one or two forms of gambling. These researchers concluded that some forms of gambling are more closely associated with problem gambling—and hence, riskier—than other forms. A separate study using the same analytic approach with data from Massachusetts found quite similar results (Mazar, Zorn, Becker, & Volberg, 2020).

In the future, it will be interesting to explore whether the relationship between gambling involvement and problem gambling identified in Sweden and Massachusetts also occurs in Washington State. As a first step, however, we can examine the relationship between level of gambling involvement and problem gambling in the Washington State survey data. The first step in this analysis was to identify the number of types of gambling in which Washington State adults engaged. Overall, 23.1% of all adults in Washington State had engaged in only 1 gambling activity in the past year, 10.6% had engaged in 2 activities, 5.2% had engaged in 3 activities, and 4.8% had engaged in 4 or more gambling activities in the past year.

The next step was to examine the number of types of gambling with which gamblers at increasing levels of problem severity engage. Table 8 shows that an increasing proportion of problem gamblers and low-risk gamblers engage in an increasing number of types of gambling. For example, 1.1% of those who have engaged in only 1 gambling activity in the past year were classified as problem gamblers compared with 12.9% of those who have engaged in 4 or more types of gambling. Similarly, 9.5% of those who had done 1 gambling activity in the past year were classified as low-risk gamblers compared to 29.7% of those who had engaged in 4 or more types of gambling.

³⁷ (Holtgraves, 2009; Phillips, Ogeil, Chow, & Blaszczynski, 2013; Volberg & Banks, 2002; Welte et al., 2015)

³⁸ (LaPlante, Afifi, & Shaffer, 2013; Laplante, Nelson, & Gray, 2014; LaPlante, Nelson, LaBrie, & Shaffer, 2011)

Table 8: Gambling Involvement and Gambling Types

Gambling involvement	Unweighted N	Weighted N	Non-problem gamblers % 95% CI	Low risk gamblers % 95% CI	Problem gamblers % 95% CI
1 gambling activity	1751	1804	89.3 (87.0, 91.7)	9.5 (7.3, 11.7)	1.1 (0.3, 1.9)
2 gambling activities	808	920	75.7 (71.1, 80.2)	20.8 (16.6, 25.1)	3.5 (1.4, 5.6)
3 gambling activities	426	470	63.5 (56.8, 70.2)	32.0 (25.5, 38.4)	4.6 (1.2, 7.9)
4+ gambling activities	322	438	57.4 (50.0, 64.7)	29.7 (23.1, 36.3)	12.9 (8.0, 17.9)
Total	3307	3632			

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

As noted above, half of the individuals experiencing gambling problems in the Massachusetts and Swedish studies participated regularly in only 1 or 2 forms of gambling. In Washington State, a much smaller proportion (30.3%) of individuals experiencing gambling problems participated regularly in only 1 or 2 forms of gambling.

Other Correlates of Gambling Problems

Problem gambling is known to be associated with other mental health issues including mood disorders and substance use disorders. Studies in 2006 and 2011 showed that bipolar disorders and major depressive affective disorders, personality disorders, and anxiety disorders are most often comorbid with problem gambling.³⁹ Substance use disorders, including alcohol use disorder, nicotine dependence, are also highly concurrent with problem gambling.⁴⁰ A literature review of population-based surveys carried out prior to 2010 found that the highest mean prevalence for combined samples of problem and disordered gambling was for nicotine dependence (60.1%), followed by a substance use disorder (57.5%), alcohol use disorder (28.1%), and illicit drug abuse/dependence (17.2%). For mental health disorders, the highest mean prevalence was for any type of mood disorder (37.9%), any type of anxiety disorder (37.4%), and major depression (23.1%) (Lorains, Cowlshaw, & Thomas, 2011).

A review of more recent research on the correlates of gambling problems yielded similar results. Both population studies and clinical research carried out since 2010 identified high rates of substance use disorders, mood disorders, anxiety disorders, attention deficit/hyperactivity disorder and disorders of impulse control among people with Gambling Disorder as well as high rates of gambling problems among individuals seeking treatment for substance use disorders and other mental health problems.⁴¹

Exhibit 7 in the WSIPP report (Miller & Xie, 2022) presented information about other self-reported behavioral health issues that were correlated with problem gambling in the Washington State survey. As the WSIPP report notes, this information was based on single questions about problems with mental

³⁹ (Chou & Afifi, 2011; Kim, Grant, Eckert, Faris, & Hartman, 2006)

⁴⁰ (Boothby, Kim, Romanow, Hodgins, & McGrath, 2017; Chou & Afifi, 2011; Johansson, Grant, Kim, Odlaug, & Götestam, 2009; Petry et al., 2005; Suomi et al., 2013)

⁴¹ (Black & Shaw, 2019; Ford & Håkansson, 2020; Grant & Chamberlain, 2020; Rodriguez-Monguio, Errea, & Volberg, 2017)

health, substance use, and other behavioral issues. There was no effort to measure these issues using validated clinical measures.

Exhibit 7 in the WSIPP report focuses on problem gambling prevalence among past-year users of tobacco, alcohol and drugs and among those who experienced other mental health issues. Table C-11 in Appendix C presents more detailed information about these issues among gamblers at increasing risk of gambling problems in Washington State. In line with the WSIPP report, this table shows that gamblers who had used tobacco in the past year were significantly less likely to be non-problem gamblers (68.9%) and significantly more likely to be low-risk gamblers (24.7%) compared with gamblers who had not used tobacco in the past year (82.3% and 15.1%, respectively). Gamblers who had used cannabis in the past year were significantly more likely to be problem gamblers (5.9%) compared with gamblers who had not consumed cannabis in the past year (2.4%). Gamblers who had used hallucinogens in the past year were also significantly more likely to be problem gamblers (13.1%) compared with gamblers who had not engaged in this behavior in the past year (2.9%).

It is interesting that, among gamblers, there was no significant difference in the risk of experiencing gambling problems for those who had consumed or not consumed alcohol in the past year; this is a striking difference in Washington State compared with many other jurisdictions where gambling prevalence surveys have been conducted. While gamblers who used alcohol in Washington State in the past year were no more likely than gamblers who did not use alcohol to be classified as problem gamblers, gamblers who acknowledged having an alcohol or drug problem were significantly more likely to be classified as problem gamblers (16.5%) compared with gamblers who did not acknowledge having alcohol or drug problems (3.0%).

Finally, individuals who gambled and also acknowledged having behavioral issues or dependencies in the past year (such as overeating, sex or pornography, shopping, exercise and Internet chat lines) were significantly more likely to be classified as problem gamblers (11.7%) compared to gamblers who did not report having behavior problems (2.1%). Gamblers who reported having difficulties with depression, anxiety or other mental health problems were significantly more likely to be classified as problem gamblers (7.5%) compared to gamblers who did not report these mental health problems (2.1%). It is also notable that Exhibit 7 in the WSIPP report shows that individuals experiencing poor physical health in the past year were significantly more likely to be classified as problem gamblers compared to all adults and to all gamblers in Washington State.

The Overlap of Gaming Online and Gambling Online

As noted in the introduction of this report, there has been a convergence of online gambling and online gaming in the past decade with a growing consensus in the problem gambling field that online gaming has many features that define gambling more generally. The legislative proviso that created the Problem Gambling Task Force asked that the members identify additional areas for consideration. In keeping with this charge, the PGTF requested that the 2021 Washington State Problem Gambling Prevalence Survey include detailed questions about online gaming and online gambling to provide up-to-date information about these behaviors to the Legislature, the PGTF, and the public.

This section of the report focuses on results from the section of the survey that collected data on participation in online gaming and gambling.⁴² Readers should be aware that these questions were not

⁴² Questions 36-44 (gaming online, gambling online, and potentially overlapping activities)

included in the earlier section of the survey focused on conventional gambling behaviors. All survey respondents were asked questions about online gaming and gambling, even if they had not participated in any of the conventional gambling behaviors earlier in the survey.⁴³ This included questions about online gaming and gambling activities such as social casinos, online sports betting, online trading and gambling in cryptocurrency, purchasing chances to win in video games, gambling on electronic devices, and purchasing chances to ‘uplevel’ in online games. It is important to note that respondents who indicated that they had participated in 1 or more online activities were not routed through the PGSI assessment to determine their risk of experiencing gambling problems unless they had engaged in 1 or more of the conventional gambling activities presented in the earlier section of the survey.

In the WSIPP report (Miller & Xie, 2022), ‘study question 2’ considered differences in the gambling modes (online versus brick-and-mortar) that were utilized by Washington State adults. Respondents were categorized as brick-and-mortar gamblers if they reported participating in any gambling activities besides gambling online (Question 21). Respondents were categorized as online gamblers if they reported participating in this activity (Question 21) and/or if they reported participating in 1 or more of the online gaming/gambling activities presented later in the questionnaire, regardless of whether they had participated in any of the brick-and-mortar activities. The WSIPP report found that 72.2% of gamblers in Washington State only gambled at brick-and-mortar establishments while 27.8% gambled online (the majority of these individuals also gambled at brick-and-mortar establishments).⁴⁴

In this report, we took a different approach and created a variable for online gambling using only the online activities presented later in the survey. A respondent’s status as a ‘Gambler’ or ‘Non-gambler’ was not a factor in determining this variable since all of the respondents completed the later section of the survey. Based on survey responses, we created four separate groups:

- **Gambled online:** Participated in one or more of the following activities: video games online, social casino games online, esports online, sports betting online, gambled using cryptocurrency, gambled using an electronic device
- **Gamed online:** Participated in one or more of the following activities: traded cryptocurrency, purchased chances to win items in online video games, purchased chances to ‘uplevel’ in online games. These activities fall into the ‘grey area’ between gambling and gaming.
- **Gamer only:** Participated in games on an electronic device
- **No online gambling/gaming:** Did not engage in any of these activities or the earlier question about online gambling

The first step in our analysis was to examine how this new variable aligned with the approach taken by WSIPP. As shown previously in Table 3, 5.1% of **all adults** in Washington State had gambled online in the past year; as shown in Table 6, 11.5% of **all gamblers** in Washington State had gambled online in the past year. The much higher online gambling participation rate identified in the WSIPP report (27.8%) is clearly due to including online activities presented later in the survey in their definition of ‘online gambling.’

The distribution of respondents who had gambled online conventionally across the new gaming/gambling typology provides additional interesting information. For example, the majority of

⁴³ Questions 17-24 (conventional types of gambling)

⁴⁴ The WSIPP report included both those who answered ‘Yes’ to Question 21 (online gamblers) and those who answered ‘No’ to Question 21 but then later endorsed activities that are included under the description of ‘Gambled Online.’

respondents who indicated that they had gambled online conventionally (72.9%) were also classified as online gamblers based on the activities included later in the survey. Another 11.8% of respondents who said they had gambled online conventionally did not participate in any of the activities in the later part of the survey and were classified as not having gambled or gamed online in the past year. A small proportion of respondents who indicated they had gambled online earlier in the survey (6.7%) had only participated in activities defined as ‘gaming online’ and another 8.6% indicated that they had played games on an electronic device in the past year—defined as ‘gaming only.’

Online Gambling and Gaming Among Gamblers

Table 9 presents the distribution of the groups of online gamblers and gamers among **all gamblers** in Washington State. This table shows that 30.8% of all gamblers in Washington State had participated in one or more of the online gambling activities presented later in the survey while 40.0% had not done any online gambling or gaming. One in ten gamblers (9.6%) had gamed online in the past year and another 19.6% had played games on an electronic device but had not done any of the other activities included in that section of the survey.

Table 9: Online Gambling/Gaming Among All Gamblers

All Gamblers	Unweighted N	Weighted N	%	95% CI
Gambled Online	891	1212	30.8	(28.5, 33.1)
Gamed Online*	302	377	9.6	(8.1, 11.0)
Gamer Only	809	773	19.6	(17.9, 21.4)
No Online Gambling/gaming	1597	1571	40.0	(37.7, 42.2)
Subtotal	3599	3933		
Missing	206			
Total	3805			

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

* These activities fall into the overlap of gambling and gaming online.

Demographics of Adults Who Participated in Online Gambling and/or Gaming

In this section we review the demographic characteristics of Washington State adults who participated in online gambling and gaming activities, as well as the ‘grey area’ that overlaps gambling and gaming online. Figure 6 summarizes the results graphically and a detailed demographic table is provided in Table C-12 in Appendix C. Since all respondents were asked the questions about online gambling/gaming, results are reported for the sample as a whole (**all adults**) rather than just for gamblers. Only statistically significant results are identified in the body of the report and differences between groups are identified only when the overall test for group differences is statistically significant based on a chi-square with an alpha of 0.05 or less. The p-values for the tests are presented in the table.

Gender: Figure 6 shows that among all adults in Washington State, there were differences between men and women across all of the groups of online gamblers and gamers. Men were more than twice as likely as women to have gambled online and more likely to have gamed online. Women were almost twice as likely as men to have only played games on an electronic device and more likely to have not done any online gambling or gaming. Overall, gender is highly correlated with gambling and gaming online, as well as the ‘grey area’ where these two activities overlap.

Race/ethnicity: Figure 6 shows that among all adults, Whites were more likely than Black, Indigenous, and People of Color/Non-White (BIPOC) to have only played games on an electronic device while BIPOC were more likely than Whites to have gambled online. Overall, race/ethnicity is correlated with some online gambling and gaming activities.

Age group: Figure 6 shows that among all adults, there were significant differences between age groups in relation to online gambling and gaming. Respondents aged 18 to 34 were more likely to have gambled online and gamed online than older adults. Respondents aged 18 to 34 were less likely than older adults to have done no online gambling or gaming. Finally, respondents aged 35 to 64 were more likely to have only played games on an electronic device compared with those aged 65 and over. Overall, age is correlated with some online gambling and gaming activities.

Education status: In contrast to differences by age, there were very few differences in online gambling and gaming by education among Washington State adults. There were no differences across education groups in online gambling, online gaming, or only playing games on an electronic device. Respondents with a high school diploma or less were more likely than those with a college degree to have done no online gambling or gaming.

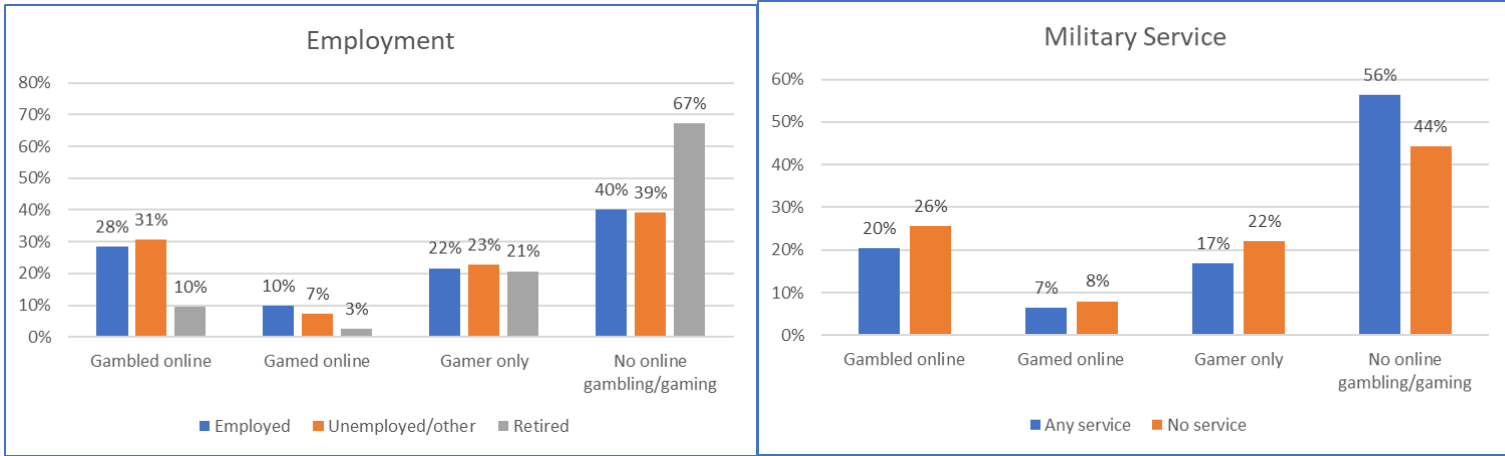
Employment status: With respect to employment status, retired adults were less likely than employed or unemployed/other adults to have gambled or gamed online and more likely to have not done any online gambling or gaming.

Military service: Finally, respondents with military service were less likely than those without any military service to have gambled online and to have played games on an electronic device. They were more likely to have done no online gambling or gaming.

It is interesting to compare the results of this analysis with the WSIPP results based on a single question about online gambling. WSIPP also found the prevalence of online gambling to be higher among men than women and among those aged 18 to 34 compared to older adults. In contrast to WSIPP, we did not find that respondents with an advanced degree were less likely than those with a high school diploma to have gambled online. Like WSIPP, we also found differences in online gambling (and gaming) by employment status and military service.

Figure 6: Demographics of Online Gamblers and Gamers





Problem Gambling Among Online Gamblers/Gamers

As noted above, the PGSI was only administered to respondents based on their answers to the questions about conventional gambling activities. Since a large proportion of respondents who had engaged in conventional online gambling (Question 21) had also engaged in online gambling or gaming activities presented later in the survey (72.9%), it is helpful to examine the prevalence of problem gambling among respondents who had engaged in conventional online gambling. Table 10 presents information about problem gambling among conventional online gamblers in Washington State (Question 21=Yes).

Table 10: Classification of Online Gamblers (Q21 only) on the PGSI

Risk level	Unweighted N	Weighted N	% 95% CI
Non-problem gambler (PGSI = 0)	228	288	62.8 (55.4, 70.2)
Low risk gambler (PGSI = 1-4)	86	124	26.9 (20.3, 33.6)
Problem gamblers (PGSI = 5+)	24	47	10.3 (5.3, 15.3)
Subtotal	338	459	
<i>Missing</i>	10		
Total	348		

Table 10 shows that the prevalence of both low-risk gambling and problem gambling was substantially higher among **online gamblers** compared to all gamblers (3.5% and 17.2%, respectively--see Table 7).

The group of online problem gamblers in Table 10 represents 34.6% of all of the gamblers identified as either at low risk or moderate-to-severe risk in Washington State.⁴⁵ If we assume that all of the gamblers who did not say ‘Yes’ to the online gambling question (Q21) were brick-and-mortar gamblers, the problem gambling prevalence rate for brick-and-mortar gamblers was 2.6%.⁴⁶ While the rate of problem gambling among online gamblers (10.3%) is much higher than the rate of problem gamblers among brick-and-mortar gamblers (2.6%) or among all gamblers (3.5%), further analysis is needed to test this difference statistically due to small group sizes.

Comparing Online Gamblers to Brick-and-Mortar Gamblers

Finally, it is helpful to consider differences in the demographics of individuals who gambled online conventionally with brick-and-mortar gamblers. As with the previous section, our focus here is on individuals who answered the conventional online gambling question (Question 21) rather than on the individuals who answered the questions presented later in the survey.

Among the six demographic groups that we considered for this report, only two significant differences were identified. Washington State adults aged 18 to 34 were significantly more likely to have gambled online in the past year compared to older individuals. Likely reflecting underlying differences in age, retired individuals in Washington State were significantly less likely to have gambled online in the past year compared to both employed and unemployed/other individuals.

⁴⁵ The weighted number of online problem gamblers is 47 (Table 10) while the weighted number of all problem gamblers is 136 (see Table 4 and Table 7). Dividing the number of online problem gamblers by the total number of problem gamblers equals 34.6%.

⁴⁶ The weighted number of online gamblers is 459 (Table 10) while the weighted number of all gamblers is 3,824 (Table 7). Subtracting online gamblers from all gamblers equals 3,365. Dividing the number of non-online problem gamblers (n=89) by number of non-online gamblers equals 2.6%.

SUMMARY AND CONCLUSIONS

The main purpose of the Washington State Problem Gambling Prevalence Study survey was to establish current levels of gambling participation and problem gambling prevalence in Washington State.⁴⁷ A second goal was to assess participation in emerging forms of online gambling and gaming to inform future efforts of the Washington State Legislature in relation to these technological developments. A third goal was to obtain information about the public's knowledge of available resources for addressing gambling problems. Drawing from these aims and the research questions generated by the Washington State Problem Gambling Task Force (PGTF), we have sought to provide answers to these questions. This information will be valuable in developing approaches to enhance and improve existing problem gambling prevention and treatment services in Washington State.

Notable Findings

What are the beliefs and attitudes towards gambling in Washington State?

There was a range of opinion among Washington State adults concerning the availability of legalized gambling in Washington State. The majority of Washington State adults felt that the current availability of gambling in the state was acceptable. The proportion of Washington State adults that felt gambling was too widely available was larger than the proportion that felt gambling was not available enough.

Washington State residents also had mixed opinions about the balance of benefits and harms of legalized gambling although the majority believed that the harms of gambling outweighed the benefits. One in four Washington State adults believed that the benefits and harms of legalized gambling were about equal and only one in ten Washington State adults felt that the benefits of legalized gambling outweighed the harms.

What is the current prevalence of gambling among adults in Washington State?

In 2021, 43.5% of Washington State adults acknowledged participating in one or more gambling activities in the past year. This rate of gambling participation is far below past-year participation rates in recent gambling studies and likely reflects people's willingness and ability to gamble at brick-and-mortar venues during the pandemic. Past-year participation was highest for lottery games (32.6%) and Tribal casinos (15.3%). The past-year participation rate for pull-tabs, bingo and raffles was 8.9% while participation rates for online gambling (5.1%), out-of-state gambling (4.5%), and commercial card rooms (4.2%) were lower. The rate of past-year gambling on horseraces was only 1.4% while the rate of gambling on 'other' activities was unexpectedly high (10.5%)—possibly reflecting relatively high rates of private betting among friends and family during the pandemic as well as participation in illegal forms of gambling, such as illegal animal fights and underground casinos.

What is the demographic pattern of gambling in Washington State?

Past-year gambling participation rates differ significantly in Washington State by gender, age, ethnicity, marital status, education, employment and military service. Men are significantly more likely than women to have gambled in the past year as are people aged 35 to 64, compared to younger and older individuals and employed people are more likely to have gambled in the past year compared to both retired and unemployed/other people. With respect to education, those with graduate degrees are the least likely to have gambled in the past year while those with some college are the most likely to have

⁴⁷ The last full Washington State problem gambling prevalence study was conducted in 1998 (Volberg & Moore, 1999b).

gambled in the past year. Never married people are significantly less likely to have gambled in the past year as are non-Hispanic individuals and those with no military service.

Table 11: Demographic Groups with High Levels of Past-year Gambling Participation

Gambling Activity	Demographic Group
Overall	<ul style="list-style-type: none"> • Male • Non-Hispanic • Aged 35 to 64 • Never married • Some college • Employed
Lottery	<ul style="list-style-type: none"> • Aged 35 and over • No college degree • Employed • Military service
Tribal casinos	<ul style="list-style-type: none"> • No college degree • Employed
Pull-tabs, bingo, raffles	<ul style="list-style-type: none"> • No college degree • Employed
Online	<ul style="list-style-type: none"> • Aged 18 to 34 • Employed
Out-of-state	<ul style="list-style-type: none"> • Some college education but no advanced degree • Employed or retired
Commercial card rooms	<ul style="list-style-type: none"> • Aged 18 to 34 • No college degree
Horseracing	<ul style="list-style-type: none"> • White
Other	<ul style="list-style-type: none"> • Male • Younger than 65 • Some college or Bachelor’s degree • Employed

What is the current prevalence of problem gambling in Washington State?

Based on the survey, the current prevalence of problem gambling among all adults in Washington State is 1.5%; this represents approximately 90,000 individuals or between 66,000 and 108,000 Washington State adults who are at risk for moderate-to-severe gambling problems (PGSI=5 and above). An additional 7.5% of Washington State adults were classified as gamblers at risk (PGSI=1-4), representing between 397,000 and 505,000 individuals.

What is the demographic pattern of problem gambling in Washington State?

In contrast to many other jurisdictions, problem gambling in Washington State was **not** significantly higher among men compared with women. While the prevalence of problem gambling was higher among people of color in Washington State compared with Whites, among all adults, this difference was not statistically significant.

Additionally, there were no significant differences in problem gambling prevalence among different age groups in Washington State. Problem gambling prevalence was higher among Washington State adults

without a college degree compared to those with higher levels of education, as was non-problem gambling participation.

Which particular forms of gambling are most strongly related to problem gambling in Washington State?

Time precluded completing analyses to identify the riskiest types of gambling in Washington State. However, this is clearly a matter that deserves exploration going forward. We were able to identify that higher proportions of problem gamblers and low-risk gamblers engage in a greater number of types of gambling; in the future, it will be helpful to replicate an analysis completed using Massachusetts, Canadian and Swedish data that controls for number of gambling activities to assess the relative riskiness of specific types of gambling in Washington State.

What is the prevalence of co-occurring disorders with problem gambling?

In contrast to many other jurisdictions, Washington State adults who gambled and consumed alcohol in the past year were not significantly more likely to be problem gamblers than gamblers who did not consume alcohol, despite the fact that adults who gambled and acknowledged a drug or alcohol problem were more likely to be problem gamblers than gamblers who did not acknowledge such problems. In line with research from other jurisdictions, Washington State adults who gambled and used tobacco, cannabis and hallucinogens were more likely to be problem gamblers compared with gamblers who had not consumed these substances in the past year. Similarly, those who gambled and acknowledged behavior problems or difficulties with depression, anxiety or other mental health problems were more likely to be problem gamblers than gamblers who did not.

What are the differences between Washington State adults who use online gambling/gaming methods compared to those who do not?

Among all adults in Washington State, men were much more likely to have gambled or gamed online compared with women, as were adults under the age of 35. There were few differences in participation in online gambling and gaming by education, while those who were retired were much less likely to have participated in any online gambling or gaming activities. Based only on the single question about online gambling,⁴⁸ 10.3% of online gamblers were classified as problem gamblers compared to 3.5% of all gamblers (and 2.6% of non-online gamblers). Approximately one-third of all gamblers in Washington State reported they engaged in one or more online gambling or gaming activities included in the later section of the survey while another 40% of Washington State gamblers had not. Much smaller proportions of Washington State gamblers had gamed online in the past year or played games on an electronic device.

Strengths and Limitations of the Study

Strengths

A primary concern when designing the 2021 Washington State Adult Problem Gambling Prevalence Study was that the data needed to be representative of the state. The use of a multimode survey approach allowed for a more inclusive sample comprising households without a telephone or who only own a cell phone and households without access to a computer or the Internet. In this respect, the Washington State survey had considerably higher coverage of the population than a telephone-only survey.

⁴⁸ Responded 'Yes' to Question 21: 'In the past 12 months, have you gambled online?'

With a sample of 9,249 respondents, the 2021 Washington State Prevalence survey is one of the largest gambling surveys conducted to date in the United States. Use of standardized methods of data collection, including address-based sampling, multiple modes of data collection, and a highly-structured instrument reduced potential bias and enhanced the validity of the results. Strenuous efforts were made to recruit a fully representative sample of Washington State residents into the survey, including several mailings of letters and postcard reminders, as well as an additional mailing of Spanish language surveys

Limitations

There are some limitations to the 2021 Washington State Adult Problem Gambling Prevalence Study. One potential limitation is the 19.2% response rate attained in the survey. Survey response rates in developed countries have fallen precipitously in recent years as people have embraced cell phones and reduced their reliance on landlines; this increases the likelihood that participants differ from non-participants in some important and systematic way (such as access to mobile and online technology) making the sample non-representative. While this does not always occur,⁴⁹ the risk is always present and tends to increase as a function of the degree of non-response. While the effort was made to minimize systematic bias by introducing the study as a survey of “health and recreation,” the response rate was lower than desirable and, as a consequence, generalization of the results should be undertaken with care.

Another limitation is that the survey was restricted to adults living in households—the sample did not include adults living in group quarters, incarcerated individuals, or homeless individuals. Although rates of problem gambling tend to be very high in these groups, they represent only small proportions of the total population and research has shown that their inclusion is unlikely to affect the overall prevalence rate.⁵⁰

A third limitation is that the questionnaire was translated into Spanish but not into other languages. Some communities in Washington State have high proportions of adults with no or limited English language abilities. While administering the survey in languages other than English or Spanish was considered, it quickly became clear that the likelihood of obtaining enough data from groups speaking other languages was small and the decision was made to consider different research strategies to reach these groups, including panel surveys as well as qualitative research methods.

A fourth limitation relates to the small size of several subgroups in the sample such that the prevalence rates of problem gambling in these groups are associated with large confidence intervals. These estimates should be viewed with caution since they may be unreliable. Finally, it is important to emphasize that, like other prevalence surveys, the 2021 Washington State Adult Problem Gambling Prevalence Study is a cross-sectional ‘snapshot’ of gambling and problem gambling at a single point in time. This limits our ability to draw any cause-and-effect conclusions from associations reported between gambling participation, gambling problems, and other variables in Washington State.

Future Directions

When the results of a new problem gambling prevalence study are published, policy makers and the media generally focus their attention on a single number—the overall rate of problem gambling in the general population. Comparisons are made with prevalence rates in other jurisdictions and questions

⁴⁹ (Curtin, 2000; Groves et al., 2006; Keeter, Miller, Kohut, Groves, & Presser, 2000)

⁵⁰ (Abbott & Volberg, 2006; Williams & Volberg, 2010)

are asked about the number of people that this overall rate represents and how many of them may seek treatment if specialized services are available. While these are important reasons for conducting prevalence research, there is much more to be learned by looking beyond the overall prevalence rate. There is also much more to be learned through additional analyses of the data, additional research activities to supplement these findings, and subsequent iterations of this survey.

In consultation with members of the PGTF, we have identified a number of future directions for gambling research in Washington State. For example, there is substantial additional analysis to be done with the data from the Washington State Adult Problem Gambling Prevalence Survey. First, it will be important to complete additional descriptive analyses of the data on online gambling and gaming, including examinations of the conventional types of gambling engaged in by the different groups of gamblers/gamers as well as the overlap between involvement in these activities and problem gambling. Second, several questions in the survey, such as participation in 'other types of gambling,' provided respondents with an option to specify their responses in an open-ended format. It would be useful to code and analyze responses to these open-ended questions with a particular focus on better understanding the gambling activities identified by respondents beyond those provided in the survey. Another relationship that could be examined descriptively is that between types of gambling and types of health insurance that individuals have in Washington State.

There are a number of topics that require deeper analyses, using multivariate and latent class approaches, to examine relationships between attitudes toward gambling and participation in specific gambling activities as well as relationships between clusters of similar gambling activities and demographics. Multivariate analyses would be useful to assess the relationships between risky and problem gambling and demographics, gambling involvement, and comorbid conditions. These analyses could help identify risk factors that remain predictive of at-risk and problem gambling status after controlling for underlying relationships in the data.

One important topic of deeper analysis would be to replicate analyses already completed in Massachusetts and Sweden to identify the types of gambling in Washington State that are uniquely associated with problem gambling among residents of the state. This analysis would control for the number of activities with which individual gamblers engage in Washington State and would yield information directly comparable to information from these other jurisdictions.⁵¹

Additional research activities would add depth to the findings presented in this report. For example, it would be interesting to conduct a survey using a low-cost, opt-in online panel. Due to the way in which respondents are selected to participate in online panels, previous research has found higher rates of problem gambling prevalence in online panels compared to population samples in the same jurisdictions.⁵² Given the small number of individuals in the Washington State Adult Problem Gambling Prevalence Survey who had sought help for a gambling problem, we were unable to identify where problem gamblers go to receive treatment with any confidence. By analyzing a dataset with a high proportion of problem gamblers, we could learn much more about their desire for treatment, treatment-seeking behavior, and the barriers they face in seeking treatment. Separately, another way to gain a better understanding about help-seeking by individuals experiencing gambling problems would be to screen for gambling problems among individuals seeking help for problems with alcohol, drugs and mental health.

⁵¹ See the section titled *Gambling Involvement Among Gamblers* on Page 33 for additional details.

⁵² (Lee, Back, Williams, & Ahn, 2015; Williams, Belanger, & Arthur, 2011; Williams & Volberg, 2014)

Finally, it would be advisable to plan to conduct a replication of the Washington State Adult Problem Gambling Survey in 3 to 5 years. Nationally and internationally, the landscape of legalized gambling is changing rapidly: some U.S. states have legalized or are in the process of legalizing online gambling and/or online sports betting. Along with this, vendors are rolling out nation-wide advertising campaigns and widespread celebrity endorsements of online sports betting apps. Although online gambling is illegal in WA State, these changes are likely to affect Washington State residents, both adults and adolescents, in unforeseen ways. Conducting a gambling prevalence survey within the next few years would also yield valuable information about the effect of the COVID-19 pandemic on gambling participation and the demographics of gamblers in Washington State. Measuring the same behaviors and using the same methods employed in the Washington State Adult Problem Gambling Survey at subsequent points in time will be useful in monitoring changes over time in gambling attitudes, gambling participation, and problem gambling prevalence in the state.

Conclusion

The descriptive results presented in this report reveal a great deal about gambling attitudes, behavior, problems, and prevention awareness in Washington State. The dataset from the Washington State Adult Problem Gambling Survey will continue to enrich our understanding of gambling and problem gambling through additional analyses and research activities. One final recommendation would be to create a Public Use Dataset to enable other researchers and stakeholders to interact with the data and conduct their own analyses, adding to the body of knowledge about gambling in Washington State. Individually and in tandem, results of the Washington State Adult Problem Gambling Survey and subsequent surveys can be used to develop data-driven strategies to promote responsible gambling, raise awareness about problem gambling, and design general and targeted prevention and treatment programs for problem gamblers and their families throughout Washington State.

WORKS CITED

- Abbott, M. W. (2001). *What do we know about gambling and problem gambling in New Zealand?* Retrieved from Wellington:
- Abbott, M. W., & Volberg, R. A. (1991). *Gambling and problem gambling in New Zealand: Report on Phase One of the National Survey*. Retrieved from Wellington:
- Abbott, M. W., & Volberg, R. A. (1992). *Frequent and problem gambling in New Zealand*. Retrieved from Wellington:
- Abbott, M. W., & Volberg, R. A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies*, 12(2), 143-160.
- Abbott, M. W., & Volberg, R. A. (2006). The measurement of adult problem and pathological gambling. *International Gambling Studies*, 6(2), 175-200.
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd edition ed.). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th edition ed.). Washington, DC: American Psychiatric Publishing.
- Baseline Market Research. (1992). *Final report: Prevalence study of problem gambling*. Retrieved from
- Biddle, N. (2020). *Gambling during the COVID-19 pandemic*. Retrieved from Sydney:
<https://openresearch-repository.anu.edu.au/handle/1885/261413>
- Bijker, R., Booth, N., Merkouris, S. S., Dowling, N. A., & Rodda, S. N. (2022). Global prevalence of help-seeking for problem gambling: A systematic review and meta-analysis. *Addiction, available online*. doi:<https://doi.org/10.1111/add.15952>
- Binde, P., Romild, U., & Volberg, R. A. (2017). Forms of gambling, gambling involvement and problem gambling: Evidence from a Swedish population survey. *International Gambling Studies*, 17(3), 490-507.
- Black, D. W., & Shaw, M. (2019). The epidemiology of gambling disorder. In A. Heinz, N. Romanczuk-Seiferth, & M. N. Potenza (Eds.), *Gambling Disorder*. Cham, Switzerland: Springer, Cham.
- Boothby, C. A., Kim, H. S., Romanow, N. K., Hodgins, D. C., & McGrath, D. S. (2017). Assessing the role of impulsivity in smoking and non-smoking disordered gamblers. *Addictive Behaviors*, 70, 35-41. doi:<https://doi.org/10.1016/j.addbeh.2017.02.002>
- Carliner, H., Auerbach, A., Showalter, E., Reynoso, N., Robertson, N., Rana, P., . . . Wolff, L. S. (2021). *2021 statewide assessment of gambling and problem gambling in Illinois*. Retrieved from Boston, MA: <https://weknowthefeeling.org/statewide-gambling-and-problem-gambling-needs-assessment/>
- Chhabra, D., Lutz, G., & Gonnerman, M. (2005). *Socioeconomic impact of gambling on Iowans*. Retrieved from Des Moines, IA:
http://www.idph.state.ia.us/IGTP/common/pdf/reports/socioeconomic_gambling.pdf
- Chou, K.-L., & Afifi, T. O. (2011). Disordered (pathologic or problem) gambling and Axis I psychiatric disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *American Journal of Epidemiology*, 173(11), 1289-1297. doi:<https://doi.org/10.1093/aje/kwr017>
- Christiansen/Cummings Associates. (1992). *Legal gambling in Connecticut: Assessment of current status and options for the future*. Retrieved from Hartford, CT:
- Currie, S. R., Hodgins, D. C., & Casey, D. M. (2013). Validity of the Problem Gambling Severity Index interpretive categories. *Journal of Gambling Studies*, 29(2), 311-327.
- Curtin, R., Presser, S., & Singer, E. (2000). The effects of response rate changes on the Index of Consumer Sentiment. *Public Opinion Quarterly*, 64, 413-428.

- Dickerson, M. G., Haw, J., & Shepherd, L. (2003). *The psychological causes of problem gambling: A longitudinal study of at risk recreational EGM players*. Retrieved from Sydney: http://gaming.uleth.ca/agri_downloads/1149/dickerson_haw.pdf
- Ferris, J., & Wynne, H. (2001). *The Canadian Problem Gambling Index: Final report*. Retrieved from Ottawa: <http://www.ccgr.ca/wp-content/uploads/2013/03/CPGI-Final-Report-English.pdf>
- Fisher, S. E. (2000). Measuring the prevalence of sector-specific problem gambling: A study of casino patrons. *Journal of Gambling Studies*, 16(1), 25-51.
- Ford, M., & Håkansson, A. (2020). Problem gambling, associations with comorbid health conditions, substance use, and behavioural addictions: Opportunities for pathways to treatment. *PLoS ONE*, 15(1), e0227544. doi:10.1371/journal.pone.0227644
- Gerstein, D. R., Volberg, R. A., Harwood, H., & Christiansen, E. M. (1999). *Gambling impact and behavior study: Report to the National Gambling Impact Study Commission*. Retrieved from Chicago, IL: <http://www3.norc.org/projects/Gambling+Impact+Behavior+Study.htm>
- Govoni, R., Frisch, G. R., & Stinchfield, R. (2001). *A critical review of screening and assessment instruments for problem gambling*. Retrieved from Windsor: <http://www.gamblingresearch.org/>
- Grant, J. E., & Chamberlain, S. R. (2020). Gambling and substance use: Comorbidity and treatment implications. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 99, 109852. doi:<https://doi.org/10.1016/j.pnpbp.2019.109852>
- Groves, R. M., Couper, M. P., Presser, S., Singer, E., Tourangeau, R., Piani Acosta, G., & Nelson, L. (2006). Experiments in producing nonresponse bias. *Public Opinion Quarterly*, 70(5), 720-736.
- Holtgraves, T. (2009). Gambling, gambling activities, and problem gambling. *Psychology of Addictive Behaviors*, 23(2), 295-302.
- Horváth, C., & Paap, R. (2012). The effect of recessions on gambling expenditures. *Journal of Gambling Studies*, 28(4), 703-717.
- Johansson, A., Grant, J. E., Kim, S. W., Odlaug, B. L., & Gøtestam, K. G. (2009). Risk factors for problematic gambling: A critical literature review. *Journal of Gambling Studies*, 24(4), 67-92.
- Kallick, M., Suits, D., Dielman, T., & Hybels, J. (1979). *A survey of American gambling attitudes and behavior*. Retrieved from Ann Arbor, MI:
- Keeter, S., Miller, C., Kohut, A., Groves, R. M., & Presser, S. (2000). Consequences of reducing nonresponse in a national telephone survey. *Public Opinion Quarterly*, 64, 125-148.
- Kessler, R. C., Hwang, I., LaBrie, R. A., Petukhova, M., Sampson, N. A., Winters, K. C., & Shaffer, H. J. (2008). The prevalence and correlates of DSM-IV Pathological Gambling in the National Comorbidity Survey Replication. *Psychological Medicine*, 38(9), 1351-1360.
- Kim, S. W., Grant, J. E., Eckert, E. D., Faris, P. L., & Hartman, B. K. (2006). Pathological gambling and mood disorders: Clinical associations and treatment implications. *Journal of Affective Disorders*, 92, 109-116.
- Ladouceur, R. (1991). Prevalence estimates of pathological gambling in Quebec, Canada. *Canadian Journal of Psychiatry*, 36, 732-734.
- Ladouceur, R., Bouchard, C., Rhéaume, N., Jacques, C., Ferland, F., Leblond, J., & Walker, M. (2000). Is the SOGS an accurate measure of pathological gambling among children, adolescents and adults? *Journal of Gambling Studies*, 16(1), 1-24.
- Ladouceur, R., Jacques, C., Chevalier, S., Sévigny, S., & Hamel, D. (2005). Prevalence of pathological gambling in Quebec in 2002. *Canadian Journal of Psychiatry*, 50(8), 451-456.
- LaPlante, D. A., Afifi, T. O., & Shaffer, H. J. (2013). Games and gambling involvement among casino patrons. *Journal of Gambling Studies*, 29(2), 191-203.
- Laplante, D. A., Nelson, S. E., & Gray, H. M. (2014). Breadth and depth involvement: Understanding Internet gambling involvement and its relationship to gambling problems. *Psychology of Addictive Behaviors*, 28(2), 396-403. doi:<https://doi.org/10.1037/a0033810>

- LaPlante, D. A., Nelson, S. E., LaBrie, R. A., & Shaffer, H. J. (2011). Disordered gambling, type of gambling and gambling involvement in the British Gambling Prevalence Survey 2007. *European Journal of Public Health, 21*(4), 171-212.
- Learning Tree Institute. (2017). *2017 Kansas gambling survey: Results and analysis*. Retrieved from Topeka, KS: https://kdads.ks.gov/docs/librariesprovider17/csp/bhs-documents/problem-gambling/2017-kansas-gambling-survey-report.pdf?sfvrsn=4cc704ee_0
- Lee, C.-K., Back, K.-J., Williams, R. J., & Ahn, S.-S. (2015). Comparison of telephone RDD and online panel survey modes on CPGI scores and co-morbidities. *International Gambling Studies, 15*(3), 435-449. doi:10.1080/14459795.2015.1068353
- 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.
- Lorains, F. K., Cowlishaw, S., & Thomas, S. A. (2011). Prevalence of comorbid disorders in problem and pathological gambling: Systematic review and meta-analysis of population surveys. *Addiction, 106*(3), 490-498.
- Lostutter, T. W., Philander, K. S., T., W., & Larimer, M. E. (2019). *2019 Problem Gambling Study*. Retrieved from Olympia, WA: https://wsgc.wa.gov/sites/default/files/public/reports-publications/Problem%20Gambling%20Study%20Report%20to%20the%20Legislature.pdf?_ga=2.144286837.1707357455.1661186848-1287917494.1650064986
- Mancuso, D., Gilson, M., & Felver, B. (2005). *The 2003 Washington State needs assessment household survey*. Retrieved from Olympia, WA: <http://www1.dshs.wa.gov/pdf/ms/rda/research/4/52/state/FullReport.pdf>
- Marotta, J., Yamagata, G., Irrgang, M., & Reohr, P. (2021). *COVID-19 impact survey of adult Oregonians: Gambling, gaming, alcohol use, and cannabis use*. Retrieved from Salem, OR: <https://oregoncpg.org/wp-content/uploads/2021/10/Research-Summary-Report-COVID-Impact-Study-FINAL.pdf>
- Mazar, A., Zorn, M., Becker, N., & Volberg, R. A. (2020). Gambling formats, involvement, and problem gambling: Which types of gambling are more risky? *BMC Public Health, 20*, 711. doi:<https://doi.org/10.1186/s12889-020-08822-2>
- McCarthy, S., Thomas, S. L., Bellringer, M. E., & Cassidy, R. (2019). Women and gambling-related harm: A narrative literature review and implications for research, policy, and practice. *Harm Reduction Journal, 16*(18). doi:<https://doi.org/10.1186/s12954-019-0284-8>
- Miller, M., & Xie, R. (2022). *Findings from the 2021 survey of health and recreation in Washington State: Gambling behaviors and prevalence*. Retrieved from Olympia, WA:
- Miller, N. V., Currie, S. R., Hodgins, D. C., & Casey, D. (2013). Validation of the problem gambling severity index using confirmatory factor analysis and rasch modelling. *International Journal of Methods in Psychiatric Research, 22*(3), 245-255. doi:DOI: 10.1002/mpr.1392
- Murray, V., Ladouceur, R., & Jacques, C. (2005). Classification of gamblers according to the NODS and a clinical interview. *International Gambling Studies, 5*(1), 57-61.
- National Research Council. (1999). *Pathological gambling: A critical review*. Washington, DC: National Academy Press.
- Neal, P., Delfabbro, P. H., & O'Neil, M. (2005). *Problem gambling and harm: Towards a national definition*. Retrieved from Adelaide: www.gamblingresearch.org.au
- Nower, L., Volberg, R. A., & Caler, K. R. (2017). *The prevalence of online and land-based gambling in New Jersey*. Retrieved from New Brunswick, NJ: <https://socialwork.rutgers.edu/centers/center-gambling-studies/research-reports-and-questionnaires/prevalence-gambling-new-jersey>
- Park, K., Losch, M., Muilenberg, R., & Zubrod, A. (2019). *Gambling attitudes and behavior: A 2018 survey of adult Iowans toward prevalence of gambling*. Retrieved from Cedar Falls, IA: <https://idph.iowa.gov/igtp/reports>

- Petry, N. M., Stinson, F. S., & Grant, B. F. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, *66*, 564-574.
- Phillips, J. G., Ogeil, R., Chow, Y.-W., & Blaszczynski, A. (2013). Gambling involvement and increased risk of gambling problems. *Journal of Gambling Studies*, *29*(4), 601-611.
- Polzin, P. E., Baldrige, J., Doyle, D., Sylvester, J. T., Volberg, R. A., & Moore, W. L. (1998). From Convenience Stores to Casinos: Gambling – Montana Style. *Montana Business Quarterly*, *36*(4), 2-14.
- Rash, C. J., Weinstock, J., & Van Patten, R. (2016). A review of gambling disorder and substance use disorders. *Substance Abuse and Rehabilitation*, *7*, 9-13. doi:10.2147/SAR.S83460
- Rodriguez-Monguio, R., Errea, M., & Volberg, R. A. (2017). Comorbid pathological gambling, mental health, and substance use disorders: Health-care services provision by clinical specialty. *Journal of Behavioral Addictions*, *6*(3), 406-415.
- RTI International. (2021). *2020 New York State problem gambling prevalence survey*. Retrieved from Research Triangle Park, NC:
- Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1997). *Estimating the prevalence of disordered gambling behavior in the United States and Canada: A meta-analysis*. Retrieved from Boston, MA:
- Shaffer, H. J., LaBrie, R. A., & LaPlante, D. (2004). Laying the foundation for quantifying regional exposure to social phenomena: Considering the case of legalized gambling as a public health toxin. *Psychology of Addictive Behaviors*, *18*(1), 40-48.
- Shinogle, J., Volberg, R. A., Park, D., Norris, D. F., Haynes, D., & Stokan, E. (2011). *Gambling prevalence in Maryland: A baseline analysis*. Retrieved from Baltimore, MD: http://maryland-adaa.org/content_documents/GAMBLING/gambling201_0610.pdf
- Sommers, I. (1988). Pathological gambling: Estimating prevalence and group characteristics. *International Journal of the Addictions*, *23*, 477-490.
- Stinchfield, R., Govoni, R., & Frisch, G. R. (2007). A review of screening and assessment instruments for problem and pathological gambling. In G. Smith, D. C. Hodgins, & R. J. Williams (Eds.), *Research and Measurement Issues in Gambling Studies* (pp. 179-213). London: Elsevier.
- Streich, F., Anton, M., & Bosch, W. (2020). *Gambling in Minnesota: A study of participation, attitudes, and the prevalence of problem gambling*. Retrieved from St. Paul, MN: <https://www.wilder.org/wilder-research/research-library/gambling-minnesota>
- Stuefen, R. M., Volberg, R. A., & Madden, M. K. (1991). *Gaming, gambling and problem gambling in South Dakota: A statistical description and analysis of socio-economic impacts*. Retrieved from Pierre, SD:
- Suomi, A., Jackson, A. C., Dowling, N. A., Lavis, T., Patford, J., Thomas, S. A., & Cockman, S. (2013). Problem gambling and family violence: Family member reports of prevalence, family impacts and family coping. *Asian Journal of Gambling Issues and Public Health*, *3*(1), 13.
- Svetieva, E., & Walker, M. (2008). Inconsistency between concept and measurement: The Canadian Problem Gambling Index (CPGI). *Journal of Gambling Issues*(22), 157-173.
- Tracy, J. K., Maranda, L., & Scheele, C. (2017). *Statewide gambling prevalence survey in Maryland: 2017*. Retrieved from Baltimore, MD: <https://prism.ucalgary.ca/handle/1880/109870>
- Volberg, R. A. (1993a). *Gambling and problem gambling among adolescents in Washington State*. Retrieved from Olympia, WA:
- Volberg, R. A. (1993b). *Gambling and problem gambling in Washington State*. Retrieved from Olympia, WA:
- Volberg, R. A. (2004). Fifteen years of problem gambling research: What do we know? Where do we go? *Journal of Gambling Issues*, *10*.

- Volberg, R. A. (2007). Population surveys. In G. J. Smith, D. C. Hodgins, & R. J. Williams (Eds.), *Research and Measurement Issues in Gambling Studies* (pp. 33-51). San Diego, CA: Elsevier.
- Volberg, R. A., & Banks, S. M. (2002). A new approach to understanding gambling and problem gambling in the general population. In J. J. Marotta, J. A. Cornelius, & W. R. Eadington (Eds.), *The downside: Problem and pathological gambling* (pp. 309-323). Reno, NV: Institute for the Study of Gambling and Commercial Gaming.
- Volberg, R. A., & Moore, W. L. (1999a). *Gambling and problem gambling among Washington State adolescents: A replication study, 1993 to 1999*. Retrieved from Olympia, WA:
- Volberg, R. A., & Moore, W. L. (1999b). *Gambling and problem gambling in Washington State: A replication study, 1992 to 1998*. Retrieved from Olympia, WA:
- Volberg, R. A., & Steadman, H. J. (1988). Refining prevalence estimates of pathological gambling. *American Journal of Psychiatry*, *145*, 502-505.
- Volberg, R. A., & Steadman, H. J. (1989). Prevalence estimates of pathological gambling in New Jersey and Maryland. *American Journal of Psychiatry*, *146*, 1618-1619.
- Volberg, R. A., & Steadman, H. J. (1992). Accurately depicting pathological gamblers: Policy and treatment implications. *Journal of Gambling Studies*, *8*(4), 401-412.
- Volberg, R. A., Williams, R. J., Stanek, E., Houpt, K. A., Zorn, M., & Rodriguez-Monguio, R. (2017). *Gambling and problem gambling in Massachusetts: Results of a baseline population survey*. Retrieved from Amherst, MA:
- Volberg, R. A., & Wray, M. (2013). Beyond social control: Prevalence research and the uses of expert knowledge. *Addiction Research and Theory*, *21*(1), 15-16.
- Welte, J. W., Barnes, G., Wieczorek, W., Tidwell, M.-C., & Parker, J. (2002). Gambling in the U.S.--Results from a national survey. *Journal of Gambling Studies*, *18*(4), 313-337.
- Welte, J. W., Barnes, G., Wieczorek, W. F., Tidwell, M.-C., & Parker, J. (2001). Alcohol and gambling among U.S. adults: Prevalence, demographic patterns and comorbidity. *Journal of Studies on Alcohol*, *62*(5), 706-712.
- Welte, J. W., Barnes, G. M., Tidwell, M.-C., 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*(3), 695-715.
- Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M.-C. O., & Hoffman, J. H. (2007). Type of gambling and availability as risk factors for problem gambling: A Tobit regression analysis by age and gender. *International Gambling Studies*, *7*(2), 183-198.
- Welte, J. W., Wieczorek, W., Tidwell, M.-C., & Parker, J. C. (2004). Risk factors for pathological gambling. *Addictive Behaviors*, *29*(2), 323-335.
- Williams, R. J., Belanger, Y. D., & Arthur, J. N. (2011). *Gambling in Alberta: History, current status, and socioeconomic impacts*. Retrieved from Edmonton:
https://dspace.ucalgary.ca/bitstream/1880/48495/1/SEIGA_Final_Report_April_2_2011.pdf
- Williams, R. J., & Volberg, R. A. (2009). Impact of survey description, administration format, and exclusionary criteria on population prevalence rates of problem gambling. *International Gambling Studies*, *9*(2), 101-117.
- Williams, R. J., & Volberg, R. A. (2010). *Best practices in the population assessment of problem gambling*. Retrieved from Guelph: <http://www.gamblingresearch.org/content/research.php?appid=2500>
- Williams, R. J., & Volberg, R. A. (2012). *Population assessment of problem gambling: Utility and best practices*. Retrieved from Guelph: <https://www.uleth.ca/dspace/handle/10133/3094>
- Williams, R. J., & Volberg, R. A. (2014). The classification accuracy of four problem gambling assessment instruments in population research. *International Gambling Studies*, *14*(1), 15-28.

- Williams, R. J., Volberg, R. A., & Stevens, R. M. G. (2012). *The population prevalence of problem gambling: Methodological influences, standardized rates, jurisdictional differences, and worldwide trends*. Retrieved from Guelph: <https://www.uleth.ca/dspace/handle/10133/3068>
- Young, M. (2013). 'Following the money': The political economy of gambling research. *Addiction Research and Theory*, 21(1), 17-18.

APPENDIX A: HERE21 RESEARCH QUESTIONS⁵³

- 1) What is the prevalence of problem gambling among adults in WA State?
 - Differences and similarities between demographic groups and preferred gambling formats
 - Helps inform how best to do outreach and prevention
- 2) What is the distribution of gambling methods (e.g., online vs. brick-and-mortar) that are being utilized by WA State adults?
 - Prevalence of online and technology-based gaming among adults in WA State
 - Characteristics of adults that engage in online gaming compared to adults who do not engage in online gaming
- 3) What is the prevalence of co-occurring disorders (substance abuse and/or mental health issues) with problem gambling?
 - Correlations with social determinants of health
 - If possible, what forms of insurance are used to access problem gambling treatment?
- 4) What methods of outreach and awareness are reaching different demographic groups?
 - For higher risk populations (e.g., older adults, economically-disadvantaged, rural, specific ethnic groups), can we determine disparities in available treatment?
- 5) What are the beliefs and attitudes towards gambling?
 - What level of awareness exists for public awareness campaigns (e.g., radio, television, online, etc.)
- 6) What is the prevalence of online gambling, online gaming, and within the convergence area of both? (Note: added at the request of the Problem Gambling Task Force)

⁵³ HERE21 is the name used by the WSU-SESRC to identify the Washington State Adult Problem Gambling Prevalence study (from the 'Health and Recreation 2021 Survey').

APPENDIX B: CALIBRATING THE PROBLEM GAMBLING SEVERITY INDEX (PGSI)

In 1997, several Canadian government agencies with responsibility for addressing problem gambling commissioned a major study to clarify the concept of problem gambling and design a new instrument to measure problem gambling in non-clinical settings. Development of the instrument, called the Canadian Problem Gambling Index (CPGI), involved conducting a large population survey, then re-testing sub-samples of respondents and completing a small number of clinical validation interviews. Many potential items were assembled from various sources and the nine items that were most effective in differentiating non-gamblers, non-problematic regular gamblers and problem gamblers were retained. These nine items constitute the Problem Gambling Severity Index (PGSI), a subset of the larger CPGI. Each of the nine PGSI items, framed in the past 12 months, is scored on a four-point scale (never = 1, sometimes = 2, most of the time = 3, almost always = 4). Conventionally, people scoring 8 or more are classified as problem gamblers. Scores of 3 to 7 indicate 'moderate risk' and scores of 1 or 2 'low risk.' 'Non-problem gamblers' score zero as do non-gamblers who are not administered any of the PGSI questions.

As noted in the body of this report, there has been criticism of the conceptual underpinnings and validity of the SOGS, PGSI, and the DSM-IV, the three most commonly used instruments for assessing problem gambling. Most importantly, there is only fair to weak correspondence between problem gamblers identified in population surveys and the subsequent classification of these same individuals in clinical interviews.⁵⁴

In a large study of 7,272 gamblers (including 977 clinically assessed problem gamblers carried out to re-evaluate the classification accuracy of the SOGS, the PGSI and the NODS, a DSM-IV-based measure, Williams and Volberg (2010, 2014) found that all of the instruments performed well at correctly classifying most non-problem gamblers (i.e., specificity and negative predictive power). The main weakness of the PGSI was that roughly half of the people labeled as problem gamblers by this instrument (using a 3+ criterion) were not classified as problem gamblers by the clinical raters (i.e., low positive predictive power). Many researchers have adopted a cutoff of 3 or more on the PGSI in preference to the cutoff of 8 or more recommended by the instrument's developers because the higher cutoff yielded too few problem gamblers for analysis.

In addition to assessing the classification accuracy of the different problem gambling instruments, different cut-off criteria for problem gambling were evaluated to determine whether improved classification accuracy could be obtained. Table B-1 shows that the PGSI/clinician prevalence ratio is closest to 1 using a 5+ cut-off. The 5+ cut-off also has significantly higher ($p < .05$) specificity, positive predictive power, and diagnostic efficiency (although lower sensitivity) compared to 3+.

⁵⁴ (Abbott, 2001; Abbott & Volberg, 1992; Ferris & Wynne, 2001; Ladouceur et al., 2000; Ladouceur, Jacques, Chevalier, Sévigny, & Hamel, 2005; Murray, Ladouceur, & Jacques, 2005)

Table B-1: Classification Accuracy of the PGSI Using Different Scoring Thresholds

	CPGI 3+	CPGI 4+	CPGI 5+	CPGI 6+	CPGI 7+	CPGI 8+
Sensitivity	91.2%	83.1%	74.2%	64.6%	54.3%	44.4%
Specificity	85.5%	92.5%	95.6%	97.6%	98.7%	99.2%
Positive Predictive Power	49.4%	63.1%	72.5%	80.5%	86.6%	89.9%
Negative Predictive Power	98.4%	97.2%	96.0%	94.7%	93.3%	92.0%
Diagnostic Efficiency	86.5%	91.2%	92.7%	93.1%	92.7%	91.9%
Kappa	0.56	0.67	0.69	0.68	0.63	0.55
Instrument Prev/Clinician Prev Ratio	1.85	1.32	1.02	0.80	0.63	0.49

A separate investigation of the PGSI independently found that the performance of the instrument was improved using a cutoff of 5+ (Currie et al., 2013). These investigators noted that the original development of the instrument only tested the problem gambler category for validity with the cutoffs for the remaining categories (non-problem, low-risk, moderate-risk) established without any validity testing. Like Williams and Volberg (2014), Currie and colleagues noted that researchers often use a 3+ cutoff for the CPGI because of the small number of individuals who score 8 or more on the screen, even in very large survey samples.

These researchers conducted a comprehensive assessment of the validity of the PGSI gambler types using data from the CPGI Integrated Dataset (which includes data from prevalence surveys conducted in Alberta, British Columbia, Ontario, Manitoba, Newfoundland, and the national CPGI validation study) (n=14,833 past-year gamblers) and from the Canadian Community Health Survey (CCHS 1.2) (n=18,913 past-year gamblers) (total n=33,746 past-year gamblers). The primary aims of their study were to assess the discriminant validity of the CPGI severity classifications and cutoff scores and to determine the impact of re-calibrating the CPGI scoring rules on the reliability and external validity of these categories.

The researchers examined gambling intensity, game preference, and gambling expenditures to assess the validity of the CPGI severity classifications. Their analysis showed that there were very few statistically significant differences across these dimensions between the low-risk (PGSI=1-2) and moderate-risk (PGSI=3-7) groups. In contrast, the differences between moderate-risk and problem gamblers (PGSI=8+) were very large on nearly all of the dimensions assessed, particularly in gambling expenditures and preferences for EGMs or casino games.

The authors noted that while a major revision of the PGSI may eventually be necessary, a relatively simple way to improve the instrument would be to revise the scoring to increase the distinctiveness of the groups. Although the possibility of merging the categories of low-risk and moderate-risk gambler types was considered, the researchers concluded that a more defensible option was to re-calibrate the categories. Their proposal was to re-score the CPGI to distinguish non-problem gamblers (CPGI=0), low-risk gamblers (CPGI=1-4), moderate-risk gamblers (CPGI=5-7), and problem gamblers (CPGI=8-27) in order to improve the distinctiveness of the groups in relation to gambling intensity and game preference as well as median income spent on gambling. Although the terminology recommended by Currie et al. (2013) is different than the terminology adopted by Williams and Volberg (2014), the preferential cutoff for the CPGI to distinguish problematic gamblers from at-risk gamblers is the same.

APPENDIX C: ADDITIONAL TABLES

Table C-1: Demographics of Lottery Players

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				0.0885
Men	3826	4549	33.9 (31.7, 36.0)	
Women	5381	4654	31.4 (29.5, 33.3)	
Race				0.6274
White	7806	7162	32.4 (30.8, 34.0)	
POC	1401	2042	33.3 (29.9, 36.8)	
Age group				<0.0001
18-34 years	1305	2781	24.0 (20.9, 27.1)	
35-64 years	4525	4623	38.3 (36.4, 40.3)	
65+ years	3377	1799	31.3 (29.1, 33.5)	
Education				<0.0001
High school or less	1000	2912	34.2 (30.7, 37.7)	
Some college	2662	3194	36.4 (34.1, 38.7)	
BA degree	3034	1967	28.8 (26.9, 30.6)	
Advanced degree	2511	1131	24.5 (22.5, 26.5)	
Employment				0.0073
Employed	4496	5045	34.3 (32.3, 36.2)	
Unemployed/other	1194	1952	28.5 (24.9, 32.0)	
Retired	3154	1820	32.4 (30.1, 34.7)	
Military service				<0.0001
Any military service	1069	940	41.3 (37.0, 45.6)	
No military service	7923	8038	31.6 (30.0, 33.1)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-2: Demographics of Tribal Casino Gamblers

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				0.7787
Men	3824	4556	15.1 (13.4, 16.8)	
Women	5379	4643	15.5 (14.0, 16.9)	
Race				0.6473
White	7806	7160	15.5 (14.2, 16.7)	
POC	1397	2039	14.8 (12.1, 17.4)	
Age group				0.8491
18-34 years	1304	2783	15.0 (12.5, 17.6)	
35-64 years	4523	4618	15.2 (13.7, 16.7)	
65+ years	3376	1798	15.9 (14.1, 17.7)	
Education				<0.0001
High school or less	998	2909	18.1 (15.4, 20.9)	
Some college	2662	3196	18.0 (16.1, 19.8)	
BA degree	3030	1962	10.9 (9.5, 12.3)	
Advanced degree	2513	1132	8.0 (6.8, 9.3)	
Employment				0.0128
Employed	4495	5049	16.5 (14.8, 18.1)	
Unemployed/other	1193	1952	12.3 (9.9, 14.8)	
Retired	3153	1819	15.8 (13.9, 17.6)	
Military service				0.1749
Any military service	1069	940	17.3 (13.9, 20.7)	
No military service	7921	8040	14.9 (13.7, 16.1)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-3: Demographics of Pull-tabs, Bingo and Raffle Players

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				0.1211
Men	3822	4554	8.1 (6.8, 9.4)	
Women	5372	4643	9.6 (8.3, 10.8)	
Race				0.5893
White	7797	7159	9.0 (8.0, 10.0)	
POC	1397	2038	8.3 (6.2, 10.5)	
Age group				0.2306
18-34 years	1302	2778	9.2 (7.3, 11.2)	
35-64 years	4524	4621	9.2 (8.0, 10.4)	
65+ years	3368	1797	7.3 (6.0, 8.7)	
Education				0.0027
High school or less	1001	2914	9.1 (7.0, 11.3)	
Some college	2656	3189	10.3 (8.8, 11.7)	
BA degree	3030	1963	7.9 (6.8, 9.1)	
Advanced degree	2507	1130	5.7 (4.6, 6.7)	
Employment				0.0278
Employed	4492	5045	9.6 (8.4, 10.8)	
Unemployed/other	1194	1955	8.0 (5.9, 10.2)	
Retired	3143	1814	6.7 (5.4, 7.9)	
Military service				0.9095
Any military service	1064	936	8.9 (6.4, 11.4)	
No military service	7916	8040	8.8 (7.8, 9.7)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-4: Demographics of Online Gamblers (Q21 only)

	Unweighted N	Weighted N	%Yes	95% CI	p-value
Gender					0.0312
Men	3824	4556	5.9	(4.8, 7.1)	
Women	5375	4645	4.3	(3.4, 5.2)	
Race					0.1277
White	7801	7161	4.8	(4.0, 5.6)	
POC	1398	2040	6.2	(4.4, 8.0)	
Age group					<0.0001
18-34 years	1303	2782	7.6	(5.7, 9.5)	
35-64 years	4521	4618	4.6	(3.7, 5.5)	
65+ years	3375	1801	2.5	(1.8, 3.2)	
Education					0.4621
High school or less	1000	2913	5.2	(3.4, 6.9)	
Some college	2658	3193	5.4	(4.2, 6.6)	
BA degree	3032	1965	5.3	(4.2, 6.3)	
Advanced degree	2509	1130	3.7	(2.7, 4.7)	
Employment					<0.0001
Employed	4493	5047	6.2	(5.1, 7.3)	
Unemployed/other	1194	1954	4.8	(3.0, 6.5)	
Retired	3150	1818	2.2	(1.6, 2.9)	
Military service					0.8033
Any military service	1068	939	5.4	(3.2, 7.5)	
No military service	7917	8040	5.1	(4.3, 5.9)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-5: Demographics of Out-of-State Gamblers*

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				0.088
Men	3821	4544	5.0 (4.1, 5.9)	
Women	5381	4654	4.0 (3.2, 4.7)	
Race				0.763
White	7802	7158	4.4 (3.8, 5.1)	
POC	1400	2040	4.7 (3.2, 6.1)	
Age group				0.746
18-34 years	1306	2786	4.2 (2.9, 5.5)	
35-64 years	4524	4617	4.7 (3.9, 5.5)	
65+ years	3372	1795	4.3 (3.3, 5.3)	
Education				0.0016
High school or less	998	2906	3.7 (2.4, 4.9)	
Some college	2662	3198	5.9 (4.7, 7.1)	
BA degree	3034	1966	4.1 (3.3, 5.0)	
Advanced degree	2508	1129	3.1 (2.2, 4.0)	
Employment				0.0005
Employed	4495	5049	5.3 (4.4, 6.2)	
Unemployed/other	1195	1952	2.2 (1.1, 3.2)	
Retired	3146	1811	4.7 (3.5, 5.8)	
Military service				0.4702
Any military service	1065	934	5.0 (3.1, 6.9)	
No military service	7921	8039	4.3 (3.6, 4.9)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

*Refers to a Washington State resident who traveled across the state border specifically to gamble.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-6: Demographics of Commercial Card Room Players

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				0.0134
Men	3825	4551	5.0 (4.0, 6.1)	
Women	5377	4645	3.4 (2.6, 4.2)	
Race				0.5788
White	7802	7154	4.1 (3.3, 4.8)	
POC	1400	2042	4.5 (3.1, 6.0)	
Age group				<0.0001
18-34 years	1303	2782	6.8 (5.1, 8.6)	
35-64 years	4524	4617	3.1 (2.4, 3.8)	
65+ years	3375	1797	2.8 (1.9, 3.8)	
Education				0.0726
High school or less	998	2906	4.7 (3.1, 6.3)	
Some college	2663	3197	4.4 (3.4, 5.5)	
BA degree	3032	1964	4.2 (3.2, 5.1)	
Advanced degree	2509	1130	2.2 (1.5, 2.9)	
Employment				0.0004
Employed	4495	5051	5.1 (4.1, 6.1)	
Unemployed/other	1192	1946	3.0 (1.7, 4.2)	
Retired	3152	1818	2.4 (1.6, 3.2)	
Military service				0.673
Any military service	1069	940	3.6 (1.9, 5.4)	
No military service	7919	8036	4.1 (3.4, 4.8)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-7: Demographics of Horseracing Bettors

	Unweighted N	Weighted N	%Yes	95% CI	p-value
Gender					0.8267
Men	3825	4558	1.4	(1.0, 1.9)	
Women	5374	4642	1.4	(0.9, 1.9)	
Race					0.0349
White	7801	7165	1.6	(1.2, 2.0)	
POC	1398	2035	0.8	(0.3, 1.2)	
Age group					0.6984
18-34 years	1304	2779	1.2	(0.5, 1.8)	
35-64 years	4517	4617	1.5	(1.0, 2.0)	
65+ years	3378	1803	1.5	(0.9, 2.2)	
Education					0.425
High school or less	1001	2910	1.6	(0.8, 2.4)	
Some college	2661	3199	1.4	(0.9, 2.0)	
BA degree	3031	1964	1.3	(0.8, 1.8)	
Advanced degree	2506	1127	0.8	(0.4, 1.3)	
Employment					0.5049
Employed	4489	5047	1.5	(1.0, 2.0)	
Unemployed/other	1195	1949	1.0	(0.4, 1.6)	
Retired	3152	1819	1.3	(0.7, 1.9)	
Military service					0.4253
Any military service	1068	939	1.8	(0.5, 3.0)	
No military service	7917	8037	1.3	(1.0, 1.7)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-8: Demographics of Other Gamblers*

	Unweighted N	Weighted N	%Yes 95% CI	p-value
Gender				<0.0001
Men	3819	4541	12.6 (11.1, 14.1)	
Women	5365	4639	8.5 (7.3, 9.7)	
Race				0.6741
White	7788	7143	10.4 (9.3, 11.5)	
POC	1396	2038	10.9 (8.7, 13.2)	
Age group				0.0003
18-34 years	1304	2779	12.7 (10.4, 15.0)	
35-64 years	4519	4609	10.5 (9.2, 11.7)	
65+ years	3361	1792	7.3 (6.1, 8.6)	
Education				0.0034
High school or less	993	2894	9.1 (6.9, 11.2)	
Some college	2657	3194	12.3 (10.7, 14.0)	
BA degree	3023	1962	11.2 (9.8, 12.7)	
Advanced degree	2511	1131	8.0 (6.7, 9.3)	
Employment				0.0019
Employed	4491	5042	11.7 (10.4, 13.1)	
Unemployed/other	1195	1950	10.1 (7.7, 12.5)	
Retired	3135	1808	7.4 (6.1, 8.7)	
Military service				0.17
Any military service	1066	937	12.2 (9.4, 14.9)	
No military service	7904	8023	10.2 (9.2, 11.2)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

* Refers to individuals who played games of chance not included elsewhere in this section of the questionnaire.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-9: Demographics by PGSI Status for All Adults

Risk level (Full sample)	Unweighted N	Weighted N	Non-Gamblers	Non-problem gamblers PGSI = 0	Low risk gamblers PGSI = 1-4	Problem gamblers PGSI = 5 and above	p-value
			% 95% CI	% 95% CI	% 95% CI	% 95% CI	
Gender							0.0232
Men	3659	4370	54.7 (52.4, 57.1)	35.3 (33.1, 37.5)	8.6 (7.2, 10.0)	1.4 (0.7, 2.0)	
Women	5127	4428	58.3 (56.3, 60.4)	33.6 (31.7, 35.6)	6.3 (5.3, 7.4)	1.7 (1.1, 2.3)	
Missing	463						
Race							0.0006
White	7453	6836	56.4 (54.7, 58.1)	35.6 (33.9, 37.2)	6.8 (5.8, 7.7)	1.2 (0.8, 1.6)	
POC	1333	1963	57.0 (53.3, 60.7)	30.5 (27.1, 33.9)	9.9 (7.6, 12.2)	2.6 (1.3, 3.9)	
Missing	463						
Age group							<0.0001
18-34 years	1279	2717	59.9 (56.4, 63.3)	30.2 (26.9, 33.4)	7.9 (6.0, 9.8)	2.1 (1.0, 3.2)	
35-64 years	4345	4415	52.8 (50.8, 54.8)	38.4 (36.4, 40.4)	7.5 (6.3, 8.7)	1.3 (0.8, 1.8)	
65+ years	3162	1667	61.0 (58.6, 63.4)	31.0 (28.7, 33.2)	6.7 (5.3, 8.2)	1.3 (0.7, 1.8)	
Missing	463						
Education							<0.0001
High school or less	929	2737	54.5 (50.7, 58.3)	35.2 (31.6, 38.9)	8.5 (6.4, 10.6)	1.7 (0.7, 2.7)	
Some college	2516	3060	52.7 (50.2, 55.1)	36.6 (34.3, 38.9)	8.5 (7.0, 10.0)	2.2 (1.4, 3.0)	
BA degree	2918	1905	59.8 (57.7, 61.9)	32.9 (30.9, 34.9)	6.4 (5.2, 7.5)	0.9 (0.5, 1.4)	
Advanced degree	2423	1096	66.6 (64.4, 68.9)	29.2 (27.1, 31.4)	3.9 (2.9, 4.9)	0.3 (0.0, 0.5)	
Missing	463						
Employment							<0.0001
Employed	4351	4871	53.2 (51.1, 55.4)	37.4 (35.4, 39.5)	8.0 (6.7, 9.3)	1.3 (0.8, 1.9)	
Unemployed/other	1153	1890	61.7 (57.8, 65.7)	29.0 (25.3, 32.7)	7.0 (5.0, 8.9)	2.3 (1.1, 3.5)	
Retired	2961	1694	60.1 (57.6, 62.5)	32.2 (29.9, 34.6)	7.1 (5.5, 8.6)	0.6 (0.2, 1.0)	
Missing	784						

Military service							0.0007
Any military service	1011	886	50.3 (45.9, 54.8)	36.5 (32.3, 40.8)	11.9 (8.3, 15.4)	1.3 (0.5, 2.1)	
No military service	7600	7722	57.3 (55.6, 59.0)	34.2 (32.6, 35.8)	7.1 (6.1, 8.0)	1.4 (0.9, 1.8)	
<i>Missing</i>	638						

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-10: Demographics by PGSI Status for All Gamblers

Risk level (Gamblers only)	Unweighted N	Weighted N	Non-problem gamblers PGSI = 0	Low risk gamblers _PGSI = 1-4	Problem gamblers PGSI = 5 and above	p-value
			% 95% CI	% 95% CI	% 95% CI	
Gender						0.1459
Men	1505	1910	77.5 (74.3, 80.6)	19.4 (16.4, 22.4)	3.1 (1.7, 4.5)	
Women	1837	1769	80.2 (77.5, 83.0)	15.7 (13.3, 18.2)	4.0 (2.6, 5.5)	
Race						0.0005
White	2819	2868	81.1 (78.9, 83.3)	15.9 (13.9, 18.0)	2.9 (2.0, 3.9)	
POC	523	811	70.5 (65.1, 76.0)	23.7 (18.7, 28.8)	5.7 (2.7, 8.7)	
Age group						0.0302
18-34 years	480	1068	74.6 (69.6, 79.6)	20.0 (15.5, 24.5)	5.4 (2.6, 8.2)	
35-64 years	1871	2005	81.0 (78.4, 83.5)	16.4 (13.9, 18.9)	2.6 (1.7, 3.6)	
65+ years	991	605	79.0 (75.4, 82.6)	17.7 (14.3, 21.1)	3.3 (1.8, 4.8)	
Education						0.0091
High school or less	389	1159	76.8 (71.9, 81.7)	19.6 (15.0, 24.2)	3.6 (1.4, 5.8)	
Some college	1106	1414	76.9 (73.6, 80.2)	18.3 (15.3, 21.3)	4.8 (3.1, 6.5)	
BA degree	1102	751	81.5 (78.6, 84.4)	16.2 (13.5, 18.9)	2.3 (1.2, 3.5)	
Advanced degree	745	354	87.2 (84.1, 90.2)	12.0 (9.1, 15.0)	0.8 (0.0, 1.6)	
Employment						0.0183
Employed	1848	2206	79.6 (76.8, 82.4)	17.6 (15.0, 20.3)	2.8 (1.7, 3.9)	
Unemployed/other	417	689	75.1 (69.4, 80.7)	18.8 (13.8, 23.9)	6.1 (3.0, 9.3)	
Retired	947	641	80.5 (76.8, 84.1)	17.9 (14.3, 21.4)	1.7 (0.6, 2.8)	
Military service						0.0771
Any military service	434	428	74.0 (67.7, 80.4)	23.2 (16.9, 29.6)	2.7 (1.1, 4.4)	
No military service	2829	3166	79.6 (77.4, 81.9)	17.1 (15.0, 19.2)	3.2 (2.2, 4.3)	

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-11: Correlates of Gambling Problems Among Gamblers

	Unweighted N	Weighted N	Non-problem gamblers % 95% CI	Low risk gamblers % 95% CI	Problem gamblers % 95% CI	p-value
Q6 Tobacco use						<0.0001
Yes	501	812	68.9 (63.2, 74.6)	24.7 (19.4, 30.0)	6.4 (3.4, 9.5)	
No	2783	2808	82.3 (80.2, 84.4)	15.1 (13.1, 17.1)	2.6 (1.7, 3.5)	
Q7 Alcohol use						0.1604
Past 30 days	2159	2270	80.2 (77.7, 82.8)	16.4 (14.0, 18.7)	3.4 (2.1, 4.6)	
Past year	536	631	75.5 (70.0, 81.0)	22.1 (16.8, 27.4)	2.4 (0.6, 4.2)	
Not at all	580	731	77.8 (72.7, 82.9)	17.3 (12.6, 21.9)	4.9 (2.3, 7.6)	
Q8 Cannabis use						0.0053
Yes	915	1201	77.1 (73.1, 81.0)	17.1 (13.6, 20.5)	5.9 (3.4, 8.3)	
No	2384	2434	79.7 (77.2, 82.2)	17.9 (15.5, 20.3)	2.4 (1.5, 3.3)	
Q9 Hallucinogen use						<0.0001
Yes	136	245	66.5 (55.6, 77.5)	20.3 (11.4, 29.2)	13.1 (4.8, 21.5)	
No	3167	3397	79.9 (77.8, 82.0)	17.2 (15.2, 19.2)	2.9 (2.0, 3.8)	
Q10 Alcohol/drug problem						<0.0001
Yes	91	148	71.4 (58.0, 84.7)	12.1 (3.2, 21.1)	16.5 (4.6, 28.4)	
No	3213	3503	79.3 (77.2, 81.4)	17.7 (15.7, 19.7)	3.0 (2.1, 3.8)	
Q12 Behavior problem						<0.0001
Yes	348	512	65.3 (58.2, 72.3)	23.0 (17.0, 29.0)	11.7 (6.5, 17.0)	
No	2947	3126	81.3 (79.1, 83.4)	16.6 (14.5, 18.7)	2.1 (1.4, 2.9)	

	Unweighted N	Weighted N	Non-problem gamblers	Low risk gamblers	Problem gamblers	p-value
Q13 Depression, anxiety, mental health problem						<0.0001
Yes	716	998	71.6 (66.7, 76.4)	20.9 (16.6, 25.3)	7.5 (4.4, 10.6)	
No	2564	2628	81.7 (79.4, 83.9)	16.2 (14.0, 18.4)	2.1 (1.4, 2.8)	

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories

Table C-12: Demographics of Online Gamblers, Gamers and Non-Gambling Gamers

Demographics		Unweighted N	Weighted N	Gambled Online		Gamed Online		Gamer Only		No Online Gambling/gaming		p-value
				%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Gender												<0.0001
	Men	3704	4433	32.5 (30.1, 34.8)		9.2 (7.8, 10.6)		15.4 (13.8, 17.0)		43.0 (40.7, 45.2)		
	Women	5143	4486	17.6 (15.9, 19.2)		6.4 (5.3, 7.4)		28.1 (26.2, 30.0)		47.9 (45.9, 50.0)		
Race												0.0001
	White	7495	6935	23.7 (22.1, 25.3)		7.2 (6.3, 8.1)		22.9 (21.5, 24.3)		46.1 (44.5, 47.8)		
	POC	1352	1984	29.4 (25.9, 32.9)		9.8 (7.6, 12.0)		17.7 (14.9, 20.6)		43.1 (39.5, 46.7)		
Age group												<0.0001
	18-34 years	1284	2735	39.5 (36.0, 43.0)		11.3 (9.1, 13.4)		20.8 (17.9, 23.7)		28.4 (25.2, 31.6)		
	35-64 years	4384	4491	21.8 (20.1, 23.6)		7.9 (6.8, 9.0)		23.6 (22.0, 25.3)		46.7 (44.6, 48.7)		
	65+ years	3179	1692	9.8 (8.4, 11.2)		2.0 (1.4, 2.6)		18.4 (16.7, 20.1)		70.0 (67.7, 72.0)		
Education												0.0029
	High school or less	958	2812	25.7 (22.2, 29.1)		5.9 (4.0, 7.8)		19.9 (16.9, 22.9)		48.5 (44.7, 52.2)		
	Some college	2551	3093	24.6 (22.3, 26.9)		8.7 (7.2, 10.2)		22.4 (20.4, 24.4)		44.4 (42.0, 46.7)		
	BA degree	2923	1918	26.9 (24.9, 29.0)		8.3 (7.0, 9.6)		23.0 (21.2, 24.7)		41.8 (39.7, 43.9)		
	Advanced degree	2415	1096	20.9 (18.8, 23.0)		9.2 (7.7, 10.7)		22.7 (20.8, 24.6)		47.2 (44.8, 49.6)		
Employment												<0.0001
	Employed	4437	4980	28.4 (26.4, 30.4)		9.8 (8.6, 11.1)		21.7 (20.1, 23.4)		40.0 (38.0, 42.1)		
	Unemployed/other	1171	1921	30.7 (26.8, 34.6)		7.4 (5.3, 9.4)		22.7 (19.4, 26.1)		39.2 (35.4, 43.1)		
	Retired	2994	1735	9.6 (8.1, 11.0)		2.6 (1.9, 3.4)		20.7 (18.7, 22.7)		67.1 (64.8, 69.4)		
Military service												<0.0001
	Any military service	1044	922	20.3 (16.4, 24.1)		6.5 (4.0, 8.9)		16.9 (13.8, 20.0)		56.4 (52.0, 60.8)		
	No military service	7734	7897	25.6 (24.1, 27.2)		8.0 (7.1, 8.9)		22.1 (20.8, 23.5)		44.2 (42.6, 45.9)		

¹ Unweighted N refers to the total number of respondents who answered this question.

² Weighted N is the total number of respondents who answered the question weighted to the WA population.

³ Percentages and 95% CI are calculated using the weighted N.

Note: Bolded item(s) indicate(s) statistically significant difference within the response categories