
OREGON YOUTH AND THEIR PARENTS:
GAMBLING AND PROBLEM GAMBLING PREVALENCE
AND ATTITUDES

Report to the Oregon Department of Human Services

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We would like to thank all of the young people of Oregon who were interviewed for this survey as well as their parents. The contribution of all of these individuals has been vital in adding to our knowledge of the extent and nature of gambling and gambling-related problems among youth in Oregon and throughout the United States. We would also like to thank the Oregon Department of Human Services for funding this study as well as Ms. Cathy Peda and the staff of Gilmore Research Group in Seattle who carried out the interviews for the survey.

EXECUTIVE SUMMARY

This report presents the results of the second survey of gambling and problem gambling among adolescents in Oregon. The main purpose of this study was to assess the extent of gambling and problem gambling among adolescents in Oregon. Another important purpose of this study was to examine the interplay between parental and adolescent gambling attitudes and involvement in predicting youth gambling participation and problems. The study took advantage of the need to obtain informed consent from a parent or guardian before speaking with an adolescent in the household to complete an assessment of the parent or guardian's gambling attitudes, behavior and knowledge. A sample of 1,555 matched pairs of Oregon parents and adolescents aged 12 to 17 was interviewed between May and August, 2007. The results of this study are intended to assist in the further development and refinement of services in Oregon for youth with gambling problems and their families.

Findings

- Six in ten Oregon adolescents (63%) have gambled at some time in their lives, 46% have gambled in the past year and 3% gamble once a week or more often.
- Gambling participation is highest for playing free gambling-type games on the Internet, closely followed by wagering on card games with friends or family. Other popular activities among Oregon adolescents include betting on sports and wagering on private games of personal skill.
- Boys are far more likely to gamble regularly than girls and older adolescents are more likely to gamble regularly than younger adolescents.
- Rates of past-year and monthly gambling in the present survey are substantially higher than rates identified in the Oregon Healthy Teens Survey. The most likely reason is that the Oregon Healthy Teens Survey includes only a single global question about gambling rather than assessing different activities separately.
- The majority of adolescents in Oregon report spending rather small amounts on gambling in a typical month. Almost half of our respondents report spending nothing on gambling in a typical month and another 40% report spending less than \$10 on gambling in a typical month.
- Despite being less likely to gamble regularly, Black, Hispanic and Asian adolescents in Oregon report spending significantly more on gambling in a typical month than White adolescents.
- In this report, a **narrow** definition of problem gambling, which captures a more extreme pattern of behavior, is used to estimate the prevalence of problem and at-risk gambling among youth in Oregon. A **broad** definition of problem gambling is used to identify risk factors associated with gambling problems among adolescents in Oregon.

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- Based on the narrow definition of problem gambling, 1.3% of Oregon adolescents score as problem gamblers. Another 4.6% of Oregon adolescents score as at-risk gamblers.
 - Based on these figures, it is estimated that there are between 1,100 and 6,300 adolescents in Oregon with severe gambling related difficulties. There are another 10,300 to 16,300 adolescents in Oregon whose gambling has caused them less severe difficulties in the past year.
 - Using the narrow definition of problem gambling, prevalence rates are highest among Oregon adolescents living in households without a parent compared to those living with one or two parents. Prevalence rates are also high among adolescents who have ever gambled on card games and on sports.
 - Based on the broad definition of problem gambling, adolescent problem gamblers in Oregon are significantly more likely to be male and to live in households with incomes below the median. Adolescents who play sports for their school are significantly more likely to be at-risk and problem gamblers than those who do not.
 - While adolescent problem gamblers in Oregon are most likely to have ever played card games for money, the gambling activity they are most likely to have done in the past year is wager on sports.
 - Adolescent problem gamblers in Oregon are significantly more likely than other gamblers to have lost more than \$50 in a single month and to have started gambling before entering 8th grade. Adolescent problem gamblers are significantly more likely than other gamblers to have skipped school, to have been hurt by and to have deliberately hurt someone else, to have been cautioned by the police, arrested and been to court in the past year.
 - Families where the parents gamble are twice as likely to have an at-risk adolescent gambler and four times as likely to have an adolescent problem gambler, holding constant who these children gamble with, their allowance and how much they spends on gambling.
 - The frequency of gambling among Oregon adolescents is correlated with alcohol, tobacco and marijuana use. Like weekly gamblers, adolescent problem gamblers in Oregon are significantly more likely than at-risk and non-problem gamblers to have used alcohol, tobacco and illicit drugs in the past year.
 - There has been a significant decrease in gambling participation among adolescents in Oregon since 1998. The most likely reason is that attitudes towards children and gambling have changed significantly over the past decade and have influenced both parents' willingness to allow their children to gamble and operators' vigilance in preventing under-age gambling.
 - Living in a household where one or more parents gamble makes it more likely that youth will gamble as well. However, gambling frequency and the number of activities involved are not closely related to the family or household unit. It is possible that once adolescents have started gambling within the family, their interest in specific

gambling activities and their involvement in gambling overall are more closely related to peer influences.

- Adolescents have more naïve attitudes towards gambling than their parents. However, relatively high proportions of parents (regardless of whether or not they gamble) believe that gambling is a harmless activity, that youth who gamble are unlikely to have problems in school, and that youth gambling is not associated with alcohol or drug use.

Moving Forward

The results of the Oregon Youth Leisure Activities Study have implications for the further development and refinement of services for adolescent problem gamblers in Oregon. The reduction in adolescent gambling in Oregon since 1998 is a strong indication that attitudes toward youth gambling can be changed. It also appears that the age of onset of gambling can be shifted. These trends should be encouraged and attention focused on these positive changes.

Although youth gambling has declined, there has been no concomitant reduction in the rate of gambling-related problems. Along with lack of help seeking by adolescent problem gamblers and their families, this suggests the need for the alternative approaches to helping Oregon youth with gambling problems. Efforts are needed to increase recognition of youth gambling problems among parents, teachers, counselors and others working with youth. The Department of Human Services is already working with key partners to increase awareness of youth gambling and problems. Integration of gambling into existing school-based curricula on healthy choices and addictions is an important step. Given higher problem gambling rates among youth who play sports for their schools, it might be valuable to begin efforts to raise awareness among athletic coaches in middle and high schools in Oregon.

An important further step will be to encourage screening for gambling problems in the mental health, drug and alcohol and juvenile justice systems. This is especially true for youth who are living in foster care and other, non-traditional households. Finally, it will be important to continue to monitor gambling involvement and gambling-related problems among Oregon youth to assess the effectiveness and efficacy of efforts to minimize gambling-related harm among Oregon youth over time.

INTRODUCTION

In the United States and other industrialized nations, adolescence is a life stage when individuals make the transition from childhood to adulthood. Like sexual experimentation and the use of alcohol and drugs, gambling may be a behavioral expression of adolescents' efforts to establish coherent, consistent identities (Erikson 1963). The majority of adolescents who gamble do so recreationally and in order to socialize. As with adults, however, a small but significant number of adolescents experience difficulties related to their involvement in gambling.

In the wake of the recent rapid legalization of lottery and casino gambling throughout North America, researchers investigating youth gambling have noted that there is now an entire generation of adolescents and young adults who have grown up in a society that not only condones, but encourages, gambling (Gupta & Derevensky 2000; Jacobs 2000; Shaffer & Hall 1996; Stinchfield & Winters 1998). Their concern is that, over time, increased availability and decreased stigma will lead to increases in adolescent gambling and, potentially, increases in the prevalence and severity of gambling problems among adolescents and young adults. These researchers are also concerned with the role that parents who gamble play in facilitating gambling by their children.

This report presents the results of the second survey of gambling and problem gambling among adolescents in Oregon. This survey is unique in the gambling studies field because it examines the interplay between parental and adolescent attitudes in predicting youth gambling participation and problems. This report is organized into several sections for clarity of presentation. The **Introduction** includes a discussion of research on adolescent gambling and problem gambling. The **Methods** section addresses the details of conducting the survey. The following sections detail findings from the survey, with a focus on:

- gambling involvement among adolescents in Oregon;
- the prevalence of problem gambling among adolescents in Oregon;
- changes in problem gambling prevalence among adolescents in Oregon;
- differences between non-problem, at-risk and problem gamblers;
- relationships between gambling, alcohol and drug use among adolescents in Oregon; and
- links between parental and adolescent gambling attitudes, participation and problems.

The report concludes with a summary of the findings and suggestions for future efforts to address problem gambling among adolescents in Oregon.

Research on Adolescent Gambling

It has been widely assumed, by researchers, clinicians, the media and the public, that gambling participation by youngsters will rise when the availability of gambling expands, regardless of age restrictions. A growing number of surveys of gambling among youth have been carried out in North America since the mid-1980s. A review of juvenile gambling research identified more than 20 such studies carried out in schools or by telephone, and explored some trends in the prevalence of youth gambling and problem gambling (Jacobs 2000). Past year gambling participation rates in early studies of youth gambling in the United States (1984-1988) range from 20% to 86%, with a median of 45%. Past year gambling participation rates in later studies of youth gambling in the United States (1989-1999) range from 52% to 71%, with a median of 66%. Based on this evidence, Jacobs concludes that youth gambling has increased significantly in the United States over the past 15 years in the wake of widespread legalization of lotteries and casinos. This is in contrast to the conclusion reached by Stinchfield and Winters (1998), that rates of youth gambling tend to be quite stable over time.

In considering the gambling activities preferred by youth gamblers, Jacobs (2000) notes that minors consistently manage to participate to some degree in every form of gambling available in their communities. Regardless of differences in local availability, the most popular games among adolescents in North America appear to be (1) cards, dice and board games played with family and friends, (2) private wagers on games of personal skill with friends, (3) sports betting, with peers as well as bookmakers, and (4) bingo.

In considering the demographic characteristics of adolescent gamblers, Jacobs (2000) notes that the intensity of gambling by male adolescents is greater than for female adolescents. Male adolescents tend to gamble earlier, gamble on more games, gamble more often, spend more time and money on gambling, and experience more gambling-related problems than female adolescents. Male adolescents are more likely to participate in "skill-based" games while female adolescents are more likely to participate in gambling activities with a large "luck" component. Jacobs argues, however, that in jurisdictions "where horse and dog races exist and where gaming machines are locally accessible, juvenile participation tends to be similar between boys and girls" (Jacobs 2000: 127).

Based on an extensive review of the literature, Stinchfield and Winters (1998) make several additional points about youth gambling. They note that (1) like most behaviors, youth gambling occurs on a continuum of involvement; (2) most youths have gambled at some time and many have played a game that is legal for adults; (3) boys are more involved in gambling than girls; (4) older youths gamble more often than do younger youths; (5) some studies have found ethnic or racial differences in youth gambling; (6) youths start gambling at an early age, oftentimes in grade school; and (7) youth gambling is related to parental gambling.

Defining Problem Gambling Among Adolescents

A variety of terms have been used in the gambling research literature to refer to difficulties caused by an individual's gambling. The term **pathological gambling** is generally limited to the psychiatric disorder first recognized by the medical profession in 1980 (American Psychiatric Association 1980). **Pathological gambling** is generally defined as: a continuous or periodic loss of control over gambling, accompanied by a progression, in

gambling frequency and amounts wagered, in preoccupation with gambling and in obtaining money with which to gamble, and a continuation of gambling despite adverse consequences (Lesieur & Rosenthal, 1998).

Research on adult gambling problems suggests that pathological gambling has strong antecedents in youthful gambling involvement (Custer & Milt 1985; Volberg 1994). However, since pathological gambling is defined as a progressive condition which often takes years to develop, some gambling researchers have argued that problem gambling among adolescents is best viewed as a pre-clinical state (Volberg & Moore 1999; Winters, Stinchfield & Fulkerson 1993b). Adolescent gamblers are a particularly vulnerable group in terms of the future development of pathological gambling. Their propensity to display the full clinical disorder is likely to be affected by a variety of risk factors and by the offsetting influence of prevention and treatment efforts. A related concern is that gambling may be an important, but ignored, component in the development of other adolescent problems such as alcohol and drug abuse and suicide.

The National Council on Problem Gambling uses the term ***problem gambling*** to describe all of the patterns of gambling behavior that compromise, disrupt or damage personal, family or vocational pursuits (Cox et al, 1997). In discussing the results of Oregon adolescent survey, the term ***problem gambling*** will be used to refer to the most severe end of a continuum of gambling involvement that stretches from no gambling at all to extremely serious difficulties. In this instance, “problem gamblers” are those respondents who show clear evidence of gambling involvement that has compromised, disrupted or damaged other important areas in their lives. “At risk” gamblers are those whose difficulties are less severe but who nonetheless appear to have substantial troubles related to their gambling.

Assessing Problem Gambling Among Adolescents

Although there are now well-accepted methods for identifying pathological gambling in the adult population (Volberg 2001), there are several reasons to hesitate in applying the same criteria to adolescents. The psychiatric criteria for identifying pathological gambling among adults were developed on the basis of adult life and gambling experiences. Younger individuals have simply not had time to develop the same depth of life experience. It is important to understand that there are differences in adult and youth gambling and to use tools specifically for adolescents that take their unique developmental issues into consideration (Stinchfield & Winters 1998). Another concern is that the psychiatric criteria for pathological gambling have never been clinically tested among adolescents and there is little information about their validity among adolescents.

The most widely used method to assess problem and pathological gambling in the adult population is the South Oaks Gambling Screen (SOGS) (Lesieur & Blume 1987). The SOGS is a 20-item scale based on the original diagnostic criteria for pathological gambling (American Psychiatric Association 1980). A number of school-based surveys of adolescents based on the original adult version of the South Oaks Gambling Screen have been carried out (Ladouceur & Mireault 1988; Lesieur & Klein 1987; Steinberg 1997; Westphal, Rush & Stevens 1997).

To date, few instruments have been developed to measure adolescent problem gambling. The majority of adolescent studies have used the original SOGS or the major adaptation of this screen for adolescents (SOGS-RA) (Winters, Stinchfield & Fulkerson 1993a). Other

investigators have adapted the adult psychiatric criteria for administration in youth surveys (DSM-IV-J) (Fisher 1992, 1998, 2000) or have developed their own instruments (MAGS) (Shaffer et al, 1994).

SOGS-RA

In Minnesota, researchers first adapted the SOGS items and later, the SOGS scoring method, for use with adolescents in schools and in the general population (Winters, Stinchfield & Fulkerson 1993a, 1993b; Winters, Stinchfield & Kim 1995). Govoni, Rupcich and Frisch (1996) describe the evolution of the SOGS-RA (Revised for Adolescents):

The SOGS-RA adolescent gambling screen was developed ... by modifying the wording of the adult SOGS screen ... to reflect adolescent gambling experiences and reading levels. Three groups were identified: problem gamblers (SOGS-RA scores of four or more), at risk gamblers (SOGS-RA scores of two or three), and no gambling problems (SOGS-RA scores of zero or one). The other significant change in the scoring methodology for the SOGS-RA as compared to the adult SOGS was the collapsing of nine scored items relating to borrowing to support gambling activities ... to one scored item ... This change was based on the assumption that every source for obtaining money to support gambling activities does not represent a significantly different sign or symptom and does not warrant an individual score. As a result the total number of scored items was reduced from 20 in the adult SOGS to 12 in the adolescent SOGS-RA screen ... Subsequently, Winters, Stinchfield and Fulkerson (1993b) modified the SOGS-RA scoring system. Acknowledging that there is no well defined definition of problem gambling in adolescents, they combined the SOGS-RA scores with frequency of gambling to produce a composite index ... (p. 306).

The scoring system based solely on the SOGS-RA total score has been referred to as a "narrow" criterion of adolescent problem gambling. The scoring system that combines gambling frequency and the SOGS-RA score has been referred to as a "broad" criterion (Poulin 2000).

The developers of the SOGS-RA reported that the screen had moderate internal reliability and high content and construct validity among male adolescents (Winters, Stinchfield & Fulkerson 1993a). However, other researchers have noted that the SOGS-RA has not been adequately tested with adolescent females and work to evaluate the psychometric properties of the SOGS-RA continues (Ferris, Wynne & Single 1999; Poulin 2002; Wiebe, Cox & Mehmel 2000).

DSM-IV-J

More recently, researchers have developed several new methods to identify problem and pathological gambling among adolescents. In Great Britain, efforts have focused on adapting the DSM-IV criteria for use with adolescents. In a pilot study, a sample of 11- to 16-year-old adolescents from a single secondary school were administered the DSM-IV-J (Juvenile) scale (Fisher 1992). Involvement in fruit machine play and affirmative answers to four of 12 items assessing nine different diagnostic criteria were used to identify respondents as probable pathological gamblers. According to these criteria, 5.6% of the total sample scored as problem gamblers (the most severe category).

A more recent and much larger study of 9,774 12- to 15-year-old adolescents drawn from 114 schools was recently completed in England and Wales (Fisher 1998, 2000). The DSM-IV-J was revised for this study to include lessons learned from the earlier work. The DSM-IV-J-MR (Juvenile Multiple Response) consists of 12 items assessing nine criteria with four response options for all but one question. Scores for the DSM-IV-MR-J range

from zero to nine, with two of the criteria scored only if an affirmative response is given to one of two or three separate questions. Factor analysis shows that all of the items discriminate effectively between problem gamblers and social gamblers. The internal consistency of the DSM-IV-MR-J is good and the scale appears to have good construct validity.

MAGS

In the early 1990s, another group of researchers developed the Massachusetts Gambling Screen (MAGS) (Shaffer, LaBrie, Scanlan & Cummings, 1994). Although the MAGS is a 7-item screen intended as a brief clinical method to identify individuals with gambling difficulties, it has always been administered along with a 12-item version of the DSM-IV criteria. In essence, the MAGS is a 19-item screen that provides two separate estimates of problem gambling prevalence. The MAGS was pilot tested with students at three suburban high schools in the Boston area. The MAGS classifies respondents as non-problem, in-transition or pathological gamblers, using a relative item weighting scheme derived from discriminant function analysis. In the pilot test, the internal consistency of the MAGS was good and the authors concluded that the screen was a valid and efficient screen for pathological gambling. However, in a survey of adolescent gambling and problem gambling in New York State, the performance of the MAGS proved unsatisfactory (Volberg 1998).

Comparing the Screens

Estimates of the prevalence of gambling problems tend to be higher among adolescents than among adults. For example, Gupta and Derevensky (2000) estimate that between 4% and 8% of adolescents report very serious gambling problems and another 10% to 15% of adolescents are at risk for developing serious gambling problems. Other estimates of the prevalence of adolescent problem or pathological gambling rates range between 1% and 9%, with a median of 6% (National Research Council 1999; Shaffer, Hall & Vander Bilt 1999). In a study comparing the performance of the SOGS-RA and the DSM-IV-J, Derevensky and Gupta (2000) found a fairly high degree of agreement between the measures although the DSM-IV-J appears to be a somewhat more conservative measure than the SOGS-RA and yields a lower prevalence estimate.

Research on the Correlates of Adolescent Problem Gambling

A growing body of research has documented the relationship between problem gambling and other disorders in the adult population, including alcohol abuse, drug abuse and depression (Abbott et al, 2004; National Research Council 1999). There is evidence that problem gambling among adolescents is similarly correlated with a range of “fellow travelers” (Jacobs 2000). These include high rates of tobacco, alcohol and marijuana use, high levels of parental gambling and parental gambling problems, illegal activities, poor school performance, truancy, and feelings of unhappiness, anxiety and depression.

Based on his review of adolescent surveys conducted since 1984, Jacobs (2000) provides a composite profile of adolescents with serious gambling-related problems. Demographic factors include male gender, early age of onset for gambling participation, parental gambling, living in a metropolitan area, and membership in an ethnic minority group. Behavioral features include a preference for continuous and interactive games, greater gambling intensity, obtaining funds to gamble from multiple sources, frequent and heavy

use of alcohol and drugs as well as problems with school and the law, and more positive attitudes toward gambling. Psychosocial features include different reasons for gambling and dissociative reactions when gambling. Griffiths and Wood (2000) identify several additional risk factors for the development of adolescent problem gambling. These include having a big win early on, consistently chasing losses, beginning to gamble with parents or alone, and depression.

The most recent trend in youth gambling research is the use of large samples and multivariate analyses to determine the relative contributions of different demographic, psychosocial and behavioral variables. In a large study of Minnesota public school students in 1992 and 1995, frequent gambling among adolescents was found to be part of a constellation of risk-taking behaviors, including frequent alcohol use and antisocial behaviors such as physical violence, vandalism, shoplifting, and truancy, with these findings being especially true for boys (Stinchfield, Cassuto, Winters & Latimer 1997). In a survey of high school students in Montreal, Gupta and Derevensky (1998) found that tobacco, alcohol and drug use, depression, dissociation, excitability and disinhibition were correlated with gambling problem severity as well as with measures of arousal and self esteem. These researchers concluded that boys and girls have different predictor variables for problem gambling. For boys, excitability and dissociation were the best predictors of problem gambling, while for girls, depression, dissociation and drug use were the best predictors.

Problem Gambling Prevention for Youth

Prevention programs directed at youth have been developed primarily in Canada, although several Australian and U.S. states as well as New Zealand have active youth prevention programs. Those programs are generally school-based curricula aimed at adolescents between the ages of 12 and 17 years.

In addition to school-based curricula, adolescent problem gambling prevention programs have involved the production and dissemination of stickers, brochures and posters. Several affiliates of the (U.S.) National Council on Problem Gambling have held successful poster contests and campaigns that provide an opportunity to facilitate discussion and raise awareness of gambling problems. In 2000, the Responsible Gambling Council (Ontario) took this approach further and started an annual contest throughout all the high schools in Ontario for the production of a screenplay. By 2004, approximately 90 screenplays had been submitted and three winning screenplays had been produced. These plays have been performed hundreds of times before thousands of students and feedback has been positive (Bell, 2004).

Although there is a growing number of problem gambling prevention programs aimed at adolescents, understanding of the effectiveness of these programs is limited. The vast majority of these programs are “universal” efforts that seek to raise general awareness concerning gambling and gambling-related problems. A few programs go further and encourage the development of skills to enhance self-esteem and resist peer pressure to gamble. Some programs focus on the mathematical aspects of gambling while others focus on reducing erroneous cognitions (Derevensky et al, 2001).

In Quebec, Ferland, Ladouceur and Vitaro (2002) designed and tested an intervention intended to modify erroneous beliefs about gambling using a video-based format among adolescents. This format was used in order to capture students’ attention more

effectively and also offered the advantages of affordability and consistency of message. The participants (N=424) high school students with an average age of 13 years were randomly assigned to four conditions (control, video presentation alone, lecture and activities without the video, lecture and activities with the video). Questionnaires were administered to assess knowledge and misconceptions about gambling one week before the intervention and one week after the intervention. Analysis showed that the intervention was effective in increasing knowledge and in modifying misconceptions towards gambling in all of the experimental groups but was most effective in the video with lecture and activities condition. Ferland and colleagues (2002) concluded that a short and amusing video can successfully change youthful misconceptions regarding the notion of randomness.

A recent school-based survey of youth in Ontario formed the basis for an examination of the implications of youthful lottery play for prevention and social policy (Felsher, Derevensky & Gupta, 2004). These researchers found that lottery tickets are highly accessible to youth despite legal prohibitions. Playing scratch cards was the most popular gambling activity among these respondents and also had the youngest age of onset. The majority of the youth surveyed were aware that the legal age to purchase lottery tickets in Ontario is 18 years but few reported any difficulties in making such purchases. The majority of respondents recalled viewing lottery advertisements on television, billboards and in the print media and could readily recite popular lottery commercials or slogans. Given the appeal and easy access of lottery products for youth as well as the possible role of lottery participation as a “gateway” to other gambling activities, Felsher and colleagues (2004) strongly encouraged policy makers to enforce existing statutes prohibiting underage youth from purchasing lottery tickets and to develop and implement specific training programs targeting lottery vendors and law enforcement personnel. These researchers also argued for other options to reduce the availability of lottery products for youth, including reducing their visibility at the point of purchase, restricting the sale of lottery tickets at retail outlets near schools and restricting retailers from “up-selling” (e.g. asking consumers whether they wish to purchase a lottery ticket when they are at the cash register). With regard to prevention, Felsher and colleagues (2004) contended that problem gambling prevention programs aimed at primary school students are needed, that efforts must be made to ensure that school administrators, school counselors and teachers are aware of the risks of gambling among youth, and that any school-based program must be accompanied by a public-education awareness program encouraging parents and adults to be attentive to the types of gambling-related problems experienced by adolescents.

In another study in Ontario, Wiebe & Falkowski-Ham (2003) conducted a three-phase study to assemble a profile of youth between the ages of 9 and 16 for the purposes of guiding the development of problem gambling prevention strategies in the province. The researchers extracted data from a yearly survey of youth aged 9 to 16 years (“tweens”), carried out focus groups and then conducted their own survey to validate their findings. Highlights of that project include:

- Youth view “betting” differently and more positively than “gambling” and are also more likely to define the types of activities in which they engage as betting
- A significant proportion of youth report betting on the Internet but nearly all do so without risking any money
- Perceptions of betting as “cool” and “fun” increase with age and youth who describe themselves as popular, leaders or risk-takers are more likely to gamble

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- 25% of youth do not feel that spending more time or money gambling than intended or borrowing or stealing to gamble are potential warning signs of a gambling problem
 - 78% of youth in this study could recall messages from television or the Internet promoting gambling but only 12% could recall a message regarding problem or responsible gambling

The researchers identified a range of implications of this study for prevention strategies with youth, particularly with regard to providing meaningful and targeted problem gambling messages to youth. These include understanding the language of the target group, developing messages that speak to the negative impacts (e.g. lost money, fights) and perceived positive impacts of gambling (e.g. status, bragging rights), increasing parents' awareness of youth gambling and associated negative impacts, and disseminating messages outside the confines of school. Given that the popularity of betting increases with age, the researchers concluded that there is a need for problem gambling prevention initiatives to target younger ages.

A relatively new development in youth problem gambling prevention is the emergence of teen-oriented websites that address gambling problems. In the United States, the North American Training Institute in Minnesota hosts a webzine about underage gambling (<http://www.wannabet.org>) and the Louisiana Office for Addictive Disorders hosts a "youth gambling prevention" website with interactive games, information and assistance (<http://www.thegamble.org>). However, most youth gambling prevention websites are based in Canada; examples include Zoot2 (<http://www.zoot2.com>) hosted by the Alberta Alcohol and Drug Abuse Commission, Lucky Day (<http://www.luckyday.ca>) hosted by the Addictions Foundation of Manitoba and TeenNet (<http://www.youthbet.net>) developed by the University of Toronto. A similar website was recently launched in New Zealand (<http://inyaface.co.nz>).

There are a range of considerations in developing primary prevention programs targeted at youth. First, evidence from the field of adolescent alcohol and substance abuse prevention suggests that no single approach is likely to be uniformly successful and that a combination of strategies works best at nurturing resilience among adolescents (Baer, MacLean & Marlatt, 1998). Strategies that combine programs across school, family and community domains are likely to be most successful as are programs that include a range of activities aimed at informing youth, parents, educators and others, improving life and social skills, offering alternative activities, ensuring problem identification and referral, and fostering community-based processes. Finally, programs need to be adapted as social, academic, employment and economic pressures change over time.

Evans (2003) makes a similar argument but emphasizes the potential of the "reasoned action" and "social inoculation" models for problem gambling prevention with adolescents. The social inoculation model involves "inoculating" adolescents with the knowledge and social skills necessary to resist various social pressures to engage in risky behaviors to which they may be exposed. The theory of reasoned action rests on the notion that a sequence of cognitive and social processes precedes possible changes in behavior. This approach has been found effective in predicting cigarette smoking, alcohol and drug use, dieting and exercise, family planning behavior, breastfeeding, and testicular and breast cancer detection behavior. A few studies of the theory of reasoned action in relation to gambling behavior among adults and adolescents have been carried out in Australia and the United States with promising results (Cummings & Corney,

1987; Moore & Ohtsuka, 1997). A specific focus on the different factors that lead adolescents to **begin** gambling compared with those that lead adolescents to **continue** gambling will be particularly important.

Moving forward, Derevensky et al (2001) argue for adoption of the scientific standards for validated prevention program evaluation advocated by Brounstein, Zweig and Gardner (1999). Derevensky and colleagues point to increasing reliance on harm reduction approaches, as opposed to abstinence, in the fields of alcohol and substance use and argue for the adoption of a similar approach in relation to gambling. They further emphasize that the theoretical and empirical evidence of common risk and protective factors across multiple domains of risky behavior among adolescents provides an important rationale for designing and implementing prevention strategies that target multiple risk behaviors simultaneously.

Youth Gambling Services in Oregon

The State of Oregon is a nationally-recognized leader in the field of problem gambling services. Oregon invests more than \$6 million annually to minimize harm from gambling using a public health framework that includes prevention, harm reduction and multiple levels of intervention and treatment as well as a substantial program of research and evaluation.

In response to concerns about the increasing availability of legalized gambling in Oregon, the Oregon Gambling Addiction Treatment Foundation has funded several problem gambling prevalence studies in Oregon. The purpose of these surveys is to assist policy makers and legislators to better estimate the need for treatment and to establish baseline measures for gambling and problem gambling behaviors. The first adult prevalence survey in Oregon was completed in 1997 and was followed closely by the first prevalence study on youth gambling in Oregon in 1998 (Carlson & Moore, 1998; Volberg, 1997).

Although the 1998 youth study estimated that approximately 6.4% of Oregon youth were at risk of experiencing problems with gambling, consultation with leading international experts in youth gambling suggested that it would not be cost effective to develop gambling-specific youth treatment tracks. Instead, the State established a training effort and provided funding for an open contract for consultation by any provider in the state that might have a youth present for treatment. There was little utilization of this consultation and little effort to increase counselor skills in working with adolescent gamblers. These factors may have played a role in the fact that, since the release of the report on the 1998 youth survey, only four adolescents have presented for problem gambling treatment within the Oregon system.

State-funded youth gambling prevention efforts emerged in the year 2000 with the development of a resource center and the decision to make funding widely available for prevention activities at the local level. Prevention efforts for youth have evolved over time from basic awareness to more sophisticated approaches such as integration into existing curricula on healthy choices, risk taking and addiction prevention, although those efforts are still not as commonplace as general awareness.

Since 2004, the Oregon Healthy Teens Survey (OHT), a primary source of data used in planning youth prevention activities of all sorts, has included one question on gambling

behavior among Oregon youth (Oregon Center for Health Statistics, 2008). Even with only one question, the results show clearly that youth gambling travels in “packs” with other risky behaviors, such as smoking, alcohol and drug use and violence. Additional questions on gambling will be added in future versions of the OHT survey.

There is a growing consensus among Oregon problem gambling prevention specialists that problem gambling prevention efforts need to be offered in conjunction with existing efforts of key partners, such as alcohol and drug prevention, school-based health, adolescent mental health and others so that clusters of risky behaviors can be addressed together, rather than competing with each other. Several major strides have been made, including the addition of problem gambling to the high school health education curriculum standards in Oregon, pilot efforts infusing problem gambling into evidence-based ATOD curricula already being used in schools, and joint program planning with the Oregon Department of Education and Oregon’s Adolescent Health Division.

The continued lack of treatment seeking among Oregon adolescents remains an enigma. Since children are unlikely to seek treatment on their own, it is possible that lack of recognition by parents, teachers, counselors and others working with youth contributes to low rates of help seeking for gambling problems among Oregon adolescents. Since problem gambling often co-occurs with other risky behaviors, it is entirely likely that youth with gambling problems are already in the mental health, drug/alcohol, or juvenile justice systems. This clearly argues for greater collaboration between problem gambling services and providers of these other services. For now, given the lack of help seeking for youth, the State has taken the approach of focusing resources on prevention and education aimed at reducing gambling problems among youth with the eventual aim of increasing treatment services as help seeking increases. The State is also committed to a renewed focus on working with partners from other systems that are seeing and treating adolescents already. Finally, the State has initiated an online version of the Problem Gambling Helpline, which features instant message, chat and email functions—all of which are more likely to be used by youth.

METHODS

In this section, the methods used to conduct the survey of gambling and problem gambling among adolescents in Oregon are described. This section addresses the overall organization of the study with specific attention to the structure of the questionnaire and the development of the sample design, including the response rate for the study as well as the weighting of the sample.

The adolescent survey in Oregon was carried out by the same team that conducted adolescent gambling surveys in Nevada and Washington State and in similar stages (Volberg 1993, 2002; Volberg & Moore 1999). In the first stage of the project, staff from Gemini Research, Ltd. conferred by telephone with representatives of the Oregon Department of Human Services regarding the final design of the questionnaire. In the second stage of the project, staff from Gilmore Research Group, a professional survey organization based in Seattle, completed telephone interviews with a sample of 1,555 adolescents aged 12 to 17 years old residing in Oregon. Interviews were also completed with 1,768 parents or guardians of Oregon adolescents. The interviews were completed between May 8 and August 18, 2007. Both parental consent and consent from the adolescent respondent were obtained for each interview. Households where both an adult and an adolescent were interviewed were sent \$10 in return for completing the survey. The average length of the interview for parents and guardians was 11 minutes and the average length of the adolescent interview was 15 minutes. Gilmore Research Group then provided Gemini Research with the data for the third stage of the project that included analysis of the data and preparation of this report.

Questionnaires

The study took advantage of the need to obtain informed consent from a parent or guardian before speaking with an adolescent in the household to complete an assessment of the parent or guardian's gambling attitudes, behavior and knowledge. A larger number of parents than adolescents were interviewed because we expected that a proportion of adults would refuse to permit their adolescent child to participate in the study after completing an interview themselves.

Parents. To allow for linking parental and adolescent gambling behavior, attitudes and knowledge, it was important to structure the questionnaires for the two groups carefully. All eligible parents were asked for information about their past year gambling involvement. The gambling activities assessed included casino gambling and lottery play, video poker or online games, playing cards anywhere except at a casino, betting on games of skill, betting on sports, gambling on the Internet without using money and gambling on the Internet with money. Parents were also asked how often they gambled in general and with whom.

The second section of the parental questionnaire included questions about attitudes toward youth gambling and assessed parents' knowledge of their child's gambling involvement and of the availability of help for people with gambling problems in Oregon. The final section of the parental questionnaire was made up of demographic questions, including age, race and ethnicity, marital status, employment status, level of education and household income.

Adolescents. To maintain comparability with the earlier survey of adolescents in Oregon as well as with adolescent surveys in other states, we replicated the questionnaire that was used in 1998 to the fullest extent possible. The 1998 questionnaire was pilot-tested with approximately 40 older adolescents in an introductory course at a medium sized university in Washington State and found to be of appropriate length and comprehensibility (Carlson & Moore, 1998).

All of the adolescent respondents were asked about their lifetime, past year and more frequent gambling involvement. The gambling activities assessed included casino gambling and lottery play, video poker or online games, playing cards anywhere except at a casino, betting on games of skill, betting on sports, gambling on the Internet without using money and gambling on the Internet with money. Respondents who had ever gambled were asked to identify their favorite gambling activity, the people they usually gambled with, their reasons for gambling and the amount of money spent on gambling in a typical month.

Problem gambling was assessed using both the SOGS-RA and the DSM-IV-MR-J, as in 1998. To prevent any potential question order bias, the two problem gambling screens were alternated. Many of the questions in these two problem gambling screens relate to negative consequences of gambling and, analyzed individually, allow assessment of the negative impacts of gambling on youth at different levels of problem gambling severity. As in 1998, the adolescent questionnaire included questions about past-year tobacco, alcohol and drug use and criminal behavior.

Adolescents were asked a series of questions about their parents' and their friends' attitudes toward gambling. The adolescents were also asked about their awareness of help for people with gambling problems in Oregon. Finally, adolescents were asked a series of demographic questions assessing gender, race and ethnicity, current grade in school and weekly income.

A copy of the questionnaire is included in Appendix D.

Sample Design

The focus of this study was adolescents aged 12 to 17, a group that represents only a small proportion of the population in any state. A critical challenge in conducting surveys of adolescents outside of schools is the small proportion of individuals within this age range in the population as a whole. The U.S. Census Bureau estimates that individuals between the ages of 12 and 17 represent only 8% of the total population in Oregon. Given the low incidence of eligible respondents in the general population, it is common to use targeted samples to conduct research on adolescents in the general population. The telephone numbers in a targeted sample are not randomly generated but are based on comparisons of telephone lists with driver's license applications and voter registration lists. Voter registration lists and license applications are used because new voters and new drivers in a household are likely to have younger siblings. This increases the potential that the household will include an eligible respondent. The targeted sample purchased for the Oregon survey increased the incidence of households with an eligible respondent to 46%.

While targeted samples do not include households with unlisted telephone numbers, this approach does yield telephone numbers of residences with a higher-than-usual likelihood of containing an individual in the desired age range. The targeted sample for the Oregon adolescent survey was purchased from Survey Sampling, Inc. of Fairfield, Connecticut, which also provided the targeted samples for adolescent gambling surveys in Georgia, Minnesota, Nevada, New York and Texas as well as two adolescent surveys in Washington State (Volberg 1993, 1996a, 1998, 2002; Volberg & Moore 1999; Wallisch 1993, 1996; Winters, Stinchfield & Fulkerson 1993a, 1993b). Since age-targeted samples purchased from this company were used in the majority of adolescent gambling surveys in the U.S., this approach also maintained continuity with surveys of adolescents in other states.

To maximize the response rate, advance letters were sent to all records in the purchased sample file. The listed aspect of the sample was a benefit in this regard because all records contained a phone number and a mailing address. The purpose of the letter was to inform potentially eligible households that interviewers would be calling and to explain the importance of this survey. The advance letters contained a summary of the project purpose and its goals, explained how the household was selected for the survey and provided assurances of confidentiality as well as instructions for contacting the Oregon Department of Human Services or Gilmore Research Group with questions about the study. Not all households receiving the letter qualified for participation in the survey but the letter served as an explanation for the interviewer's call.

Response Rate

Response rates for telephone surveys in general have declined in recent years. The decline is related to the proliferation of fax machines, answering machines and other telecommunications technology, such as "caller ID," that make it more difficult to identify and recruit eligible individuals. The decline is also related to the amount of political polling and market research that is now done by telephone and to the higher likelihood that eligible households will refuse to participate in any survey. In the case of adolescent surveys, response rates are further affected by the need to obtain informed consent from two parties (parent and adolescent).

The response rate for the Oregon adolescent survey was calculated using the same CASRO approach that Gemini Research uses in reporting the results of adult surveys. The response rate for the Oregon adolescent survey was 39% of the known households. The refusal rate for the Oregon adolescent survey was 49% which includes parental refusals as well as refusals by adolescents.

Weighting the Sample

The survey data were weighted to account for differential probabilities of selection, response rates and population coverage rates. Weights were developed based on the 2000 estimates of the Oregon population aged 12 to 17, available online from the Census Bureau. Weighting the data adjusts for lower representation of groups in the population that are particularly difficult to engage in surveys. However, weighting cannot correct for differences in gambling participation and problems (if they are present) between survey participants and non-participants in these groups.

Table 1 on the following page compares key demographic characteristics of the achieved sample and the weighted sample. This table shows that the weighted sample is very similar to the achieved sample across several important demographic characteristics and suggests that even the unweighted sample of adolescents interviewed for this study is representative of all adolescents aged 12 to 17 in Oregon.

Table 1: Comparing the Demographics of the Achieved and Weighted Samples

		Achieved Sample %	Weighted Sample %
Gender	Teen Female	49.1	49.5
	Teen Male	50.9	50.5
Age	12	10.6	12.3
	13	16.5	20.0
	14	17.3	16.5
	15	20.5	18.9
	16	17.8	16.5
	17	17.4	15.8
	Average Parent Age	47.06	46.80
Race	Any Minority	8.2	8.5
	African American	1.0	1.1
	Asian	2.5	2.3
	Native American	1.1	1.1
	Other	2.2	2.4

A detailed description of our weighting procedures is included in Appendix A.

Data Analysis Approach

The results in this report were generated using a variety of statistical methods designed to test whether observed differences between groups of Oregon adolescents or patterns across groups were statistically significant. Many of these analyses were conducted while weighting the data to approximate the Oregon population of children aged 12 to 17, with standard errors calculated using a Taylor series standard error estimate (Wolter 2007). These analyses were conducted using the STATA statistical package version 10.0.

We have chosen to present some details of our analytic approach separately in two chapters of the report (***Comparing the 1998 and 2007 Surveys*** and ***Comparing Parents and Youth***). This is because the analytic approaches employed in these chapters are more complex than the approaches taken in other sections of the report.

Proportions and Risk

The approach used throughout most of the report relies primarily on the use of contingency tables and two-sample t-tests. To test the association between two categorical variables, for example gender and gambling frequency, a chi-square test was

used to test the hypothesis that the two variables are independent (the **null hypothesis**). The chi-square test calculates the proportion of the sample that we would expect for each cell in the table if the two variables were independent and compares this to how much the observed proportions deviate from the expected proportions.

Another use of contingency tables is to estimate the **relative** risk of a case falling into one cell compared to another. Many of these risks are calculated using a multinomial regression technique instead of straight calculations from tables. This allows us to control for other, non-categorical factors that otherwise would not allow for a tabular analysis. However, the basic concept remains the same.

Differences between Groups

Assertions as to whether two groups differ with regards to an average or proportion of an outcome variable are supported by two-sample tests of means. These tests calculate the difference in means between two groups, for example children in two-parent households and children in other types of households, and then divide by the standard error of that difference. Calculation of the standard error is complicated with weighted data but use of the STATA statistical package ensures that the standard error for weighted data is correctly calculated.

Fundamentally, however, these tests are based on a normal sampling distribution with classic critical values to reject the null (e.g. 1.96 for a significance of 0.05). The basic form of these tests is the difference between groups divided by the standard error of that

difference, i.e. $t = \frac{\bar{X}_A - \bar{X}_B}{SE_{\bar{X}_A - \bar{X}_B}}$.

GAMBLING AMONG ADOLESCENTS IN OREGON

This section examines gambling participation by adolescents in Oregon. To assess the full range of gambling activities available to Oregon adolescents, the questionnaire for the survey collected information about nine different types of gambling. Although individuals under the age of 18 are not permitted to purchase lottery tickets in Oregon and individuals under the age of 21 are not permitted to enter Indian Gaming Centers, adolescent respondents were asked about their participation in the following gambling activities:

- Oregon Lottery games (includes Scratch-its, Sports Action, Daily Four, Keno, Powerball, Megabucks Drawing, pulltabs, Breakopens)
- video poker or line games at a restaurant or bar
- cards for money someplace other than a casino
- games of skill (such as pool, golf, arcade games)
- bet money on sports teams with friends or relatives
- gambling-type games on the Internet without using money
- gambling games on the Internet using money
- any other gambling activity outside of a casino
- gambling at a casino or Indian Gaming Center

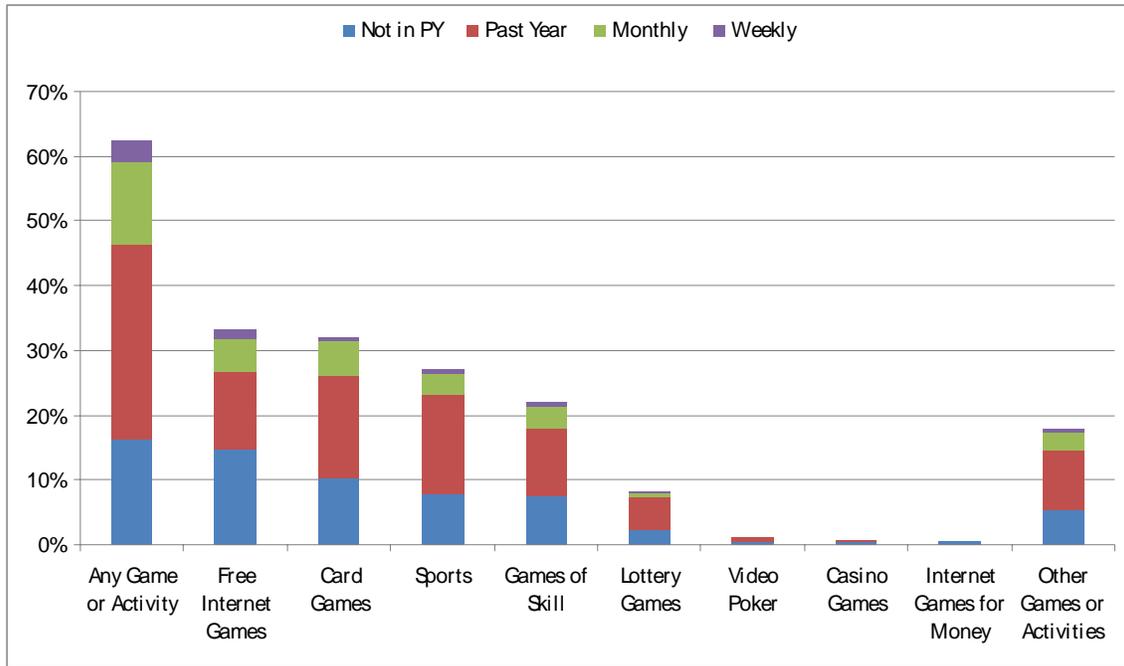
Gambling Participation

Figure 1 on the following page presents information about lifetime, past year, monthly and weekly gambling among the adolescent respondents from Oregon (see also Table B-1 in Appendix B). This figure shows that just over six in ten Oregon adolescents (63%) have ever participated in one or more of the gambling activities included in the questionnaire. Lifetime gambling participation is highest for playing free gambling-type games on the Internet closely followed by wagering on card games with friends or family. Lifetime participation is also substantial for betting on sports and for wagering on private games of personal skill, including making side bets or wagers on arcade or video games. Lifetime participation rates for age-restricted forms of gambling in Oregon are much lower than participation rates for non-regulated forms of gambling. This includes lottery games, video poker and casino games in Oregon as well as gambling on the Internet for money.

Figure 1 also shows that just under half of Oregon adolescents (46%) have gambled in the past year, with participation highest for card games followed by sports betting and then gambling for free on the Internet. Monthly and weekly gambling participation rates

are much lower with only one in six Oregon adolescents gambling on a monthly basis and only one in 30 Oregon adolescents gambling weekly or more often.

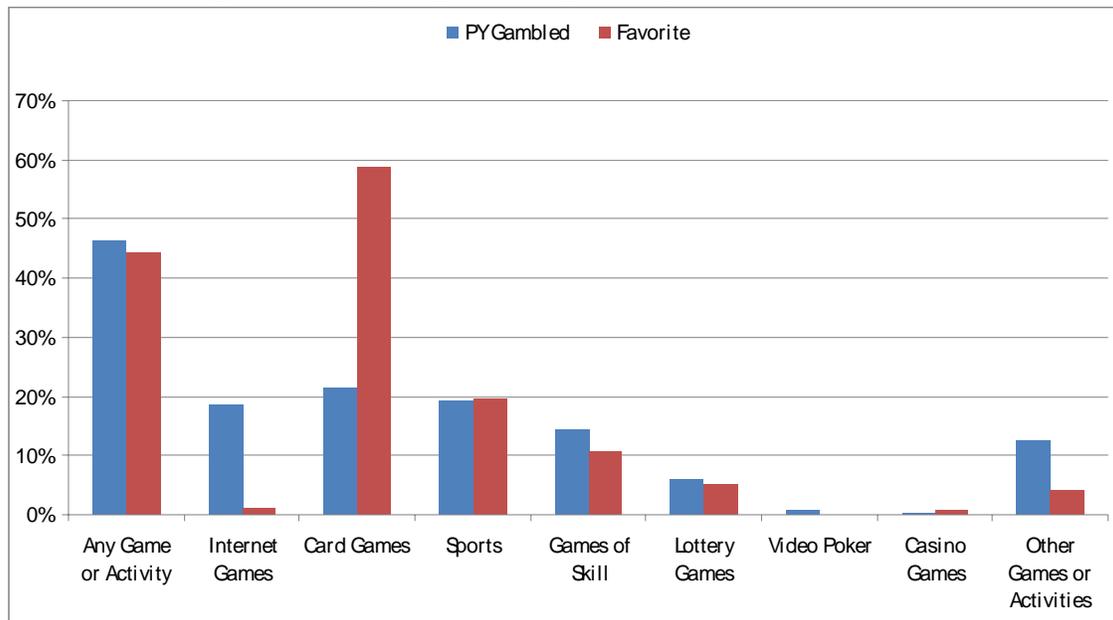
Figure 1: Gambling Participation Among Oregon Adolescents



Nearly three-quarters (74%) of adolescents who have ever gambled have done so in the past year. The proportion of adolescents who have participated in non-regulated forms of gambling in the past year ranges from 55% of those who have ever gambled on the Internet for free to 71% of those who have ever wagered on sports. Although the proportion of Oregon adolescents who have ever participated in age-restricted gambling activities is much lower than for non-regulated activities, 73% of adolescents who have ever played the lottery and 62% of adolescents who have ever played video poker have done so in the past year. In contrast, only 38% of the small group of adolescents who have ever gambled at a casino and only 33% of the even smaller group of adolescents who have gambled on the Internet for money have done so in the past year.

To understand patterns of gambling participation, it is also helpful to consider the relationship between participation and preferred gambling activities. Figure 2 on the following page (see also Table B-2 in Appendix B) compares past-year gambling participation with activities that Oregon adolescents who have ever gambled identified as their favorite. This figure shows that Oregon adolescents who have ever gambled are far more likely to identify playing card games as their favorite than any other gambling activity. In contrast, although 19% of Oregon adolescents had gambled for free on the Internet in the past year, only 1% of those who had ever gambled identified this activity as their favorite. Apart from card games, only casino games were identified as a favorite by more Oregon adolescents than had participated in such activities in the past year.

Figure 2: Comparing Gambling Participation and Preferences



Patterns of Gambling Participation

It is helpful to examine the demographic characteristics of adolescent respondents in Oregon who wager at increasing levels. To analyze levels of gambling participation, we divided the respondents into four groups:

- **non-gamblers** who have never participated in any type of gambling (38% of the total sample);
- **infrequent gamblers** who have participated in one or more types of gambling but not in the past year (16% of the total sample);
- **past-year gamblers** who have participated in one or more types of gambling in the past year but not on a monthly or weekly basis (30% of the total sample);
- **monthly gamblers** who have participated in one or more types of gambling on a monthly basis (13% of the total sample); and
- **weekly gamblers** who participate in one or more types of gambling on a weekly or daily basis (3% of the total sample).

While most adolescents in Oregon who gamble participate in more than one activity, nearly four in ten adolescents who have ever gambled (38%) have done only one type of gambling. Among these respondents, the type of gambling they are most likely to have done is gamble on the Internet for free (48%), followed by betting on sports (21%) and playing card games for money (15%).

Table 2 shows differences in the demographic characteristics of non-gamblers, infrequent gamblers, past year gamblers, monthly gamblers and weekly gamblers

among adolescents in Oregon as well as differences in the average age and average number of gambling activities for these groups.

Table 2: Demographics of Adolescent Gamblers in Oregon

	Non-Gamblers (567) %	Infrequent Gamblers (240) %	Past Year Gamblers (480) %	Monthly Gamblers (197) %	Weekly Gamblers (55) %
Gender ¹					
Male	37.1	47.9	57.8	70.5	74.8
Female	62.9	52.1	42.2	29.5	25.2
Race ²					
White	91.4	91.1	91.5	92.2	92.7
Non-White	8.6	8.9	8.5	7.8	7.3
Grade ³					
6 th - 8 th Graders	48.9	37.3	33.2	35.1	34.9
9 th - 12 th Graders	51.0	61.1	65.8	63.5	65.1
Average Age ⁴	14.2	14.6	14.8	14.7	15.1
Average No. of Activities ⁵	---	1.32	2.28	2.98	4.12
Notes: Cells are weighted column percentages unless otherwise specified; 1: Chi-square p < 0.000; 2: Chi-Square not significant; 3: Children not in school or in other grades not reported, Chi-Square p < 0.00; 4: F(4, 1533) p < 0.000; Cells are weighted means; 5: F(3, 967) = p < 0.000; Cells are weighted mean-counts.					

Table 2 shows that, as in many other adolescent surveys, gender is strongly associated with gambling involvement among adolescents in Oregon, with males significantly more likely than females to gamble weekly or more often. As in other adolescent surveys, the average age of adolescents in Oregon who gamble weekly or more often is significantly higher than those who gamble less frequently. In conjunction with their age, adolescents who gamble weekly or more often in Oregon are also significantly more likely to be in high school rather than in middle school grades. In contrast to many other adolescent surveys, adolescents in Oregon who identify themselves as Black, Hispanic or Asian are less likely than respondents who identify themselves as White to gamble weekly. Finally, Table 2 shows that the **number** of gambling activities that adolescents in Oregon have ever tried increases significantly with increased participation.

Comparison with the Oregon Healthy Teens Survey (OHT)

The Oregon Healthy Teens Survey (OHT) is a comprehensive, school-based survey of risk behaviors and other factors affecting the health and well-being of Oregon's adolescents (Oregon Center for Health Statistics, 2008). The OHT is conducted as a collaborative effort by the Oregon Department of Education and the Oregon Department of Human Services, with additional support from the Oregon Commission on Children and Families, the Oregon Commission on Juvenile Justice, the Oregon Progress Board and the Oregon Research Institute. The OHT includes a large, representative sample of Oregon teens and generally achieves high response rates. Anonymous, confidential questionnaires covering topics such as nutrition, physical activity, sexual behavior, mental health, tobacco, alcohol and drug use, harassment, personal safety and family,

peer and community influences on behavior are completed by 8th graders and 11th graders in a statewide sample of schools. The sample is weighted to be representative of all 8th or 11th grade students in the state with an overall margin of error (at the 95% confidence interval) of approximately 0.5%. Since 2004, the OHT has included one question on gambling participation.

The question about gambling in the OHT is broadly framed, asking how many times during the past 12 months an individual has gambled (e.g., bought lottery tickets or bet money on sports teams or card games, etc.). In 2006, 26% of Oregon 8th graders and 31% of Oregon 11th graders acknowledged gambling in the past year while 3% of 8th graders and 6% of 11th graders acknowledged gambling monthly (that is, 12 or more times in the past year). Past-year gambling rates were two times higher among 8th grade and 11th grade boys compared with girls in the same grade. Monthly gambling rates were nearly four times higher among 8th grade boys compared to 8th grade girls and five times higher among 11th grade boys compared to 11th grade girls.

Between 2004 and 2006, the OHT found that approximately 30% of Oregon 11th graders had gambled in the past year. In 2007, only 25% of Oregon 11th graders acknowledged gambling in the past year. Past year gambling participation was higher for 11th graders compared with 8th graders and for boys compared with girls.

Rates of past-year and monthly gambling in the Oregon Healthy Teens Survey are much lower compared with the 46% past-year and 16% monthly gambling rates in the present study. There are several possible reasons for these differences. First, the OHT is a school-based survey administered in classrooms using a paper-and-pencil format. In contrast, the present study is a telephone survey that may have picked up adolescents who skip school on a regular basis, a group that is known to gamble heavily. The more likely reason for the different results is that the single question included in the OHT requires adolescents to self-identify as “gamblers,” a factor that results in substantial under-reporting in adult surveys (Volberg 1996b).

The Demographics of Specific Gambling Activities

There are important differences in the demographic characteristics of adolescents in Oregon who have engaged in specific gambling activities. In this section, we provide information about the demographic characteristics and other gambling activities of adolescents who have ever engaged in specific gambling activities.

Free Internet Games. As Figure 1 above demonstrates, gambling for free on the Internet is the most popular gambling activity among Oregon adolescents. Youth in Oregon who have gambled for free on the Internet are significantly more likely to be male than female (61% male and 39% female). These adolescents are also significantly older than those who have not gambled on the Internet. However, there are no statistically significant differences between adolescents who have gambled for free on the Internet and those who have not in ethnicity, household structure or disposable income. Adolescents in Oregon who have gambled for free on the Internet have participated in an average of 2.5 gambling activities in all. The gambling activities that adolescent Internet gamblers are most likely to have done include playing cards for money (46%), betting on sports events (32%) and wagering on games of skill (30%).

Card Games. Gambling on card games for money is the second most popular gambling activity among Oregon adolescents. Youth who have played card games for money are significantly more likely than the adolescent population in Oregon to be male (64%), aged 15 and over and to have an allowance or weekly income over \$20. Adolescents in Oregon who have played card games for money have participated in an average of 3.1 gambling activities in all. The gambling activities that adolescent card players are most likely to have done include betting on sports (50%), gambling for free on the Internet (48%) and betting on games of skill (45%).

Given the recent rapid rise in the popularity of poker, there was interest in obtaining additional information about the card games that youth were playing. Among adolescents who had played card games for money in the past year, 61% usually played Texas Hold 'em, another 15% usually played another poker game and 19% usually played blackjack. Only 5% of youth in Oregon who had played card games for money in the past year had played a game besides poker or blackjack. When asked where they usually played card games, 55% of adolescents who had played cards in the past year said that they did so at a friend's house and 31% said they did so at home. A small proportion of these adolescents (6%) said they usually played card games at school and 3% said they usually did so at a relative's house. Finally, 63% of adolescents who had played card games for money in the past year said they usually played with friends, 17% said they usually played with adult family members and 18% said they usually played with non-adult family members.

Adolescents who had played card games for money in the past year but did not usually play with family members were asked whether they participated in tournament-style games. Nearly four in ten of these adolescents (37%) acknowledged usually playing in tournaments. The average amount spent to buy into a tournament by these respondents is \$15 and the average amount of the typical winning pot or grand prize is \$80. However, the large standard deviations around these averages indicate that there is significant variability in these amounts.

Sports. Wagering on sports events is the third most popular gambling activity among Oregon adolescents. Like those who have played card games for money, youth who have wagered on sports events in Oregon are about twice as likely to be male as female (65%). These adolescents are significantly more likely than youth who have not gambled on sports to be aged 14 and over and to have an allowance or weekly income over \$10. Youth who have gambled on sports in Oregon are significantly less likely than those who have not done so to live in a two-parent household. Adolescents in Oregon who have gambled on sports have participated in an average of 2.9 gambling activities in all. The gambling activities that adolescent sports bettors are most likely to have done include playing card games for money (59%), wagering on games of skill (45%) and gambling for free on the Internet (39%).

Games of Skill. Wagering on games of skill is the fourth most popular gambling activity among Oregon adolescents. Youth in Oregon who have gambled on games of skill, including pool, golf and arcade games, are significantly more likely to be male (72%) than female. These adolescents are also significantly more likely than other adolescents in Oregon to be aged 16 or 17 and to be Black, Hispanic or Asian. Finally, adolescents in Oregon who have gambled on games of skill are significantly more likely than those who have not done so to have an allowance or weekly income of \$20 or more. Adolescents in Oregon who have wagered on games of skill have participated in an

average of 3.3 gambling activities in all. The gambling activities that these adolescent gamblers are most likely to have done include playing card games for money (66%), betting on sports (55%) and gambling for free on the Internet (45%).

Other Activities. As Figure 1 above shows, a substantial proportion of Oregon adolescents (18%) have gambled on activities or games that were not included in the questionnaire. As with most other gambling activities, the majority of youth in Oregon who have gambled on “other” activities and games are male (69%). These adolescents are somewhat older than adolescents who have not engaged in these activities and are significantly more likely to have an allowance or weekly income over \$50. Adolescents in Oregon who have gambled on “other” games have participated in an average of 3.6 gambling activities in all. The gambling activities that these adolescents are most likely to have done include playing card games for money (78%), wagering on games of skill (54%), gambling for free on the Internet (53%) and betting on sports (48%).

Lottery Games. Although purchases of lottery tickets are generally age-restricted, this is the form of regulated gambling that adolescents are most likely to be able to do, in Oregon as elsewhere. Adolescents in Oregon who have played the lottery are significantly more likely than adolescents who have not played the lottery to be male (64%), to be 17 years of age and to have an allowance or weekly income over \$20.

Youth who had ever played the lottery were asked where they usually obtained tickets. Six out of ten adolescents who played the lottery were able to get lottery tickets by asking a parent, sibling or other relative to buy tickets for them. One in seven of these adolescents (15%) was personally able to buy lottery tickets at a convenience store or at a grocery store. One in ten of these adolescents (8%) was able to get lottery tickets from a vending machine. The great majority of adolescents who played the lottery (86%) obtained tickets in only one way.

Adolescents in Oregon who have played the lottery have participated in an average of 3.6 gambling activities in all. The gambling activities that adolescent lottery players are most likely to have done include playing card games for money (61%), gambling for free on the Internet (51%) and betting on sports and games of skill (49%).

Video Poker. Only a small proportion of youth in Oregon acknowledged ever playing video poker. Among these adolescents, 60% are male and 55% are aged 15 or over. Youth who have ever played video poker are significantly less likely than other adolescents in Oregon to live in a two-parent household. Adolescents in Oregon who have played video poker have participated in an average of 4.4 gambling activities in all. The gambling activities that adolescent video poker players are most likely to have done include playing card games for money (85%), gambling for free on the Internet (67%), participating in “other” gambling activities (58%) and betting on sports (50%).

Casino Games. Like video poker, only a small proportion of Oregon adolescents acknowledge ever gambling at a casino. Two-thirds (67%) of these adolescents are male and 25% are Black, Hispanic or Asian. All of these adolescents reside in two-parent households and 60% of them have an allowance or weekly income of \$20 or more. Adolescents in Oregon who have gambled at a casino have participated in an average of 4.3 gambling activities in all. The gambling activities that adolescent casino gamblers are most likely to have done include playing card games for money (67%),

betting on sports (67%) and wagering on games of skill (58%). Half of these adolescents have gambled for free on the Internet and one-third have played the lottery.

Internet Games for Money. Like video poker and casino gambling, only a tiny proportion of Oregon adolescents acknowledge ever gambling on the Internet for money. All of these adolescents are boys and most (78%) are aged 15 and over. All but one of these adolescents lives in a two-parent household and all have allowances or weekly income of \$10 or more. Adolescents in Oregon who have gambled on the Internet for money are heavily committed gamblers with an average of 5.5 gambling activities that they have ever tried. The gambling activities that adolescent Internet gamblers are most likely to have done include gambling on the Internet for free (88%), playing card games for money (78%), betting on sports (75%), wagering on games of skill (63%) and playing the lottery (56%).

While it is illegal to use credit cards, electronic funds transfers or other banking mechanisms to transfer money to known Internet gambling operators, it is not illegal to gamble on the Internet. However, there are laws in Oregon restricting gambling to individuals aged 18 and over for social games and the Oregon Lottery. Oregon laws also restrict machine gambling to individuals aged 21 and over. As in many other jurisdictions internationally, the question of the legality of underage gambling on the Internet remains a murky area in Oregon.

Reasons for Gambling

Another important question in gambling studies is why people choose to gamble. Adolescents who had gambled in the past year were asked a general question about why they chose to gamble. Table 3 presents information about the proportion of past year, monthly and weekly Oregon gamblers who identified each of these reasons as one of the “main reasons” they gamble.

Table 3: Reasons for Gambling Among Gamblers

	Past Year Gamblers (412) %	Monthly Gamblers (183) %	Weekly Gamblers (51) %
For entertainment or fun	96.1	96.7	96.0
Excitement or challenge	69.8	80.8	83.7
To socialize	50.1	65.4	62.0
To win money	40.8	59.9	63.3
Out of curiosity	26.0	32.4	42.0
As a hobby	18.7	27.5	36.0
As a distraction from everyday problems	3.7	3.3	2.0

Note: Cells are weighted column percentages.

This table shows that the great majority of Oregon adolescents gamble for entertainment with gamblers at all levels of intensity equally likely to endorse this reason. Among monthly or weekly gamblers, excitement or challenge and winning money are far more important reasons for gambling compared with less regular gamblers. Monthly gamblers are most likely to gamble as a way to socialize while weekly gamblers are mostly likely to gamble out of curiosity or as a hobby. Interestingly, past year gamblers are slightly

more likely than regular gamblers to say that distraction from everyday problems is one of the main reasons they gamble.

Given differences in gambling participation by gender and age among Oregon adolescents, differences in reasons for gambling associated with these important demographic variables were examined. The analysis showed that adolescent boys in Oregon are significantly more likely than girls to say that curiosity and winning money are important reasons to gamble and that gambling is important as a hobby. Oregon adolescents aged 12 and 13 are significantly less likely than older adolescents to say that curiosity, socializing, excitement or challenge and winning money are important reasons to gamble. Adolescents aged 14 are significantly more likely than either younger or older adolescents to say that gambling is important as a hobby.

Expenditures on Gambling

Adolescents in Oregon who had done any kind of gambling in the past year were asked to indicate how much money they spent on gambling in a typical month. Responses ranged from \$0 to \$200 or more. Figure 3 shows that the majority of adolescents in Oregon report spending rather small amounts on gambling in a typical month. Almost half of these respondents (49%) report spending nothing on gambling in a typical month and another 40% report spending less than \$10 on gambling in a typical month. About one in ten Oregon adolescents (9%) report spending between \$10 and \$19 on gambling in a typical month and 2% report spending between \$20 and \$49. Only 1% of the adolescent respondents in Oregon report spending \$50 or more on gambling in a typical month.

Figure 3: Reported Monthly Expenditures on Gambling

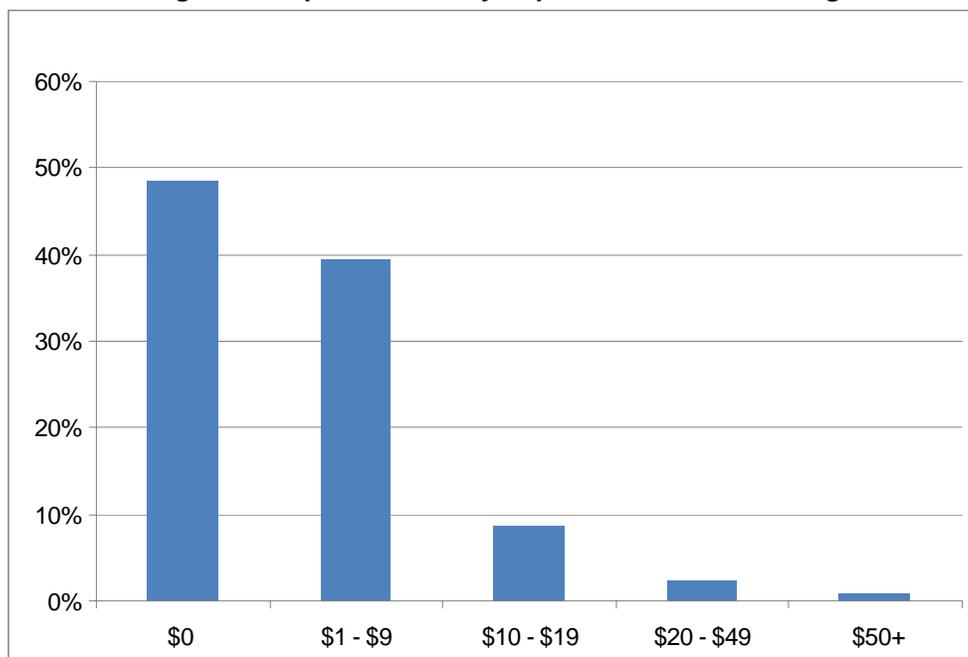


Table 4 on the following page examines differences in average monthly expenditures on gambling among important subgroups of Oregon adolescents. As in other states, male adolescents in Oregon report spending significantly more than females. Despite being

less likely to gamble regularly (monthly or more often), Black, Hispanic and Asian adolescents in Oregon report spending significantly more on gambling in a typical month than White adolescents. Table 4 also shows that adolescents with weekly allowances of \$50 or more and those not living in two-parent households spend significantly more on gambling in a typical month than adolescents with less disposable income and those in two-parent households. Finally, Table 4 presents correlations between expenditure and age, grade and number of activities. These correlations show that there is a positive linear relationship between expenditures on gambling and adolescents' age, grade in school and number of gambling activities they have ever tried (all correlations are significant at $p < 0.000$). Regression analysis shows that each increment in age or grade accounts for a 72¢ and 62¢ increase in expenditures, respectively, while each additional gambling activity accounts for a \$2.35 increase in gambling expenditures.

Table 4: Expenditures on Gambling

Average Monthly Expenditures		
Sample of Gamblers		\$3.91
Gender	Male	\$4.58
	Female	\$2.86
Race	White	\$3.69
	Non-White	\$5.94
Weekly Allowance	\$0 - \$9	\$2.62
	\$10 - \$49	\$3.88
	\$50 or more	\$7.26
Household	Two-Parent HH	\$3.74
	Non-Traditional HH	\$6.38
Correlations with Monthly Expenditure		
Grade		0.18
Average Age		0.17
Average No. of Activities		0.41
Notes: Cells are weighted averages or Pearson correlations; all associations are statistically significant at $p < 0.05$.		

Gender and Gambling

Nearly every study of gambling among adolescents and young adults has found significant differences in gambling participation by gender, with boys gambling far more than girls. In contrast, among adults and in some jurisdictions, differences between the genders are beginning to disappear and women are just as likely to gamble as men, at least on lottery games and at casinos (Gerstein et al 1999; Volberg 2003a).

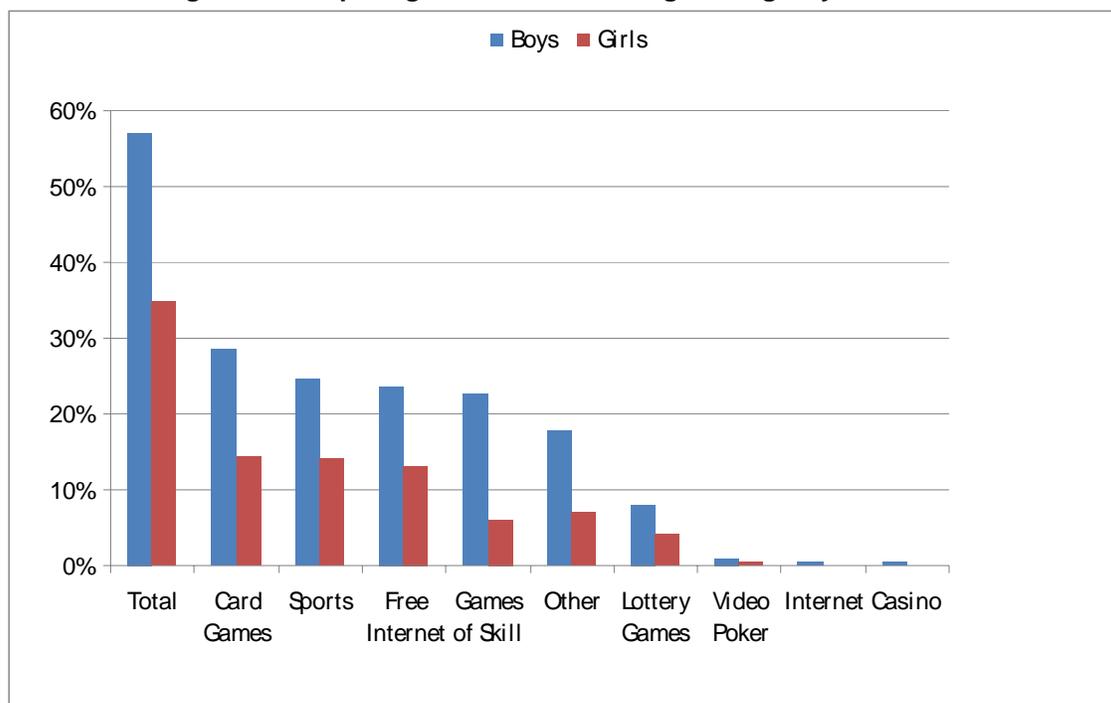
The research literature suggests that boys and girls have distinct preferences for different gambling activities. Across numerous surveys, boys have been found to gamble more often on sports and games of skill while girls are more likely to gamble on

games of chance, such as lottery games and bingo (Jacobs, 2000; Stinchfield & Winters, 1998). These preferences are congruent with gender roles in modern society and it is likely that the gambling preferences of adolescents are particularly associated with the pressures to conform to gender expectations that adolescents encounter as they near adulthood.

We have already seen that gambling participation among male adolescents in Oregon is significantly higher than among female adolescents. However, there are other measures of gambling involvement beyond frequency of participation. In this section, we are also interested in examining differences in the gambling *preferences* and *intensity* of participation among male and female Oregon adolescents.

Preferences for gambling activities are expressed directly as recent behavior. Figure 4 (see also Table B-3 in Appendix B) presents differences in past year participation in specific gambling activities among male and female adolescents in Oregon. This figure shows that boys are significantly more likely than girls to have played card games for money, wagered on sports and games of skill, gambled for free on the Internet, played the lottery and gambled on other games or activities. In addition to overall low rates of past year participation in age-restricted types of gambling, differences in participation by gender in these activities are not statistically significant.

Figure 4: Comparing Past Year Gambling Among Boys and Girls



In addition to different patterns of gambling involvement, most studies of adolescent gambling have found significant differences in the intensity of gambling participation by gender. In general, boys start gambling at an earlier age than girls, gamble more often and on more activities, and spend more time and money on gambling than girls. However, some researchers have speculated that, in jurisdictions where gambling has

been widely available for extended periods of time, the intensity of boys' and girls' gambling will be similar (Derevensky & Gupta, 2000; Jacobs, 2000).

Table 5 presents information related to the intensity of gambling by male and female adolescents in Oregon. Several of these questions, including age when respondent first gambled and the usual amount spent on gambling, were asked only of adolescents who had ever gambled or of adolescents who indicated that they had a favorite gambling activity.

Table 5: Intensity of Male and Female Adolescent Gambling

Item	Males	Females
Mean Number of Past Year Activities ¹	1.76	1.16
Mean Monthly Expenditure ²	\$4.71	\$2.91
Largest single gambling loss ³		
\$0	6.7	10.0
\$1 - \$9	40.6	52.3
\$10 - \$19	24.7	26.3
\$20 - \$49	21.9	9.8
\$50 or more	6.8	1.6
Mean Starting Grade ⁴	7.31	7.40

Note: 1: Cells are weighted counts, t-test was performed on the estimated log-incidence rate difference between males and females using a poisson regression estimate, $p < 0.000$; 2: Cells are weighted means, t-test was performed using least squares difference tests using SE's based on the observations, $p < 0.000$; 3: Cells are weighted percentages, Chi-square $p < 0.000$; 4: Cells are weighted means, t-test was performed using least squares difference tests using SE's based on the observations, p ns.

We have seen that girls in Oregon are significantly less likely than boys to have gambled in the past year. Table 5 shows that there are also significant differences between male and female adolescents in Oregon who have gambled in terms of the number of gambling activities they have done in the past year, their mean monthly expenditures on gambling and the largest amount of money they have lost in a single day. Although legal, regulated gambling has existed in Oregon since the mid-1980s, the results from this survey do not support the notion that the intensity of boys' and girls' gambling will be similar in jurisdictions where gambling has long been available.

It is interesting that, among adolescents in Oregon who have gambled in the past year, there is no difference in the age at which boys and girls started gambling. This suggests that, in jurisdictions where legal gambling has been available for many years, boys and girls begin to participate in gambling activities at about the same age. However, the data in Table 5 suggests that the length of time that legal gambling has been available in a jurisdiction does not lead girls to increase their gambling involvement to match the involvement of boys.

ADOLESCENT PROBLEM GAMBLING IN OREGON

Gambling researchers have argued that the use of multiple screens to measure gambling problems should be one measure of the quality of prevalence surveys in the general population (Abbott & Volberg 1999; Gambino 1999; Shaffer, Hall & Vander Bilt 1997). In the present study, two different screens were used to identify adolescent respondents as problem gamblers. These included the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA) (Winters, Stinchfield & Fulkerson 1993a) and a DSM-IV screen developed specifically for youth (DSM-IV-MR-J) (Fisher 2000). In this section, we present information on the prevalence of adolescent problem and at-risk gambling based on the narrow SOGS-RA approach, the broad SOGS-RA approach and the DSM-IV-MR-J (Fisher 2000; Poulin 2000). Additional information about the performance of the two problem gambling screens in the Oregon adolescent sample is presented in Appendix C.

As described above (see Page 3), there are two different methods for classifying respondents into problem gambling categories, based on the SOGS-RA. These include a **narrow** approach based simply on the number of positive responses to the 12 SOGS-RA items and a **broad** approach that includes weekly or more frequent gambling involvement as an indicator of problematic gambling in addition to the individual's responses to the SOGS-RA items (Poulin 2000). Like the narrow approach to the SOGS-RA, scoring for the DSM-IV-MR-J is additive and ranges from zero to nine.

Govoni, Frisch and Stinchfield (2001; see also Stinchfield, Govoni & Frisch, 2004) note that confusion has arisen from the existence of two different approaches to scoring the SOGS-RA. While Govoni and colleagues (2001) argue that the broad approach to scoring the SOGS-RA should be abandoned, we believe that the two approaches serve distinct but equally important purposes. The narrow approach to scoring the SOGS-RA yields information about the number of adolescents most likely to meet a diagnosis of problem or pathological gambling and is most useful in establishing the level of need for services for adolescent problem gamblers in a jurisdiction. The broad approach to scoring the SOGS-RA yields information about youth whose gambling involvement is placing them at risk for the development of gambling-related problems. The broad approach is therefore most useful in developing and refining problem-gambling prevention efforts.

Prevalence Rates

Conventionally, prevalence rates are based on the proportion of respondents who score on an increasing number of items that make up one or another of the different problem gambling screens. Table 6 on the following page presents information about the proportion of the total sample of Oregon adolescents who score on an increasing number of items on the SOGS-RA and the DSM-IV-MR-J. Table 6 also summarizes the prevalence of problem and at-risk gambling, based on established criteria for discriminating between respondents without gambling-related difficulties and those with moderate to severe problems (Winters, Stinchfield & Fulkerson 1993a; Fisher 2000).

Table 6: SOGS-RA and DSM-IV-MR-J Scores

No. of Items	SOGS-RA %	DSM-IV-MR-J %
Non-Gamblers	38.6	38.6
0	47.2	52.7
1	8.3	5.1
Non-Problem Gamblers	55.5	57.8
2	3.3	2.5
3	1.3	0.6
At Risk (2-3)	4.6	3.1
4	0.7	---
5	0.1	0.1
6	0.3	0.4
7	---	0.1
8	---	---
9	0.1	---
10	0.1	---
Problem (4+)	1.3	0.6
Total	100.0	100.0

As noted above, there are two different methods for scoring the SOGS-RA. The *narrow* approach is based on a straightforward count of the items endorsed by each respondent. The *broad* approach looks separately at gambling frequency and gambling-related difficulties (Govoni et al., 2001; Winters, Stinchfield & Fulkerson 1993b; Winters, Stinchfield & Kim 1995). Table 77 below summarizes the prevalence of problem and at-risk gambling among Oregon adolescents using the two alternative methods based on the SOGS-RA as well as the DSM-IV-MR-J.

Table 7: SOGS-RA Risk Groups

	Percentage
SOGS-RA (Narrow)	
Non-Gambler	38.6
Non-Problem Gambler	55.5
At Risk	4.6
Problem	1.3
SOGS-RA (Broad)	
Non-Gambler	38.6
Non-Problem Gambler	54.7
At Risk	5.2
Problem	1.5
DSM-IV-MR-J	
Non-Gambler	38.6
Non-Problem Gambler	57.8
At Risk	3.1
Problem	0.6

Review of all of the approaches to classifying adolescent respondents as problem and at-risk gamblers shows that the **broad** approach developed by the authors of the SOGS-RA generates the highest prevalence rates among the adolescents in Oregon while the DSM-IV-MR-J generates the lowest prevalence rates. After consultation with several youth gambling experts and with the goal of comparing the results of this survey with the survey carried out among Oregon youth in 1998, we have elected to use the **narrow** approach in reporting prevalence rates and the **broad** approach in analyzing risk factors for problem gambling among the adolescent respondents in Oregon in the next section of this report.

There is always some level of uncertainty associated with the results of surveys. It is important, therefore, to examine not only the point prevalence estimates but also the confidence interval within which the true prevalence is likely to fall. Conventionally, survey results are reported with a confidence interval such that the true prevalence will fall inside this range 95% of the time. According to the most recent population estimates available by age from the Bureau of the Census, there are approximately 287,000 adolescents aged 12 to 17 residing in Oregon. Table 8 shows the confidence intervals around the point prevalence estimates for each of the three methods for estimating prevalence rates among adolescents in Oregon.

Table 8: Confidence Intervals and Ranges for Point Prevalence Estimates

Classification	Point Prevalence	95% Confidence Interval		Range (in the population)	
SOGS-RA (Narrow) Problem Gamblers At Risk	1.3	0.4	2.2	1,148	6,314
	4.6	3.6	5.7	10,332	16,359
SOGS-RA (Broad) Problem Gamblers At Risk	1.5	0.9	2.2	2,583	6,314
	5.2	3.9	6.5	11,193	18,655
DSM-IV-MR-J Problem Gamblers At Risk	0.6	0.1	1.0	287	2,870
	3.1	2.0	4.3	5,740	12,341

Notes: Cells are weighted percentages.

This table shows that the range of estimates of the number of adolescent problem gamblers in Oregon is quite wide, depending on the problem gambling screen used and the method for classifying respondents. Based on the **narrow** approach to calculating the SOGS-RA prevalence rate, we estimate that there are between 1,100 and 6,300 adolescents in Oregon with severe gambling related difficulties. We further estimate that there additionally are between 10,300 and 16,300 adolescents in Oregon with less severe gambling related difficulties.

Prevalence Within Demographic Groups

As in other states, problem gambling prevalence rates are significantly different among subgroups in the population. Given the size of the Oregon adolescent sample, the

confidence intervals around many of the prevalence estimates for these subgroups are large and these comparisons should be interpreted with caution. We remind readers that we have elected to use the *narrow* approach to scoring the SOGS-RA in this section of the report.

Table 9 shows that the prevalence of *problem* gambling is not significantly higher among boys compared with girls in Oregon or among non-Whites compared with Whites. Problem gambling is significantly higher among Oregon adolescents aged 14 compared with both younger and older adolescents. Problem gambling is also significantly higher among Oregon adolescents living in households without a parent compared with living with one or two parents. Not surprisingly, problem gambling is significantly higher among Oregon adolescents who gamble weekly.

Table 9: Prevalence By Demographic Group

		Sample Count	At Risk %	Problem %
Total Sample		1,555	4.6	1.3
Gender ¹				
	Male	791	5.9	1.4
	Female	764	3.4	1.2
Age ²				
	12	164	5.1	1.0
	13	256	6.7	0.0
	14	269	3.5	3.9
	15	318	4.2	1.0
	16	277	2.0	0.8
	17	270	6.1	1.6
Ethnicity ³				
	White	1,402	4.3	1.4
	Non-White	126	7.0	1.6
Household ⁴				
	Two Parents	1,420	4.4	1.2
	One Parent	99	6.7	1.0
	Other HH Type	35	8.6	8.6
Intensity ⁵				
	Not in Past Year	240	1.7	0.8
	Past Year	480	6.6	0.9
	Monthly	197	12.6	4.0
	Weekly	55	23.1	11.5

Notes: Percentages are based on total sample. 1: p = ns; 2: p=ns, N = 1553; 3: p = ns; 4: p < 0.000; 5: p < 0.000. Cells represent sample counts or weighted row percentages. Non-gamblers and non-problem gamblers were collapsed into a single category for chi-square tests.

Table 9 also shows that the prevalence of *at risk* gambling is higher among boys compared with girls. Although the statistical test was not in a significant range, a risk analysis showed that boys are more likely than girls to be classified as at risk (t = 2.21). At risk gambling is significantly lower among adolescents living in two-parent households compared with other living arrangements. Finally, Table 9 shows that at risk gambling is significantly higher among adolescents who gamble once a month or more often compared with those who gamble less regularly.

Why Are Prevalence Rates So Similar When Boys Gamble More?

An important question in considering the prevalence of problem gambling among adolescents in Oregon is, if boys are so much more likely to gamble than girls, why is the rate of problem gambling similar for boys and girls? To answer this question, it is helpful to compare responses to specific items from the SOGS-RA by gender. Since we are trying to understand differences between boys and girls with regard to gambling problems, this analysis is restricted to those adolescents who scored one or more points on the SOGS-RA.

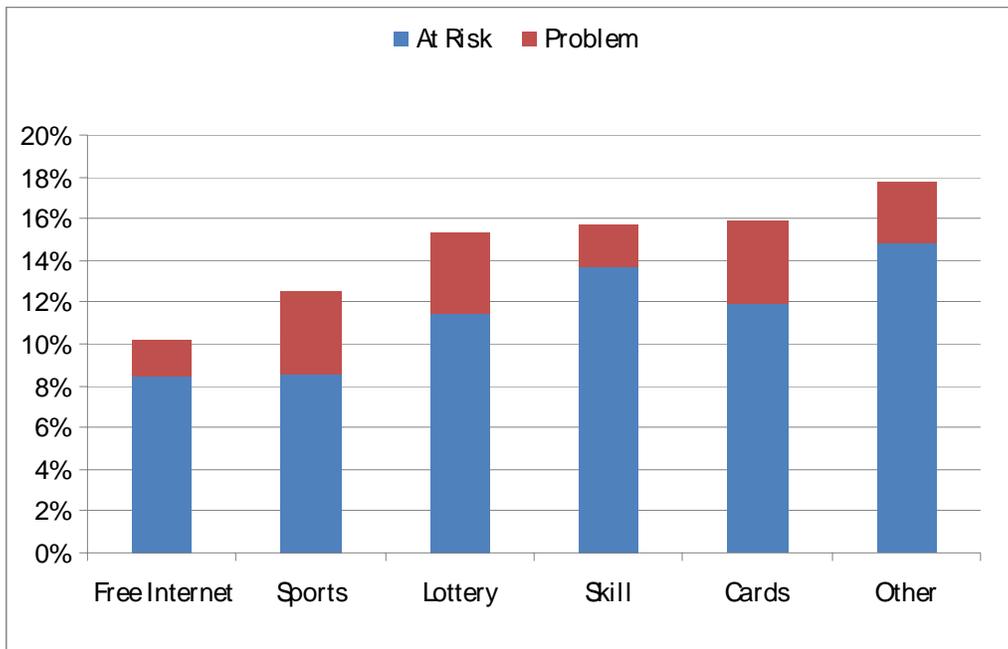
Analysis shows that boys who score at all on the SOGS-RA are more likely than girls to endorse items assessing chasing, lying about winning, being criticized for one's gambling and wanting to stop gambling but not feeling able to do so. Girls who score at all on the SOGS-RA are more likely than boys to endorse items assessing whether betting has caused problems with family or school, spending more time or money on gambling than intended, feeling bad about amounts gambled, hiding signs of gambling from family or friends, having arguments about gambling with family or friends and borrowing money to gamble and not paying it back. Boys and girls who score on the SOGS-RA are equally likely to acknowledge skipping school to gamble and stealing something to bet or cover gambling debts (see Table B-5 in Appendix B).

This analysis suggests that although girls are less likely to gamble in general, when they do gamble, they are more likely than boys to acknowledge the interpersonal effects that gambling has on their relationships with family and friends. In contrast, boys are more likely to endorse SOGS-RA items that are more closely tied to concerns about their own behavior, such as chasing, lying and loss of control.

Prevalence By Type of Gambling

Another approach to understanding the relationship between gambling involvement and gambling-related problems is to examine the prevalence of at-risk and problem gambling among adolescents who participate in specific types of gambling. Figure 5 on the following page (see also Table B-4 in Appendix B) shows the prevalence of at risk and problem gambling among adolescents who have ever participated in specific types of gambling. Three types of gambling, including video poker, casino and Internet gambling for money, are not shown because the number of participants involved in these activities is too small to yield reliable information.

Figure 5: Prevalence by Type of Gambling



This figure shows that the prevalence of problem gambling is highest among adolescents who have ever gambled on card games for money and on sports. The prevalence of problem gambling is also elevated among adolescents who have ever played lottery games. The prevalence of at risk gambling is highest among adolescents who have ever gambled on “other” games and activities, followed by those who have gambled on games of skill. The prevalence of at risk gambling is also high among adolescents who have gambled on card games for money and among those who have played the lottery.

COMPARING AT-RISK GAMBLERS IN OREGON

Poulin (2000) argues that inquiries into the question of who is at risk for gambling problems among youth are poorly served by using full-blown pathology as a litmus test. Such a narrow definition of problematic gambling among adolescents captures an extreme pattern of behavior while the broad definition incorporates a dimension of gambling involvement that is likely to be more useful in monitoring changes over time. Another reason to focus on the broad definition of problem gambling in assessing risk factors among youth is that regular gambling is indicative of a more committed pattern of behavior and is likely to be associated with a higher risk of negative consequences.

In developing policies and programs to address adolescent gambling, 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 greatest risk of experiencing gambling-related difficulties. Since the purpose of this section is to examine individuals at risk, our focus will be on differences between adolescents who **gamble**, with and without problems, rather than on the entire sample of adolescents. Further, for reasons noted above, the data presented in this section of the report will be based on the **broad** approach to classifying SOGS-RA responses rather than on the **narrow** approach used in the foregoing section.

Finally, in considering the results presented in this section, it is important to note the small size of the group of problem gamblers (N=23).¹ Results based on this group should be interpreted with caution because of the small size of the group and the large confidence intervals associated with small groups in statistical analysis. Despite this caveat, we believe that the results of this survey can be used to draw meaningful conclusions about the characteristics of problem gambling among adolescents in Oregon.

Demographics

Table 10 on the following page presents information on the demographic characteristics of adolescents in Oregon who gamble without problems compared to those experiencing mild difficulties related to their gambling and those who gamble daily or acknowledge multiple problems related to their gambling. Table 10 shows that problem gamblers in Oregon are significantly more likely to be male compared to adolescents who gamble without problems or those experiencing mild difficulties. This is a contrast to the gender differences noted above with regard to the narrow definition of problem gambling and is explained by the inclusion of daily gambling as a criterion for classification as a problem gambler in the broad definition.

Based on the **broad** definition of problem gambling, Table 10 shows that problem gamblers in Oregon are somewhat more likely than at risk and non-problem gamblers to live in households with incomes below the median and somewhat less likely to live in a two-parent household. In contrast to youth in many other jurisdictions, Black, Hispanic and Asian adolescents in Oregon are not more likely to be problem gamblers than White adolescents although they are somewhat more likely to be at risk gamblers. Table 10

¹ Readers are reminded that, in this report, the term **problem gambler** refers to the most severe classification of adolescent gamblers—those who show the clearest evidence of gambling involvement that has compromised, disrupted or damaged other important areas in their lives.

also shows that adolescents who play sports for their school are significantly more likely to be at risk and problem gamblers than those who do not.

Table 10: Demographic Characteristics of At Risk Gamblers in Oregon

		Non-Problem Gamblers % (874)	At Risk Gamblers % (75)	Problem Gamblers % (23)
Gender ¹	Male	58.7	64.0	87.0
	Female	41.3	36.0	13.0
Age ²	12	7.6	12.0	---
	13	14.4	18.7	17.4
	14	16.6	18.7	13.0
	15	21.3	22.7	8.7
	16	19.9	10.7	21.7
	17	20.2	17.3	39.1
Ethnicity ³	White	92.6	86.1	87.0
	Non-White	7.4	13.9	13.0
Family Income ⁴	Less than Median	20.9	23.2	28.6
	Greater than Median	79.1	76.8	71.4
Family Structure ⁵	Two Parents	90.6	92.0	73.9
	One Parent	7.1	5.3	13.0
	Other	2.3	2.7	13.0
Youth Plays Sports for School ⁶		66.1	81.3	78.3

Notes: Percentages are based on total sample. 1: p < 0.05; 2: p = ns; 3: p = ns; 4: p = ns; 5: p < 0.00; 6: p < 0.00. Cells represent weighted column percentages.

Gambling Participation

In considering the relationship between gambling involvement and gambling problems, it is useful to look at differences in the gambling activities of non-problem, at-risk and problem gamblers in Oregon. In considering these differences, it is worth noting that gambling involvement forms one dimension in the **broad** method used to classify adolescent respondents as problem gamblers.

Table 11 on the following page shows that there are significant differences in the types of gambling that non-problem, at-risk and problem gamblers have ever tried. Problem gamblers are significantly more likely to have ever participated in every type of gambling included in the questionnaire except gambling for free on the Internet and gambling at a casino. Problem gamblers are significantly more likely than at-risk and non-problem gamblers to have ever played the lottery and to have ever gambled on card games for money, games of skill, sports, other games or activities, video poker and Internet games for money. Table 11 also shows that there is a significant difference in the average number of gambling activities that non-problem, at-risk and problem gamblers have ever tried.

Table 11: Lifetime Gambling by At Risk Groups in Oregon

	Non-Problem Gamblers % (874)	At Risk Gamblers % (75)	Problem Gamblers % (23)
Card Games ¹	47.9	81.5	95.8
Sports ²	42.3	53.2	87.5
Games of Skill ³	33.0	53.1	83.3
Other Games or Activities ⁴	25.5	49.4	79.2
Free Internet Games ⁵	51.6	51.3	75.0
Lottery Games ⁶	12.2	19.8	41.7
Video Poker ⁷	1.2	6.2	20.8
Casino Games ⁸	1.1	2.5	4.2
Internet Games for Money ⁹	0.6	---	16.7
Average Number of Gambling Activities ¹⁰	2.1	3.2	5.0

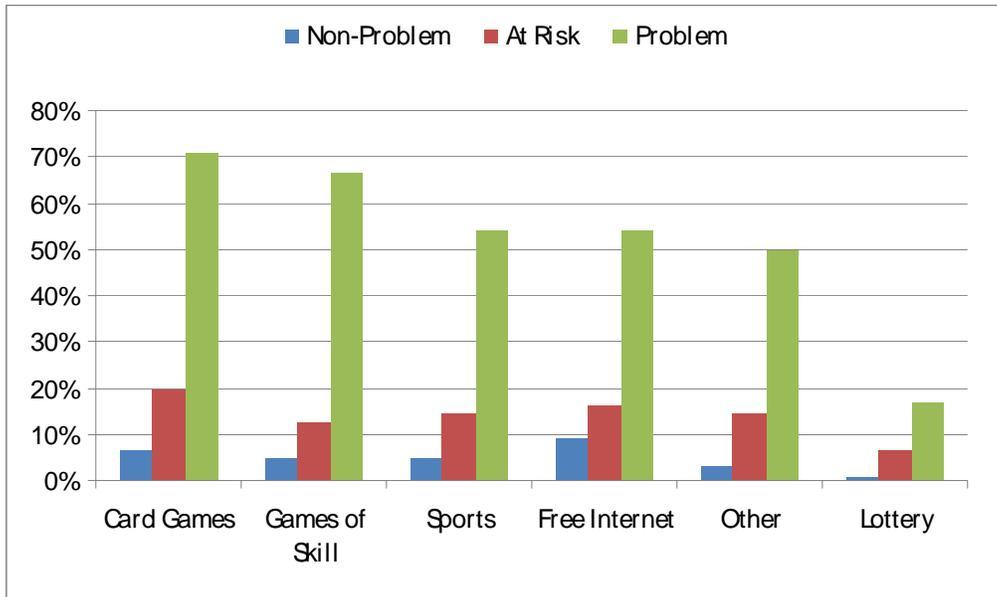
Notes: All Chi-Square df = 2, except 10: df = 24. 1: p < 0.000; 2: p < 0.000; 3: p < 0.000; 4: p < 0.000; 5: p < 0.000; 6: p < 0.000; 7: p < 0.000; 8: p = 0.174; 9: p < 0.000; 10: p < 0.000.

It is interesting that while gambling for free on the Internet is the activity that non-problem gamblers are most likely to have ever tried, playing card games for money is the activity that at-risk and problem gamblers are most likely to have ever tried. Although the present study is cross-sectional and does not assess change over time, this finding suggests that, among adolescents, problem gambling *careers* may progress from gambling on the Internet for free to playing card games for money with friends and family. This conclusion is based on the sharply higher rates of lifetime card game gambling among at-risk and problem gamblers compared with non-problem gamblers compared with the smaller differences between these groups in lifetime gambling for free on the Internet.

Patterns of *past year* gambling participation are generally similar to patterns of lifetime participation among adolescents in Oregon. However, there are a few interesting differences. For example, while adolescent problem gamblers in Oregon are most likely to have ever played card games for money, the gambling activity they are most likely to have done in the past year is wager on sports. While betting on card games and sports remain the two top activities that adolescent at-risk gamblers in Oregon have tried in the past year, betting on other games and activities surpasses betting on games of skill and gambling for free on the Internet as the third activity these individuals are most likely to have done in the past year. Among adolescent non-problem gamblers in Oregon, playing card games for money is the activity they are most likely to have done in the past year followed by sports betting and gambling for free on the Internet.

Figure 6 on the following page (see also Table B-6 in Appendix B) provides a further indication of the types of gambling most closely correlated with gambling problems among adolescents in Oregon. Like the pattern of lifetime gambling participation, adolescent problem gamblers in Oregon are significantly more likely than at-risk and non-problem gamblers to gamble once a month or more often on many of the types of gambling included in the questionnaire. The only exceptions are gambling for money on the Internet and casino games where there are no observations because none of the youth in the survey engaged in these activities on a monthly or more frequent basis.

Figure 6: Monthly Gambling by At Risk Groups



Gambling Expenditures

Given the well-known correlation between gambling problems and heavy spending on gambling among adults, it is useful to examine differences in reported expenditures on gambling by non-problem, at-risk and problem gamblers among adolescents in Oregon. Table 12 presents information about the proportion of adolescent non-problem, at-risk and problem gamblers in Oregon who spend increasing amounts of money on gambling in a typical month. Nearly all of the non-problem gamblers (99%) and 91% of the at-risk gamblers report spending less than \$20 on gambling in a typical month compared with only 59% of adolescent problem gamblers in Oregon.

Table 12: Typical Monthly Expenditures by At Risk Groups

	Non-Problem Gamblers % (675)	At Risk Gamblers % (78)	Problem Gamblers % (22)
<\$1	53.2	28.2	---
\$1 to \$9	38.8	50.0	22.7
\$10 to \$19	6.5	12.8	36.4
\$20 to \$49	1.0	7.7	31.8
\$50 or more	0.4	1.3	9.1

Notes: Chi-Square = 137.50, df = 2, p < 0.000.

Other Differences in Gambling Involvement

In addition to gambling participation and expenditures, there are typically other significant differences in the gambling involvement of adolescent non-problem, at-risk and problem gamblers. These include the age at which adolescents begin gambling and the largest amount they report losing at gambling in a given period of time. Table 13

shows that adolescent problem gamblers in Oregon are significantly more likely than non-problem or at-risk gamblers to say that the largest amount of money they ever spent on gambling in a single month is \$50 or more. Although the chi-square test does not achieve statistical significance, further risk analysis indicates that problem gamblers are significantly more likely than non-problem gamblers to say that they were in grades 1 through 8 when they first gambled for money. The risk of being either at-risk or having a gambling problem is significantly lower for those who start gambling in the 11th or 12th grade. This finding echoes research on other youth risk behaviors, such as alcohol, tobacco and drug use, where the later youth begin to engage in these activities, the less likely they are to develop problems (Smith, 1999). This finding further suggests that delaying the age at which children and adolescents begin gambling for money may prevent them from becoming regular gamblers and, as a result, may protect them from developing gambling-related difficulties.

Table 13: Correlates of At Risk Gambling

	Non- Problem Gamblers % (688)	At Risk Gamblers % (75)	Problem Gamblers % (22)
Largest Amount Ever Spent in Single Month ¹			
<\$1	8.9	2.5	---
\$1 to \$9	49.3	17.7	8.3
\$10 to \$19	24.1	41.8	8.3
\$20 to \$49	15.0	29.1	29.2
\$50 or more	2.7	8.9	54.2
Grade When First Gambled ²			
6 th Grade or Below	36.6	45.7	65.2
7 th – 8 th Grade	41.7	40.7	17.4
9 th – 10 th Grade	18.8	13.6	13.0
11 th – 12 th Grade	2.9	---	4.3

Notes: 1: Chi-Square p < 0.000; 2: Chi-square p = ns.

Table 14 on the following page presents the results of a regression analysis intended to explore the relative importance of several characteristics of adolescent gambling in the development of gambling-related problems. This table shows that neither gambling alone nor with family members is associated with a significantly greater risk for developing gambling-related problems among adolescents in Oregon. However, gambling with friends and acquaintances is significantly associated with the development of mild gambling-related difficulties. Most importantly, Table 13 shows that families where the parents gamble are twice as likely to have an at-risk adolescent gambler and four times more likely to have an adolescent problem gambler, holding constant who these children gamble with, their allowance and how much the child spends on gambling.

Table 14: Relative Risk of Problem Gambling

	At-Risk vs. Non-Problem	Problem vs. Non-Problem
Usually gambles with ...		
Alone	1.08	3.98
With family	1.79	0.60
With friends & acquaintances	2.15*	3.09
Parents Gamble	2.09*	4.31**
Increase of Allowance by \$1	1.00	0.98
Increase "most spent" by \$1	1.04***	1.14***
Notes: *** p < 0.001, ** p < 0.01, * p < 0.05, calculated from multinomial regression coefficients.		

Other Significant Differences

In addition to their demographic characteristics and gambling involvement, there are other significant differences between adolescent non-problem, at-risk and problem gamblers in Oregon. These include differences in their reasons for gambling, differences in the perceived attitudes of parents and friends towards gambling, and differences in non-gambling behaviors and experiences that suggest somewhat chaotic home environments.

Table 15 shows differences in the importance of reasons for gambling across adolescent non-problem, at-risk and problem gamblers in Oregon. Problem gamblers are significantly more likely than non-problem and at-risk gamblers to say that every reason except "entertainment or fun" is an important reason for their gambling. The smallest differences between the groups are for socializing and distraction from everyday problems. While most of the non-problem and at-risk gamblers feel that excitement is an important reason to gamble, all of the problem gamblers feel this way. Winning money is a much more important reason for gambling among problem gamblers than among non-problem and at-risk gamblers. Curiosity and personal interest (as in a hobby) are more important reasons for gambling among at-risk and problem gamblers than among non-problem gamblers.

Table 15: Reasons for Gambling Among At Risk Groups

Reason	Non-Problem Gamblers	At Risk Gamblers	Problem Gamblers
	% (690)	% (75)	% (22)
For entertainment or fun ¹	95.7	95.0	100.0
Excitement or challenge ²	68.6	85.2	100.0
To socialize ³	53.4	63.0	73.9
To win money ⁴	43.3	55.6	95.7
Out of curiosity ⁵	26.6	43.8	52.2
As a hobby ⁶	17.7	35.8	45.8
As a distraction from everyday problems ⁷	3.3	8.8	4.3
Notes: Cells are weighted column percentages. All Chi-square are df = 2. 1: p = ns; 2: p = <0.00; 3: p = ns; 4: p < 0.00; 5: p < 0.01; 6: p < 0.01; 7: p < 0.00; 8: p = ns.			

Another important distinction between adolescent non-problem, at-risk and problem gamblers in Oregon relates to how their parents and friends view gambling activities. For example, 41% of non-problem gamblers and 43% of at-risk gamblers but 59% of problem gamblers say that their parents do not worry much about their gambling. In contrast, 6% of non-problem gamblers, 23% of at-risk gamblers and 48% of problem gamblers say that their friends encourage them to participate in gambling activities.

Table 16 compares adolescent non-problem, at-risk and problem gamblers in Oregon with regard to several non-gambling behaviors and experiences suggestive of additional difficulties experienced by these youth. Problem gamblers are significantly more likely than non-problem and at-risk gamblers to have skipped school at least three times in the past 12 months. Problem gamblers are also significantly more likely than non-problem and at-risk gamblers to have deliberately hurt somebody and to have been cautioned by the police at least three times in the past 12 months. Problem and at-risk gamblers are significantly more likely than non-problem gamblers to have been hurt at least three times in the past 12 months by someone else.

Table 16 also shows that while adolescent problem gamblers are no more likely than non-problem and at-risk gamblers to have stolen something at least one in the past 12 months, they are significantly more likely to have been arrested by the police and to have been to court at least once in the past 12 months. The proportion of adolescents in the non-problem and at-risk groups who have been to court is slightly higher than the proportion that has been arrested. The reason for this is unclear.

Table 16: Other Experiences of At Risk Groups

Other Risky Behaviors Past 12 Months	Non-Problem Gamblers % (874)	At Risk Gamblers % (75)	Problem Gamblers % (23)
Three or More Times			
Been hurt by somebody else ¹	7.7	14.8	20.8
Absent from school w/out permission ²	7.2	10.0	25.0
Deliberately hurt somebody ³	3.0	3.8	8.3
Been warned by the police ⁴	2.2	2.5	16.7
One or More Times			
Stolen something ⁵	9.0	14.8	12.5
Been arrested ⁶	2.0	6.1	25.0
Been to court ⁷	3.5	8.6	20.0

Notes: Cells are weighted column percentages. All Chi-Square df = 2. 1: p < 0.05; 2: p < 0.01; 3: p = ns; 4: p < 0.00; 5: p = ns; 6: p < 0.00; 7: p < 0.01.

These results are similar to findings from the Oregon Healthy Teens Survey which has consistently found that students who gamble are significantly more likely than non-gamblers to have carried a handgun and been in a physical fight in the past 12 months (Oregon Center for Health Statistics, 2008). Together, the results of these two surveys underscore the importance of addressing gambling and problem gambling in conjunction with other youth risk behaviors.

GAMBLING, ALCOHOL AND DRUG USE AMONG OREGON YOUTH

Research shows that problem gambling among adults is often complicated by involvement with alcohol or drugs. We noted above (see Page 5) that a growing body of research has documented the relationship between problem gambling and “co-morbid” disorders in the adult population. There is growing evidence that problem gambling among adolescents is similarly correlated with a range of “fellow travelers” including alcohol and drug use (Jacobs 2000). In this section, we examine data from the Oregon adolescent gambling survey on alcohol and drug use as well as the relationship between alcohol and drug use, gambling involvement and gambling-related problems.

Alcohol and Drug Use Among Adolescents

As in other states, alcohol, tobacco and marijuana are the illicit substances most often used by adolescents in Oregon. Table 17 shows that alcohol, tobacco and marijuana use are quite low among Oregon adolescents. Only 11% of Oregon adolescents have consumed alcohol in the past year and only 4% of Oregon adolescents consume alcohol once a month or more often. 6% have consumed tobacco and 4% have used marijuana in the past year. More frequent use of these substances is even lower with only 4% of Oregon adolescents consuming alcohol and tobacco and only 2% consuming marijuana once a month or more often.

Table 17: Alcohol and Drug Use Among Adolescents in Oregon

	Alcohol % (1554)	Tobacco % (1554)	Marijuana % (1554)
Never	89.4	93.7	95.9
Less than Monthly	6.9	2.6	2.2
More than Monthly	3.7	3.7	1.8

Notes: Cells are weighted column percentages.

The rate of monthly alcohol consumption in the present survey appears to be much lower than the “past 30 days” rate of alcohol consumption amongst adolescents in the 2006 Oregon Healthy Teens Survey (Oregon Center for Health Statistics, 2008). There are likely several reasons for this, including differences in question wording, survey modality and sampling frame.

Gambling, Alcohol and Drug Use

Based on research with adolescents in Oregon and other states, we hypothesized that gambling would be significantly related to Oregon adolescents’ use of alcohol and other drugs. Table 18 on the following page shows that frequency of gambling is correlated with alcohol, tobacco and marijuana use. Weekly gamblers are significantly more likely than infrequent, past year or monthly gamblers to have used alcohol and tobacco in the past year. Although weekly gamblers are more likely than other gamblers to have used marijuana in the past year, the difference is not statistically significant. Finally, Table 18

shows that weekly gamblers are significantly more likely than less frequent gamblers to have gotten into difficulties from their drinking in the past year.

Table 18: Past Year Alcohol and Drug Use Among Adolescent Gamblers

	Infrequent Gamblers (239) %	Past Year Gamblers (480) %	Monthly Gamblers (197) %	Weekly Gamblers (55) %
Alcohol ¹	8.4	13.7	18.3	34.6
Tobacco ²	5.1	8.5	9.2	26.4
Marijuana ³	3.8	5.4	5.6	11.3
Gotten into difficulties from drinking ⁴	2.1	2.4	0.5	7.5

Notes: Cells are weighted column percentages. All Chi-Square df = 3. 1: p < 0.00; 2: p < 0.00; 3: p = ns; 4: p < 0.05.

Even more than gambling participation, adolescent problem gambling is correlated with the use of alcohol and drugs. Table 19 shows that adolescent problem gamblers in Oregon are significantly more likely than at-risk and non-problem gamblers to have used alcohol, tobacco and illicit drugs in the past year. A comparison of Tables 19 and 20 shows that problem gamblers are even more likely than weekly gamblers to have used alcohol, tobacco and marijuana in the past year.

Table 19: Past Year Alcohol and Drug Use Among At Risk Groups

	Non-Problem Gamblers % (874)	At Risk Gamblers % (75)	Problem Gamblers % (23)
Alcohol ¹	13.4	17.5	43.5
Tobacco ²	8.2	8.6	30.4
Marijuana ³	4.9	6.2	20.8
Gotten into difficulties from drinking ⁴	1.9	2.5	16.7

Notes: Cells are weighted column percentages. All Chi-Square df = 2. 1: p < 0.01; 2: p < 0.01; 3: p < 0.01; 4: p < 0.00.

Although there are differences in alcohol consumption rates in the present survey compared with the Oregon Healthy Teens Survey, both surveys document the existence of a significant correlation between alcohol use and gambling. The consistency of this finding underscores the importance of addressing gambling as one of several risky behaviors among youth and, conversely, the importance of incorporating questions of tobacco, alcohol and drug use in problem gambling awareness and prevention efforts in Oregon.

COMPARING THE 1998 AND 2007 SURVEYS

Since the 1980s, **baseline** prevalence surveys of gambling and problem gambling have been carried out in many jurisdictions worldwide. **Replication** surveys, using the same methods to monitor changes over time, have been completed in a much smaller number of jurisdictions. Replication surveys are useful in examining changes in participation in gambling activities over time, permit more precise assessments of the impact of specific types of gambling on the prevalence of gambling-related difficulties, and provide important information for the refinement of services for individuals with gambling-related problems. To our knowledge, the present study is the first replication survey of adolescent gambling and problem gambling.

Analytic Approach

In analyzing the extent of changes in the prevalence of gambling and problem gambling over time, the goal is to determine whether enough statistical evidence exists to conclude that rates measured at two different points in time have changed significantly. In making this determination, we have drawn from a general class of statistical tests known as **hypothesis testing**.

There are four major components to the test of a hypothesis: the null hypothesis, the alternative hypothesis, the test statistic and the rejection region. The **null hypothesis** in this case is that there were no changes in prevalence between the baseline and replication surveys (H_0 is equal to zero). The **alternative hypothesis** defines the specific test on which to base a decision to accept or reject the null hypothesis. Two alternative hypotheses that can be tested in considering differences in the proportions, as is the case here. The first alternative is that there has been change, regardless of its direction. The second alternative is that the change has been in a particular direction, either up or down. The appropriate **test statistic** for the first alternative would be a two-tail test that tests for change in either direction (H_A is not equal to zero). The appropriate test statistic for the second alternative would be a one-tail test that tests for either increase (H_A is greater than zero) or decrease (H_A is less than zero).

By convention, statistical significance is generally interpreted to mean a result that happens by chance less than once in 20 times. This is often called the “95% confidence interval” and refers to the probability that the results of a test fall within two standard deviations of the center of a standard normal distribution. While tradition keeps this alpha value small, there are often good reasons to consider results that fall outside the 95% confidence interval as significant. This is particularly true when considering a rare event like problem gambling or when considering results based on small sample sizes.

A shortcoming of this formal approach is the subjective selection of the significance level for the test. A formal hypothesis test only gives acceptance/rejection answers to the question of whether there has been a significant change; it does not give investigators an opportunity to decide for themselves what is a sufficient level of significance. An alternative to the formal hypothesis test is to calculate the p-value of each test statistic, that is, the smallest value of alpha that would lead to rejection of the null hypothesis. In this case, lower p-values correspond to increased evidence that change has actually occurred in the time between the studies.

The tables in this chapter present comparisons of data from the two adolescent surveys in Oregon. These tables are all organized in a similar fashion: first, the descriptive data for each sample are presented, then the direction of change is presented and then the specific results of a one-tail test of significance. This approach allows readers to decide for themselves in each case whether enough evidence exists to accept or reject the null hypothesis.

Comparing the Two Samples

The first step in comparing the results of the two adolescent surveys in Oregon is to identify any significant differences in the characteristics of the samples from the two surveys. Table 20 presents this information.

Table 20: Comparing the Samples in 1998 and 2007

		1998 (997) %	2007 (1555) %	Direction	p-value (1-tail)
Gender	Male	54.0	50.5	-	.043
	Female	46.0	49.5	+	.043
Ethnicity	White	90.1	91.5	+	.108
	Non-White	9.9	8.5	-	.108

Both the 1998 and the 2007 adolescent surveys relied on targeted lists of households as the sampling frame. Carlson and Moore (1998) note that their sample was representative of the adolescent population in terms of gender and age. While some minority groups were under-represented, the overall proportion of non-White respondents matched the known census estimate. Since the data from both samples was weighted to match the adolescent population in Oregon at or around the time of the survey, this table suggests that there may have been an increase in the proportion of female adolescents in Oregon between 1998 and 2007.

Changes in Gambling Participation

The baseline adolescent survey in Oregon was carried out 14 years after the Oregon Lottery started, six years after the Oregon Lottery received approval to operate video poker and five years after tribally owned casinos, or Indian Gaming Centers, began operations. In 2007, the Oregon Lottery had been in operation for nearly quarter of a century (23 years); video poker had been operational for 15 years, and the Indian Gaming Centers had been in operation for 14 years. In addition, Oregon has long been home to commercial horse and dog racing, bingo and charitable gaming as well as locally permitted commercial cardrooms.

Figure 7 on the following page (see also Table B-7 in Appendix B) provides an overview of the substantial changes in gambling participation among adolescents in Oregon between 1998 and 2007. The figure clearly shows substantial and significant decreases in the proportion of adolescents who have gambled in the past year as well as in the proportion of adolescents who gamble monthly or weekly.

Figure 7: Comparing Gambling Participation Rates in 1998 and 2007

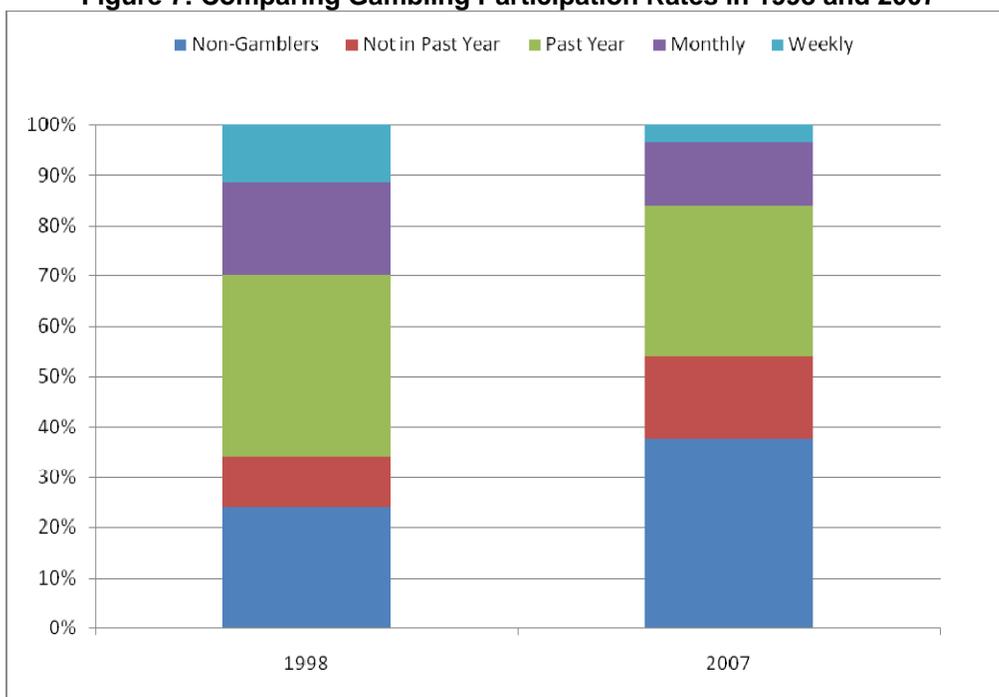


Table 21 provides a more detailed picture of how adolescent gambling has changed in Oregon between 1998 and 2007. This table shows changes in lifetime participation in all of the gambling activities that were included in both surveys. Lifetime participation among adolescents has decreased in four activities and has increased in only two activities. Lifetime gambling participation has decreased significantly for lottery games, betting on sports and games of skill and gambling at a casino. While lifetime participation in playing card games for money and gambling on the Internet for money has increased, these changes are not statistically significant.

Table 21: Comparing Lifetime Participation in Specific Activities

	1998 (997) %	2007 (1555) %	Direction	p-value (1-tail)
Lottery Games	38.9	8.4	-	<0.000
Sports	31.6	27.2	-	0.009
Card Games	30.9	31.9	+	.297
Games of Skill	25.4	21.9	-	0.022
Casino Games	18.6	0.8	-	<0.000
Internet Games for Money	0.3	0.6	+	.158

The reductions in adolescent participation in lottery and casino games in Oregon are worthy of comment. Lifetime participation in casino gambling by Oregon adolescents has declined 96% (from 18.6% to 0.8%) while past year casino gambling has declined by 98% (from 12.1% to 0.3%). Lifetime lottery play among Oregon adolescents has declined 78% (from 38.9% to 8.4%) and past year lottery play has declined 80% compared with 1998 (from 29.6% to 6.0%).

Another change that has occurred in lottery play among Oregon adolescents relates to where they are able to purchase or obtain lottery tickets. In 1998, 50% of the adolescents who had played the lottery obtained tickets from family members compared with 59% of the much smaller group of Oregon adolescents who played the lottery in 2007. There were also increases in the proportion of Oregon adolescents who had played the lottery who were able to purchase lottery tickets in convenience stores and from vending machines compared with 1998. However, there were declines in the proportion of adolescents who were able to purchase lottery tickets at grocery stores.

There are several possible explanations for the substantial drop in age-restricted gambling activities among Oregon adolescents between 1998 and 2007. Since different individuals were interviewed in the two surveys, some of the differences in gambling participation are likely due to the sampling errors inherent in all survey research. Another possibility is that, as in an earlier survey of adolescents in Nevada (Volberg, 2002), lifelong exposure has led adolescents in Oregon to perceive gambling as something done by their parents and therefore not terribly exciting or interesting. Lifelong exposure also means that adolescents in Oregon are more likely to have a parent, adult relative or older friend who has gotten into difficulties with gambling and this may have increased their perception of the risks associated with gambling. Yet another possibility is that efforts in the State of Oregon to educate youth, their parents and their teachers about the risks of adolescent gambling are indeed having an effect, at least when it comes to legal but age-restricted forms of gambling.

Another possible explanation is that attitudes towards children and gambling have changed significantly over the past decade and this has influenced both parents' willingness to allow their children to participate in age-restricted forms of gambling and operators' vigilance in preventing under-age gambling. This attitudinal change is epitomized by the shift among Las Vegas casinos and the city's municipal government from promoting Las Vegas as a "family entertainment" destination (Reno, 1997) to the new brand message that underscores the flexible morality and adult-oriented theme of "What happens in Vegas, stays in Vegas."

Changes in the Characteristics of Past Year Gamblers

In 1998, Carlson and Moore (1998) reported that boys in Oregon were significantly more likely to have gambled in the past year than girls and older youth were significantly more likely than younger adolescents to have gambled in the past year. As we have already seen, boys in Oregon in 2007 are still significantly more likely than girls to gamble and older youth are still more likely than younger adolescents to have gambled in the past year. Table 22 on the following page shows that the decline in past year gambling between 1998 and 2007 has taken place across the board and is significant across gender, age and ethnicity.

Table 22: Comparing Past Year Gamblers in 1998 and 2007

		1998 %	2007 %	Direction	p-value (1-tail)
Total Sample		66.0	46.1	-	<0.000
Gender					
	Male	74.0	57.1	-	<0.000
	Female	57.1	35.0	-	<0.000
Age					
	13	58.9	43.8	-	0.001
	14	65.4	47.3	-	0.001
	15	66.1	49.5	-	0.001
	16	69.1	49.4	-	<0.000
	17	68.5	57.6	-	0.009
Ethnicity					
	White	66.9	46.4	-	<0.000
	Non-White	58.6	45.0	-	0.021

Changes in Problem Gambling Prevalence

Table 23 compares the prevalence rates of at-risk and problem gambling (using both the narrow and broad approaches) among Oregon adolescents in 1998 and 2007. Based on the narrow criteria for scoring the SOGS-RA (the straightforward numeric count), the prevalence of at-risk and problem gambling among adolescents in Oregon appears to be unchanged. However, based on the broad criteria for scoring the SOGS-RA (which includes gambling frequency as a factor), the prevalence of at-risk and problem gambling has declined significantly among Oregon adolescents. This decline is largely accounted for by the decline in overall gambling involvement overall among Oregon adolescents.

Table 23: Comparing Prevalence Rates in 1998 and 2007

		1998 %	2007 %	Direction	p-value (1-tail)
SOGS-RA (Narrow)					
	At Risk	5.0	4.6	-	0.328
	Problem	1.4	1.3	-	0.328
SOGS-RA (Broad)					
	At Risk	11.2	5.2	-	<0.000
	Problem	4.1	1.5	-	<0.000

To remind readers, the narrow SOGS-RA classification is relevant for treatment-planning purposes while the broad SOGS-RA classification is relevant to public health and prevention goals. The stability of problem gambling prevalence based on the narrow approach suggests that there has been little or no change in the number of youth in Oregon in need of treatment for gambling-related problems. The decline in problem gambling prevalence based on the broad approach suggests that the number of youth at risk for gambling problems is lower because, overall, youth gambling rates have dropped over the past decade.

Prevalence Rates Within Demographic Groups

Finally, we present information about changes in prevalence of problem gambling (using the broad criteria) among adolescents in different demographic groups in Oregon. Since the 1998 report only reported broad prevalence rates among gamblers (Carlson & Moore, 1998), we are limited in the number of comparisons that we can make to the 2007 data. Table 24 shows that the rate of problem gambling has declined significantly among adolescent gamblers in Oregon. Declines have occurred among both boys and girls and for White and non-White adolescents. Problem gambling prevalence rates have also declined among adolescents of different ages although small sample sizes for each age group limit our ability to test these declines for statistical significance.

Table 24: Comparing Prevalence Rates in Key Groups in 1998 and 2007

		1998 %	2007 %	Direction	p-value (1-tail)
Total Sample of Gamblers		6.2	2.5	-	<.000
Gender					
	Male	7.8	3.9	-	0.004
	Female	3.8	0.5	-	0.001
Age					
	13	6.7	3.3	-	0.101
	14	4.5	2.5	-	0.181
	15	10.2	1.1	-	<0.000
	16	4.6	2.4	-	0.133
	17	5.1	4.4	-	0.391
Ethnicity					
	White	5.8	2.5	-	<0.000
	Non-White	10.3	2.6	-	0.028

Grade of Onset and Problem Gambling

In both the 1998 and 2007 adolescent surveys, respondents were asked what grade in school they were in the first time they gambled for money. Table 25 on the following page shows the prevalence of at-risk and problem gambling among adolescents in the two surveys who acknowledged first gambling for money in grade school compared with those who started in middle school and high school. This table shows that while prevalence rates of at-risk and problem gambling declined over the past decade, these rates remain substantially higher among adolescents who acknowledge first gambling for money in grade school.

It is worth noting that 29% of adolescent gamblers in 2007 acknowledge first gambling for money in grade school, compared with 36% of adolescent gamblers in 1998. This is further evidence that attitudes toward youth gambling have shifted over the past decade and that the onset of gambling involvement is increasingly being delayed among younger children.

Table 25: Comparing Age of Onset and Problem Gambling 1998 and 2007

	1998 %	2007 %	Direction	p-value (1-tail)
Percent Starting in Grade School				
At Risk	23.6	13.5	-	0.002
Problem	8.0	5.5	-	0.123
Percent Starting in Grades 7-9				
At Risk	13.1	11.0	-	0.239
Problem	5.6	1.3	-	0.004
Percent Starting in High School				
At Risk	16.8	7.3	-	0.010
Problem	3.2	2.6	-	0.401

COMPARING PARENTS AND YOUTH

While research examining the effects of family environment and parenting styles on child and adolescent outcomes goes back decades, these relationships have rarely been investigated in the gambling studies field. Internationally, problem gambling prevalence studies often include questions about problem gambling among family members. Such studies typically find problem gamblers reporting elevated levels of problem gambling on the part of their parents, especially fathers but also among siblings, grandparents and cousins (Abbott et al, 2004).

A shortcoming of most research on problem gambling among family members is the reliance on respondent assessment. Even studies that have specifically examined relationships between family environment and adolescent gambling behavior have relied on reports from adolescents alone and have not assessed parental attitudes and behaviors separately (e.g., Meerkamper, 2006; Ste-Marie, 2006).

Only two previous studies have been carried out examining the interplay between parents and adolescents in predicting youth gambling participation and problems (Dane et al, 2004; Vachon et al, 2004). Dane and colleagues (2004) conducted a telephone survey of 674 parent-child pairs (the children were between the ages of 10 and 19) and found evidence that different aspects of authoritative parenting were associated with adolescent problem gambling severity, regardless of the child's temperament. The results of this study also showed that parents' gambling activities were related to adolescent problem gambling severity, with fathers' modeling of gambling activities showing the strongest link to adolescent problem gambling. Vachon and colleagues (2004) completed face-to-face interviews with 938 children and one or both parents of each child. This study found that adolescent gambling frequency was related to parents' gambling frequency but adolescent gambling problems were linked only to fathers' severity of gambling problems. Low levels of parental monitoring enhanced the children's risk of gambling involvement and problem development, even after controlling for socioeconomic status, gender, impulsivity and hyperactivity.

Despite the lack of substantial evidence, researchers and clinicians have long assumed that parental gambling can influence the acquisition of adolescent gambling behavior and is likely also implicated in the development of problem gambling. Through their own participation, adults may initiate their offspring into gambling activities (whether intentionally or not), inculcate attitudes that condone or encourage gambling and, through such activities as buying lottery tickets or providing money, may provide the material and emotional support for involvement in gambling. Given the dearth of research in this area, the present study represents an important contribution to our understanding of parent-child interactions around gambling and problem gambling.

Dyadic Analysis Approach

The analysis in this chapter uses an approach specifically designed for testing associations within groups. In this case the "within" groups consist of parent-child dyads. In a dyadic analysis, we must take into account the fact that parents and children are related, live in the same household and have many shared experiences. This relationship means that parents and children may also have similar expectations with

regards to gambling attitudes and behavior. There are two approaches to estimating within-dyad effects that we use in this chapter.

First, we seek to estimate the amount of agreement there is between parents and children across those gambling variables for which we have both parent and child measurements. Agreement is defined as the proportion of agreement that occurs over and above what would be expected if we assumed that there were no parent-child correlations. This is estimated using Cohen's Kappa test (Kenny, Kashy & Cook 2007). The Kappa test is similar to chi-square tests in that it measures the difference between expected agreement and observed agreement.

As in chi-square tests, expected agreement is calculated based on the marginal probabilities of any given answer among parents or children. For example, imagine that we gave a single fair die to each the parent and the child, and asked them to roll their dice a number of times. The chance that they would each roll a "one" after many rolls would be 16.7% (one in six). The chance that they would each roll a "one" at the same time would be the product of each of their chances, or 2.8%. In other words, we can expect that the parent and child would roll the same number about 2.8% out of sheer chance. If, however, the parent and child were somehow able to make their dice agree for a number of rolls, then the observed chance of rolling the same number would be greater. In a similar fashion we can expect that parents and children who do not agree systematically will still answer questions in the same way sometimes by chance alone. If, however, the number of times that they agree is greater than what we would expect by chance alone, then we can infer that something systematic between that parent and child is leading them to answer questions in the same way. The Kappa statistic captures this.

The Kappa statistic is the proportion of the cases that we observe agreeing, p_o , minus the proportion of agreement we expect by chance alone, p_e , divided by the proportion

we expect to not agree $1 - p_e$, i.e. $\kappa = \frac{p_o - p_e}{1 - p_e}$. This is a nice statistic in that it will not

produce a false positive for situations in which the entire sample chooses the same answer, regardless of dyad membership. For example, the vast bulk of humanity thinks that murder is wrong. If we wanted to find out if murder is related to dyad membership, our Kappa would be low because we would expect almost everyone to say that it was wrong anyway. The Kappa statistic can range from 1 (perfect agreement when none expected) to 0 (the same amount of agreement as expected by chance) to negative numbers (less agreement than expected). Less agreement than expected is also a viable research hypothesis; it simply asserts that members of dyads generally disagree with each other. The Kappa statistic also has an associated standard error that we can use for hypothesis testing. It is important to note that the Kappa statistic does not indicate the overall agreement, just the amount of agreement beyond what is expected by chance. Therefore, any non-zero estimate indicates that there is some within-dyad agreement.

The other method of estimating whether there is a significant amount of dyadic agreement is the intra-class correlation statistic (Raudenbush & Bryk 2002). This statistic measures the proportion of the total variance of a measure that can be attributed to between-group variation. In a fashion similar to analyses of variance (ANOVA), the total variance of a measure is divided into the variance between groups, σ_b , and the

variance within groups, σ_w . The ICC, then, is simply the between group variance divided by the total variance: $\rho = \frac{\sigma_b}{\sigma_w + \sigma_b}$. This is calculated using a mixed regression

technique (sometimes referred to as hierarchical linear models) whereas the within and between variances are calculated using a generalized linear model. In many cases, the ICC and the Kappa are of the same scope and magnitude; this triangulation of results further supports our assertions that some of these behaviors and attitudes are shared by parents and children.

The Sample of Parents

Since adolescents were the main focus of the present study, our concern was with obtaining a representative sample of Oregon adolescents rather than a representative sample of parents of Oregon youth. Although the weighting procedure used to align the characteristics of the adolescents with the known population did not change the parents' data, it is helpful to examine some key demographic characteristics of the parents and guardians who participated in the survey. To place these data in a broader context, we have included demographic data from the most recent adult problem gambling prevalence survey carried out in Oregon (Moore, 2006).

Table 26: Comparing the Parent Sample with Oregon Adults

		2006 Adult Survey % (1554)	Parent Sample % (1555)
Gender	Male	47.4	30.3
	Female	52.6	69.7
Average Parent Age		46.8	50.4
Race	White	92.3	94.6
	Non-White	7.7	5.4
Marital Status	Married	58.9	90.3
	Widowed	8.9	1.4
	Divorced	14.7	7.8
	Never Married	15.6	0.6
Education	Less than HS	4.1	0.8
	HS Graduate	28.1	17.4
	Some College	39.0	32.0
	College Graduate	14.3	27.8
	Graduate Study	14.5	19.9
Employment	Full-time	47.5	56.5
	Part-time	9.8	20.4
	Keeping House	10.2	18.9

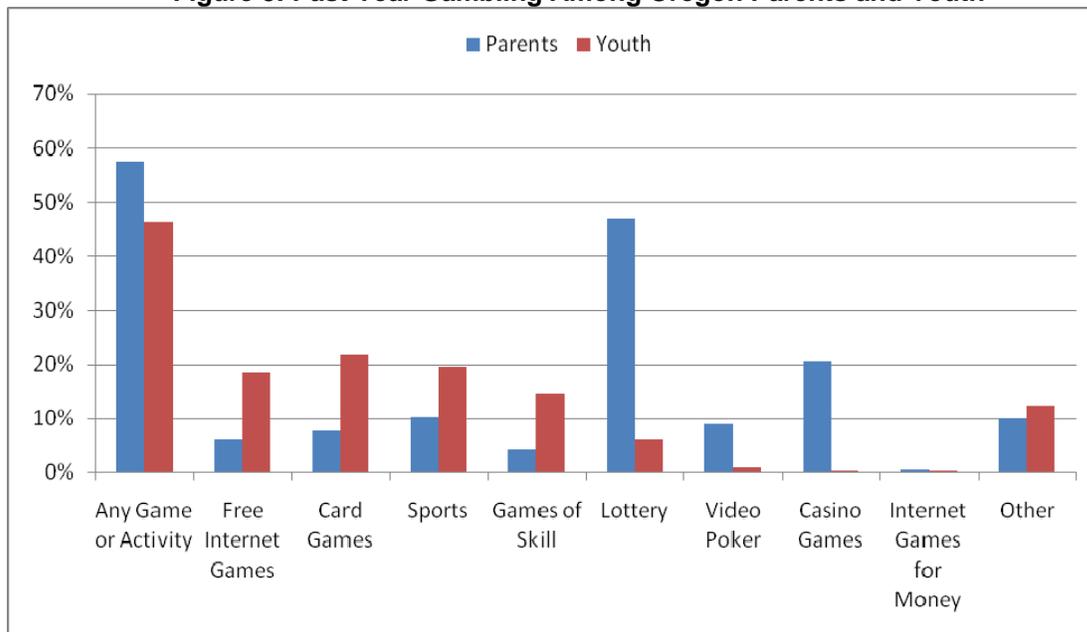
To improve the likelihood of obtaining an interview with an adolescent in an eligible household, we elected not to attempt to randomize parental respondents. Interviewers were instructed simply to complete an interview with the parent who answered the telephone. It is clear that female parents and guardians were more likely than male parents to participate in the survey. The parents who participated in the survey are slightly older than the average Oregon adult and slightly more likely to be White. As might be expected, the sample of parents is far more likely to be married than the general adult population in Oregon, somewhat more likely to have graduated from college and/or pursued graduate studies, and far more likely to be employed full-time or part-time or, conversely, to be keeping house. Household income among the parents is substantially higher than in the general adult population in Oregon although this may be partly due to the fact that parents of children are much more likely to be married and to have dual-income households compared with the general adult population.

While the characteristics of the parents included in the study raises some questions about the representativeness of this sample, there is no way to determine how closely these parents actually reflect the population of parents of adolescents in Oregon. Furthermore, given the dearth of research on the links between parental and adolescent gambling, any information derived from comparing parents and youths in the same households is likely to be useful.

Parents and Gambling Participation

Parents and guardians who agreed to participate in the study were asked about their past year participation in the same gambling activities as the adolescents. They were also asked to estimate their overall frequency of gambling participation. Parents were not asked for more detailed information about their gambling involvement in order to save time to explore the gambling involvement of the adolescent respondents in more detail. Figure 8 (see also Table B-8 in Appendix B) compares overall past year gambling by parents and youth as well as participation in nine different gambling activities.

Figure 8: Past Year Gambling Among Oregon Parents and Youth



As might be expected, past year gambling participation by parents and youth is significantly different. Overall, parents are significantly more likely to have gambled in the past year than youth. Parents are significantly less likely than youth to have gambled for free on the Internet, played card games for money, gambled on sports or games of skill and gambled on “other” activities in the past year. Parents are significantly more likely than youth to have participated in the past year in legal, age-restricted forms of gambling in Oregon, including playing the lottery, gambling at casinos and playing video poker.

Given that playing the lottery is the gambling activity that parents are most likely to have engaged in over the past 12 months, it is not surprising that 39% of parents also say that they usually gamble alone. Another 25% of parents usually gamble with a spouse or partner, 21% usually gamble with friends and 10% usually gamble with other adult family members.

Relationship Between Parental and Youth Gambling

We now turn to the question of whether and how parental gambling affects youth gambling. Table 27 shows that in households where the parent has gambled in the past year, 72% of the adolescents also gamble. In households where the parent has not gambled in the past year, 50% of the adolescents also do not gamble. This comparison shows clearly that living in a household where one or more parents gamble does make it more likely that youth will gamble as well. However, even in households where at least one parent does not gamble, half of adolescents (50%) have tried one or more gambling activities.

Table 27: Interactions Between Parent and Youth Gambling

		Parent Gambles		
		No %	Yes %	
Child Gambles ¹	No	50.2	28.1	
	Yes	49.8	71.9	
		Parent Frequency of Gambling		
		Less than Monthly %	Monthly %	Weekly or Daily %
Child Frequency of Gambling ²	Less than Monthly	74.3	66.9	72.2
	Monthly	20.2	25.3	20.5
	Weekly or Daily	5.6	7.9	7.4
		Parent Number of Gambling Activities		
		None %	1 %	2 or more %
Child Number of Gambling Activities ³	None	50.2	35.2	21.7
	1	24.8	23.2	23.5
	2 or more	25.0	41.6	54.9

Notes: Cells are weighted column percentages. 1: Chi-Square df = 1, p < 0.00; 2: Chi-Square df = 4, p = ns; 3: Chi-Square df = 4, p < 0.00.

In contrast to choosing to gamble at all, another question is how much of the intensity of an adolescent’s gambling—in this case, the frequency of gambling—is explained by the intensity of a parent’s gambling. Table 27 also shows that in households where the parent gambles weekly or daily, only 7% of the adolescents gamble at the same intensity while nearly three-quarters of these adolescents (72%) gamble less than monthly. This is nearly the same proportion as among adolescents living in households where the parent gambles less than monthly.

Finally, we asked whether the number of gambling activities in which the parent engaged affected the number of gambling activities that adolescents in the same household have tried. Table 27 shows that in households where the parent had not done any gambling in the past year, 50% of the adolescents had also not done any gambling. In contrast, in households where the parent had done two or more types of gambling in the past year, 55% of the adolescents had also engaged in two or more gambling activities.

Table 28 presents this information in a more statistically informative way. In this table, the intra-class correlation (ICC) tells us that 29% of the variation in whether a child or a parent gambles is explained at the household level. If we were considering variation in children’s math scores, this would tell us that nearly one-third of the variation in these scores is due to the school that the child attends. The extent of the variation in lifetime gambling explained by the household suggests that focusing prevention resources and efforts on parents and households as well as on adolescents could have a potentially significant impact in reducing youth gambling initiation.

Table 28: Correlations Between Parent and Youth Gambling

	ICC	KAPPA
Lifetime Gambling ¹	0.29	0.23
Total Number of Activities Population ²	0.26	0.08
Gamblers Only ³	0.06	-0.10
Frequency of Gambling ⁴	0.03	0.00
Notes: 1: ICC p < 0.00, KAPPA p < 0.000; 2: KAPPA p < 0.000; 3: KAPPA p = 1.00, 4: KAPPA p < 0.05.		

When we turn from gambling at all to the question of gambling intensity, Table 28 shows that 26% of the variation in the number of gambling activities that a parent or child has tried is explained at the household level. However, much of this variation is explained by the large proportion of households where *neither* the parent nor the child gambles. When we consider only households where either a parent or a child gambles, the variation in the number of gambling activities tried goes down considerably to 6%. Similarly, only 3% of the variation in how frequently parents and youth gamble (e.g., daily, weekly, monthly, etc.) is explained at the household level. While these numbers are still statistically significant, our conclusion is that intensity and frequency of gambling is far more individual than gambling initiation since the household effect on intensity and frequency is less than one-quarter of the household effect on gambling at all.

Thus, gambling at all does appear to be a family- or household-related process. However, beyond gambling initiation, the frequency of gambling and the number of activities involved is not related to the family or household unit. It is possible that once adolescents have started gambling within the family, their interest in specific gambling activities and their involvement in gambling overall are more closely related to peers and their influence. In the future, it would be interesting to interview siblings, other adults in the household and perhaps even networks of adolescents to determine whether the frequency and intensity of children's gambling is related to other children in the household or to networks of friends and acquaintances outside the household.

Attitudes Toward Youth Gambling

Both parents and adolescents were asked whether they agreed or disagreed with a series of statements about youth gambling. These statements were designed to assess how positively or negatively both parents and adolescents viewed gambling by youth. These items explored attitudes of parents and adolescents about the harmfulness of gambling, about the risks sometimes associated with gambling and about problems associated with gambling such as trouble at school or illegal acts. Table 29 compares the proportion of parents and adolescents who agreed somewhat or completely with a range of statements about gambling in general.

Table 29: Attitudes About Gambling Among Oregon Parents and Youth

	Parent Agreement	Adolescent Agreement
Gambling can become a problem for young people.	97.4	93.7
A child who has a parent with a gambling problem is more likely to develop a gambling problem.	91.4	89.4
Youth who gamble might also commit illegal acts to finance their gambling activities.	89.8	81.3
The State of Oregon takes adequate measures to make sure that gambling activities are not accessible to minors.	65.4	80.7
The majority of youth who gamble also use alcohol and drugs.	68.6	73.5
The popularity of gambling these days is having a bad effect on young people.	80.0	70.1
Youth who bet money or things of value on games of chance have problems at school.	69.5	62.7
Kids are gambling at school.	72.3	33.2
Betting money or other things of value on games of chance is a harmless, recreational family activity.	20.1	27.3
Gambling is a good way to keep youth away from alcohol and drugs.	2.0	9.5
Girls gamble more than boys.	7.3	6.6

Table 29 indicates that there may be some social desirability bias² in the responses to these items since the great majority of both parents and children agree on statements about whether gambling can become a problem for youth, whether children with parents who gamble problematically may be more likely to develop a problem, with the possibility that gambling can lead to problems at school, the use of alcohol and drugs and illegal acts. Youth are more likely than parents to agree that the State of Oregon is taking appropriate steps to prevent underage gambling. In contrast, parents are more likely than youth to agree that the current popularity of gambling is harmful. The one glaring discrepancy in parental and youth attitudes relates to agreement about whether adolescents are gambling at school. Nearly three-quarters of parents (72%) believe that kids are gambling at school, compared with only 33% of adolescents.

The data presented in Table 29 contrasts rather sharply with the results of several focus groups on youth gambling carried out recently in Oregon (Farrell, 2006). Three focus groups involving 12 teenagers and 22 parents of teenagers were conducted by a professional research organization. Among the teenagers, gambling was acknowledged but not deemed very important. Certainly, the teenagers in the focus group did not attach any stigma to gambling with family members or friends. Among the parents, few believed that their children gambled and, if they did, were not concerned because it was viewed as harmless and generally limited to low stakes.

There are many possible reasons for the differences between the results of the present study and these focus groups. As with the Oregon Healthy Teen Survey, these differences may be due to modality (face-to-face group discussion versus telephone interview), sampling frame and question wording. Another distinct possibility relates, again, to the issue of social desirability bias in survey research.

Relationship Between Parental and Youth Attitudes

To assess the interrelationship between parent and youth attitudes towards gambling, we reverse-coded responses to several of the statements presented above. This was done to distinguish pro-gambling items from anti-gambling items more clearly. Table 30 on the following page presents Kappa and intra-class correlations (ICC) for each of seven attitudinal statements that both parents and youth answered. Based on the Kappas and ICCs for all seven statements, it is clear that all of these are low, regardless of whether we look at all of the respondents (parents and youth), just at families with a gambler (either a parent or the adolescent) or at families where the adolescent has been classified as an at-risk or problem gambler. Overall, agreement on these statements is so high that it is difficult to tease out a specific “household” effect on attitudes toward youth gambling and gambling-related problems.

² **Social desirability bias** is the desire to present oneself in a favorable light. Social desirability can affect research when respondents answer questions in ways that they believe are socially acceptable rather than providing their true opinions.

Table 30: Correlations Between Parent and Youth Attitudes

	Item (see notes below for key)							Total positive responses
	A	B	C	D	E	F	G	
Correlation								
All Respondents								
<i>KAPPA</i>	0.04	0.02	0.02	0.07	0.06	0.07	0.06	0.06
<i>ICC</i> (Unconditional)	0.06	0.00	0.06	0.10	0.08	0.13	0.07	0.12
Families with a gambler								
<i>KAPPA</i>	0.02	0.01	0.02	0.06	0.05	0.05	0.04	0.05
<i>ICC</i> (Unconditional)	0.03	0.00	0.08	0.08	0.07	0.08	0.04	0.10
Families with an at risk or Problem adolescent gambler								
<i>KAPPA</i>	-0.19	-0.06	-0.01	0.08	0.13	-0.05	-0.01	0.15
<i>ICC</i> (Unconditional)	0.00	0.00	0.00	0.11	0.17	0.00	0.00	0.12
Odds Ratio								
Gamblers	2.65	1.95	1.70	1.83	1.79	1.87	2.65	
Child	1.47	5.27	2.51	1.36	1.23	2.08	1.67	
Proportion Parents								
Non-Gamblers	0.11	0.02	0.02	0.22	0.24	0.07	0.11	
Gamblers	0.27	0.02	0.03	0.36	0.37	0.13	0.27	
Proportion Children								
Non-Gamblers	0.18	0.06	0.05	0.31	0.29	0.14	0.20	
Gamblers	0.33	0.11	0.07	0.41	0.41	0.21	0.36	
Mean Parents								
Non-Gamblers								0.69
Gamblers								1.31
Mean Children								
Non-Gamblers								1.17
Gamblers								1.85

Item (see notes below for key)							Total positive responses
A	B	C	D	E	F	G	
Notes: Answers recoded to a yes/no responses consistent with yes indicating a pro-gambling attitude, and no indicating negative attitudes with gambling. Wording of the questions reflects this change.							
Statements:							
A: Betting money or other things of value on games of chance is a harmless, recreational family activity							
B: Gambling is a good way to keep youth away from alcohol and drugs.							
C: Gambling cannot become a problem for young people.							
D: Youth who bet money or things of value on games of chance don't have problems at school.							
E: The minority of youth who gamble also use alcohol and drugs.							
F: Youth who gamble generally do not also commit illegal acts to finance their gambling activities.							
G: The popularity of gambling these days is not having a bad effect on young people.							

Another approach to assessing parent and adolescent attitudes toward gambling emerges from consideration of the odds ratios (ORs) associated with different attitudinal statements. These results show that adolescents are far more likely than parents to agree with statements about the benefits of gambling for youth, regardless of whether or not they or their parents gamble. As the Kappas and ICCs in Table 30 demonstrate, adolescents appear to be somewhat more naïve than their parents about the possible risks associated with gambling. However, relatively high proportions of parents (regardless of whether or not they gamble) agree that gambling is a harmless activity, that youth who gamble are unlikely to have problems in school and that youth gambling is not associated with alcohol or drug use. The clear message here is that work is needed in Oregon to educate both youth and their parents about the risks associated with gambling.

SUMMARY AND CONCLUSION

The main purpose of this study was to assess the extent of gambling and problem gambling among adolescents in Oregon. Another important purpose of this study was to examine the interplay between parental and adolescent gambling attitudes and involvement in predicting youth gambling participation and problems. The results of this study are expected to be useful in the further development and refinement of services in Oregon for youth with gambling problems and their families.

Summary

The results of the survey show that over six in ten Oregon adolescents (63%) have gambled at some time in their lives. Lifetime gambling participation is highest for playing free gambling-type games on the Internet closely followed by wagering on card games with friends or family. Other popular gambling activities among Oregon adolescents include betting on sports and wagering on private games of personal skill, including making side bets or wagers on arcade or video games.

As in many other adolescent surveys, gender is strongly associated with gambling among adolescents in Oregon, with males significantly more likely than females to gamble weekly. As in other adolescent surveys, adolescents who gamble weekly are significantly older than those who gamble less frequently.

Rates of past-year and monthly gambling in the present survey are substantially higher than rates identified in the Oregon Healthy Teens Survey. While there are several possible explanations, the most likely reason is that the Oregon Healthy Teens Survey includes only a single question that requires adolescents to self-identify as a “gamblers.” In adult surveys, this approach is known to result in substantial under-reporting of gambling participation.

The great majority of Oregon adolescents gamble for entertainment. Among monthly or weekly gamblers, excitement or challenge and winning money become more important reasons for gambling compared with less regular gamblers. Monthly gamblers are most likely to gamble as a way to socialize while weekly gamblers are mostly likely to gamble out of curiosity or as a hobby.

The majority of adolescents in Oregon report spending rather small amounts on gambling in a typical month. Almost half of our respondents report spending nothing on gambling in a typical month and another 40% report spending less than \$10 on gambling in a typical month. About one in ten Oregon adolescents report spending between \$10 and \$49 on gambling in a typical month and only 1% of the adolescent respondents in Oregon report spending \$50 or more on gambling in a typical month. Despite being less likely to gamble regularly, Black, Hispanic and Asian adolescents in Oregon report spending significantly more on gambling in a typical month than White adolescents.

There are correlations between gambling expenditures and children’s age and grade in school. Analysis shows that each year of age and grade in school accounts for a 72¢ and 62¢ increase in expenditures, respectively, while each additional gambling activity accounts for a \$2.35 increase in gambling expenditures.

Nearly every study of gambling among adolescents and young adults has found significant differences in gambling participation by gender, with boys gambling far more than girls. Among male and female adolescents in Oregon, boys are significantly more likely than girls to have played card games for money, wagered on sports and games of skill, gambled for free on the Internet, played the lottery and gambled on other games or activities. There are also significant differences between male and female adolescent gamblers in Oregon in terms of the number of gambling activities they have done in the past year, their mean monthly expenditures on gambling and the largest amount of money they have lost in a single day.

There are two methods for classifying respondents into problem gambling categories, based on the primary problem gambling screen used in the survey. The narrow approach yields information about the number of adolescents most likely to meet a diagnosis of problem or pathological gambling and is useful in establishing the level of need for treatment services for adolescent problem gamblers. The broad approach yields information about youth whose gambling involvement places them at risk for the development of gambling-related problems. The broad approach is most useful in developing and refining problem-gambling prevention and public health efforts.

Based on the narrow approach, 1.3% of Oregon adolescents score as problem gamblers and an additional 4.6% score as at-risk gamblers. According to the Bureau of the Census, there are approximately 287,000 adolescents aged 12 to 17 residing in Oregon. We therefore estimate that there are between 1,100 and 6,300 adolescents in Oregon with severe gambling related difficulties.

There are differences in problem gambling prevalence rates in different demographic groups. Problem gambling is significantly higher among Oregon adolescents living in households without a parent compared to those living with one or two parents. At-risk gambling is significantly lower among adolescents living in two-parent households compared with other living arrangements. There are also differences in problem gambling prevalence rates among adolescents who have participated in different gambling activities. The prevalence of problem gambling is highest among adolescents who have ever gambled on card games and on sports. The prevalence of problem gambling is also elevated among adolescents who have ever played lottery games. The prevalence of at-risk gambling is highest among adolescents who have ever gambled on "other" games and activities, followed by those who have gambled on games of skill.

Adolescent problem gamblers in Oregon are significantly more likely to be male compared to adolescents who gamble without problems or those experiencing less severe difficulties. Problem gamblers in Oregon are somewhat more likely than at-risk and non-problem gamblers to live in households with incomes below the median and somewhat less likely to live in a two-parent household. Adolescents who play sports for their school are significantly more likely to be at-risk and problem gamblers than those who do not.

While adolescent problem gamblers in Oregon are most likely to have ever played card games for money, the gambling activity they are most likely to have done in the past year is wager on sports. Nearly all of the non-problem gamblers (99%) and 91% of the at-risk gamblers report spending less than \$20 on gambling in a typical month compared with only 59% of adolescent problem gamblers in Oregon.

In addition to gambling participation and expenditures, there are other significant differences in the gambling involvement of adolescent non-problem, at-risk and problem gamblers. Adolescent problem gamblers in Oregon are significantly more likely than non-problem or at-risk gamblers to say that the largest amount of money they ever spent on gambling in a single month is \$50 or more. Adolescent problem gamblers in Oregon are significantly more likely than non-problem gamblers to say that they were in grades 1 through 8 when they first gambled for money. This echoes research on other youth risk behaviors, such as alcohol, tobacco and drug use, where the later youth begin to engage in these activities, the less likely they are to develop problems and suggests that delaying the age at which children and adolescents begin gambling for money may prevent them from becoming regular gamblers and may protect them from developing gambling-related difficulties.

Gambling with friends and acquaintances is associated with having gambling-related difficulties. Moreover, families where the parents gamble are twice as likely to have an at-risk adolescent gambler and four times as likely to have an adolescent problem gambler, holding constant who these children gamble with, their allowance and how much the child spends on gambling.

Problem gamblers are significantly more likely than non-problem and at-risk gamblers to have skipped school at least three times in the past 12 months. Problem gamblers are also significantly more likely than non-problem and at-risk gamblers to have deliberately hurt somebody and to have been cautioned by the police at least three times in the past 12 months. Problem and at-risk gamblers are significantly more likely than non-problem gamblers to have been hurt at least three times in the past 12 months by someone else. Finally, problem and at-risk gamblers are significantly more likely than non-problem gamblers to have been arrested by the police and to have been to court at least once in the past 12 months.

Frequency of gambling among Oregon adolescents is correlated with alcohol, tobacco and marijuana use. Weekly gamblers are significantly more likely than less frequent gamblers to have used alcohol and tobacco in the past year. Weekly gamblers are also significantly more likely than less frequent gamblers to have gotten into difficulties from their drinking in the past year. Like weekly gamblers, adolescent problem gamblers in Oregon are significantly more likely than at-risk and non-problem gamblers to have used alcohol, tobacco and illicit drugs in the past year.

There has been a substantial and significant decrease in gambling participation among adolescents in Oregon since 1998. In 1998, 66% of Oregon adolescents had gambled in the past year and 11% gambled weekly. In 2007, only 46% of Oregon adolescents had gambled in the past year and only 3% gambled weekly. Recent surveys of adolescents in several other jurisdictions have found similar decreases in gambling participation. Taken together, the results of these surveys suggest that when gambling availability increases, youth gambling may also increase for a period of time but may then stabilize and even decline.

While there are several possible explanations for the substantial drop in age-restricted gambling activities among Oregon adolescents between 1998 and 2007, the most likely reason is that attitudes towards children and gambling have changed significantly over the past decade and have influenced both parents' willingness to allow their children to

participate in age-restricted forms of gambling and operators' vigilance in preventing under-age gambling. Another important change has been an increase in the proportion of Oregon adolescents who did not start gambling until after leaving elementary school. This is further evidence that attitudes toward youth gambling have shifted over the past decade and that the onset of gambling participation is being delayed among younger children.

Past-year gambling participation by parents and adolescents is significantly different. While parents are significantly more likely to have gambled at all in the past year, they are less likely than youth to have gambled for free on the Internet, played card games for money, gambled on sports or games of skill and gambled on "other" activities in the past year. Parents are significantly more likely than youth to have participated in the past year in legal, age-restricted forms of gambling in Oregon, including playing the lottery, gambling at casinos and playing video poker.

In households where the parent has gambled in the past year, 72% of the adolescents also gamble. In households where the parent has not gambled in the past year, 50% of the adolescents also do not gamble. Clearly, living in a household where one or more parents gamble makes it more likely that youth will gamble as well. In contrast to choosing to gamble at all, in households where the parent gambles weekly or daily, only 7% of the adolescents gamble at the same intensity. In households where the parent has not gambled at all in the past year, 50% of the adolescents have also not done any gambling. In contrast, in households where the parent has done two or more types of gambling in the past year, 55% of the adolescents have also engaged in two or more gambling activities.

Thus, gambling at all does appear to be a family- or household-related process. However, beyond gambling initiation, frequency of gambling and the number of activities involved are not closely related to the family or household unit. It is possible that once adolescents have started gambling within the family, their interest in specific gambling activities and their involvement in gambling overall are more closely related to peer influences.

Adolescents are far more likely than parents to agree with statements about the benefits of gambling for youth, regardless of whether or not they or their parents gamble. Adolescents appear to be somewhat more naïve than their parents about the possible risks associated with gambling. However, relatively high proportions of parents (regardless of whether or not they gamble) believe that gambling is a harmless activity, that youth who gamble are unlikely to have problems in school, and that youth gambling is not associated with alcohol or drug use.

Moving Forward

The results of the Oregon Youth Leisure Activities Study have implications for the further development and refinement of services for adolescent problem gamblers in Oregon and their families. In spite of the history of legal gambling in Oregon and the availability of significant resources to address problem gambling, it has proven difficult to raise awareness of the risks of youth gambling and engage adolescent problem gamblers in treatment. In considering future developments, the Department of Human Services may wish to give consideration to the following:

-
- The substantial reduction in adolescent gambling in Oregon since 1998 is a strong indication that attitudes toward youth gambling can be changed. It also appears that the age of onset of gambling has shifted with fewer children starting to gamble in elementary school. These trends should be encouraged and attention focused on these positive changes.
 - Although youth gambling has declined, there has been no concomitant reduction in the rate of gambling-related problems. Along with the lack of help seeking by adolescent problem gamblers and their families, this suggests the need for alternative approaches to helping Oregon youth with gambling problems. Two possibilities include increasing awareness of the Oregon problem gambling resource center and providing Internet-based resources that youth and their families can access.
 - Efforts are needed to increase recognition of youth gambling problems among parents, teachers, counselors and others working with youth. Parents' views of gambling as harmless and not associated with other risky behaviors are likely shared by others working with youth in Oregon. In particular, parents who gamble need to be educated about the increased risk of gambling problems for their children. Once gambling initiation has occurred, peer influences around gambling involvement should be addressed in school-based curricula.
 - The Department of Human Services is already working in cooperation with key partners to increase awareness of youth gambling and problems. Integration of gambling into existing school-based curricula on healthy choices and addictions is an important step. Given the high rates of bullying among youth problem gamblers, it might be helpful to add a gambling component to anti-bullying activities in Oregon schools. Also, given higher problem gambling rates among youth who play sports for their schools, it might be valuable to begin efforts to raise awareness among athletic coaches in middle and high schools in Oregon.
 - An important further step would be to encourage screening for gambling and gambling-related problems in the mental health, drug and alcohol and juvenile justice systems. This is especially true for youth who are living in foster care and other, non-traditional households.
 - Finally, it will be important to continue to monitor gambling involvement and gambling-related problems among Oregon youth to assess the effectiveness and efficacy of efforts to minimize gambling-related harm among Oregon youth over time.

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