

**Seniors and Gambling:
Sociodemographic and Mental Health Factors Associated with Problem
Gambling in Older Adults in Ontario**

Sponsored by **Community Outreach Programs in Addictions (COPA):**
A Community-based, Not-for-profit Addiction Agency with twenty years experience in
working with older adults with addiction problems

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Disclaimer: Opinions expressed in this final report are those of the investigator(s), and do not necessarily represent the views of the Ontario Problem Gambling Research Centre (OPGRC).

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EXECUTIVE SUMMARY

Although the literature suggests that gambling among older adults is influenced by unique age-related factors, the literature provides little information on the factors that predict gambling and problem gambling among older adults. Accordingly, it is difficult for Community Outreach Programs in Addictions (COPA), the sponsoring agency for this project and one of the few organizations that serve older adults, to plan and provide prevention or treatment services for this growing part of the population of Ontario. The two-fold purpose of this research is: (1) to describe the extent and nature of gambling and problem gambling among older adults in Ontario; and, (2) to identify the sociodemographic health determinants and mental health-related problems, including alcohol and drug dependence, that predict gambling problems among older adults in Ontario.

The research is an exploratory, secondary analysis of the recently released data from the Canadian Community Health Survey - Mental Health and Well-being (CCHS 1.2) that includes the Canadian Problem Gambling Index (CPGI). The purpose is met by pursuing three major research questions:

1. What is the prevalence and nature of gambling and gambling problems among older adults in Ontario?
2. Do sociodemographic health determinant factors predict gambling problems among older adults in Ontario?
3. Do mental health problems, including alcohol and drug dependence, predict problem gambling in older Ontario adults?

The analysis consists of calculating descriptive statistics on the prevalence and nature of gambling and problem gambling and applying hierarchical logistic regression procedures onto sociodemographic health determinant and mental health factors.

The results demonstrate that gambling is as common an occurrence among older Ontario adults as it is among younger adults. About 75% of both younger and older adults reported at least one instance of gambling in the past year. Among older adults, the most common gambling activities were lottery tickets (reported by 65.3% of the sample), instant win tickets (reported by 32% of the sample) and Video Lottery Terminals (VLTs) at casinos (reported by 24.1% of the sample). Seniors were more likely than younger adults to report more frequent purchase of lottery and instant win tickets, and were less likely to report participating in sports lotteries and games other than slots or VLTs/at casinos. On average, seniors reported spending a greater amount of money and a higher proportion of their income on gambling in comparison to younger adults.

An estimation of the prevalence of any gambling problems is complicated by the large number of respondents reporting gambling behaviours who were not asked the CPGI severity questions (about 20% of the sample) when they declared themselves not to be gamblers. In the first method of prevalence estimation, this portion of the sample is considered to have no gambling problems. The resulting prevalence estimate for any gambling problems among seniors is of 3.3%. In the second method of prevalence estimation, the proportion that were not asked the gambling problem questions are considered to be distributed over the problem gambling categories in the same way as those asked the questions. The resulting prevalence estimate for any gambling problems among older Ontario adults using this method is 4.6%. This latter figure is close to the figure of 6.4% recently reported by Wiebe, Single, Falkowski-Ham, and Mun (2004).

Several behavioural, sociodemographic, and mental health factors are shown to be important predictors of gambling problems among older Ontario adults. Measures of frequency of participation in various gambling activities strongly predicted gambling problems; for example, the odds of reporting a gambling problem was 29 times higher among those who reported playing VLTs/at casinos once a

month or more, in comparison to those who did not gamble at casinos. Similarly, reporting more types of gambling predicted gambling problems. Being married or living common law, having a higher education level, and living in more traditional family arrangements (i.e., living as a couple or with children) were associated with reduced risk of gambling problems. Increasing expenditures on gambling were strongly related to gambling problems; for example, those who spent more than \$1,000 on gambling were 74 times more likely to report gambling problems than those who spent \$50 or less, and the odds of reporting a gambling problem was 16 times higher among those who spent 2% or more of their income on gambling, in comparison to those who spent less than 1%. Among mental health variables, alcohol dependence and any substance dependence significantly increased the odds of reporting a gambling problem.

The findings were discussed with a group of COPA's stakeholders before the conclusions and recommendations were developed and reported. The research is expected to provide knowledge to the field, contribute to planning prevention and treatment services for older adults, and suggest additional areas of investigation.

Recommendations for this report are as follows:

Recommendation 1. More research is needed on the issue of gambling and gambling problems among seniors. The present research makes it clear that much more understanding of gambling and gambling problems among seniors is needed. It is possible that the previous conceptions of low levels of problems among this group are incorrect, and that there are clearly subgroups for whom gambling has presented important problems.

Recommendation 2. The results of this work should be disseminated to seniors, stakeholder groups, service providers, and others with an interest in this issue. The results described here are of general interest. Some of the observed increases in risk levels are substantial, such as the associations involving frequency of gambling and amount spent with gambling problems. This information will prove of value for service providers.

Recommendation 3. A variety of research approaches needs to be applied to this issue. Additional survey research needs to be undertaken to verify the results reported here and to examine the predictors of different levels of gambling problems, in addition to the presence of any gambling problems. Qualitative studies are needed to understand the meaning of gambling for seniors, and how that meaning may change depending on their circumstances and experiences. Stakeholder groups and seniors need to be involved in the planning, design, and conduct of these studies.

Recommendation 4. Factors that draw seniors into gambling and gambling problems need to be examined, such as the role of inducements.

Recommendation 5. The potential role of cognitive impairment in seniors' gambling and gambling problems needs to be understood. Restrictions or changes in cognitive abilities may substantially influence gambling decisions, including how much to spend, how often to participate, and when to stop.

Recommendation 6. Important subgroups of seniors may exist with respect to gambling and gambling problems, and these subgroups need to be identified. These may include various ethno-cultural groups that differ in attitudes to gambling and the likelihood of developing gambling problems.

Recommendation 7. The possibilities for prevention of gambling problems among seniors need to be considered. Innovative programs involving information provision, skills training, and other strategies should be developed and evaluated.

Recommendation 8. There are important opportunities for early identification of gambling problems in primary care settings. People working in these settings, including physicians and other health care professionals, may be in an ideal position to identify seniors experiencing gambling problems, and possibly to deliver brief interventions or refer clients to appropriate services.

Recommendation 9. A simple and brief screening instrument is needed for use in primary care and similar settings to identify seniors and others who may be experiencing gambling-related problems. The results of this study suggest that a screening instrument for seniors may differ from one developed for younger adults.

Recommendation 10. This study found that seniors' gambling is related to the broader determinants of health in the same way that other health problems are. Thus, efforts to address these determinants of health as part of efforts to improve the health of the population receive support from this work. More specifically, efforts to improve life circumstances, such as quality of housing and access to social capital, may also have beneficial effects on gambling problems among seniors.

Recommendation 11. Additional research to explore the relationships among mental health problems, gambling, and gambling problems in seniors is needed. A larger sample, such as the national dataset, would allow these relationships to be studied with greater precision.

Recommendation 12. The links among gambling, gambling problems, and alcohol and other substance dependence need additional examination in seniors. Alcohol and other substance dependence increased the risk for gambling problems in this sample. Causal pathways need to be understood, and implications for service provision identified.

INTRODUCTION

Even though older adults have been identified as a segment of the population that is potentially at-risk for gambling-related problems, there has been relatively little research focused on older adults and the factors (e.g., social demographic and health factors, including mental health) which may be related to problem gambling in this growing population. This lack of knowledge is of more than a theoretical concern. Our limited knowledge handicaps agencies (i.e., Community Outreach Programs in Addictions; COPA, the sponsoring agency for this project) that are charged with the responsibility of developing treatment and prevention programs for problem gambling in older adults. This study was intended to help fill in this significant knowledge gap by identifying the sociodemographic health determinant factors and mental health problems that are associated with problem gambling among older adults in Ontario.

Literature Review

In Canada, as in other industrialized countries, the percentage of older adults in the population is growing. As a proportion of the population, seniors are the fastest growing group in Canada. For example: in 2001, one in eight Canadians was 65 years of age and older; by 2026, one in five Canadians will be 65 or over; and, by 2041, one in four Canadians will be 65 and older (Health Canada, 2002).

Gambling in Ontario and other similar jurisdictions has undergone a significant expansion in the last few decades. Some of the new forms of gambling include lotteries, scratch cards, casinos, racinos, electronic gaming machines (EGMs), and sports betting. This expansion of gambling activities has brought with it both benefits and costs (Korn & Shaffer, 1999). On the positive side, gambling provides increased government revenues and economic benefits, as well as a new range of recreational opportunities which are enjoyed by a significant percentage of the population. On the negative side, excessive or problem gambling can have adverse financial, social, occupational, emotional, and physical impacts.

Overall, there has been little research on gambling and older adults. The evidence on older adults is usually drawn from studies of the general population. Although this information is useful, existing studies often use small samples of older adults that limit confidence in the findings.

Three recent studies focused on gambling in older adults. Petry (2002) carried out a comparative study of 343 young (aged 18 to 35), middle-aged (aged 36 to 55) and older (aged 56 and older) adult, treatment-seeking, pathological gamblers in the State of Connecticut. Levens, Dyer, Zubritsky, Knott, and Oslin (2005) randomly selected a sample of elderly, primary care clinic patients aged 65 years and over in Philadelphia, Pennsylvania, with half of the sample being comprised of Veterans Affairs (VA) patients. There were 843 patients screened by completing a questionnaire and evaluating their gambling habits, sociodemographic characteristics, health status, cognitive status, and psychiatric comorbidities, including suicidality, alcohol use, and cigarette smoking. Wiebe, Single, Falkowski-Ham, and Mun (2004) utilized data from a previous prevalence study of 5,000 adults aged 18 and older in Ontario (Wiebe, Single, & Falkowski-Ham, 2001) and examined the nature and extent of gambling and gambling problems using the CPGI among a sub-sample of 1,500 older adults aged 60 years and older.

Seniors and Gambling

There has been concern that the older segment of the population, defined here as individuals 55 years of age and older, may be at greater risk of developing gambling-related problems (Korn & Shaffer, 1999; Wiebe, 2002). Some of the unique factors that are thought to contribute to this greater potential risk are loneliness, limited financial resources, amount of leisure time after retirement, and

declining health (Munro, Cox-Bishop, McVey, & Munro, 2003; Wiebe, 2002; Korn & Shaffer, 1999). These observations are in agreement with the evolving public health perspective that considers the role of broader sociodemographic and environmental factors in determining the health of individuals and populations (e.g., Frank & Mustard, 1994; Evans, Barer, & Marmor, 1994; Berkman & Syme, 1979). These factors include gender, education, employment income, ethnicity, and service access, among others.

Many older adults have both the time and the disposable income to gamble. In particular, retirement provides older adults with significant leisure time. Over time, older adults tend to experience the loss of a spouse, friends, and community, all which lead to feelings of loneliness and isolation. Under these circumstances older adults frequently choose gambling as a leisure activity (Munro et al., 2003). It has been suggested that for older adults with fixed incomes, even small losses can have significant financial and legal impacts (Levens, Dyer, Zubritsky, Knott, & Oslin, 2005). On the other hand, some research studies that have focused on general gambling behaviour in older adults have found that gambling, for most older adults, is a relatively problem-free recreational activity that provides positive social benefits (Stitt, Giacomassi, & Nichols, 2003; Hope & Havir, 2002; Wiebe, 2000). When older adults in Ontario were asked to identify the benefits of gambling, 33.9% reported that gambling provides a chance for “winning money”, 30.7% indicated that it provides “excitement and fun”, 29.0% indicated that gambling provides “no benefit”, and 20.9% suggested that gambling is an opportunity to “socialize” (Wiebe, Single, Falkowski-Ham, & Mun, 2004).

Based on general population prevalence studies, older adult participation in gambling is lower than that of other adults; however, older adult participation in gambling is growing. This rise in gambling participation paired with an increase in gambling opportunities may result in higher rates of problem gambling in older adults (Petry, 2002). The National Opinion Research Centre (1999) reported that older adults had experienced a marked increase in gambling participation with the proliferation of gambling opportunities over the past 15 years. Levens et al. (2005) reported that 69.6% of older primary care patients had participated in at least one gambling activity in the past year. Wiebe et al. (2001) reported that 83% of adults in Ontario gambled once in the past year, and, using the same survey data, later reported that, “Overall, a significant majority of older adults (73.5%) had participated in some form of gambling in the past twelve months” (Wiebe et al., 2004).

Among older, primary care, patient gamblers in Philadelphia, the two most popular gambling activities were playing the lottery (77.3%) and playing gambling machines or going to a casino (54.3%) (Levens et al., 2005). According to Wiebe et al. (2004), the most popular gambling activities for older adults in Ontario tend to be the “chance” activities rather than the “skill” activities (e.g., casino table games or speculative investing). For example, the most popular gambling activities reported included: lottery (58.0%); raffle tickets (47.9%); EGMs in casinos (23.0%); and, scratch tickets (19.7%).

Seniors and Problem Gambling

Although gambling may be a positive recreational activity for some older adults, it is problematic for a small but significant percentage. Whereas older age has been associated with lower rates of pathological gambling, most authors agree that the prevalence of pathological gambling is related to the availability of gambling activities (Levens et al., 2005). The following are examples of prevalence studies that have reported problem gambling rates for older adults:

- A survey of 2,750 Arizona residents 18 years of age and older estimated the past year percentage of problem and probable pathological gamblers in various age groups. These percentages were: 2.3% for ages 18-34; 2.6% for ages 35-54; and, 2.1% for ages 55 and over (Volberg, 2003).
- A national telephone survey of 2,630 residents 18 years of age and older in the United States estimated an overall rate of problem and pathological gambling in the previous year as 3.5%.

The rate for residents 61 years of age and older was 1.2% (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002).

- A telephone survey of 1,000 New Brunswick adults 55 years of age and older estimated that 0.6% of the sample were moderate risk or problem gamblers in the previous 12 months (Schellinck, Schrans, Walsh, & Grace, 2002).
- A survey of 843 older, primary care, patient gamblers in Philadelphia reported that 10.9% were “at-risk” gamblers. “At-risk” gambling was defined as having bet more than \$100 on a single bet and/or having bet more than they could afford to lose in the past year (Levens et al., 2005).
- A survey of 5,000 Ontario residents 18 years of age and older reported that for those aged 60 years and older, an estimated 2.1% experienced moderate problems, and 0.1% experienced severe problems in the past twelve months (Wiebe et al., 2001).

Based on a review of the problem gambling prevalence studies listed above (i.e., Volberg, 2003; Welte et al., 2002; Schellinck et al., 2002; Levens et al., 2005; Wiebe et al., 2001), two broad observations can be made. First, the estimates of problem gambling in older adults are generally estimated to be lower than the levels found in the general adult population. Second, there is considerable variation between studies, including the age range used for “older adults”, and the absolute and relative levels of problem gambling among the general sample and the older adult segment of the sample. These differences across studies may be due to differences in: problem gambling rates experienced by various jurisdictions and age groups; survey instruments; and survey methodology. Also, differences may result from the use of survey instruments that were not specifically designed to measure problem gambling in older adults (Wiebe, 2002). It may be necessary and desirable to develop specialized methods and instruments to study the nature and effects of gambling among older adults.

Of greatest significance here, is the study by Wiebe et al. (2001), using the CPGI (Ferris & Wynne, 2001), that found 6.4% of Ontario adults aged 60 years and older were at-risk (4.3%), had moderate problems (2.0%), or had severe problems (0.1%) with gambling. Although the percentage of older adults with gambling problems might appear modest, the survey results suggest that 45,200 Ontario residents aged 60 and older suffer from moderate to severe gambling-related problems.

Grant, Kim, and Brown (2001) compared older pathological gamblers (those 60 years of age and older) to younger pathological gamblers. The results showed that older pathological gamblers had a later age of onset, developed pathological gambling over a longer period of time, were more likely to gamble as a result of boredom, and were more likely to be slot machine gamblers.

According to Petry (2002), older female gamblers in her study were likely to have begun gambling later in life. Among the treatment-seeking gamblers, slot machine gambling was the most popular form of gambling for the middle and older age groups, particularly for the women. Compared to the middle-aged gamblers, the older gamblers wagered on fewer days, but older female gamblers wagered the greatest amounts in the month prior to treatment entry. For example, “Women gambled large proportions of their monthly incomes prior to entering treatment, and this effect was especially pronounced in older women, who gambled in excess of 200% of their incomes” (Petry, 2002). Levens et al. (2005) found that 75% of older, primary care patients reported playing EGMs and going to a casino in the past year. Among gamblers that reported playing EGMs or going to a casinos, 21.7% were at-risk gamblers. Pointing to small cell counts, Wiebe et al. (2004) very cautiously reported that problem gambling among older adults seemed to be associated with more gambling activities, expenditures, and time. With considerable certainty, Wiebe et al. (2004) found that compared to non-problem older adult gamblers, “at-risk”, “moderate problem”, and “severe problem” gamblers participated in significantly more casino slot/video lottery terminal (VLT) play.

Sociodemographic Factors and Problem Gambling

Many gambling prevalence studies of the general population have reported relationships between sociodemographic factors and problem gambling (Marshall & Wynne, 2003; Wiebe et al., 2001; McGowan, Drossier, Nixon, & Grimshaw, 2000; National Council on Welfare, 1996; Raylu & Oei, 2002; Stinchfield, 2000; National Opinion Research Center, 1999). There are strong relationships between age and gender and problem gambling. Problem gamblers are generally understood to be young and male. Relationships between income levels and education levels and problem gambling have also been found, but the evidence is conflicting (Marshall & Wynne, 2003; Wiebe et al., 2001; National Council on Welfare, 1996). A review of several Canadian provincial studies suggested the Canadian gambler is most likely to be young, male, and unmarried (National Council of Welfare, 1996). A very recent national prevalence study reported that men, off-reserve Aboriginal persons, and people with less education were significantly more likely to be at-risk or problem gamblers (Marshall & Wynne, 2003). A recent Ontario survey found age and gender to be associated with problem gambling (Wiebe et al., 2001).

A recent review of the literature on older adults and gambling (Munro et al., 2003) found few studies that attempted to identify factors that were associated with problem gambling in older adults. Petry (2002) found that among older, treatment-seeking adults, problem gambling was related to being female, and older adults were most likely to be married. Of particular interest, this study found that older women did not begin gambling regularly until an average of 55, whereas older men were more likely to have gambled during most of their adult lives. When controlling for gender, Petry (2002) found that age was associated with increased employment problems, but fewer social and legal problems. Levens et al. (2005) found that at-risk gambling was not significantly associated with gender among older, primary care patients. Among the strongest predictors of at-risk gambling behaviour were being a member of a minority race/ethnicity and/or a patient of a Veterans Affairs (VA) clinic.

Based on a sample of older adults from a previous study, Wiebe et al. (2004) reported that the sociodemographic factors of age, income, marital status, and religious affinity were related to gambling behaviour among older adults in Ontario. Of particular interest was the following comment: "It appears that in our sample single adults between the ages of 60 to 65, with lower incomes were at the highest risk for experiencing moderate and severe problem gambling" (Wiebe et al., 2004). They also reported that a strong religious belief system served a protective factor against gambling problems, and that there was generally little relation between gambling and self-reported health variables.

Mental Health Problems and Problem Gambling

Within the literature, it is generally accepted that mental health factors, including substance abuse, are involved in problem gambling. Problem gamblers have been shown to suffer from numerous psychiatric symptoms (Toneatto, 2002). Mental health factors associated with problem gambling include affective disorders, anxiety disorders, depression, suicidal ideation, personality disorders, and substance abuse disorders (Toneatto & Millar, 2004; Toneatto, 2002; Raylu & Oei, 2002; Korn, 2000; National Opinion Research Centre, 1999; Beaudoin & Cox, 1999; Blazczynski & Steel, 1998; Spunt, Dupont, Leisieur, Liberty, & Hunt, 1998; Specker, Carlson, Edmonson, Johnson, & Marcotte, 1996; Rosenthal, 1992).

In a study of four types of gamblers, Toneatto (2002) found that active gamblers reported elevated rates of psychiatric distress, emotional distress, and personality dysfunction. A very recent report on Canada stated, "Problem gamblers in particular suffered elevated levels of alcohol dependence, stress, emotional distress, and past episodes of depression" (Marshall & Wynne, 2003). In Ontario, a recent prevalence study indicated that moderate and severe problem gamblers were most likely to report being under a doctor's care for emotional or physical problems due to stress and depression. Severe problem gamblers were by far the most likely to report having considered suicide as a result of their gambling (Wiebe et al., 2001). A follow up study of 448 participants of the same

Ontario prevalence study reported factors related to increased “time 2” CPGI scores, including loneliness, distress, and decreased social support from friends (Wiebe et al., 2003).

There is significant evidence to support the relationship between problem gambling and substance abuse (Toneatto, 2002; Raylu & Oei, 2002; Korn, 2000; Feigelman, Wallisch, & Leiseur, 1998; Spunt et al., 1998; Specker et al., 1996; Rosenthal, 1992). According to a recent prevalence survey in Ontario, problem gamblers are not more likely to drink, but they tend to have higher rates of consumption than other gamblers. Moderate and severe problem gamblers smoke more often than other gamblers, and are more likely to use illicit drugs. They are also more likely to use and get high from alcohol and/or drugs while gambling (Wiebe et al., 2001).

While there are very important indications that problem gambling is related to mental health problems in the general population, much less evidence is available on the comorbidity of problem gambling and mental health problems in the senior population. As described above, Petry (2002) studied a sample of treatment-seeking, older adults. In this sample, she found that when controlling for gender, older age was associated with fewer alcohol and drug problems. According to the study by Levens et al. (2005) with a sample of older adults in primary care clinics, the strongest predictors of at-risk gambling behaviour included being a binge drinker and having current posttraumatic stress disorder symptoms. At-risk gambling was not significantly associated with current or past depressive symptoms or cigarette smoking, and at-risk gambling was just as likely among the mild to moderate cognitively impaired as those without impairment.

Wiebe (2002) undertook a secondary analysis of data from a survey of 5,000 residents of Manitoba who were 60 years of age and older. Logistic regression was used to determine the factors associated with problem gambling in this sample. The results showed that older problem gamblers were more likely to report anxiety and depression. An Ontario sample of adults aged 60 years and older found higher rates of depression, alcohol and nicotine consumption, and the use of gambling to cope with painful events; however, the low incidence undermined the determination of statistical significance (Wiebe et al., 2004).

Present Study

While gambling behaviour and problems have become an area of substantial research interest in recent years, much less information is available on gambling behaviour and problems in the senior population. Nevertheless, there are important indications that gambling problems are present in this age group, and may be a particular concern because of the restricted incomes and co-occurring physical and mental health issues that seniors face. The central aim of the present study is to examine gambling behaviour and problems in the Ontario senior population (i.e., those aged 55 years and older). The prevalence of these behaviours and problems among Ontario seniors are reported, and the sociodemographic and mental health factors that influence these measures are examined.

RESEARCH METHODOLOGY

The following section begins by describing the research design, purpose, and questions. Descriptions of the data source, gambling and problem gambling measures, demographic variables, mental health measures, and statistical analyses are also explained.

Research Design

To help address the gaps in understanding of gambling and gambling problems among older adults, an exploratory analysis of the Ontario segment of the Canadian Community Health Survey – Mental Health and Well-being, Cycle 1.2 (CCHS 1.2) was undertaken (Statistics Canada, 2003; Marshall & Wynne, 2003). This large national survey is unique in that it has captured data on gambling

and problem gambling using the Canadian Problem Gambling Index (CPGI: see Appendix A: Ferris & Wynne, 2001; Wynne, 2003), as well as measures of mental health disorders and problems, including alcohol and drug dependence (see Appendix B).

Purpose

The two-fold purpose of this research was to: (1) describe the extent and nature of gambling and problem gambling among older adults in Ontario; and, (2) identify the sociodemographic health determinants and mental health related problems, including alcohol and drug dependence, that predict gambling problems among older adults in Ontario.

Research Questions

The major research questions for this study were as follows:

1. What is the prevalence and nature of gambling and gambling problems among older adults in Ontario?
2. Do sociodemographic health determinant factors predict gambling problems among older adults in Ontario?
3. Do mental health problems, including alcohol and drug dependence, predict problem gambling in older Ontario adults?

Data Source

Data used in this analysis are from the CCHS 1.2, a cross-sectional survey that collects information related to mental health and well-being for the Canadian population (Statistics Canada, 2003). For the first time, the CCHS 1.2 included questions on gambling. The CCHS 1.2 targeted persons aged 15 years or older who are living in private dwellings in the 10 provinces. Residents of the three territories, persons living on Indian Reserves or Crown lands, clientele of institutions, full-time members of the Canadian Armed Forces, and residents of certain remote regions were excluded from this survey. The CCHS 1.2 covered approximately 98% of the population aged 15 years or older in the 10 provinces.

To provide reliable estimates at the provincial level, the original designed sample of 30,000 was allocated among provinces proportionally to the square root of the estimated population in each province (6,720 for Ontario). In order to have a good urban and rural representation in each province, the provincial sample was proportionally allocated to the urban and rural strata to the number of dwellings in each stratum. The survey used a multistage stratified cluster design in which the dwelling was the final sampling unit (for additional information on the sampling strategy for the CCHS 1.2, see Statistics Canada, 2003). To allow reliable estimates within the seven health planning regions, Ontario provided additional funds to sample an additional 7,702 respondents, which resulted in a total designed sample of 14,422 respondents for Ontario. The actual and final Ontario sample ended up being 13,184 personal respondents from which all 4,526 respondents aged 55 years and older in Ontario were abstracted for this study, leaving 8,658 individuals 15 to 54 years of age (see Table 1).

Selection of individual respondents was designed to ensure over-representation of young persons (aged 15 to 24) and seniors (aged 65 or older). The selection strategy was designed to consider user needs, cost, design efficiency, response burden, and operational constraints (Beland, Dufour, & Gravel, 2001). One person aged 15 years or older was randomly selected from the sampled households. The probability of selection for each person in a household was defined as a function of the household composition.

Data collection took place between May 2002 and December 2002, a period of seven months. This plan was carefully designed to ensure that the survey's quality objectives would be met. The final month of collection was planned to provide interviewers with the opportunity for a final attempt to

convert non-responding cases. The CCHS 1.2 questionnaire was administered using computer-assisted interviewing. Sample units selected from the area frame were interviewed using the computer-assisted personal interviewing method.

A total of 48,047 households in Canada were selected to participate in the CCHS 1.2. Out of these selected households, a response was obtained for 41,560, resulting in an overall household-level response rate of 86.5%. Among these responding households, 41,559 individuals (one per household) were selected to participate, out of which a response was obtained for 36,984. This resulted in an overall person-level response rate of 89.0%. At the national level, this would yield a combined response rate of 77.0% for the CCHS 1.2. The combined response rate in Ontario was 73.4%.

Gambling and Problem Gambling Measures

The measures of gambling and problem gambling were drawn from the CPGI (see Appendix A: Ferris & Wynne, 2001; Wynne, 2003). For the first time, the CCHS 1.2 included the CPGI, and produced the first national gambling and problem gambling survey data.

Measures of Gambling

A total of 13 questions were asked to measure gambling activities in the survey:

1. In the past 12 months, how often have you bet or spent money on instant win/scratch tickets or daily lottery tickets (Keno, Pick 3, Encore, Banco, Extra)?
2. In the past 12 months, how often have you bet or spent money on lottery tickets such as 6/49 and Super 7, raffles, or fund-raising tickets?
3. In the past 12 months, how often have you bet or spent money on Bingo?
4. In the past 12 months, how often have you bet or spent money playing cards or board games with family or friends?
5. In the past 12 months, how often have you bet or spent money on video lottery terminals (VLTs) outside of casinos?
6. In the past 12 months, how often have you bet or spent money on coin slots or VLTs at a casino?
7. In the past 12 months, how often have you bet or spent money on casino games other than coin slots or VLTs, for example, poker, roulette, blackjack, Keno?
8. In the past 12 months, how often have you bet or spent money on Internet or arcade gambling?
9. In the past 12 months, how often have you bet or spent money on live horse racing at the track or off track?
10. In the past 12 months, how often have you bet or spent money on sports, such as sports lotteries (Sport Select, Pro-Line, Mise-au-jeu, Total), sports pools, or sporting events?
11. In the past 12 months, how often have you bet or spent money on speculative investments, such as stocks, options or commodities?
12. In the past 12 months, how often have you bet or spent money on games of skill such as pool, golf, bowling, or darts?
13. In the past 12 months, how often have you bet or spent money on any other forms of gambling, such as dog races, gambling at casino nights/country fairs, bet on sports with a bookie, or gambling pools at work?

Participants chose one of the following eight answers to each of the questions:

1. Daily
2. Between two to six times a week

3. About once a week
4. Between two to three times a month
5. About once a month
6. Between six and 11 times a year
7. Between one and five times a year
8. Never, don't know/refusal

Gambling activities were regrouped into fewer categories than were used in the original questionnaire because of the small number of seniors who reported more frequent gambling (see Tables 3 and 4). The derived variable, which counts the number of different types of gambling activities in which the respondent participated, was based on all of the gambling measures above.

The amount of money spent on gambling activities was assessed by a question that asked: "In the past 12 months, how much money, not including winnings, did you spend on all of your gambling activities?" The response choices were: "\$1-50", "\$51-100", "\$101-250", "\$251-500", "\$501-1,000", and "more than \$1,000". The ratio of amount of money spent on gambling activities to household income was derived based on amount of money spent on gambling activities and total household income. The ratio was classified into three categories: less than 1%, 1% but less than 2%, and 2% or more.

Measures of Problem Gambling

Problems with gambling were assessed with the CPGI (see Appendix A: Ferris & Wynne, 2001; Wynne, 2003). The CPGI includes nine questions that assess two domains of problem gambling: (a) problem gambling behaviour; and, (b) consequences of that behaviour for the individual or others. These nine questions are scored to determine problem gambling severity. This 9-item index is referred to as the Problem Gambling Severity Index (PGSI).

Individuals who report a low frequency of any gambling behaviour (i.e., reported participating not more than five occasions per year in any gambling activity) were assigned a score of 0 on the PGSI. As well, when asked the first question on the PGSI ("In the past 12 months how often have you bet or spent more money than you wanted to on gambling"), a substantial proportion of the sample responded that they were not gamblers. For these respondents, the remaining eight questions of the PGSI were not administered. Individuals who reported gambling behaviour but spontaneously noted that they were not a gambler on the first question of the PGSI were identified as "not-gamblers" by Statistics Canada. The nine PGSI questions and the scoring of the instrument are summarized in Appendix A.

Gamblers and Problem Gamblers Measures

Statistics Canada classified the respondents into gamblers, non-gamblers, and not-gamblers. A gambler was defined as someone who has engaged in at least one type of gambling activity in the past year, and considers himself/herself a gambler. A non-gambler was defined as someone who had not engaged at all in the past year in any type of the gambling activities listed above. As previously noted, the category of not-gambler included those who reported gambling activities in the past 12 months but who spontaneously identified themselves as non-gamblers on the first question of the PGSI.

Gambling problems were assessed based on the modified PGSI. The nine items of the PGSI were scored, as described in Appendix A, to classify respondents into one of four gambler subtypes: non-problem gambler (score 0); low risk gambler (score 1-2); moderate risk gambler (score 3-7); and, problem gambler (score 8 or higher).

In the analyses, measures of gambling problems were recoded to form a measure of "any gambling problem", defined as experiencing any problem resulting from gambling. This involved collapsing the categories of low risk gambler, moderate risk gambler, and problem gambler into one

variable. Any individual receiving a score of one or more on the PGSI fell into this group, while those with scores of 0 were considered gamblers reporting no gambling related problems in the analysis.

Demographic Variables

Demographic variables included in this study were: (1) health region; (2) age; (3) sex; (4) marital status; (5) education level completed; (6) country of birth; (7) immigration status; (8) household type; (9) job status over past year; and, three income variables - (10), (11), and (12):

1. The health region variable was a categorical and consisted of seven provincial health areas in Ontario: South West, Central South, Central West, Toronto, Central East, Eastern Ontario, and Northern Ontario.
2. Age was categorized into six groups: ages 55-59, 60-64, 65-69, 70-74, 75-79, and 80+.
3. Sex or gender was identified as male or female.
4. Marital status was a categorical variable that included: married, common-law, widowed/separated/divorced, and single (never married).
5. Education level was categorical, and represented the highest level of education acquired by the respondent: less than secondary school, secondary school, other post-secondary school, and post-secondary school
6. Country of birth classified the respondent based on whether he or she was born in Canada or elsewhere.
7. Immigration status indicated whether or not the respondent was an immigrant
8. Household type was a categorical variable representing economic family status: unattached individual, couple alone, couple/one parent with children, and other family type.
9. Job status was a categorical variable representing employment status over the past year: employed for all of the past year, unemployed for all of the past year, and employed for part of the past year.

The three income measures included:

10. Household's main source of income grouped into four categories:
 - i. Wages/salaries or self-employment;
 - ii. Employment insurance or worker's compensation or social assistance;
 - iii. Canada or Quebec pension or retirement pensions or old age security/Guaranteed Income Supplement (GIS);
 - iv. Dividends/interest or child tax benefit or child support or alimony or other or none.
11. Total household income grouped into five categories: no income/less than \$15,000, \$15,000-30,000, \$30,000-49,999, \$50,000-79,999, and \$80,000+. The no income category was combined with seniors whose income was less than \$15,000 because of the small number of seniors who reported no income.
12. Household income grouped into four categories based on total household income and the number of people living in the household:
 - i. Lowest income included less than \$15,000 if one or two people, less than \$20,000 if three or four people, and less than 30,000 if five or more people;
 - ii. Lower middle income included \$15,000-29,999 if one or two people, \$20,000-39,999 if three or four people, and \$30,000-59,999 if five or more people;
 - iii. Upper middle income included \$30,000-59,999 if one or two people, \$40,000-79,999 if three or four people, and \$60,000-79,999 if five or more people;
 - iv. Highest income included more than \$60,000 if one or two people, and more than \$80,000 if three or more people.

Mental Health Measures

The mental disorders, conditions, or problems included in the CCHS 1.2 (see Appendix B) were derived from The Diagnostic and Statistical Manual of Mental Disorders, third revised and fourth editions (DSM-III-R and DSM-IV) developed by the American Psychiatric Association (American Psychiatric Association Task Force on DSM-IV, 1994). The DSM is an internationally recognized classification system for mental disorders and has appeared in several versions. The most recent versions (DSM-III-R and DSM-IV) were used for the operationalization of mental disorders, conditions, or problems in the CCHS 1.2. The derived variables in this analysis are summary indicators whose component variables are coded to the CCHS 1.2/ Mental Health – Composite International Diagnostic Interview Instrument (WMH-CIDI)¹ standards. Unless otherwise stated, these derived variables are described below using the WMH-CIDI criteria.

1. Major depressive disorder-12 months: identifies whether respondent met criteria for major depressive episode in the 12 months prior to interview.
2. Suicide thought-12 months: identifies whether respondent thought about committing suicide or taking his/her own life in the past 12 months.
3. Mania disorder-12 months: identifies whether respondent met criteria for manic episode in the 12 months prior to the interview.
4. Panic disorder-12 months: identifies whether respondent met criteria for panic disorder in the 12 months prior to the interview.
5. Social phobia-12 months: identifies whether respondent met criteria for social phobia in the 12 months prior to the interview.
6. Agoraphobia-12 months: identifies whether respondent met criteria for agoraphobia in the 12 months prior to the interview.
7. Any selected disorder-12 months dependence: identifies whether respondent met criteria for any of the measured disorders or substance dependencies in the past 12 months.
8. Any mood disorder-12 months: identifies whether respondent met criteria for any of the measured mood disorders (i.e., major depressive episode, manic episode) in the past 12 months.
9. Any anxiety disorder-12 months: identifies whether respondent met criteria for any of the measured anxiety disorders (i.e., agoraphobia, panic disorder, social phobia) in the past 12 months.
10. Any substance dependence: identifies whether respondent met criteria for dependence of alcohol or illicit drugs in the past 12 months.
11. Alcohol dependence: identifies whether respondent met DSM-IV criteria for alcohol dependence in the 12 months prior to the interview. Respondents who meet the criteria report at least three symptoms related to aspects of tolerance, withdrawal, loss of control, and social or physical problems related to alcohol use in daily life.
12. Eating disorder: assesses characteristics of eating troubles in the 12 months prior to the interview based on the Eating Attitudes Test (EAT) 26. The EAT-26 is a widely used standardized measure of the extent of symptoms and concerns characteristic of eating disorders (Garner & Garfinkel, 1979).

¹ The CCHS also included the variable “Illicit Drug Dependence”; however, this variable was not included in subsequent analyses because of the very small number of seniors who reported these problems.

Statistical Analyses

Statistical analyses were completed using SPSS software (Version 12). Analyses were performed on the weighted data so that the estimates produced from survey data were representative of the population. This was necessary because the CCHS 1.2 is based on a complex design, with stratification, multiple stages of selection, and unequal probabilities of selection of respondents. The weight variable in the CCHS 1.2 public file was rescaled so that the average weight was equal to 1. This rescaled weight was used for the analyses.

Descriptive statistics were used to address the characteristics of the sample and the prevalence and nature of gambling and gambling problems for various demographics among senior adults in Ontario in 2002. A chi-square test was used to test any difference in the prevalence of gambling and gambling problems between specific demographic groups. Logistic regression analysis provided odds ratios and 95% confidence intervals as estimates of relative risk of any gambling and gambling problem for demographic and mental health variables, while adjusting for the potential confounding effects of age and sex (Kleinbaum, 1994; Hosmer & Lemeshow, 2000). All statistical tests were two-sided. Results were considered significant at $p \leq 0.05$. Model fit was evaluated using the model chi-square (Hosmer & Lemeshow, 2000; Pampel, 2000).

RESULTS

The results include the findings on the prevalence and nature of gambling and problem gambling. In addition, the results address the findings on the sociodemographic factors and mental health problems, including alcohol and other drugs.

Demographic Characteristics

The demographic characteristics of the sample are provided in Table 1. There were seven sub-provincial health areas in Ontario. The Toronto region accommodated 22.1% of adults aged 15 and older in Ontario. There was a significant difference between senior adults aged 55 and older and younger adults aged 15-54 in the proportion of region population ($\chi^2_{(6df)} = 55.26, p < 0.001$). A slight majority of Ontario adults aged 15 years and older were female (51%). There was a significant difference between males and females in the proportion of adults aged 15 years and older ($\chi^2_{(1df)} = 14.86, p < 0.001$). While younger adults aged 15-54 years included 50% males and 50% females, senior adults aged 55 and older included 46.3% males and 53.7% females.

Married, common-law, widowed/separated/divorced, and single adults aged 15 years and older accounted for 56.9%, 5.9%, 12.1%, and 25.2%, respectively, of the Ontario sample. There was a significant difference between senior adults and younger adults in the proportion of marital status ($\chi^2_{(3df)} = 1902.84, p < 0.001$). More seniors (68.0%) were married than younger adults (52.8%). While substantially more of the younger adults (32.9%) were single, only 4.4% of seniors were single.

The education variable describes the highest level of education acquired by the respondent. While 47.8% of adults aged 15 years and older completed their post-secondary education, 23.8% of the population did not graduate from high school. There was a significant difference between senior adults aged 55 years and older and younger adults aged 15-54 years in the respondents' education levels ($\chi^2_{(3df)} = 404.37, p < 0.001$). While over half of younger adults (50.9%) graduated from post-secondary school, only 39.3% of seniors completed their post-secondary school education.

Respondents were classified into immigrants and non-immigrants. Immigrants accounted for 31.8% of adults aged 15 years and older in Ontario in 2002. There was a significantly higher proportion of immigrants among senior adults aged 55 years and older (36.3%) than that among younger adults aged 15-54 years (30.1%; $\chi^2_{(1df)} = 3144.43, p < 0.001$). While the majority of younger adults (73%)

were couples with children, 23.4% of seniors aged 55 years and older were couples with children. Couples living alone accounted for 49.7% of seniors, but only 14.1% of younger adults.

The household type variable describes the family relationships that exist within the household. Approximately 60% of adults aged 15 years and older were couples with children or one parent with children. There was a significant difference between seniors and younger adults in the proportion of various household types ($\chi^2_{(3df)} = 3144.43, p < 0.001$). For adults aged 15-54 years, 73.0% were couple and one parent households; however, for adults aged 55 years and older, 23.4% were couple and one parent households. Likewise, the proportion of couples living alone was 14.1% for adults aged 15-54 years and 48.7% in adults aged 55 years and older.

The job status variable indicates the respondent's job status over the past year. The majority of Ontario adults (56.5%) had a job throughout the previous year. There was a significant difference between seniors and younger adults on this variable ($\chi^2_{(2df)} = 2649.47, p < 0.001$). While younger adults aged 15-54 years who had a job over the past year accounted for 63.4% of the younger adult sample, senior adults aged 55 years and older who had a job over the past year accounted for 24.4% of the senior adult sample.

Total household income was classified into four categories based on total household income and the number of people living within the household. The majority of families were of upper middle income and highest income in Ontario (74%). However, there was a significant difference between seniors and younger adults in the proportion of total household income ($\chi^2_{(3)} = 268.68, p < 0.001$). A large proportion of seniors aged 55 years and older (34%) fell into "lowest income" and "lower middle income" categories. This proportion was only 23.1% among younger adults aged 15-54 years.

Table 1. Demographic characteristics of senior adults aged 55 years or older and younger adults aged 15-54 years in Ontario, 2002

Characteristics	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	%‡	
Health region ***							
South West	1782	12.7	1142	12.5	640	13.3	55.26(6)
Central South	1675	9.8	1067	9.5	608	10.4	<0.001
Central West	2035	18.1	1394	19.2	641	15.1	
Central East	1947	16.9	1299	16.5	648	17.9	
Toronto	2142	22.1	1490	22.7	652	20.4	
East Ontario	1783	13.4	1106	13.0	677	14.9	
North Ontario	1820	7.0	1160	6.6	660	8.1	
Sex ***							
Male	6047	49.0	4143	50.0	1904	46.3	14.86(1)
Female	7137	51.0	4515	50.0	2622	53.7	<0.001
Marriage ***							
Married	6193	56.9	3822	52.8	2371	68.0	1902.84
Common-law	744	5.9	655	7.2	89	2.3	(3)
Widowed/separated/divorced	2786	12.1	991	7.2	1795	4.8	<0.001
Single	3442	25.2	3177	32.9	265	4.4	
Immigrant ***							
Yes	3114	31.8	1832	30.1	1282	36.3	48.75(1)
No	9967	68.2	6758	69.9	3209	63.7	<0.001
Education (respondent) ***							
Less than secondary school	3406	23.8	1685	19.5	1721	35.3	404.37
Secondary school	2489	19.8	1682	20.1	807	19.0	(3)
Other post-secondary	1134	8.7	839	9.5	295	6.4	<0.001
Post-secondary	6078	47.8	4403	50.9	1675	39.3	

Characteristics	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	%‡	
Household type ***							
Unattached individual	3362	10.7	1519	7.0	1833	20.6	3144.43
Couple alone	3422	23.8	1372	14.1	2051	49.7	(3)
Couple/one parent with children	5728	59.5	5268	73.0	460	23.4	<0.001
Other family type	604	6.0	428	5.9	176	6.3	
Job status over past year ***							
Job throughout past year	6294	56.5	5379	63.4	915	32.6	2649.67
Without job	3157	22.3	1135	12.3	2022	56.8	(2)
Had job part of year	2362	21.2	2047	24.2	315	10.5	<0.001
Total household income (4 categories) ***							
Lowest income	1402	8.1	801	7.6	601	9.5	268.68
Lower middle income	2424	17.9	1285	15.5	1139	24.5	(3)
Upper middle income	4312	35.2	2872	34.2	1440	37.9	<0.001
Highest income	3899	38.8	3023	42.6	876	28.2	

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ % is calculated based on weighted cases.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

Gambling

The prevalence of any form of gambling reported by the respondents was examined. The nature of gambling was considered by examining the reported number and types of gambling activities, and expenditures on gambling activities.

Prevalence of Gambling

The prevalence of gambling was determined by calculating the proportion of the sample that reported participating in any gambling activity in the past year. As shown in Table 2, the majority of Ontario seniors reported some form of gambling in the past year. The proportion of older adults aged 55 years and older who reported at least one form of gambling in the past year was 75.2%, while 24.8% reported no gambling during the past year. The proportion of seniors who reported any gambling was nearly the same as the proportion of Ontario adults younger than 55 years of age who reported any gambling (74.8%), and the difference between the two age groups was not statistically significant ($\chi^2_{(1df)} = 0.25, p = 0.613$).

Number of Gambling Activities

For respondents who gambled, the number of different gambling activities in which the respondents participated was collected. Based on these counts, respondents were classified into four categories: one-two types, three types, four types, and five or more types. Table 2 presents the proportion of respondents in the two age groups by number of different types of gambling activities. There was a significant difference between seniors and younger adults in these proportions ($\chi^2_{(3df)} = 135.67, p < 0.001$). More seniors (70.4%) tended to fall into the one-two types category than did younger adults (59.8%).

Table 2. Number and proportion of respondents by number of different types of gambling activities among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Gambling	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	%‡	
Reported gambling activities							
No	3315	25.1	2123	25.2	1192	24.8	0.25(1)
Yes	9845	74.9	6521	74.8	3324	75.2	0.613
Number of gambling activities							
One-two types	6059	62.7	3772	59.8	2287	70.4	135.67
Three types	1794	17.7	1218	17.9	576	16.2	(3)
Four types	1000	9.5	737	10.3	263	7.5	<0.001
Five or more types	980	10.3	792	12.0	188	5.8	

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ % is calculated based on weighted cases.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

Type of Gambling

Tables 3 and 4 present the number and proportion of the respondents by gambling activities among seniors and younger adults in Ontario in 2002. Each gambling activity was assessed by a single question that asked respondents for the frequency of that activity in the past 12 months. Some responses were combined due to small numbers, as estimates based on small numbers can be unreliable and unstable.

In Ontario, instant win tickets, lottery tickets, bingo, cards/board games, and VLTs/at casinos were the forms of gambling most often engaged in (see Table 3). Of the adults aged 15 years and older, 37.6% spent money on instant win tickets at least once in the past year. There was a significant difference between seniors and younger adults in the frequency of spending money on instant win tickets ($\chi^2_{(4df)} = 214.01, p < 0.001$). More of the younger adults (39.8%) spent money on instant win tickets than seniors (32%). Buying lottery tickets was the most frequently reported type of gambling activity in Ontario. A total of 62.2% of adults bought lottery tickets at least once in the past year. There was a significant difference between seniors and younger adults in the frequency of spending money on lottery tickets ($\chi^2_{(4df)} = 211.49, p < 0.001$). More seniors (65.3%) bought lottery tickets in the past year than younger adults (61%). Approximately 8% of adults spent money on bingo in the past year. There was a significant difference between seniors and younger adults in the frequency of playing bingo ($\chi^2_{(2df)} = 75.87, p < 0.001$). While 4.2% of seniors played bingo at least once a month, only 2.3% of younger adults played bingo at least once a month. A total of 11.2% of adults spent money playing cards or board games with family or friends. More younger adults (12.2%) spent money playing cards or board games than seniors (7.6%) in Ontario ($\chi^2_{(2df)} = 66.53, p < 0.001$). Approximately 24% of adults spent money on coin slots or VLTs at a casino, but there was not a significant difference between seniors and younger adults ($\chi^2_{(2df)} = 4.31, p = 0.111$).

Table 3. Most frequently reported types of gambling activities among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Type of gambling	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	%‡	
Instant win tickets ***							
Never	8078	62.4	5010	60.2	3068	68.0	214.01
1 to 11 times a year	2654	19.9	2031	22.1	623	14.1	(4)
1 to 3 times a month	1558	9.6	998	10.5	360	7.0	<0.001
1 time a week	712	5.6	405	5.1	166	6.7	
2 times or more a week	372	2.6	206	2.0	166	4.1	
Lottery tickets ***							
Never	5042	37.8	3401	39.0	1641	34.7	211.49
1 to 11 times a year	3344	25.7	2361	27.2	983	21.6	(4)
1 to 3 times a month	1803	14.2	1219	14.5	584	13.5	<0.001
1 time a week	2039	15.1	1170	13.4	869	19.6	
2 times or more a week	943	7.2	498	5.9	445	10.6	
Bingo ***							
Never	11923	91.9	7802	91.7	4121	92.4	75.87
1 to 11 times/year	771	5.3	593	6.0	178	3.4	(2)
1 time or more a month	479	2.8	254	2.3	225	4.2	<0.001
Cards/board games							
Never	11664	88.8	7542	87.8	4122	91.4	66.53
1 to 11 times/year	1053	8.1	828	9.2	225	5.0	(2)
1 time or more a month	455	3.1	278	3.0	177	3.5	<0.001
VLTs/at casinos							
Never	9872	75.9	6468	75.9	3404	75.9	4.31(2)
1 to 11 times/year	2708	23.2	1885	23.3	823	22.9	0.111
1 time or more a month	593	0.9	294	0.8	296	1.2	

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ % is calculated based on weighted cases.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

In Ontario, some adults spent money in the following gambling activities during the past year: VLTs outside of casinos (2.1%); casino games other than coin slots or VLTs (6.7%); internet or arcade gambling (0.8%); live horse racing at the track or off track (6.2%); sports, such as sports lotteries (6.6%); speculative investments, such as stocks; options or commodities (5.8%); games of skill, such as pool, golf, bowling, or darts (6.4%); and, other forms of gambling, such as dog races, gambling at casino nights/country fairs, sports betting with bookies, or gambling pools at work (5.0%). There was a significant difference between seniors and younger adults in the proportion of people spending money on these gambling activities (see Table 4). Less seniors spent money on these gambling activities in the past year than younger adults.

Table 4. Less frequently reported types of gambling activities among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Type of gambling	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	%‡	

VLTs/outside casinos *							
Never	12895	97.9	8443	97.7	4524	98.3	5.43(1)
At least once	277	2.1	205	2.3	72	1.7	0.020
Other games at casinos ***							
Never	12339	93.1	7965	91.9	4374	96.5	91.66(1)
At least once	833	6.9	684	8.1	149	3.5	<0.001
Internet/arcade gambling ***							
Never	13071	99.2	8558	99.0	4513	99.8	20.70(1)
At least once	100	0.8	91	1.0	9	0.2	<0.001
Live horse racing *							
Never	12396	93.8	8112	93.5	4284	94.4	3.91(1)
At least once	775	6.2	537	6.5	238	5.6	0.048
Sports lotteries ***							
Never	12377	93.4	7930	91.8	4447	97.7	156.05(1)
At least once	795	6.6	719	8.2	76	2.3	<0.001
Speculative investments ***							
Never	12518	94.2	8158	93.6	4360	95.6	20.77(1)
At least once	643	5.8	490	6.4	153	4.4	<0.001
Games of skill ***							
Never	12315	93.6	7906	92.3	4409	97.3	120.06(1)
At least once	856	6.4	743	7.7	113	2.7	<0.001
Other forms of gambling ***							
Never	12522	95.0	8119	94.2	4403	97.2	51.46(1)
At least once	649	5.0	530	5.8	119	2.8	<0.001

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ % is calculated based on weighted cases.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

Expenditure on Gambling

The amount of money spent on gambling activities was assessed by a question that asked, “In the past 12 months, how much money, not including winnings, did you spend on all of your gambling activities?” Respondents fell into one of six categories based on the amount of money spent on gambling activities. The majority of adults in Ontario (85.9%) spent \$500 or less on gambling activities in the past year. There was a significant difference between seniors and younger adults in the proportion of adults with different amounts of money spent on gambling activities ($\chi^2_{(5df)} = 32.47, p < 0.001$). More seniors fell into the highest spending categories in comparison to younger adults.

The percentage of gambling money to household income was derived by dividing amount of money spent on gambling activities by total household income. Based on these amounts, respondents were divided into three categories, and significant differences were found for the proportion of seniors and younger adults in these categories ($\chi^2_{(2df)} = 86.33, p < 0.001$). Approximately 85% of adults spent less than 1% of their total household income on gambling activities in Ontario. More seniors (21.3%) spent 1% or more of total household income or higher on gambling activities than younger adults (12.7%).

Table 5. Expenditure of gambling among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Variables	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184 %		N=8658 %		N=4526 † % †		
Money spent on gambling activities ***							
\$1 to \$50	1952	28.5	1305	29.6	647	25.7	32.47(5)
\$51 to \$100	1478	20.8	945	21.6	533	18.9	<0.001
\$101 to \$250	1529	22.1	953	21.1	576	24.4	
\$251 to \$500	963	14.5	593	14.4	370	14.9	
\$501 to \$1000	527	7.4	306	6.7	221	9.0	
> \$1000	440	6.7	270	6.6	170	7.1	
% of gambling money/household income ***							
Less than 1%	5235	84.8	3520	87.3	1715	78.7	86.33(2)
1% - less than 2%	647	9.2	349	8.0	298	12.1	<0.001
2% or more	530	6.0	256	4.7	274	9.2	

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. † % is calculated based on weighted cases.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

Gambling Problems

As previously described, gambling problems were measured using the PGSI. Estimation of the prevalence of any gambling problems involves identifying the percentage of the population that report one or more problems with gambling. Two factors complicate this process with this sample and likely act to create more conservative estimates of gambling problem prevalence. First, it is important to note that those who did not report gambling more than five times per year on any gambling activity were assigned a score of 0 on the PGSI. However, it is possible that some of these low frequency gamblers actually experienced gambling problems. Second, as noted previously, a substantial proportion of the sample reported participating in gambling activities but spontaneously replied that they were not gamblers on the first question of the PGSI. This group was identified as “not gamblers” by Statistics Canada. One approach to dealing with this group is to take them at their word; that is, treat them as having no gambling problems. We calculated the first estimate of problem prevalence, termed the unadjusted estimate, in this manner.

As also noted previously, the “not gambler” group reported gambling behaviours similar to those reported by the group asked the PGSI questions. Thus, another approach would be to assume that the distribution of gambling problems in the two groups is the same. We also calculated an estimate of problem prevalence, termed the adjusted estimate, in this manner. In subsequent logistic regression analyses predicting gambling problems, the group of “not gamblers” was not included, since there was no accurate way to estimate the problem gambling status of any individual in this group. This reduced the sample size available for these analyses.

Type of Gambler

Table 6 presents the proportion of different types of gamblers (and non-gamblers) in Ontario in 2002, as presented by Statistics Canada. As noted above, Statistics Canada created a category of “not gamblers” for individuals who indicated that they were not gamblers even though they reported gambling activities in the preceding year. Low risk, moderate risk, and problem gamblers were based on the categories defined in the CPGI. As shown in Table 6, there was a significant difference between

seniors and younger adults in the proportion falling into the six categories ($\chi^2_{(5df)} = 78.29, p < 0.001$). Slightly more seniors (75.2%) gambled in the past year than younger adults (74.8%), but fewer seniors (2.9%) fell into one of the problem categories (low risk, moderate risk, or problem gambler) than younger adults (5.6%). A total of 23.5% of all respondents fell into the “not gambler” category, and this proportion was higher among seniors (27.3%) than among younger adults (22.1%).

Table 6. Type of gamblers and non-gamblers among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Type of gamblers ***	Total Sample		Age 15-54		Age 55+		χ^2 (df) p
	N=13184 %		N=8658 %		N=4526 †% ‡		
Non-gambler	3315	25.1	2123	25.2	1192	24.8	78.29(5)
Non-problem gambler	6247	46.6	4221	47.2	2026	44.9	<0.001
Low risk gambler	388	2.8	291	3.2	97	1.9	
Moderate risk gambler	185	1.6	145	1.9	40	0.8	
Problem gambler	59	0.4	45	0.5	14	0.2	
Not gambler Δ	2966	23.5	1819	22.1	1147	27.3	

Notes: † N is the number of unweighted cases and the sample size for some variables does not total to the full sample size due to excluding cases with missing values. ‡ % is calculated based on weighted cases. Δ These were respondents who did not consider themselves a gambler despite having reported gambling activities in the past 12 months.

χ^2 test: ** $p < 0.01$ *** $p < 0.001$.

Prevalence of Gambling Problem

As noted above, the calculation of the prevalence of gambling problems in the population is complicated by the presence of the “not gambler” group. Although these individuals were not asked the gambling problem questions, the distributions of their gambling behaviours were similar to those observed among the gamblers. Therefore, we estimated the prevalence of any gambling problem in the population in two ways. In the first, or unadjusted, method, we treated the “not gambler” group as if they had no gambling problems. In the second, or adjusted, method, we assumed that the distribution of gambling problems in the “not gambler” group was similar to that in the group of gamblers.

As noted previously, low risk, moderate risk, and problem gamblers were combined to derive the variable “any gambling problem”. Table 7 presents the prevalence of gambling problem by age groups in Ontario in 2002. The unadjusted prevalence estimates indicate that adults reporting any form of gambling problem accounted for 4.8% of Ontario adults in 2002. The prevalence of any gambling problem was significantly higher among those aged 15-54 years (5.6%) than among seniors aged 55 years and older (3.3%) in Ontario ($\chi^2_{(1df)} = 42.26, p < 0.001$). The adjusted prevalence of any gambling problem among Ontario adults was 7.1%. Again, there was a significantly higher adjusted prevalence among respondents aged 15-54 years (7.9%) than among respondents aged 55 years and older (4.6%) in Ontario ($\chi^2_{(1df)} = 46.37, p < 0.001$). Looking at only those who reported some form of gambling activity in the past year, the prevalence of any gambling problem was significantly higher among younger respondents (7.4%) than among seniors (3.9%; $\chi^2_{(1df)} = 43.76, p < 0.001$). Finally, looking at only those who considered themselves gamblers, 9.4% reported at least one gambling-related problem, and this proportion was significantly higher among younger gamblers (10.6%) than among senior gamblers (6.1%; $\chi^2_{(1df)} = 31.77, p < 0.001$).

Table 7. Prevalence of any gambling problem among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Gambling problem Δ	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526	†%‡	
All respondents unadjusted							
No	12528	95.2	8163	94.4	4365	96.7	42.26(1)
Yes	632	4.8	481	5.6	151	3.3	<0.001
All respondents adjusted Π							
No	12256	92.9	7977	92.1	4285	95.4	46.37(1)
Yes	904	7.1	667	7.9	231	4.6	<0.001
Respondents who gambled							
No	9213	93.5	6040	92.6	3173	96.1	43.76(1)
Yes	632	6.5	481	7.4	151	3.9	<0.001
Respondents who were gamblers							
No	6247	90.6	4221	89.4	2026	93.9	31.77(1)
Yes	632	9.4	481	10.6	151	6.1	<0.001

Notes: † N is the number of unweighted cases and sample size for some variables does not total to the full sample size due to excluding cases with missing values. ‡ % is calculated based on weighted cases. Δ includes those who were evaluated as a low risk gambler, moderate risk gambler, and problem gambler. Π adjusted based on assuming not-gamblers had the same prevalence of gambling problem as gamblers did since not-gamblers and gamblers had similar gambling frequencies on gambling activities.

Type of Gambling and Gambling Problems

The types of gambling and gambling problems are presented below. The types were examined in relation to the most frequent, less frequent, and number of gambling types.

Most Frequent Types of Gambling

Instant win tickets, lottery tickets, bingo, cards/board games, and VLTs/at casinos were the gambling types most engaged in within Ontario. We examined the relationship between participation in the most frequent types of gambling activities and gambling problems in senior gamblers. Table 8 presents the prevalence and odds ratios of gambling problem for the type of gambling activity among senior gamblers aged 55 years and older in Ontario in 2002. A significant relationship was found between gambling problem and instant win tickets ($\chi^2_{(4df)} = 43.05, p < 0.001$), lottery tickets ($\chi^2_{(4df)} = 54.71, p < 0.001$), bingo ($\chi^2_{(2df)} = 80.78, p < 0.001$), cards/board games ($\chi^2_{(2df)} = 21.50, p < 0.001$), and VLTs/at casinos ($\chi^2_{(2df)} = 156.26, p < 0.001$). There was a very high rate of gambling problem among senior gamblers who spent money on instant win tickets at least once per week (16.1%), on lottery tickets at least once per week (14.9%), on bingo at least once a month (26.2%), on cards/board games at least once a month (16.9%), and on VLTs/at casinos (45.5%) at least once a month.

Furthermore, the values of the adjusted odds ratios of gambling problem for these types of gambling activities revealed increased risk of gambling problem when senior gamblers frequently gambled. The risk of developing a gambling problem among seniors was more likely to increase with frequency of each type of gambling. The adjusted odds ratios of 2.50 (95% CI: 1.40-4.45), 2.74 (95% CI: 1.55-4.83), and 4.06 (95% CI: 2.22-7.41) of gambling problem for instant win tickets suggested that there was 150% higher risk of gambling among senior gamblers who spent money on instant win tickets one to three times a month, 174% higher risk among senior gamblers who spent money on instant win tickets once a week, and 306% higher risk among senior gamblers who spent money on

instant win tickets two times or more a week than among those who did not spend money on instant win tickets in the past year. The adjusted odds ratio of 2.42 (95% CI: 1.20-4.87) and 4.42 (95% CI: 2.21-8.86) of gambling problem for lottery tickets suggested that there was a 142% higher risk of developing a gambling problem among senior gamblers who bought lottery tickets one time a week in the past year and a 342% higher risk of developing a gambling problem among senior gamblers who bought lottery tickets two times or more a week in the past year than among those who did not buy lottery tickets. The adjusted odds ratio of 7.94 (95% CI: 4.79-13.17) of gambling problem for bingo suggested that there was a 694% higher risk of developing a gambling problem among senior gamblers who played bingo in the past year than that among those who did not play.

The adjusted odds ratios of 4.26 (95% CI: 2.26-8.05) of gambling problem for cards/board games suggested that there was a 326% higher risk among senior gamblers who spent money on cards/board games at least once a month than among those who did not spend money on cards/board games. The adjusted odds ratios of 3.85 (95% CI: 2.47-6.02) and 29.27 (95% CI: 14.50-59.09) of gambling problem for VLTs/at casinos suggested that senior gamblers who spent money on VLTs/at casinos one to 11 times a year and senior gamblers who spent money on VLTs/at casinos at least once a month suffered a gambling problem 3.85 and 29.27 (respectively) times as much as those who did not spend money on VLTs/at casinos.

Table 8. Prevalence (P%) and odds ratio of gambling problem for type of the most frequently gambling activities among senior gamblers aged 55 and over in Ontario, 2002

Type of gambling	N=2177†	P%‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡ Δ
Instant win tickets		***		
Never	1203	4.5	1.00	1.00
1 to 11 times a year	450	3.4	0.72 (0.38-1.36)	0.71 (0.37-1.35)
1 to 3 a month	216	10.8	2.57 (1.44-4.56)**	2.50 (1.40-4.45)**
1 time a week	194	11.4	2.72 (1.54-4.77)***	2.74 (1.55-4.83)***
2 times or more a week	113	16.1	3.99 (2.21-7.20)***	4.06 (2.22-7.41)***
Lottery tickets		***		
Never	351	4.0	1.00	1.00
1 to 11 times a year	776	2.9	0.74 (0.35-1.57)	0.71 (0.34-1.51)
1 to 3 a month	307	4.3	1.14 (0.49-2.63)	1.12 (0.48-2.61)
1 time a week	460	8.6	2.34 (1.17-4.67)*	2.42 (1.20-4.87)*
2 times or more a week	283	14.9	4.33 (2.19-8.55)***	4.42 (2.21-8.86)***
Bingo		***		
Never	1902	4.8	1.00	1.00
1 to 11 times/year	119	6.0	1.24 (0.48-3.17)	1.30 (0.50-3.34)
One a month or more	156	26.2	7.08 (4.35-11.52)***	7.94 (4.79-13.17)***
Cards/board games		***		
Never	1903	5.3	1.00	1.00
1 to 11 times/year	160	9.6	1.83 (0.95-3.40)	1.78 (0.96-3.33)
One a month or more	114	16.9	3.60 (1.94-6.67)***	4.26 (2.26-8.05)***
VLTs/at casinos		***		
Never	1354	2.7	1.00	1.00
1 to 11 times/year	766	9.6	3.91 (2.51-6.09)***	3.85 (2.47-6.02)***
One a month or more	57	45.5	30.33 (15.10-60.91)***	29.27 (14.50-59.09)***

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Less Frequent Types of Gambling

Table 9 presents the prevalence and odds ratio of gambling problem for less frequently played types of gambling activities among senior gamblers aged 55 years and older in Ontario in 2002. There

was a significantly higher rate of gambling problem among those who spent money on VLTs/outside casinos ($\chi^2_{(1df)} = 11.43, p = 0.001$), other games at casinos ($\chi^2_{(1df)} = 47.94, p < 0.001$), live horse racing ($\chi^2_{(1df)} = 34.83, p < 0.001$), sports lotteries ($\chi^2_{(1df)} = 10.44, p = 0.001$), and other forms of gambling ($\chi^2_{(1df)} = 5.65, p = 0.017$). However, there was not a significant relationship between gambling problem and internet/arcade gambling ($\chi^2_{(1df)} = 0.81, p = 0.366$), speculative investments ($\chi^2_{(1df)} = 0.00, p = 0.993$), and games of skill ($\chi^2_{(1df)} = 1.01, p = 0.313$).

The values of the adjusted odds ratios of gambling problem for these less frequent types of gambling suggested that there was a 271% higher risk of gambling problem among senior gamblers who spent money on VLTs/outside casinos, a 441% higher risk on other games at casinos, a 270% higher risk on live horse racing, a 182% higher risk on sports lotteries, and a 116% higher risk on other forms of gambling at least once in the past year than that among those who did not spent money on VLTs/outside casinos, other games at casinos, live horse racing, sports lotteries, and other forms of gambling.

Table 9. Prevalence (P%) and odds ratio of gambling problem for type of less frequently gambling activities among senior gamblers aged 55 years and older in Ontario, 2002

Type of gambling	N=2177†	P%‡	Unadjusted OR (95%CI)	Adjusted OR (95%CI) ‡ Δ
VLTs/outside casinos		***		
Never	2125	5.8	1.00	1.00
At least once	52	18.2	3.55 (1.59-7.89)***	3.71 (1.65-8.36)**
Other games at casinos		***		
Never	2064	5.1	1.00	1.00
At least once	113	22.2	5.37 (3.20-9.01)***	5.41 (3.18-9.20)***
Internet/arcade gambling				
Never	2169	6.1	1.00	1.00
At least once	8	14.3	1.55 (0.11-20.41)	1.33 (0.10-17.62)
Live horse racing		***		
Never	2000	5.1	1.00	1.00
At least once	176	16.8	3.70 (2.31-5.92)***	3.70 (2.31-5.95)***
Sports lotteries		***		
Never	2116	5.8	1.00	1.00
At least once	61	15.6	3.04 (1.50-6.15)**	2.82 (1.35-5.86)**
Speculative investments				
Never	2049	6.1	1.00	1.00
At least once	125	6.1	0.98 (0.46-2.07)	0.92 (0.43-1.96)
Games of skill				
Never	2102	6.0	1.00	1.00
At least once	75	9.0	1.62 (0.69-3.77)	1.63 (0.69-3.84)
Other forms of gambling		**		
Never	2087	5.8	1.00	1.00
At least once	90	12.2	2.36 (1.20-4.66)*	2.16 (1.10-4.31)*

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Number of Different Types of Gambling Activities

Table 10 presents the prevalence and odds ratios of any gambling problem for number of different types of gambling activities among senior gamblers aged 55 years and older in Ontario in 2002. A significant association was found between gambling problem and the number of different types of gambling activities among senior gamblers in Ontario ($\chi^2_{(1df)} = 129.68, p < 0.001$), and the rate of any gambling problem increased with the number of gambling activities, from 1.8% for those who

played one to two types, 12.3% for those who played three types, 16.9% for those who played four types, and 18.7% for those who played five or more types. The adjusted odds ratios of gambling problem suggested that seniors who gambled three, four, five or more types suffered gambling problems 7.64 times, 11.08 times and 12.08 times, respectively, as much as those who played one to two types.

Table 10. Prevalence (P%) and odds ratios of gambling problem for number of different types of gambling activities among senior gamblers aged 55 years and older in Ontario, 2002

Number of gambling activities ***	N=2177†	P%‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡ Δ
One-two types	1453	1.8	1.00	1.00
Three types	380	12.3	7.86 (4.59-13.46)***	7.64 (4.45-13.10)***
Four types	183	16.9	11.15 (6.12-20.31)***	11.08 (6.07-20.23)***
Five or more types	156	18.7	12.69 (6.91-23.29)***	12.08 (6.54-22.30)***

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Demographic Determinants of Gambling Problems

The relationships between demographic factors and the presence of any gambling problem among senior gamblers aged 55 years and older were examined. Here, non-gamblers and not gamblers were not included in the analyses. Thus, the sample size available for these analyses was reduced in comparison to the previous analyses of gambling behaviours. The findings on region, age, gender, marital status, country of birth, immigration status, education, household type, job status, and income are described below.

Geographic Region

Table 11 presents the prevalence and the odds ratios of any gambling problem for health regions among senior gamblers aged 55 years and older in Ontario in 2002. The prevalence of gambling problems was highest in North Ontario (9.6%). It was 8.4% in Central South Ontario. The lowest prevalence rates were in Central East (4.8%) and East Ontario (4.7%). The prevalence was 5.4% in Toronto. These differences, however, were not significant ($\chi^2_{(6df)} = 7.79, p = 0.253$).

Table 11. Prevalence (P%) and odds ratios of any gambling problem for health region among senior gamblers aged 55 years and older in Ontario, 2002

Health region	N=2177†	P%‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡ Δ
South West	291	6.2	1.00	1.00
Central South	284	8.4	1.32 (0.64-2.71)	1.29 (0.62-2.66)
Central West	294	5.8	0.89 (0.42-1.86)	0.87 (0.41-1.84)
Central East	318	4.8	0.76 (0.37-1.58)	0.72 (0.34-1.50)
Toronto	306	5.4	0.85 (0.43-1.69)	0.86 (0.43-1.69)
East Ontario	343	4.7	0.74 (0.35-1.58)	0.71 (0.33-1.52)
North Ontario	341	9.6	1.56 (0.75-3.25)	1.51 (0.72-3.16)

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Age and Sex

Table 12 presents the prevalence and odds ratios of any gambling problem for age and sex among senior gamblers aged 55 years and older in Ontario in 2002. The prevalence of any gambling problem varied as age increased. The rates appeared to decrease with age; for example, from 8.3% in age group 60-64, to 6.0% in age group 65-69, to 4.8% in age group 70-74, to 3.2% in age group 75-79. While the rate was 6.8% in age group 55-59, it was 5.0% in age group 80 and older. However, there were no significant differences in the prevalence of any gambling problem between age groups ($\chi^2_{(5df)} = 7.64, p = 0.177$). The prevalence of any gambling problem was 7.7% for males and 6.4% for females, and this difference was not significant ($\chi^2_{(1df)} = 0.01, p = 0.936$).

Table 12. Prevalence (P%) and odds ratios of any gambling problem for age and sex among senior gamblers aged 55 years and older in Ontario, 2002

Demographic variables	N=2177†P% ‡		Unadjusted OR (95%CI)‡	Adjusted OR (95%CI)‡Δ
Age group				
55-59	491	6.8	1.00	1.00
60-64	466	8.3	1.22 (0.74-2.02)	1.23 (0.74-2.03)
65-69	373	6.0	0.85 (0.47-1.53)	0.85 (0.47-1.53)
70-74	359	4.8	0.70 (0.36-1.33)	0.70 (0.36-1.33)
75-79	252	3.2	0.43 (0.17-1.07)	0.42 (0.17-1.07)
80+	236	5.0	0.74 (0.32-1.70)	0.74 (0.32-1.70)
Sex				
Male	915	7.7	1.00	1.00
Female	1262	6.4	0.97 (0.66-1.43)	1.02 (0.69-1.50)

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ Adjusted for other. χ^2 or Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Marital Status

Table 13 presents the prevalence and odds ratios of any gambling problem for marital status among senior gamblers aged 55 years and older in Ontario in 2002. Married gamblers were less likely to report gambling problems (5.3%), while single gamblers were more likely than the other groups to have experienced gambling problems (10.4%). Although the Chi-square analysis did not suggest a significant association between marital status and gambling problem ($\chi^2_{(3df)} = 5.58, p = 0.134$), the adjusted odds ratio of 1.75 (95% CI: 1.09-2.80) and 2.18 (95% CI: 1.02-4.65) of any gambling problem for marital status suggested that there was a 75% higher risk of any gambling problem among widowed/separated/divorced gamblers, and a 118% higher risk of any gambling problem among single gamblers compared to married gamblers.

Table 13. Prevalence (P%) and odds ratios of any gambling problem for marital status among senior gamblers aged 55 years and older in Ontario, 2002

Marital status	N=2177†P%‡		Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡Δ
Married	1200	5.3	1.00	1.00
Common-law	52	7.7	1.52 (0.53-4.30)	1.48 (0.52-4.22)
Widow/separate/divorce	798	7.5	1.44 (0.92-2.23)	1.75 (1.09-2.80)*
Single	124	10.4	2.19 (1.03-4.67)*	2.18 (1.02-4.65)*

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ Adjusted for age and sex. χ^2 test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Country of Birth and Immigration Status

When respondents were classified into those born in Canada and others, we found no significant differences in the rate of any gambling problem by country of birth (4.7%; $\chi^2_{(1df)} = 3.39, p = 0.065$). The adjusted odds ratio of any gambling problem of 0.68 (95% CI: 0.44-1.06) also did not demonstrate a significant association between country of birth and gambling problem. When senior gamblers were classified into immigrants and non-immigrants, we found no significant differences in the rate of any gambling problem by immigration status ($\chi^2_{(1df)} = 3.41, p = 0.065$). The adjusted odds ratio for immigration status (OR: 1.46 and 95% CI: 0.94-2.27) also did not reveal a significant association between immigration status and gambling problem (see Table 14).

Table 14. Prevalence (P%) and odds ratios of any gambling problem for country of birth and immigration status among senior adults aged 55 years and older in Ontario, 2002

Variables	N=2177†	P% ‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡Δ
Country of birth				
Canada	1605	6.9	1.00	1.00
Others	558	4.7	0.67 (0.43-1.03)	0.68 (0.44-1.06)
Immigrant				
Yes	553	4.6	1.00	1.00
No	1612	6.8	1.49 (0.96-2.30)	1.46 (0.94-2.27)

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ Adjusted for age and sex. χ^2 and Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Education

Table 15 presents the prevalence and odds ratios of any gambling problem by education level among senior gamblers aged 55 years and older in Ontario in 2002. The prevalence of any gambling problem was 9.2% among those with less than secondary school education, 5.4% among those with secondary school education, 3.8% among those with some post-secondary school education, and 4.3% among those with post-secondary school education. There was a significant association between education and any gambling problem ($\chi^2_{(3df)} = 15.90, p = 0.001$). Furthermore, the adjusted odds ratios of any gambling problem suggested that there was a 51% lower risk of gambling problems among seniors with secondary school education than among seniors with less than secondary school education. There was also a 63% lower risk of any gambling problem among seniors with some post-secondary school education and those with post secondary school education than among seniors with less than secondary school education.

Table 15. Prevalence (P%) and odds ratios of any gambling problem for education variables among senior adults aged 55 years and older in Ontario, 2002

Respondent's education **	N=2177†	P% ‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡Δ
Less than secondary school	806	9.2	1.00	1.00
Secondary school	398	5.4	0.56 (0.33-0.95)*	0.49 (0.20-0.84)*
Other post-secondary	154	3.8	0.42 (0.17-1.05)	0.37 (0.15-0.94)*
Post-secondary	807	4.3	0.43 (0.27-0.69)***	0.37 (0.23-0.59)***

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 and Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Household Type

Table 16 presents the prevalence and odds ratios of any gambling problem for household type among senior gamblers aged 55 years and older in Ontario in 2002. The prevalence of any gambling problem was 6.9% among unattached individuals, 5.3% among couples living alone, 4.6% among those who were couples and one parent with children, and 13.9% among other family types. A significant association was found between household type and gambling problem ($\chi^2_{(3df)} = 16.33, p = 0.001$). The adjusted odds ratios of any gambling problem suggested that there was a 66% lower risk of gambling problems among couples living alone, and a 73% lower risk among couples and one parent with children than among those who fell into the other family type category.

Table 16. Prevalence (P%) and odds ratios of any gambling problem for demographic variables among senior adults aged 55 years and older in Ontario, 2002

House type **	N=2177†	P% ‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡Δ
Other family type	87	13.9	1.00	1.00
Unattached individual	820	6.9	0.45 (0.23-0.86)*	0.52 (0.26-1.01)
Couple alone	1035	5.3	0.33 (0.19-0.60)***	0.34 (0.19-0.62)***
Couple/one parent with children	230	4.6	0.28 (0.14-0.56)***	0.27 (0.13-0.54)***

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ Adjusted for age and sex. χ^2 and Wald test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Job Status

Table 17 presents the prevalence and odds ratios of any gambling problem for employment status among senior gamblers aged 55 years and older in Ontario in 2002. The prevalence of any gambling problem was 7.2% among gamblers who had a job throughout the past year, 5.7% among those without a job and either looking or not looking for work throughout the past year, and 9.0% among those who had a job for part of the year, either looking or not looking for the other part of the year. However, there was not significant association between job status over the past year and any gambling problem ($\chi^2_{(2df)} = 3.03, p = 0.220$).

Table 17. Prevalence (P%) and odds ratios of any gambling problem for employment status among senior gamblers aged 55 years and older in Ontario, 2002

Job status over past year	N=2177†	P% ‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡Δ
Job all past	487	7.2	1.00	1.00
Without job–look (not)	1001	5.7	0.77 (0.49-1.20)	0.80 (0.48-1.35)
Had job-look	189	9.0	1.22 (0.66-2.27)	1.20 (0.64-2.24)

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ Adjusted for age and sex. χ^2 or Wald test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Income

Table 18 presents the prevalence and odds ratios of any gambling problem for economic measures among senior gamblers aged 55 years and older in Ontario in 2002. The relationship between three economic measures and any gambling problem was examined; however, a significant association was only found between main source of total household income and any gambling problem ($\chi^2_{(3df)} = 9.56, p = 0.023$). A significant association was not found between any gambling problem and total

household income based on four categories ($\chi^2_{(3df)} = 0.322, p = 0.956$), and household income ($\chi^2_{(4df)} = 8.03, p = 0.090$). While the prevalence of any gambling problem was 15.4% among gamblers whose income was worker's compensation, the rate was only 2.9% among the 'other' income source category. The adjusted odds ratio of 4.52 (95% CI: 1.11-18.35) of any gambling problem suggested that there was a 4.52 times higher risk of any gambling problem among seniors whose income was derived from worker's compensation than those whose income was derived from the 'other' category.

Table 18. Prevalence (P%) and odds ratios of any gambling problem for economic measures among senior gamblers aged 55 years and older in Ontario, 2002

Income variables	N=2177†	P%‡	Unadjusted OR (95%CI)‡	Adjusted OR (95%CI) ‡ Δ
Total household income-main source		*		
Wages/salaries/self-employed	650	7.0	2.15 (0.70-6.54)	1.92 (0.62-5.94)
Worker's compensation	59	15.4	5.07 (1.26-20.36)*	4.52 (1.11-18.35)*
Senior benefits	1269	5.3	1.62 (0.53-4.94)	1.76 (0.57-5.37)
Others	135	2.9	1.00	1.00
Total household income (4 categories)				
Lowest income	252	7.2	1.00	1.00
Lower middle income	520	6.4	0.89 (0.40-1.95)	0.92 (0.41-2.02)
Upper middle income	715	6.0	0.81 (0.38-1.72)	0.76 (0.36-1.64)
Highest income	491	6.0	0.81 (0.37-1.74)	0.71 (0.32-1.57)
Household income				
No income/less than \$15,000	589	6.7	1.00	1.00
\$15,000-30,000	636	7.9	1.21 (0.75-1.95)	1.23 (0.75-1.99)
\$30,000-49,999	420	4.3	0.64 (0.34-1.18)	0.56 (0.29-1.06)
\$50,000-79,999	234	7.7	1.15 (0.62-2.15)	1.01 (0.52-1.98)
\$80,000+	120	2.5	0.31 (0.08-1.41)	0.27 (0.07-1.00)

Notes: † N is the number of unweighted cases and sample size does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ adjusted for age and sex.

χ^2 or Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

Expenditures and Gambling Problems

Table 19 presents the prevalence and odds ratios of any gambling problem for money spent on gambling among senior gamblers aged 55 years and older in Ontario in 2002. A significant association was found between any gambling problem and amount of money spent on gambling activities ($\chi^2_{(5df)} = 177.09, p < 0.001$). The rate of any gambling problem increased with the amount of money spent on gambling activities, from 0.9% among those spending \$1-50, to 2.2% among those spending \$51-100, to 3.2% among those spending \$101-250, to 10.4% among those spending \$251-500, to 22.1% among those spending \$501-1000, and to 37.3% among those spending more than \$1000 (see Table 19). The adjusted odds ratios of any gambling problem for money spent on gambling suggested that senior gamblers spending \$251-500, \$501-1000, and more than \$1000 experienced gambling problem 14.29 times, 36.87 times, and 74.34 times, respectively, as much as those who spent \$1-50 on gambling.

Table 19. Prevalence (P%) and odds ratios of any gambling problem for money spent on gambling among senior gamblers aged 55 years and older in Ontario, 2002

Expenditure of gambling	N=2177†	P%‡	Unadjusted OR (95%CI)	Adjusted OR (95%CI) ‡ Δ
Money spent on gambling activity		***		
\$1 to \$50	286	0.9	1.00	1.00
\$51 to \$100	259	2.2	2.18 (0.41-11.57)	2.26 (0.42-12.03)
\$101 to \$250	319	3.2	3.31 (0.75-14.65)	3.59 (0.81-15.94)
\$251 to \$500	221	10.4	11.49 (2.80-47.06)**	14.29 (3.64-59.05)***
\$501 to \$1000	152	22.1	28.54 (7.08-114.97)***	36.87 (9.03-150.54)***
> \$1000	144	37.3	60.24 (15.17-239.14)***	74.34 (18.39-298.82)***
% of gambling \$/household income		***		
Less than 1%	882	3.7	1.00	1.00
1% - less than 2%	191	20.5	6.57 (3.84-11.25)***	7.41 (4.27-12.84)***
2% or more	192	34.1	13.32 (7.87-22.54)***	15.86 (9.17-27.44)***

Notes: † N is the number of unweighted cases. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: *p < 0.05 ** p < 0.01 *** p < 0.001.

A significant association was found between any gambling problem and percentage of total household income spent on gambling ($\chi^2_{(1df)} = 134.85, p < 0.001$). The rate of any gambling problem increased with the percentage, from 3.7% among those who spent less than 1% of their total household income on gambling, to 20.5% among those who spent 1% but less than 2% of their total household income on gambling, and to 34.1% among those who spent 2% or more of their total household income on gambling. The adjusted odds ratios of any gambling problem suggested that senior gamblers who spent 1% but less than 2% of their total household income on gambling, and those who spent 2% or more of their total household income on gambling suffered gambling problems 7.41 times, and 15.86 times, respectively, as much as those who spent less than 1% of their total household income on gambling.

Mental Health and Gambling Problems

This subsection presents information on the prevalence of mental health problems within the sample of younger and older adults. It continues with analyses of the impact of mental health problems on the risk of developing gambling problems.

Prevalence of Mental Health Problems

The prevalence of mental health problems in the past 12 months was estimated based on the CCHS 1.2 data (see Table 20). As shown in the table, seniors were significantly less likely to report nearly all of the disorders identified. The one exception was for agoraphobia, where the prevalence among seniors did not differ significantly from that observed among younger adults.

Table 20. Prevalence of mental health problems among senior adults aged 55 years and older and younger adults aged 15-54 years in Ontario, 2002

Mental health problems	Total Sample		Age 15-54		Age 55+		χ^2 (df) <i>p</i>
	N=13184	%	N=8658	%	N=4526†	% ‡	
Major depressive disorder ***							
No	12438	95.2	8065	94.4	4373	97.3	49.05(1)
Yes	696	4.8	569	5.6	127	2.7	<0.001
Suicidal thought ***							
No	12643	96.5	8215	95.9	4428	98.0	34.83(1)
Yes	525	3.5	433	4.1	92	2.0	<0.001
Mania disorder ***							
No	12643	99.2	8215	98.9	4428	99.9	32.36(1)
Yes	525	0.8	433	1.1	92	0.1	<0.001
Panic disorder **							
No	12662	98.5	8308	98.4	4354	99.0	8.35(1)
Yes	230	1.5	204	1.6	26	1.0	0.004
Social anxiety ***							
No	12647	96.7	8217	96.0	4430	98.8	69.15(1)
Yes	439	3.3	380	4.0	59	1.2	<0.001
Agoraphobia							
No	13033	99.4	8557	99.3	4476	99.4	0.37(1)
Yes	98	0.6	74	0.7	24	0.6	0.542
Any selected disorder ***							
No	11276	89.3	7201	87.3	4075	94.7	152.62(1)
Yes	1455	10.7	1230	12.7	225	5.3	<0.001
Any mood disorder ***							
No	12342	94.8	7991	93.9	4351	97.2	51.69(1)
Yes	760	5.2	629	6.1	131	2.8	<0.001
Any anxiety disorder ***							
No	12149	95.1	7914	94.2	4235	97.3	54.98(1)
Yes	658	4.9	556	5.8	102	2.7	<0.001
Any substance dependence ***							
No	12717	97.5	8235	96.8	4482	99.6	92.02(1)
Yes	363	2.5	345	3.2	18	0.4	<0.001
Eating disorder *							
No	12889	98.1	8435	98.0	4454	98.6	5.33(1)
Yes	258	1.9	199	2.0	59	1.4	0.021
Alcohol dependence ***							
No	11980	91.9	7562	89.6	4418	98.1	277.09(1)
Yes	1141	8.1	1051	10.4	90	1.9	<0.001

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ % is calculated based on weighted cases.

χ^2 test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Mental Health Problems and Problem Gambling

We examined the relationship between any gambling problem and 12-month mental health measures (see Table 21). A significant association was found between any gambling problem and any substance dependence ($\chi^2_{(1df)} = 7.79, p = 0.005$), and alcohol dependence ($\chi^2_{(1df)} = 11.44, p = 0.001$). The adjusted odds ratio of 6.51 (95% CI: 1.13-37.36) for any gambling problem with any substance dependence suggested that there was a 55.1% higher risk of any gambling problem among those who met the criteria for any substance dependence than among those who failed to meet the criteria. The adjusted odds ratio of 3.88 (95% CI: 1.65-9.10) for any gambling problem with alcohol dependence

suggested that there was a significantly higher risk of developing gambling problems among those who met the criteria for alcohol dependence than among those who failed to meet the criteria.

Table 21. Prevalence (P%) and odds ratios of any gambling problem for 12-month mental health problems among senior adults aged 55 years and older in Ontario, 2002

Mental health problem	N=2177 †	P% ‡	Unadjusted OR (95%CI)	Adjusted OR (95%CI) ‡ Δ
Major depressive disorder				
No	2107	6.0	1.00	1.00
Yes	61	9.3	1.53 (0.59-4.00)	1.53 (0.58-4.01)
Suicidal thought				
No	2131	6.0	1.00	1.00
Yes	45	8.6	1.52 (0.47-4.91)	1.52 (0.47-4.94)
Mania disorder				
No	2163	6.1		
Yes	4	0.0		
Panic disorder				
No	2098	6.2		
Yes	14	0.0		
Social anxiety				
No	2128	6.1	1.00	1.00
Yes	31	7.7	1.15 (0.25-5.30)	1.15 (0.25-5.30)
Agoraphobia				
No	2157	6.2		
Yes	10	0.0		
Any selected disorder				
No	1961	5.9	1.00	1.00
Yes	114	8.8	1.59 (0.78-3.22)	1.54 (0.75-3.13)
Any mood disorder				
No	2097	6.0	1.00	1.00
Yes	64	8.9	1.59 (0.63-3.99)	1.58 (0.62-3.97)
Any anxiety disorder				
No	2038	6.1	1.00	1.00
Yes	53	3.6	0.59 (0.14-2.41)	0.55 (0.13-2.24)
Any substance dependence		**		
No	2157	6.0	1.00	1.00
Yes	9	33.3	7.52 (1.33-42.51)*	6.51 (1.13-37.36)*
Eating disorder				
No	2140	6.0	1.00	1.00
Yes	30	13.8	2.49 (0.85-7.29)	2.31 (0.78-6.85)
Alcohol dependence		**		
No	2122	5.8	1.00	1.00
Yes	46	19.4	4.06 (1.76-9.36)***	3.88 (1.65-9.10)**

Notes: † N is the number of unweighted cases and sample size in some variables does not total to full sample size due to excluding data with missing value from the sample. ‡ Calculated based on weighted cases. Δ adjusted for age and sex. χ^2 or Wald test: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

No significant association was found between any gambling problem and other mental health problems, including major depressive disorder ($\chi^2_{(1df)} = 1.64, p = 0.201$), suicidal thought ($\chi^2_{(1df)} = 0.62, p = 0.429$), social anxiety ($\chi^2_{(1df)} = 0.31, p = 0.573$), any selected disorder ($\chi^2_{(1df)} = 2.27, p = 0.131$), any mood disorder ($\chi^2_{(1df)} = 1.43, p = 0.231$), any anxiety disorder ($\chi^2_{(1df)} = 0.25, p = 0.614$), and eating disorder ($\chi^2_{(1df)} = 2.46, p = 0.117$). The rate of any gambling problem was 6.1% among those without 12-months mania disorder, 6.2% among those without 12-months panic disorder, and 6.2% among those without 12-months agoraphobia. However, no cases were found among those with 12-months

mania disorder, panic disorder, or agoraphobia. Thus, while alcohol and substance abuse problems were strong predictors of gambling problems, other mental health problems were not. It is important to note here that the small number of individuals with other mental health problems means that the sample size does not permit meaningful conclusions to be drawn.

DISCUSSION

In this section, findings are discussed in summary fashion within the structure of the research questions and as answers to the research questions. The research questions were as follows:

1. What is the prevalence and nature of gambling and gambling problems among older adults in Ontario?
2. Do sociodemographic health determinant factors predict gambling problems among older adults in Ontario?
3. Do mental health problems, including alcohol and drug dependence, predict problem gambling in older Ontario adults?

Prevalence of Gambling and Gambling Problems

The prevalence of gambling was calculated based on the 13 gambling behaviours identified in the CPGI. Based on these questions, it appears that gambling is common among Ontario seniors. Most seniors (about 75%) reported participating in at least one form of gambling in the previous year. This figure is nearly identical to that reported by Wiebe et al. (2004), who found that 73.5% of their sample of Ontario seniors reported participating in at least one gambling activity in the preceding year.

As noted in the Research Methodology section, estimation of the prevalence of any gambling problem among Ontario seniors presented some complications due to the large number of gamblers who identified themselves as “not gamblers” when asked the gambling problem questions. Subsequent inspection of the data suggested that the gambling behaviour of this group was similar to that of the gamblers who were asked the gambling problem questions. Therefore, we estimated the prevalence of any gambling problem in the population in two ways. In the first, or unadjusted, method, we treated the “not gambler” group as if they had no gambling problems. In the second, or adjusted, method, we assumed that the distribution of gambling problems in the “not gambler” group was similar to that in the group of gamblers. The unadjusted prevalence estimate was 3.3%, and the adjusted prevalence estimate was 4.6%. We believe that the latter figure (the adjusted estimate) is likely closer to the true proportion of Ontario seniors who experienced one or more gambling related problems in the previous year. Support for the 4.6% estimate is found in the Wiebe et al. (2004) study that found a similar proportion (6.4%) of seniors within their sample who experienced one or more gambling-related problem in the previous year (combined the at-risk and moderate/severe problem groups). While this prevalence figure is lower than that observed among younger adults, it still indicates that about one in every 20 seniors experienced one or more gambling-related problem in the previous 12 months. When this figure is expressed as a proportion of those who gamble, it increases to 6.1% of senior gamblers reporting at least one gambling-related problem in the previous year.

Nature of Gambling and Problem Gambling

Gambling is common in Ontario: 74.9% of the Ontario sample aged 15 years and older gambled at least once in the last year. The analyses here allowed comparisons of seniors to younger adults in terms of characteristics of gambling and gambling problems, and also permitted a more focused analysis of seniors’ experiences with gambling.

There were no statistically significant differences in gambling participation rates between the younger and older segments of the sample. Gambling is now a common activity of older adults as well as younger ones. Although older adults have similar gambling participation rates as younger gamblers, they engage in fewer types of gambling activities. Older adults are also similar to younger adults in the gambling activities that they engage in. For some activities (e.g., playing cards or board games), older adults were less likely to participate than younger adults. However, for other activities, they were more likely to participate than younger adults, and more frequently (e.g., lottery tickets, bingo). For example, the proportion of seniors who reported purchasing lottery tickets two or more times per week was nearly double the proportion of younger adults who reported purchasing that frequently (10.6% vs. 5.9%).

When gambling participation was measured by dollars spent on gambling, there were significant differences between the younger and older segments of the sample. In general, seniors appeared to spend more on gambling in absolute terms, and also in terms of the proportion of household income spent on gambling. A smaller proportion of seniors fell in the lowest category of spending (\$1-50 per year; 25.7% vs. 29.6% of younger adults), while a higher proportion of seniors fell in some of the higher categories of spending (e.g., 9.0 % of seniors vs. 6.7% of younger adults spent between \$501-1,000 on gambling in the past year). When gambling expenditures are measured as a percentage of household income spent on gambling, older adults spend a greater percentage of income on gambling, with almost twice as many older adults spending 2% or more of their income on gambling than younger adults (9.2% vs. 4.7%).

The findings that suggest seniors may be at an increased risk for gambling problems in some areas were supported by the results of logistic regression analyses of predictors of problem status controlling for age and sex. First, it was clear in these analyses that more frequent participation in gambling activities among seniors was significantly associated with increased risk of experiencing gambling problems. This was particularly striking in terms of VLT/casino gambling, where individuals who reported participating in this activity once a month or more were 29 times more likely to report experiencing any gambling problem in the past year. Similarly, increasing expenditures on gambling were associated with an increased likelihood of problems. Individuals in the two highest spending categories (\$501-1000 and over \$1000) were 37 times and 74 times, respectively, more likely to experience gambling-related problems. Individuals who spent 2% or more of their income on gambling were 16 times more likely to report experiencing any gambling problems. Seniors were more likely to be represented in all of the higher risk categories than younger adults.

Previously, seniors have been characterized as being at a relatively low risk for developing gambling problems. Our results provide some support for this interpretation, in that the proportion reporting any gambling-related problems was lower for seniors than for younger adults. However, these results also point to some troubling inconsistencies with that interpretation. Seniors were more likely to participate in some forms of gambling at the most frequent levels, and also appeared to spend more money gambling in absolute terms (and as a proportion of total income). They also reported significantly higher levels of gambling debt. These results are consistent with those of Petry (2002), who found that older problem gamblers reported spending a substantially higher proportion of their monthly income on gambling than did middle aged and young adults.

Evidence presented here and by others (e.g., Wiebe et al., 2004) indicates that more frequent gambling and higher amounts spent on gambling are associated with a higher likelihood of having a gambling problem. The increased risk associated with more frequent participation and higher spending is substantial and merits additional investigation. The observation that a larger proportion of seniors fall into the highest gambling spending categories, and that on some gambling activities a higher proportion of seniors fall into the most frequent participation categories, may call into question the previous suggestion that seniors are at relatively low risk of developing gambling problems, and instead may indicate that seniors may be at higher risk of developing gambling problems in at least some measures.

At minimum, these observations suggest that there are important subgroups of seniors who are at substantial risk of experiencing gambling problems. It is possible that the measure of gambling problems used may lack sensitivity to the special problems created by gambling among senior groups. An alternative measure might include some of those indices of frequent participation and spending that have been identified here as powerful predictors of gambling problems in senior populations.

Sociodemographic Health Determinant Factors

A major research question of interest in this study was the assessment of the potential sociodemographic health determinant factors as predictors of gambling problems. The sociodemographic variables evaluated in this study were health region, age, sex, marital status, level of education completed, country of birth and immigration status, household type, job status over past year, and three income variables.

Of these demographic factors, four had a significant impact on the risk of experiencing gambling problems, after controlling for age and gender in logistic regression analyses. For marital status, singles and those widowed, separated, or divorced had moderately larger odds ratios compared to those who were married. Increasing education produced much lower risks of problem gambling. Interestingly, simple income measures seemed to have relatively little impact on experiencing any gambling problem. The only significant observation here was that those on worker's compensation had a significantly higher relative risk of gambling problems compared to those who were self-employed or salaried. Since this relatively small subgroup of seniors is associated with illness and injury as well as a source of income, its interpretation is unclear.

A growing body of evidence indicates that a variety of health problems have important social determinants. For example, life expectancy is importantly related to education, family resources, and so on (e.g., Evans, Barer, & Marmor, 1994; Frank & Mustard, 1994). These data suggest that gambling problems, like other areas of health, have important social determinants. Increasing education, living in a family situation (as opposed to being single, widowed, or divorced), and being married or living with another person, all significantly reduce the chances of experiencing gambling-related problems. Thus, efforts to improve the health of the population by focusing on the social determinants of health are likely to have the additional benefit of reducing gambling problems among seniors.

Mental Health Problems

The final important question addressed in this research was whether or not mental health problems, including alcohol and drug dependence, predict gambling problems. A large number of mental health conditions were examined, including major depressive disorder, suicidal thought, mania disorder, panic disorder, social anxiety, agoraphobia, any selected disorder, any mood disorder, any anxiety disorder, any substance dependence, eating disorder, and alcohol dependence. One important observation was that the senior population experienced lower levels of problems on nearly all forms of mental health conditions assessed, with the exception of agoraphobia. This finding indicates that, on average, Ontario seniors enjoy a more positive level of mental health in comparison to younger adults.

The logistic regression analyses identifying potential mental health predictors of gambling problems showed that only two mental health conditions were associated with an increased risk for problem gambling - substance dependence and alcohol dependence. Both remained as significant predictors of gambling problems after the effects of age and gender were controlled for. In general, both relationships appeared quite robust, with odds ratios of about 4 for alcohol dependence and nearly 7 for any substance dependence. These findings are in agreement with the findings of other studies, which demonstrate substantial comorbidity between gambling problems and alcohol or drug problems

(Toneatto, 2002; Korn, 2000; Raylu & Oei, 2002; Feigelman et al., 1998; Spunt et al., 1998; Specker et al., 1996; Rosenthal, 1992).

It was surprising that other mental health measures were not associated with gambling problems. This finding is in contrast to some other studies which have suggested that, for example, depression, emotional distress, and suicidal thoughts are related to risk of gambling problems (Toneatto, 2002; Marshall & Wynne, 2003). Several factors might account for these differences. In the present research, we have focused on the experience of any problems related to gambling, while other studies have considered individuals with more severe gambling problems (e.g., Marshall & Wynne, 2003), which may tend to increase the strength of the association in the sample. Additionally, our available sample size was reduced when the “not gambler” group was removed from the analyses, and the chances of statistical significance are increased with larger sample sizes.

Limitations of the Research

While the results of this research are of substantial interest, several limitations must be kept in mind when considering them. Since gambling, gambling problems, and other variables are measured at the same point in time, the causal relationship among these variables cannot be determined. Nevertheless, the study has established several significant relationships among gambling, gambling problems, sociodemographic factors, and mental health variables in the Ontario senior population. Secondly, the data involve self-reports, and are therefore subject to self-report bias. Self-report data may underestimate the true rate of behaviours, including gambling (Adlaf, Paglia, & Ivis, 1999) and result in conservative prevalence estimates. A third concern is non-response bias. The response rate of 73.4 % (in Ontario) for this study may be considered excellent for a survey of this nature, but it means that slightly more than 25% did not agree to participate, and agreement to participate may be related to the variables of interest in this research. A fourth concern is the excluded population in the survey. The survey is based on a target population of households with telephones, and excludes those in prisons, hospitals, military establishments, and transient populations, such as the homeless. Bias caused by such non-coverage may affect the results. However, if the size of the excluded group is small relative to the total population (i.e., households without a telephone only account for 1.4% in Ontario households in 1991; Statistics Canada, 1992), the bias is usually minimal (e.g., Trinkoff, Ritter, & Anthony, 1990). A final concern is that a relatively small number of cases reported gambling problems, and thus the estimates involving this sample may suffer from reduced precision. Similarly, the sample size was not sufficient to differentiate among levels of gambling problems as is possible with the CPGI. Keeping these limitations in mind, the results provide some very important perspectives on gambling and gambling problems among Ontario seniors.

Recommendations

Any level of gambling problem is a serious concern for society. Gambling problems among seniors are a particular concern because in many ways, seniors are a vulnerable population. The overall picture that emerges of Ontario seniors is of a relatively healthy group. For example, they demonstrate significantly lower levels of many mental health problems on the CCHS 1.2. Perhaps in a related fashion, seniors have traditionally been considered to be at a lower risk of developing gambling problems than younger adults. Some of our findings are consistent with this observation, with a significantly smaller proportion of seniors reporting gambling problems (on the CPGI) than younger adults. However, other observations are more troubling, with a significantly larger proportion of seniors falling into the category with the highest proportion of income spent on gambling. Additionally, in some gambling activities, seniors are more likely to report the highest participation rates.

As a prelude to writing the recommendations section of this report, we met with a group of COPA stakeholders on June 17, 2005. These stakeholders consisted of seniors, service providers, and others with an interest in this issue. A preliminary draft of this report was presented to participants, and areas for recommendations were discussed. The recommendations listed below have the benefit of the insightful comments of this stakeholder group.

Recommendation 1. More research is needed on the issue of gambling and gambling problems among seniors. The present research makes it clear that much more understanding of gambling and gambling problems among seniors is needed. It is possible that the previous conceptions of low levels of problems among this group are incorrect, and that there are clearly subgroups for whom gambling has presented important problems.

Recommendation 2. The results of this work should be disseminated to seniors, stakeholder groups, service providers, and others with an interest in this issue. The results described here are of general interest. Some of the observed increases in risk levels are substantial, such as the associations involving frequency of gambling and amount spent with gambling problems. This information will prove of value for service providers.

Recommendation 3. A variety of research approaches needs to be applied to this issue. Additional survey research needs to be undertaken to verify the results reported here and to examine the predictors of different levels of gambling problems, in addition to the presence of any gambling problems. Qualitative studies are needed to understand the meaning of gambling for seniors, and how that meaning may change depending on their circumstances and experiences. Stakeholder groups and seniors need to be involved in the planning, design, and conduct of these studies.

Recommendation 4. Factors that draw seniors into gambling and gambling problems need to be examined, such as the role of inducements.

Recommendation 5. The potential role of cognitive impairment in seniors' gambling and gambling problems needs to be understood. Restrictions or changes in cognitive abilities may substantially influence gambling decisions, including how much to spend, how often to participate, and when to stop.

Recommendation 6. Important subgroups of seniors may exist with respect to gambling and gambling problems, and these subgroups need to be identified. These may include various ethno-cultural groups that differ in attitudes to gambling and the likelihood of developing gambling problems.

Recommendation 7. The possibilities for prevention of gambling problems among seniors need to be considered. Innovative programs involving information provision, skills training, and other strategies should be developed and evaluated.

Recommendation 8. There are important opportunities for early identification of gambling problems in primary care settings. People working in these settings, including physicians and other health care professionals, may be in an ideal position to identify seniors experiencing gambling problems, and possibly to deliver brief interventions or refer clients to appropriate services.

Recommendation 9. A simple and brief screening instrument is needed for use in primary care and similar settings to identify seniors and others who may be experiencing gambling-related problems. The results of this study suggest that a screening instrument for seniors may differ from one developed for younger adults.

Recommendation 10. This study found that seniors' gambling is related to the broader determinants of health in the same way that other health problems are. Thus, efforts to address these determinants of health as part of efforts to improve the health of the population receive support from this work. More specifically, efforts to improve life circumstances, such as quality of housing and access to social capital, may also have beneficial effects on gambling problems among seniors.

Recommendation 11. Additional research to explore the relationships among mental health problems, gambling, and gambling problems in seniors is needed. A larger sample, such as the national dataset, would allow these relationships to be studied with greater precision.

Recommendation 12. The links among gambling, gambling problems, and alcohol and other substance dependence need additional examination in seniors. Alcohol and other substance dependence increased the risk for gambling problems in this sample. Causal pathways need to be understood, and implications for service provision identified.

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APPENDIX A - CANADIAN PROBLEM GAMBLING INDEX (CPGI)

Excerpts on the CPGI and its Problem Gambling Severity Index²

The CPGI assesses two domains of problem gambling, namely (a) problem gambling behaviour, and (b) consequences of that behaviour for the individual or others. There are twelve items in these two domains, and nine of these are scored to determine problem gambling severity. This nine-item index is referred to as the *Problem Gambling Severity Index* (PGSI), ... Depending on how a respondent scores on these nine PGSI items, he or she may be classified as being in one of four gambler sub-types, namely: (a) non-problem gambler; (b) low risk gambler; (c) moderate risk gambler; and, (4) problem gambler.

PROBLEM GAMBLING SEVERITY INDEX (PGSI)

Scoring Algorithm and Questionnaire Items

1. PGSI Questionnaire Items Scored

- The nine items (Q1-Q9) in the questionnaire below are scored.
- Score 1 for each response of “sometimes,” 2 for each “most of the time,” and 3 for each “almost always.”
- A score of between 0 and 27 points is possible.

2. Classification of Gambler Sub-Types

- There are four classification categories based on the following cut-points for PGSI scores:

0	=	non-problem gambler
0-2	=	low risk gambler
3-7.1.1	=	moderate risk gambler
8+	=	problem gambler

- The non-problem gambler group is separated into gamblers and non-gamblers as these sub-groups have quite different characteristics.

3. PGSI Scored by Category

Dimension	Variables	Indicators	PGSI Scored Items
Problem Gambling Behaviour	Loss of control	Bet more than could afford	1. How often have you bet more than you could really afford to lose?
	Motivation	Increase wagers	2. How often have you needed to gamble with larger amounts of money to get the same feeling of excitement?
	Chasing	Return to win back losses	3. How often have you gone back another day to try to win back the money you lost?
	Borrowing	Borrow money or sold anything	4. How often have you borrowed money or sold anything to get money to gamble?
		Felt problem	5. How often have you felt that you might

² This material has been drawn from Wynne, H. (2003). *Introducing the Canadian Problem Gambling Index*. Wynne Resources: Edmonton Alberta

Dimension	Variables	Indicators	PGSI Scored Items
Adverse Consequences	Problem recognition	Criticism	have a problem with gambling? 6. How often have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?
	Personal consequences	Feelings of guilt	7. How often have you felt guilty about the way you gamble or what happens when you gamble?
		Negative health effects	8. How often has your gambling caused you any health problems, including stress or anxiety?
	Social consequences	Financial problems	9. How often has your gambling caused any financial problems for you or your household?

PGSI Gambler Sub-Types

Public health research relies on the science of epidemiology, which has as its first main goal the identification of positive “cases” of a condition (e.g. tuberculosis, small pox, AIDS) in a human population. In this vein, problem gambling prevalence studies have all sought to identify true cases of problem gambling in human populations, and various screening instruments and measurement strategies have been developed to accomplish this. Moreover, researchers have chosen different labels for categories of gambler cases (e.g. non-problem, at-risk, problem, pathological, Level 1, 2, 3). These various approaches have caused some confusion, and it is often difficult to compare studies because of differences in definition, labelling, and measurement.

In problem gambling research, it is incumbent on investigators to carefully describe the measures they use, scoring algorithms, and labels that are assigned to categories of cases. In view of this, the four PGSI gambler sub-types are described below.

In epidemiological research, correctly classifying and labelling positive cases of a health condition is crucial for researchers and service providers to identify and treat individuals. However, sometimes the label becomes a pejorative term that stigmatizes the person with the condition. There are many examples of health condition labels that have served to isolate and ostracize the afflicted within societies (e.g., leper, addict, alcoholic, schizophrenic, AIDS victim, pedophile), thus adding to the individual’s torment. **While the PGSI utilizes convenient labels to categorize individuals who have some severity of gambling problem** (bolding added) (e.g., low risk, moderate risk, and problem gambler), it must be stressed that the focus should be on the *problem behaviour and consequences* of that behaviour, rather than on the individual, per se. This is a very important distinction that will hopefully serve to focus public health discussion, communiqués, and intervention strategies on the issue of problem gambling behaviour, thus mitigating the potential harmful effect the problem gambling label may have for the individual.

APPENDIX B - CANADIAN COMMUNITY HEALTH SURVEY – MENTAL HEALTH AND WELL-BEING

Excerpt from the Canadian Community Health Survey - Mental Health and Well-being

The following material provides definitions of the key mental health variables that will be utilized in the proposed study. The source for these definitions is the Canadian Community Health Survey - Mental Health and Well-being (2002).

Mental Health Disorders

Major Depressive Disorder

Major depression is defined as a period of two weeks or more with persistent depressed mood and loss of interest or pleasure in normal activities, accompanied by symptoms such as decreased energy, changes in sleep and appetite, impaired concentration, and feelings of guilt, hopelessness, or suicidal thoughts.

Population aged 15 and over is classified as meeting or failing to meet the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for major depressive disorder in the **12 months prior to the interview**. Respondents who meet the criteria reported: (1) meeting the criteria for lifetime major depressive disorder*; (2) having a depressive episode in the 12 months prior to the interview; and (3) clinically significant distress or impairment in social, occupational or other important areas of functioning.

*Population aged 15 and over who meet or fail to meet the DSM-IV criteria for **lifetime major depressive disorder**. Respondents who meet the criteria reported: (1) two weeks or longer of depressed mood or loss of interest or pleasure and at least five symptoms associated with depression which represent a change in functioning; (2) that symptoms cause clinically significant distress or impairment in social, occupational or other important areas of functioning; (3) that symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication), or to a general medical condition; and (4) that symptoms are not better accounted for by bereavement or symptoms last more than two months or the symptoms are characterized by a marked functional impairment, preoccupation with worthlessness, suicidal ideation, or psychomotor retardation.

The questions and calculation of the final derived variable are based on the WMH2000 version of the Composite International Diagnostic Interview (CIDI) and uses the DSM-IV diagnostic classification.

Mania Disorder

Mania is characterized by a period of a week or days with exaggerated feelings of well-being, energy, and confidence in which a person can lose touch with reality. Symptoms of mania include: flight of ideas or racing thoughts; inflated self-esteem; decreased need for sleep; talkativeness; and irritability.

Population aged 15 and over is classified as meeting or failing to meet the DSM-IV criteria for mania in the 12 months prior to the interview. Respondents who meet the criteria report: (1) meeting the criteria for lifetime mania*; (2) having a manic episode in the 12 months prior to the interview; and (3) clinically significant distress or impairment in social, occupational or other important areas of functioning.

*Respondents who meet the lifetime criteria report: (A) a distinct period of abnormally and persistently elevated, expansive or irritable mood lasting at least one week; (B) three or more of

seven symptoms (or four or more if mood is only irritable); (D) marked impairment in occupational or social functioning, or psychotic features, or hospitalization was required; and (E) symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication), or to a general medical condition.

The questions and calculation of the final derived variable are based on the WMH2000 version of the Composite International Diagnostic Interview (CIDI) and uses the DSM-IV diagnostic classification.

Panic Disorder

Panic disorder is characterized by repeated and unexpected attacks of intense fear and anxiety accompanied by physiological manifestations such as palpitations, chest pain, smothering or choking, dizziness, sweating, nausea or abdominal distress, trembling or hot flushes or chills.

Population aged 15 and over is classified as meeting or failing to meet the DSM-IV criteria for panic disorder in the 12 months prior to interview. Respondents who meet the criteria reported: (1) meeting the criteria for lifetime panic disorder*; (2) having a panic attack in the 12 months prior to interview; and (3) significant emotional distress during a panic attack in the 12 months prior to interview.

*Respondents who meet the lifetime criteria report (A) recurrent unexpected panic where at least one of the attacks has been followed by one month of concern about having additional attacks or their implications or a change in behaviour related to attacks; and (B) the panic attacks are not due to the direct effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g. hypothyroidism).

The questions and calculation of the final derived variable are based on the WMH2000 version of the Composite International Diagnostic Interview (CIDI) and uses the DSM-IV diagnostic classification.

Social Anxiety Disorder (Social Phobia)

Social anxiety disorder (social phobia) is characterized by a persistent, irrational fear of situations in which the person may be closely watched and judged by others, as in public speaking, eating, or using public facilities. Symptoms include avoidance or anxiety related to the situations and physical symptoms such as rapid heart rate, nausea, dry mouth, sweating, chest pain, faintness, dizziness, and panic attacks.

Population aged 15 and over is classified as meeting or failing to meet the DSM-IV criteria for social anxiety disorder in the 12 months prior to the interview. Respondents who meet the criteria reported: (1) meeting the criteria for lifetime social phobia*; (2) fearing or avoiding social or performance situation(s) in the 12 months prior to the interview; and (3) clinically significant distress or impairment in social, occupational or other important areas of functioning.

*Respondents who meet the lifetime criteria for social phobia report: (A) a marked and persistent fear of one or more social or performance situations in which he/she is exposed to unfamiliar people or to possible scrutiny by others, and fear that he/she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing; (B) exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a panic attack; (C) recognition that the fear is excessive or unreasonable; (D) the feared social or performance situations are avoided or endured with intense anxiety or distress; (E) the avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interfere significantly with the person's normal routine, or social or occupational functioning; and (F) in individuals under age 18, the duration is at least 6 months.

The questions and calculation of the final derived variable are based on the WMH2000 version of the Composite International Diagnostic Interview (CIDI) and uses the DSM-IV diagnostic classification.

Agoraphobia

Agoraphobia is the fear and avoidance of being in places or situations from which escape might be difficult or in which help may not be available. Feared situations include being outside the home alone, being in a crowd or standing in a line, being on a bridge, and traveling in a bus, train or automobile. Situations may be endured with distress that can include dizziness, sweating, chest pain, nausea, feelings of helplessness or detachment, or feeling that the body or environment is unreal. Agoraphobia may occur alone or be accompanied by panic disorder.

Population aged 15 and over is classified as meeting or failing to meet the DSM-IV criteria for Agoraphobia in the 12 months prior to the interview. Respondents who meet the criteria reported: (1) meeting the lifetime criteria* for Agoraphobia; and (2) fearing or avoiding the agoraphobic situations in the 12 months prior to the interview.

*Respondents who meet the lifetime criteria report (A) fear of two or more situations; (B) situations are avoided, endured with marked distress, or require the presence of a companion; and (C) the anxiety or phobic avoidance is not better accounted for by another mental disorder, such as Social Phobia.

The questions and calculation of the final derived variable are based on the WMH2000 version of the Composite International Diagnostic Interview (CIDI) and uses the DSM-IV diagnostic classification.

Any of Selected Disorders, including Alcohol and Illicit Drug Dependence

Respondents aged 15 and over are classified as meeting or failing to meet criteria for any of the measured disorders (major depressive disorder, mania disorder, panic disorder, social anxiety disorder, agoraphobia) or substance dependencies (alcohol dependence, illicit drug dependence) in the 12 months prior to interview.

Suicide

Suicidal Thoughts

Population aged 15 and over is classified according to whether they thought about committing suicide or taking their own life in the 12 months prior to interview.

Note: Some respondents were not asked the questions required for the calculation of '12-month suicidal thought'. Consequently, important information was missing for those individuals (this represented 4.83% of all respondents for this variable). To fill in these missing responses, an imputation strategy was used to assign values for '12 month suicidal thought'.

Mental Health Problems

Risk of Gambling Problem

Population aged 15 and over who report having participated more than six times in at least one gambling activity in the 12 months prior to interview. For those that meet this criteria, the risk of having a gambling problem is measured.

The response scale is based on a modified version of the Canadian Problem Gambling Index (CPGI), which measures problem gambling in population surveys. This divides respondents into categories based on the severity of their problems associated with gambling.

Risk of Eating Disorder

Population aged 15 and over who indicate symptoms and concerns characteristic of eating troubles in the 12 months prior to interview. Individuals scoring above the threshold are considered at-risk of having an eating disorder.

The Eating Troubles module of this survey is based on a modified version of the Eating Attitudes Test. The EAT-26 is a widely used standardized measure of symptoms and concerns characteristic of eating disorders.

Alcohol Dependence

Population aged 15 and over classified by the probability of meeting the criteria for alcohol dependence in the 12 months prior to interview. Respondents who meet the criteria report at least three symptoms related to aspects of tolerance, withdrawal, loss of control and social or physical problems related to alcohol use in daily life.

Illicit Drug Dependence

Population aged 15 and over is classified as meeting or failing to meet criteria for illicit drug dependence in the 12 months prior to interview. Respondents who meet the criteria report at least three symptoms related to aspects of tolerance, withdrawal, loss of control and social or physical problems related to alcohol use in daily life.