Gambling Behaviour and Factors Associated with Problem Gambling among Older Adults

by

Jamie Wiebe

A Thesis Submitted to the Faculty of Graduate Studies
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirements of the degree of

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Abstract

The recent widespread expansion of gambling in North America has generated concerns about potential social and economic impacts. One group that has been identified as potentially at-risk of being negatively impacted by gambling expansion is older adults (Korn and Shaffer, 1999). This study had three main objectives: to examine the gambling patterns of older adults, to identify factors associated with gambling and problem gambling, and to examine the appropriateness of using existing measures of problem gambling with an older adult population. The data were drawn from research conducted by the Addictions Foundation of Manitoba in which telephone interviews were conducted with a sample of 5,000 older adults, 60 years and older, throughout the province. Problem gambling was determined from scores on the South Oaks Gambling Screen Revised (SOGS-R) (Lesieur and Blume, 1987). The results showed gambling to be a fairly common activity among older adults, with 74.7% of participants having gambled in the year prior to the study. Compared to nongamblers, gamblers tended to be younger, have higher incomes, have completed high school, be less likely to be single, and be more likely to consume alcohol and tobacco. Of the total sample, 1.6% were gambling at problem levels, and a further 1.2% were gambling at probable pathological levels. A series of logistic regressions were conducted to examine factors associated with nonproblem and problem gambling. The results revealed few differences between those gambling at nonproblem and problem levels. Problem gamblers were more likely to be male and report feelings of anxiety and depression. There were no differences related to income, social support, education, employment, age, location of residence, perceived health status or substance use. Finally, inspection of the psychometric properties of the SOGS-R showed that the

instrument might not be an appropriate tool for assessing problem gambling among older adults. The results from this study highlight areas for further research as well as identify directions for public awareness messages, prevention initiatives and treatment strategies for older adults.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

During the past two decades, there has been a broad expansion of gambling across Canada and the United States (Shaffer, Hall & Vander Bilt, 1997). Before 1969, most types of gambling were illegal in Canada. In 1969, an amendment to the Criminal Code approved lotteries and casino gambling conducted by licensed charities. In 1985 the Code was further amended to allow for electronic gambling devices such as slot machines and video lottery terminals (Smith and Azmier, 1997). This latter change granted provincial governments greater authority over gambling affairs. Today, gambling is an integral component of Canada's revenue-raising equation, providing approximately 4% of all provincial own-source revenues (Azmier, 2000).

In 1996, the Family Expenditure survey conducted by Statistics Canada included questions related to gambling expenditures in the following areas: government lotteries, non-government lotteries and raffles, casinos, slot machines and bingos (Marshall, 1998). A total of 14,765 households throughout Canada participated in the survey. Overall, 82% of households reported spending some money on at least one gambling activity in 1996, and these same households spent an average of $420 in total. When total gambling expenditures were averaged over all 10.9 million households, spending was estimated at $350 per Canadian household.

This shift in the role of gambling in society has been accompanied with concerns about potential social and economic consequences. In response to these concerns, a number of jurisdictions have conducted prevalence studies to assess the extent of gambling and problem gambling. Gambling has been defined as "risking something of

value on the outcome of an event when the probability of winning is less than certain" (Korn and Shaffer, 1999, p. 5). The majority of studies to date have focused on the general adult population. A few have examined the extent of gambling and problem gambling among adolescent populations. More recently, attention is being directed at the older adult population.

With the aging population and the increasingly accessibility of gambling activities comes a concern that a growing number of older adults will be participating in gaming activities and experiencing problems associated with their gambling. In 1998, there were an estimated 3.7 million individuals aged 65 and over in Canada. This represents a 57% increase from 1981. Seniors made up 12% of the total population in 1998, up from 10% in 1981. This population is expected to grow even more rapidly during the next several decades, particularly once baby boomers start turning 65 around 2011. By 2041, a projected 23% of the population will be 65 and over (Statistics Canada, 1999). This aging trend has considerable policy and program implications. As this segment of our population continues to expand, there is a need to stay abreast of the issues facing older adults.

Research has found that the proportion of older adults, defined as 60 or 65 years and older, participating in gambling has increased dramatically between 1975 and 1998 (NORC, 1999). Groups of older adults are often visible in casinos and tour companies specifically target seniors in the marketing of trips to casinos in Canada and the United States. Although, for many, gambling provides a form of entertainment and a social outing, there is concern that an increasing number of seniors may be experiencing problems related to their gambling. These concerns are highlighted in the following

newspaper and magazine headlines: "Many seniors gambling homes away" (Ogle, 1998), "A gamble on the rest of their lives: many seniors fall prey to gambling addiction" (Diffendal, 1998), and "Gambling it all away: the spread of casinos in Canada is posing a threat to the country's growing population of seniors" (Nicol, 2000).

Older adults face a unique set of factors that may place them at greater risk of developing gambling problems, including loneliness, fixed incomes, and vulnerability resulting from post-retirement inactivity (Fessler, 1996). There is also concern that gambling problems among seniors may be more difficult to identify because of increased isolation from co-workers, friends and family (Fessler, 1996). At present, however, there is little empirical evidence available indicating seniors are at risk for developing gambling related problems.

The objective of the present study was to examine the extent and nature of gambling among the older adult population in Manitoba, defined as individuals 60 years and older. The specific objectives were to determine: a) the extent of gambling and problem gambling; b) the predictors of problem gambling; c) and the adequacy of using existing measures of problem gambling with older adults.

The results from this research will fill an important gap in the available literature related to seniors' gambling, and provide direction for the development, enhancement and modification of problem gambling initiatives for older adults in Manitoba. First, seniors constitute one of the fastest growing population groups in North America. As this segment of the population expands, it is critical to stay abreast of the potential issues facing older adults. Second, anecdotal information suggests that there are an increasing number of seniors experiencing problems related to gambling. At present, however, there

is little empirical evidence describing gambling patterns among older adults. Third, there has not been any systematic examination of the factors related to problem gambling among older adults. Fourth, there has been no investigation of the adequacy of using existing measures of problem gambling with older adults.

This thesis is organized as follows. Chapter 2 reviews the literature related to trends in gambling and problem gambling, the measurement of problem gambling, and factors associated with problem gambling. The review introduces the population health conceptual framework as a possible means of understanding the factors underlying the development of gambling-related problems. Chapter 3 describes the data, measures and statistical procedures used to test the research questions presented in Chapter 2. The results of the statistical analyses are presented in Chapter 4. Lastly, Chapter 5 discusses the results in relation to the implications of the findings for future programming. Conclusions and suggestions for future research are provided.

CHAPTER 2: LITERATURE REVIEW

There has been a dramatic increase in the prevalence of gambling in North America during the last decade. This growth has been attributed to three primary forces: provincial governments' desire to generate new revenue without increasing taxes, tourism entrepreneurs developing new entertainment destinations, and the development of new technologies and types of gambling (Korn and Shaffer, 1999).

In 1985, an amendment to the Criminal Code of Canada gave provinces exclusive control of gambling. The 1990s witnessed a significant increase in the numbers of casinos, slot machines and video lottery terminals (VLTs) across Canada. In 1997, there were more than 50 permanent casinos, 21,000 slot machines, 38,000 VLTs, 20,000 annual bingo events and 44 permanent horse racing tracks in Canada. From 1994/95 to 1999/2000, provincial profits from gambling increased by 82%. In 1999, gambling provided $5.4 billion dollars a year in profits for the provinces, approximately 4% of all provincial own-source revenues (Azmier, 2000).

Similar trends have occurred in the United States. Until 1964, Nevada was the only state to have casinos. In 1978, casinos were brought to Atlantic City. Between 1992 and 2000, the United States went from having two states with casinos to roughly 30 (Keith Whyte, personal communication, 2002). Between 1975 and 1998 the percentage of Americans who never gambled increased from one in three to one in seven. In 2000, net gambling revenues in the US were approximately $60 billion (Keith Whyte, personal communication; National Gambling Impact Study Commission, 1999).

In Canada, only governments can "manage and conduct" gaming ventures. It is only since the 1970s that lotteries and casinos have been operating legally. In 1985, computers, video and slot devises were legalized and the provinces were given exclusive control of gambling (Korn and Shaffer, 1999). Private sector ownership is prohibited. In contrast, most casinos in the United States are privately owned and operated. State lotteries, on the other hand, are government owned.

A number of public health concerns have been identified in response to the large expansion of the gambling industry. The dominant concern is the emergence of pathological or problem gambling associated with gambling expansion, particularly related to casinos and VLTs in neighbourhood bars and restaurants (Korn and Shaffer, 1999).

Pathological gambling has been defined as a "progressive disorder characterized by a continuous or periodic loss of control over gambling; a preoccupation with gambling and with obtaining money with which to gamble; irrational thinking; and a continuation of the behaviour despite adverse consequences" (Rosenthal, 1992, pp 72-73). Other terms that have been used include compulsive gambling and gambling addiction. Clinically, the American Psychiatric Association (APA, 1994), in its Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), classifies pathological gambling as an impulse control disorder. Other terms that have been used by researchers and lay people include "abuse", "dependence" and "addiction".

Currently a preference is developing for the term "problem gambling" over "pathological gambling" (Walker and Dickerson, 1996). Problem gambling has been defined as "gambling behaviour that creates negative consequences for the gambler,

others in his or her social network, or for the community" (Ferris and Wynne, 2001, p.3). The term problem gambling avoids the medical and derogatory connotations of pathological (Walker and Dickerson, 1996) and suggests the inclusion of a range of gambling-related problems, not merely the most severe.

One group that has been identified as potentially vulnerable to gambling-related harms, be it pathological or problem gambling, is older adults (Korn and Shaffer, 1999). Although not generally considered risk-takers, concern has been expressed about older persons' vulnerability to gambling problems because of issues such as fixed incomes, social isolation and declining health (Fessler, 1996; Glazer, 1998; Korn and Shaffer, 1999; McNeilly and Burke, 1998). Many older people, now living on a fixed income, may be hoping for the "big win". Upon retirement, some individuals are given the option of taking their retirement money in a single lump sum and investing as they choose. Unfortunately, the person with gambling problems may lose their entire retirement savings. When they lose, it is more difficult to recoup because they may no longer have any earning capacity. There is also a concern that older adults may use gambling as a way to escape some of the stressors that are more common among this population, such as losing a spouse and increased health problems (Diffendal, 1998; Fessler, 1996). Concerns have also been raised regarding how casinos specifically target older adults, offering inexpensive day trips and other incentives (McNeilly, 2001).

Gambling Participation

To date, a range of studies have been conducted in Canada and the United States to determine the prevalence of gambling among adults and youth. Generally,

participation in gambling is determined by asking individuals if they have participated in various activities, including regulated forms of gambling (e.g., lotteries, scratch tickets, bingo, slots, VLTs, casino table games), as well as unregulated gambling (e.g., betting on games of skill, cards/board games/dice/coins, arcade games and gambling on the Internet). Some studies have also included questions pertaining to making speculative stock investments, as this is also considered by some to be a form of gambling (Wynne, 1994).

Consistently, the prevalence research shows that the majority of adults and youth gamble. In a review of gambling in Canada, the frequency of gambling among the general adult population ranged from a low of 67% in Ontario to a high of 97% in British Columbia (National Council of Welfare, 1996). Gambling rates that have been observed among youth (12 to 17 or 18 years) include 60% in Nova Scotia (Omnifacts, 1993), 78% in Manitoba (Wiebe, 1999) and 90% in Windsor, Ontario (Govoni, et al., 1996). It should be noted that direct comparisons between jurisdictions are often hindered by divergent definitions of gambling and research methods.

In terms of gambling activities, youth tend to play informal games, such as betting on games of personal skill, cards or dice, or purchasing raffle tickets. Adults (18 years and older) are more likely to frequent casinos or gamble on other regulated activities such as lotteries. Youth wager smaller amounts of money than adults, and tend to gamble less often (NORC, 1999). Most of the comparisons between adult and youth gambling patterns have been at a broad level, with 12 to 17 or 18 year old patterns compared with the average patterns observed among 18 year olds to the elderly. The limitation, of course, is that patterns by age cohort are not identified. Few studies have examined

gambling patterns across age cohorts, or have specifically examined gambling among older adults.

Mok and Hraba (1991) explored the relationship between gambling behaviour and age among 1,011 adult participants 18 years of age and older from Iowa. Gambling behaviour was a constructed variable defined by the scope, frequency, amount of money wagered and the amount of leisure time spent on gambling. The results revealed a negative relationship between gambling behaviour and age. Within this trend, however, people of different ages were also found to be participating in different types of gambling. The gambling activities most common among elderly respondents (65 years or older) were lotteries and bingo. With the exception of bingo, older adults were still the least likely to participate in all types of gambling. It should be noted, however, that this study was conducted before the legalization of riverboat casino gambling in Iowa and the broad expansion of gambling in the United States.

The National Opinion Research Centre at the University of Chicago (NORC, 1999) analyzed five data sets on gambling behaviour, attitudes and problems to examine changes in gambling patterns from 1975 to 1998. The results revealed substantial changes in gambling patterns since 1975 (see Figure 2.1). As shown, the proportion of seniors who have ever gambled increased from 35% in 1975 to 80% in 1998. Of all the age groups, the most dramatic increase was among adults 65 years and older.

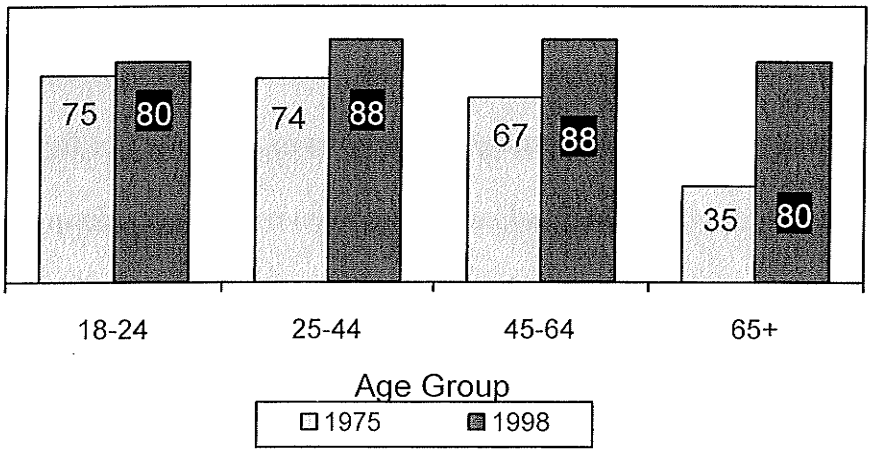

Figure 2.1: Lifetime Gaming by Age Group 1975 and 1998
Source: NORC, 1999.

McNeilly and Burke (1998) conducted a study to examine the importance of gambling as a social activity among older adults (65 years and older), following the wide expansion of gambling opportunities. Information was obtained from activity directors from 50 organizations, representing 6,957 older adults. Among 11 common types of social activities (e.g., shopping, going out for lunch/dinner, theatres, church), gambling was found to be the most highly attended activity. As reported by activity directors, 23% of older adults played bingo more than four times a month, and 16% participated in trips to a gambling casino on a monthly basis or greater. Out of all day trip types of social activities, going to a casino was the most popular. According to the authors, the popularity of casinos as a social activity is related to the increased availability of casino gambling and the accessibility of transportation for day trips.

The present study contributes to the growing research in this area by conducting an in-depth examination of the gambling patterns of older adults in Canada. This study extends the existing research in this area by exploring older adults' participation in a

wider range of gambling activities, as well as gambling frequency, money spent on gambling, reasons for gambling, and the importance of gambling as a social activity.

Measurement of Problem Gambling

In 1980 the American Psychiatric Association formally recognized pathological gambling as a disorder of impulse control (APA, 1980). The criteria were modified in the Diagnostic and Statistical Manual of Mental Disorders Third Edition - Revised (DSM-III-R) and DSM-IV (APA, 1987; 1994). Impulse disorders are characterized by a person's inability to "....resist an impulse, drive, or temptation to perform an act that is harmful to the person or to others" (APA, 1994, p.609). A diagnosis of pathological gambling is made if the individual experiences gambling behaviour in five or more areas. These areas include: a preoccupation with gambling, the need to gamble with increasing amounts of money in order to achieve the desired excitement, repeated unsuccessful attempts to control, reduce or stop gambling, feelings of restlessness or irritability when trying to control gambling, often going back another day to recover losses (chasing losses), lying to family about gambling involvement, committing illegal acts to finance gambling, lost relationships or jobs because of gambling, and borrowing money from others to pay gambling debts.

In an effort to develop a measurement instrument that could be easily administered to assess pathological gambling, Lesieur and Blume (1987) developed the South Oaks Gambling Screen (SOGS), a 20- item self-administered questionnaire. The development and validation of the SOGS was based on DSM-III criteria. The SOGS

rapidly became the most common instrument researchers used to assess the prevalence of pathological or problem gambling in the general population. One of the main reasons is that it is the instrument that has received the most validity and reliability testing. As noted by Shaffer et al., (1997), another reason is that Rachel Volberg, who has chosen to use the SOGS, conducted many of the early prevalence studies conducted in the United States (Volberg, 1992; 1994;1996; Volberg & Steadman, 1989).

Over time, adaptations have been made to the SOGS. For example, the original SOGS used lifetime measures only. Since 1991, a revised version (SOGS-R) of the instrument has been used that measures problems experienced in the past year. Generally, a score of 5 or greater is considered indicative of "potential pathological gambling" and 3 to 4 as "problem gambling". There is also the SOGS-RA (Winters, Stinchfield and Fulkerson, 1993), which is a modification of the SOGS for use with adolescent populations. The questions on the SOGS-R are contained in appendix A.

Despite its popularity, use of the SOGS has been associated with uncertainty and controversy. For instance, the scores that define social gambling (non-problem gambling), problem gambling and probable pathological gambling are neither consistently employed nor empirically based. According to Shaffer et al., (1997), the scores that identify pathological gambling are not fixed, but vary depending on whether a set of criteria yields an "acceptable" prevalence rate among a particular group. In addition, the SOGS "problem" gambling category (score of 3 to 4) has become widely accepted despite the lack of supporting research. As noted by Cox et al., (2000), a common misconception is that the SOGS developers chose scores of 3 or 4 as an index of

"problem gambling". In fact, this scoring originated with prevalence studies conducted by Volberg and Steadman (1988; 1989).

Cox et al., (2000) examined the meaning of various SOGS scores and their relation to a variety of gambling behaviours in a sample of 738 adults from the general population. The only group that consistently stood out on a number of gambling variables was the group with SOGS scores of 0. A clear distinction between problem and pathological gamblers did not emerge. Rather, a continuum was observed such that even individuals with scores of 1 or 2 were more similar to "problem" or "probable pathological" gamblers than those with SOGS scores of 0. The authors concluded that the cut-off score used to categorize gambling problems is ultimately a subjective decision.

Other criticisms of the SOGS have centered on the fact that it was developed in a clinical setting, and yet it is used in general population studies. Culleton (1989) has suggested that the SOGS, when used to estimate problem gambling rates in the general population, results in a high number of false positives. In contrast, Lesieur (1994) has argued that rates are underestimated because treatment populations are not sampled and pathological gamblers are not likely to be home to participate in a telephone survey.

The present study will test the psychometric properties of the SOGS-R instrument in a community-based sample of older adults. The results will build on emerging research examining the psychometric properties of instruments designed to tap problem gambling among general population based samples. There has been no attention to scale development among older persons in a community sample.

Prevalence of Problem Gambling

Shaffer and colleagues (1997) conducted a meta-analysis of the gambling prevalence research in North America. A broad strategy identified 152 studies, of which 120 met the criteria for inclusion in the analysis. The authors observed two major clusters of studies. The first have focused on general adult or general youth populations. The adult surveys have typically employed telephone surveys; the youth studies have used either telephone or in-school surveys. The second cluster includes special populations, such as treatment groups or college students.

Most studies examining the prevalence of problem gambling have focused on the general population or youth. In the meta-analysis of prevalence studies conducted by Shaffer et al., (1997), a classification scheme, consisting of levels of problem gambling, was constructed to facilitate the comparison of conceptually different groups. Level 1 was defined as gamblers who do not experience gambling problems, Level 2 as gamblers with sub-clinical levels and Level 3 as the most severe category of disordered gambling (pathological gambling). The overall percentage of Level 2 adult gamblers was estimated at 2.80%, and Level 3 gamblers as 1.14%. There were no significant differences in prevalence rates between Canada and the United States.

A summary of some problem gambling rates among general adult populations found in Canada, and elsewhere, is presented in Table 2.1. Direct comparisons are difficult because not every study used the same scoring scheme. Generally, though,

problem gambling rates range between 2% and 3%, and probable pathological rates between 1% and 1.5%.

Table 2.1: Problem Gambling Rates in Canada and Elsewhere

Province/Country	Problem (%)	Probable Pathological (%)
Alberta (Wynne, 1998)	2.8	2.0
British Columbia (Gemini Research, 1994)	2.4	1.1
Manitoba (Criterion Research, 1995)	2.4	1.9
New Brunswick (Baseline Research, 1992)	3.1	1.4
Nova Scotia (Baseline Research, 1996)	2.8	1.1
Ontario (Ferris & Stirpe, 1995)	Not available	0.9
Quebec(Ladouceur, 1991)	2.6	1.2
Saskatchewan (Volberg, 1994)	1.9	0.8
Australia (Productivity Commission, 1999)	2.6	2.3
United States (NORC, 1999)	2.0	0.9

While few studies have specifically examined the impact of gambling on older adults since the broad expansion of gambling opportunities, reports have suggested a growing and largely unrecognized public health problem among older adults (NORC, 1999; Shaffer et al., 1997). For instance, the "elderly" were identified as one of the "at risk groups" who lose significantly more in gambling as a proportion of their total income than do those in higher incomes (Shaffer et al., 1997). However, in terms of problem gambling rates, persons 65 years and older were less likely to be gambling at problematic levels than those in younger age groups.

Howard Research (2000) examined gambling behaviours and attitudes among older adults from Alberta. Of the 800 individuals who were surveyed, a small minority (1.8%) were experiencing gambling-related problems. A substantial proportion (40%)

indicated that they would not know where to turn for assistance if they knew someone with a gambling problem, or felt that they had a gambling problem.

Case reports highlight the increasing number of older adults with gambling problems who are presenting in clinics for other concerns. McNeilly and Burke (1999) present four cases which they argue typify the growing number of older adults who present themselves or are presented for the treatment of an affective disorder, and who also have undetected problem gambling behaviours. All four individuals were referred to treatment by family members, who were concerned with the client's depression. While in treatment, gambling problems were revealed. For instance, a 67-year-old married male was admitted to treatment for depression. His gambling habits went unnoticed by family members until he himself suggested that gambling might be one of the reasons for his depression. Also, a 70-year-old female, who was later classified as a pathological gambler, was admitted to treatment by her daughter. Her gambling activities went unnoticed until the daughter opened some of her mother's bank/credit card statements. Three of the four problem gamblers started gambling as a result of loneliness or boredom. For instance, a 79-year-old female started gambling after she surrendered her ill husband's care to a nurse. The 67-year-old male mentioned above viewed gambling as a way of escaping his home after his disabled mother-in-law moved into his house.

Wiebe and Kostyk (2000) examined the characteristics of older adults attending treatment for gambling problems at the Addictions Foundation of Manitoba. Of 1,328 clients who had received gambling treatment between 1996 and 2000, 61 (6%) were 60 years or older. The most pursued gambling activities by the 61 seniors were slots/VLTs, lottery tickets and then bingo. The most common reason for gambling was to win money,

followed by being distracted from problems. Just under one-quarter (21%) indicated that they had no close friends to talk with about personal problems.

These results were largely substantiated in a survey of professionals working with older adults in Manitoba (Doupe, 1999). VLTs and slots were identified as the gambling activities that were causing the most problems for older adult gamblers. Benefits that older adults receive from gambling included the reduction in loneliness and isolation, as well as providing mental stimulation/excitement. Problems resulting from gambling included financial strain, relationship problems, and health-related problems such as depression, drinking and smoking. Some of the barriers preventing older adults with gambling problems from seeking assistance included inaccessibility of services, denial of the problem, and feeling embarrassment and shame for needing help.

McNeilly and Burke (1999) sought to develop a profile of older adults from Nebraska who were experiencing problems with gambling. A survey was distributed to older adults from senior retirement centres, bingo halls, members of senior's organizations, and a group of casino bus trip participants. A total of 308 completed surveys were returned, giving an overall response rated of 67%. Of the total sample, 4.2% were classified as problem gamblers and 2.6% as probable pathological gamblers. Compared to others, those in the probable pathological category were more likely to gamble on a weekly basis or greater, and spend the most money on slot machines in casinos. Pathological gamblers also reported the lowest levels of life satisfaction, had higher levels of depression, were more likely to smoke cigarettes and have a past history of substance abuse.

As noted by the authors, however, caution needs to be taken as the results were drawn from a small sample of older adults in a metropolitan area close to a casino. They stress the need for further research, drawn from larger samples, to examine the prevalence of problematic gambling among older adults.

The present study provides an important contribution to the literature by specifically assessing the prevalence of problem gambling among a large community-based sample of older adults.

Conceptual Framework for Understanding Problem Gambling

A number of prevalence studies have included measures to identify the gambling patterns and socio-demographic characteristics associated with problematic levels of gambling. This research shows that the gambling patterns of problem gamblers differ in many respects from those gambling at non-problematic levels.

Common reasons associated with gambling cited by problem gamblers include fun and entertainment, winning money, and escaping from problems. Non-problem gamblers also gamble for the entertainment it provides, but they tend to be less concerned with winning money and are more likely than problem gamblers to gamble to support charities. Problem gamblers prefer continuous modes of gambling, such as bingo, horse racing, slots/VLTs, activities that pay immediately (Wynne et al., 1998). That is, the time between wagering and knowing the outcome is quite short. Problem gamblers are also more likely than non-problem gamblers to gamble on a weekly or greater basis on several different activities (Wynne et al., 1998).

The National Council of Welfare (1996) reviewed the results of eight Canadian adult prevalence studies in an attempt to identify the profile of a problem gambler. The review identified a fairly consistent pattern between problem gambling and being male, single and under the age of 30 years. Similarly, in a review of prevalence studies conducted by Korn (2000), being male, young, and having a concurrent substance abuse or mental illness placed people at greater risk for gambling-related problems. In a national study conducted in the United States (NORC, 1999), problem gamblers were more likely than non-problem gamblers to have mental illness issues, received mental health care in the past year and have been arrested or incarcerated. As previously discussed, McNeilly and Burke's (1999) study with older adults found that pathological gamblers had higher levels of depression, were more likely to smoke cigarettes and have a past history of substance abuse compared to non-problem gamblers.

There has not been any systematic examination of the factors related to problem gambling among older adults. In addition, there has not been any framework guiding the selection of potential correlates among those studies examining predictors of problem gambling. To date, the dominant conceptualization of problem gambling has been from a medical perspective, with the focus on diagnosing and treating the individual with the gambling problem. This framework, however, has less utility for researchers who are attempting to understand individuals experiencing gambling-related problems in the general population, but may not be seeking treatment.

Population health is a framework that examines the social and economic determinants of health and provides an explanation of health beyond the biomedical (Evans and Stoddart, 1994). The Lalonde Report set the stage in 1974, by establishing a

framework for the key factors that seemed to determine health status: lifestyle, environment, human biology and health services. Since then, much has been learned that supports, and at the same time, refines and expands this basic framework.

In the early 1990s, a Federal/Provincial/Territorial Advisory Committee was established with the objective of identifying population health strategies that would include all levels of government. The Committee's document, *Strategies for Population Health: Investing in the Health of Canadians* (1994), was adopted in September 1994 by the Federal and Provincial Ministers of Health. The report stressed the importance of targeting the full range of determinants known to influence the health of the population. The determinants of health identified, based on research, were: income and social status, social support networks, education, employment and working conditions, physical environment, biology and genetic endowment, personal health practices and coping skills, healthy child development and health services. Also stressed was the need for intersectoral collaboration, and education of the public and partners on the determinants of health.

In 1994, Evans and Stoddart formulated a framework for understanding the processes by which the health determinants affect health status (see Figure 2.2). The model incorporates the categories of social environment, physical environment, genetic endowment and health care to classify the array of health determinants. Although they appear separately, the determinants function interdependently to produce health and disease in individuals and populations.

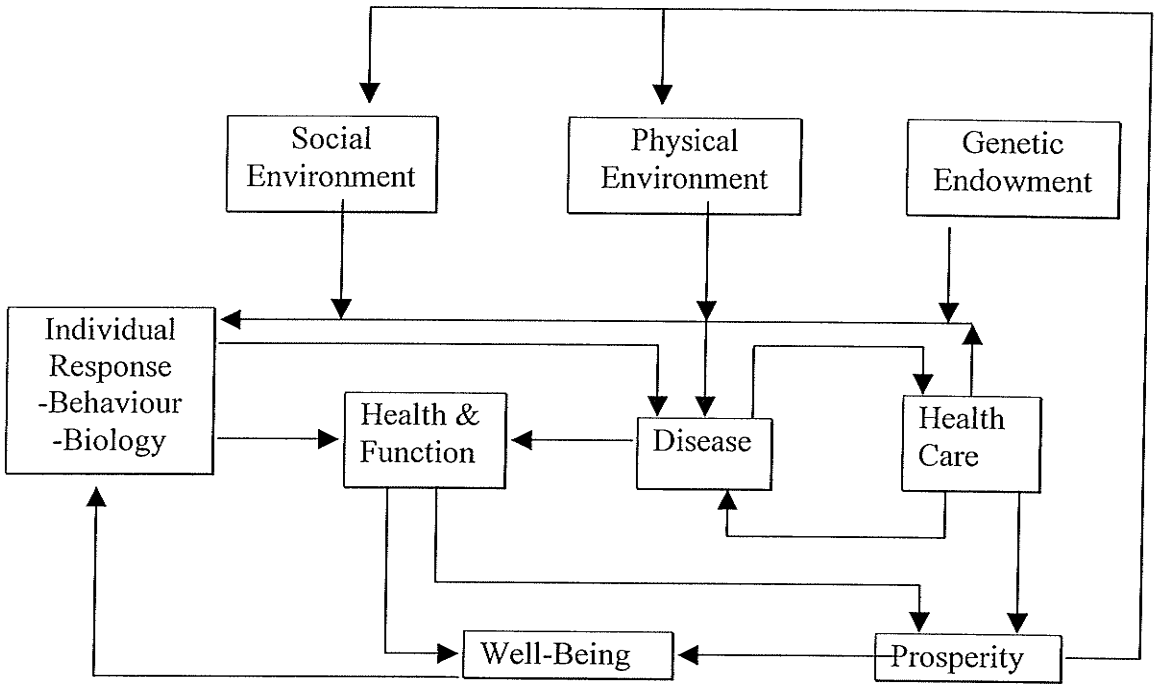

Figure 2.2: Determinants of Health Framework (Evans & Stoddart, 1994, p.53)

In this model, physical health and function are not the most important outcome. Well-being is the ultimate goal. Evans and Stoddart (1994) point out the potential negative impact of the health care system on an individual's well-being. For example, medical interventions may undermine an individual's sense of self-esteem, coping ability or empowerment. Being labelled as having a disease or disorder may create a sense of vulnerability. The costs associated with medical interventions may also impact on an individual's well-being. This occurs when resources that could have been directed at other valued purposes are used up by health care. Evans and Stoddard (1994) give the example of how increased health costs for the elderly take up funds that are then unavailable for increased pensions and other forms of support.

Although the precise pathway is unclear, the causal mechanism from health determinants to health and well-being is related to the ability of an individual to cope with and control the stresses experienced in life. If a person has strong functional coping skills, and has some sense of control over his/her life, he/she will be better able to overcome stress and resist disease processes.

Within the model put forward by Evans and Stoddart (1994), "addictive" behaviours such as pathological gambling and substance abuse fall under the individual's response to the determinants of health. The limitation of the model is that it does not account for the two-way interaction between addictive behaviours and the determinants of health. Gambling problems can result from the interaction of deficits in the basic prerequisites of health (poverty, unemployment, poor education, lack of support networks). Alternatively, gambling problems can directly affect the basic requirements for health. For example, an unemployed individual may continue to use the same or greater amounts of money to gamble despite increased financial constraints.

The population health framework is a relatively new addition to the addictions field (Wiebe, 1997). In June 1999, a symposium was held in Edmonton, Alberta, Canada, that brought together addictions researchers, policy makers and public health professionals to examine the fit, if any, of substance abuse and problem gambling within the determinants of health framework. The discussions revealed the complex relationship of "addictions" with the health determinants. As mentioned above, problem gambling and substance abuse are not only independent determinants of health status, but are also important mechanisms by which the other determinants of health impact on overall levels of population health. Nonetheless, it was generally felt that the "population health model

offers one possible framework to organize, assess and integrate masses of information, with the ultimate purpose being to clarify potential policy both in and external to, the health field" (Poulin, 1999, p.12). Furthermore, rather than being a model or a theory, population health was viewed more as a conceptual framework. So, while a number of limitations with the population health model were noted, it was generally felt that addictions, including problem gambling, had an important place in the model.

Determinants of Health and Problem Gambling

The following discussion examines the potential relationship between each health determinant and problem gambling.

Income and Social Status

Research shows that individuals' well-being and health are affected by the discrepancy between the richest and poorest members of the society (Evans and Stoddart, 1994). Health status improves at each higher level of the income and social hierarchy. High income allows for better living conditions, and generally provides more control and discretion. As income increases, Canadians have longer life expectancies, better health and experience less illness (Health Canada, 2001).

While poverty rates among seniors have declined in the last few years, it is still an important societal concern (Rosenthal, 1998). Older women and minority older people continue to experience high rates of poverty (Transition Magazine, 1998). Among seniors, married couples tend to be the wealthiest, and unattached women the poorest. In 1998, the poverty rate for people 65 and older was 17.5%, representing the lowest rate

since 1995. The poverty rate for unattached women 65 and older, however, was 39.4%. This represents one of the highest rates of poverty for any family type (National Council of Welfare, 1998). Poverty increases the risk of poor health, social isolation, lack of information of available resources, and accessibility to services (Macleod and Associates, 1997). Poverty also affects family members' ability to care for seniors.

There has been interest in the relationship between gambling and socio-economic status. The results from recent Statistics Canada surveys (Marshall, 1998; Marshall, 2000) show that while gambling participation and expenditures increase with income levels, lower income households spend proportionately more on gambling than do higher income households. This finding has important implications. Money lost to gambling, and the inability to recoup such losses, could have devastating impacts on older adults.

Social Support Networks

Another key health determinant is social support networks, which includes family, friends and community. Social support is particularly relevant to the older population who may be experiencing reduced support due to deaths of family and friends, and less contact with colleagues as a result of retirement. Furthermore, Statistics Canada (1994) reports that the extended family household is becoming a thing of the past. The implications are that an increasing number of older adults are living alone and experiencing reduced social networks. Furthermore, due to their retired status or isolation from family members, older adults are accountable to fewer people, and therefore problems are more likely to go unnoticed (Fessler, 1996). People who have suffered a

recent loss or change of lifestyle, such as the death of spouse or retirement, may require assistance with re-building social structures in their everyday lives.

MacLeod and Associates (1997) used a population health framework to examine the practical implications of some of the projects funded under the New Horizons: Partners in Aging program. While many factors contribute to seniors' health, social isolation was found to be one of the most important risk factors. This health determinant reduces health status by limiting the ability of seniors and their caregivers to access needed information and help. As noted by the authors, social isolation is difficult to address because it is often linked with the undervaluing of seniors in our society, poverty, low literacy, language barriers, geographic isolation, inadequate housing, transportation problems, gender and culture (MacLeod and Associates, 1997). Many seniors are isolated because they do not speak English or French, or existing programs are culturally inappropriate.

Without social support, the older adult with a gambling problem may not know where to turn for help. As well, the gambling problem may simply go unnoticed because of less contact with others. At the same time, older adults may turn to gambling as a means of coping with loneliness associated with a weak social support network.

Education

Education is closely tied to socio-economic status. As education increases, socio-economic status increases, and health status improves (Chomik, 2001). Education assists people in making healthy choices by improving people's ability to access and understand information, provides the opportunity for a better income and job security and more

satisfaction with work. Canadians with low literacy skills are more likely to be unemployed and poor, and have higher morbidity and mortality rates than Canadians with higher levels of education (Health Canada, 2001).

Older adults with low literacy face challenges that can directly impact their health status. They may need to rely on support networks for assistance with reading and writing. If these support networks are taken away, they may be very isolated. There may also be a sense of embarrassment associated with limited education and low literacy, which may make individuals reluctant to access programs and rebuild social support networks (MacLeod and Associates, 1997).

A number of studies have observed a relationship between low education levels and problem gambling (Baseline Market Research, 1992, 1996; Wynne 1998). In a prevalence study conducted in Alberta, Wynne (1998) found problem gamblers to be more likely than the general population to have less than a high school education. Similar results were observed in studies conducted in New Brunswick (Baseline, 1992) and Nova Scotia (1996). The precise link between education and problem gambling is not clear, but it is possible that those with low levels of education are less aware of available services, more reluctant to access services, and therefore less able to get assistance with the problem. Those with lower education may also have a distorted view of randomness and probability; faulty cognitions that influence gambling participation.

Employment and Working Conditions

Employment has a significant impact on a person's health and well-being. Employment provides more than just income, it gives people a sense of identity and

meaning, opportunities for personal growth, and social contacts. In a healthy workplace, people feel that what they do is important, that they have control over work and working conditions, that their job is secure and that the workplace is safe. Unemployment, underemployment, stressful or unsafe work are associated with poorer health (Health Canada, 2001).

Often, older workers are the first to be laid off or offered early retirement packages. Between 1989 and 1994 there was a 30% increase in the number of people reporting early retirement because of losing their job and being unable to find other employment (Transition magazine, 1998). In trying to locate other employment, displaced older workers often find that positions demand higher education levels or skills different from what they have (Macleod and Associates, 1997).

Because employment occupies such a critical role in people's lives, the transition from employment to retirement is important to health. However, the effects of retirement on health status are not clear. Some studies suggest a negative impact, others suggest a positive impact, and still others report no impact (Marshall and Clarke, 1996). According to Marshall and Clarke (1996), the crucial factor appears to be the extent to which an individual has control over the decision to retire.

Retirement may have an important relationship with an individual's involvement in gambling. Gambling may be seen as a way of coping with boredom and loneliness resulting from more free time, and less contact with others. Motivations to gamble may also result from having a fixed income, and wanting to augment this income. Depending on the individual's involvement, gambling conducted under these circumstances may

lead to problems for the older adult. On the other hand, gambling may simply be a harmless, entertaining pastime for retirees.

Biology and Genetic Endowments

Some individuals have an inherited predisposition that affects morbidity and mortality. There is a great deal of neurobiological and genetic research showing biological underpinnings to problem gambling (Eber and Shaffer, 200; Walters, 2001). Nonetheless, most would argue that the physiological condition is not a sufficient explanation (Ferris, Wynne, Single, 1999). Rather, problem gambling may result from a biological predisposition, in combination with certain social and environmental stimuli that place an individual at greater risk for gambling-related problems.

For the purposes of this discussion, the age and sex of an individual will be discussed within this category, although they are often included as separate health determinants. Both of these variables are strongly linked to problem gambling.

Among adults 18 or 19 years and older, research has consistently observed higher problem gambling rates among the younger age cohorts (Ladouceur, 1991; Smart and Ferris, 1996; Volberg, 1994; Wynne, 1994). A recent study conducted in Ontario with a representative sample of 5,000 adults 18 years and older observed an overall problem gambling rate of 3.8%. However, the age group with the highest problem gambling rate at 7% was 18 to 24 year olds (Wiebe, Single and Falkowski-Ham, 2001). One explanation that has been given for the higher rates among young adults is related to lifestyle. Increases in responsibility, family, jobs, children, and so forth may lead young

people to cut back on their gambling and possibly grow out of their excesses (Wiebe et al., 2001).

It is well known that men and women are prone to different types of diseases and conditions. Men are more likely to die at an earlier age than women and women are more likely than men to suffer from depression, stress and other chronic conditions (Health Canada, 2001). There is also a tendency for men and women to have different incomes and types of employment. Society ascribes roles, personality traits, attitudes and behaviours based on sex that in turn can influence health and well-being. Numerous studies have found problem gambling rates to be more prevalent among males than females (National Council of Welfare, 1996). The precise cause of these differences is not clear, however, it may be related to the roles that society ascribes to the different sexes. In addition, as gambling becomes more acceptable in society, it is possible these gender differences will decrease.

Personal Health Practices and Coping Skills

Personal practices and coping skills refer to the behaviours and actions that an individual can take to prevent disease and promote well-being. It involves coping strategies, problem solving skills, and making choices that enhance health. According to Ulysse (1997), two major mental health problems for older adults are depression and suicide. Several explanatory factors have been identified, including the loss of a spouse, loneliness and social isolation, health problems, and substance abuse.

One of the most common problems reported by problem gamblers is depression. In fact, Jacobs (1986, 1987) and Rosenthal (1993) emphasize the importance of

depression and other negative inner states in the lives of pathological gamblers. Both researchers suggest that depressive inner states motivate pathological gambling behaviour as a result of gamblers' lack of alternative, adaptive coping skills. In addition, a study with problem gambling clients at the Addictions Foundation of Manitoba found that, in addition to feelings of depression, many problem gamblers reported that they gambled in bars and in casinos to ease their profound sense of loneliness (Beaudoin and Cox, 1999).

Physical Environment

The quality of the environment, including factors related to housing, air quality, and the design of communities and transportation systems can significantly impact health and well-being. The location and accessibility of gambling venues has been found to have an important impact on gambling levels and problem gambling rates. For instance, Room, Turner and Ialomiteanu (1999) examined the impacts on the community of the opening of a casino in Niagara Falls. The results showed that the introduction of a casino in that community increased gambling by local residents as well as increased reports of gambling problems.

Healthy Child Development

Healthy child development refers to the effects of prenatal and early childhood experiences on health and well-being in later life (Chomik, 2001). In the area of substance abuse, child development has shown to be an important factor (Wiebe, 1997). Family practices that include consistent discipline, child monitoring, positive reinforcement, the teaching of problem solving skills, and parental involvement in the

child's life significantly decrease the chances of a youth using substances in a harmful manner (Wiebe, 1997). There is some evidence that parental gambling behaviours are related to child's behaviour. For instance, in a study with youth from Ontario, youth who reported that their parents gambled excessively had almost twice the rate of problem gambling as did those adolescents who did not report excessive parental gambling (Govoni, Ripcich, & Frisch, 1996).

Health Services

For people who require assistance with a gambling problem, it is important that accessible and appropriate services are available. According to professionals working with older adults in Manitoba (Doupe, 1999), some of the barriers preventing older adults from seeking assistance include inaccessibility, and feeling embarrassment and shame about having a problem. There may also be transportation issues that prevent older people from accessing services.

The present study draws upon the population health model as a means of conceptually organizing the data. This analysis represents an initial step in understanding problem gambling in terms of its relationship to various determinants of health.

Research Questions

In summary, the present study is guided by the following research questions:

1. What are the general patterns of gambling (gambling activities, money spent, frequency of gambling, reasons for gambling, importance of gambling) among adults 60 years and older living in Manitoba?
2. How appropriate is the SOGS-R as a measure of problem gambling among older adults?
3. Using a population health model to conceptually organize the data, what are the predictors of problem gambling among older adults?

CHAPTER 3: METHODOLOGY

Data for the present study are based on the Addictions Foundation of Manitoba (AFM) Study "Prevalence of Gambling and Problem Gambling Among Older Adults in Manitoba" (Wiebe,2001), for which the present author was principal investigator. Ethical review and approval were obtained from an external research advisory committee, consisting of researchers with university affiliation. This committee was specifically created by the AFM to provide ethical review of their research projects. The AFM granted the use of the data for the present study.

Sampling

The population of Manitoba is approximately 1.1 million people, of which 17.5% are individuals 60 years and older. The population size of those 60 years and older by Manitoba health region was determined using 1996 Census data (see Table 3.1). Basing the sampling on these figures, about 56% of the study participants were drawn from the City of Winnipeg, 23% from Winnipeg Rural, 19% from the West and only 2% from the North. The total sample for each region and corresponding margins of error are also presented in Table 3.1. The margin of error associated with the total sample of 1,000 is ±3.0% at a 95% confidence level.

Table 3.1: Comparison of the Manitoba Population Age 60 and Over with the Study Sample by Region

Region	Total Population	Population 60+ yrs	% 60 yrs+ in Man. by region	Study Sample (n)	% of Study Sample	Margin of Error
Northern	68,267	4,562	2%	19	2%	±22.4%
Western	162,161	37,169	19%	190	19%	±7.1%
Winnipeg Rural	264,627	44,960	23%	231	23%	±6.4%
City of Winnipeg	618,843	108,834	56%	560	56%	±4.1%
Total	1,113,898	195,525	100%	1000	100%	±3.0%

A total of 570 females (57%) and 430 males (43%) participated in this study. A breakdown of the age of the study sample appears in Table 3.2. Compared to the actual distribution of ages in the population, those 60 to 69 years were slightly over-sampled, while those 70 and over were slightly under-sampled.

Table 3.2: Comparisons by Age between the Actual Population and Study Sample

Age:	Actual Population	Study Sample	Difference
60-64 years	22.33%	25.6%	3.27%
65-69 years	21.43%	23.6%	2.17%
70-74 years	20.35%	19.4%	(-0.95%)
75-79 years	15.64%	14.1%	(-1.54%)
80-84 years	11.29%	7.7%	(-3.59%)
85+ years	8.93%	3.8%	(-5.13%)
Unclassified		5.8%	

Procedures

Households were randomly selected from a sample of listed telephone numbers, contacted by phone, informed of the study's purpose, and asked whether there was anyone living in the household who was 60 years of age or older. If someone in the household met the age requirement, the interviewer asked to speak to that person. If more than one person met the age requirements, the person whose birthday came next was asked to complete the interview (a process used to randomize the selection within each household). Only one individual from each household was asked to participate. In total, 1,000 Manitoba adults 60 years and older were interviewed. Viewpoints Research, a survey firm located in Winnipeg, was contracted by the Addictions Foundation of Manitoba to conduct the interviews.

A total of 12,728 contacts resulted in a household being asked if they met the study's criterion. Of these, 857 did not have a person 60 years or older, 9,339 refused to indicate either way, and 2,532 households identified an eligible respondent. Of the

eligible households, 1,467 were unwilling to participate, 65 respondents ended the survey prematurely and 1,000 completed interviews. Therefore, among the households with a known eligible respondent, the response rate was 39% and the refusal rate was 61%.

Response rates for general problem gambling surveys in Canada range from 65% in Ontario (Ferris & Stirpe, 1995) to 25% in British Columbia (Gemini Research, 1993). The response rate achieved in this study is toward the lower range. Survey research professionals in the United States and Canada have found that response rates for telephone surveys in the general population have declined in recent years as individuals in the general population become more reluctant to participate in this type of research (Gemini Research, 1994). Older adults may be even less likely that the general population to participate in telephone surveys, perhaps due to fears associated with fraudulent telephone schemes.

Data Description

The SOGS-R (Lesieur and Blume, 1987; Volberg and Steadman, 1988) was used to measure gambling levels. A classification of non-gambler, non-problem gambling, problem gambling and probable pathological gambling is made based on engagement in gambling activities and the number of endorsed SOGS-R items. Non-gambling was applied to participants who indicated that they had not participated in gambling activities in the past year. Non-problem gambling was based on scores between 0 and 2 on the SOGS-R, problem gambling was scores between 3 and 4 and probable pathological gambling was based on scores of 5 or greater. This instrument has been used in Canada,

the United States and abroad to measure the prevalence of problem gambling among the general population (Shaffer et al., 1997).

Gambling activities were measured by presenting respondents with a list of 23 different types of activities and asking them if they had "ever bet or spent money in the past 12 months" on each activity. For each activity with an affirmative response, respondents were asked to indicate the frequency of participation from a list that included daily, several times a week, about once a month, or one or two times a year. Participants were also asked a separate question about whether they were now gambling more, less or the same amount as ten years ago. Asking participants to indicate the amount they spend on gambling activities in an average month assessed gambling expenditures. Time spent on gambling was assessed by a question that asked how much time was spent gambling in an average week. Reasons for gambling were measured by having participants select from a generated list of potential reasons. Multiple selections were allowed. Finally, participants were asked to rate the relative importance of gambling, compared to other social or recreational activities, on a 4 point scale from "very important" to "not important at all".

Although the primary purpose of the research was to examine the extent of gambling and problem gambling, a number of demographic, social and health questions were included as well. The study, as originally designed, was not intended to be a test of the population health framework. Nonetheless, the population health model, with the determinants of health, provides a useful framework for categorizing the array of information that was collected. The table below presents each question by health determinant category. As shown, there are no indicators for the healthy child

development and health services determinants. Furthermore, sex and age were considered under "biology and genetic endowment". The complete survey for the present study is contained in Appendix B.

Table 3.3: Indicators of the Determinants of Health

Health Determinants	Indicators
Income and Social Status	1. What is your total household income?
Social Support	1. Can you talk to a family or a friend about problems you are having? 2. What is your marital status?
Education	1. What is the highest level of education you have completed?
Employment & Working Conditions	1. Are you currently employed outside the home?
Biology & Genetic Endowment	1. Male or female 2. Age
Personal Health Practices & Coping Skills	1. In the past 12 months, have you felt anxious, worried, upset, or depressed? 2. In the past 12 months, how often have you drank alcohol? 3.How many times in the last month have you had 5 or more drinks of alcohol at one time? 4. How often have you used the following in the past 12 months: tobacco, prescription drugs 5. How would you describe your general health at present?
Physical Environment	1. Region of the province residing in?
Healthy Child Development	NA
Health Services	N/A

Data Analysis

General patterns of gambling (gambling activities, money spent, frequency, reasons for gambling) and problem gambling rates were examined. Chi-square tests and analysis of variance procedures were used to determine overall levels of association between gambling category and various indicators of gambling behaviour. All reported significant differences are at a probability level less than or equal to .05. Post hoc testing was only completed to examine whether nongamblers differed from gamblers, and whether problem gamblers and probable pathological gamblers differed from nonproblem gamblers and nongamblers. Because of the large number of comparisons, some of the findings may be due to chance. In addition, p-values can be inflated in large samples such as this study. To compensate, a $p<.01$ was used to determine statistically significant differences for all pairwise comparisons. Appendix C contains the statistical information for all pairwise comparisons that were conducted.

Psychometric properties of the SOGS-R were assessed first by examining the endorsement of each item by SOGS-R score. The assumption of uni-dimensionality was examined through the use of factor analysis procedures.

Logistic regressions were conducted to examine the health determinants that best predict nonproblem (SOGS-R scores of 0 to 2) versus problem gambling (SOGS-R scores of 3 or greater). Logistic regression is similar to multiple regression, which also assesses the association between explanatory variables and an outcome. Whereas multiple regression assumes that the outcome variable is continuous, the outcome variable in a logistic regression analysis is dichotomous.

Table 3.4 shows the coding that was employed in the logistical regressions for the various health determinant indicators. In each case, the response that is a potential "risk factor" is compared to all other responses.

Table 3.4: Logistic Regression PredictorVariables*

Variables	Frequency	Percent
Income and Social Status		
Household income	**601**	
Less than $20,000	168	28.0
$20,000 or more	433	72.0
Social Support		
Talk to others/friends about problems	**721**	
Some of most of the time	605	83.9
Not very often/not at all	116	16.1
Marital Status	**764**	
Divorced/widowed/single	303	39.7
Married	461	60.3
Education		
Education Level	**759**	
Less than high school	301	39.7
High school graduate or more	458	60.3
Employment and Working Conditions		
Employment Status	**768**	
Retired or unemployed	653	85.0
Employed	115	15.0
Biology and Genetic Endowment		
Gender	**775**	
Male	323	41.7
Female	452	58.3
Age	**769**	
60 to 65 years old	279	36.3
66 to 70 years old	194	25.2
71 or more	296	38.5

Personal Health Practices and Coping Skills		
Health Status	**766**	
Very Good/Good	544	71.0
Fair/Poor/Very poor	222	29.0
Anxious	**761**	
Some or most of the time	168	22.1
Not very often/not at all	593	77.9
Alcohol	**772**	
Not at all	260	33.7
Less than one a month/2-3 times a month	289	37.4
Once or more a week/daily	223	28.9
5+ alcohol drinks on one occasion	**508**	
Never/not once in the last month	432	85.0
1-3 times in the past month	52	10.2
4-5 times in the past month	24	4.7
Tobacco	**772**	
Not at all	628	81.3
Less than one a month/2-3 times a month	8	1.0
Once or more a week/daily	136	17.6
Prescription/ Non-prescription Drugs	**773**	
Not at all	456	59.0
Less than one a month/2-3 times a month	113	14.6
Once or more a week/daily	204	26.4
Physical Environment		
Place of Residence	**775**	
Winnipeg	436	56.3
Other	339	43.7

***non-gamblers not included in the analysis**

Definition of Terms

Gambling: Risking something of value on an event where the outcome is unknown. There are regulated forms of gambling (e.g. lotteries, scratch tickets, bingo, slots, VLTs,

casino table games, horse races, etc.) and unregulated forms (betting on games of skill, cards/board games/dice/coins, arcade games, Internet, etc.). As well, speculative stock investments are considered a form of gambling.

Non-Gambler: An individual who has not participated in any regulated and unregulated forms of gambling in the past year.

Gambling Problems: Consist on a continuum with non-problem gambling at one end, problem gambling in the middle and probable pathological gambling as the most severe level of gambling problems. In general, gambling problems include an array of risk practices (e.g., gambling more than intended, difficulty stopping gambling, etc.) and negative consequences (e.g. financial, work, relationships, etc.).

Non-Problem Gambling: An individual who has gambled in the past year but has not experienced any substantial negative consequences as a result of their gambling. Scores of 0 to 2 on the SOGS-R are considered to be indicative of non-problem gambling.

Problem Gambling: An individual who has gambled in the past year, and has experienced some problems related to their gambling. These individuals are considered to be at-risk of gambling at probable pathological levels if they do not change their gambling practices. Scores of 3 to 4 on the SOGS-R are considered to be indicative of problem gambling

Probable Pathological Gambling: An individual who has gambled in the past year and has experienced substantial problems related to their gambling. These individuals are considered to be experiencing the most severe levels of gambling problems. Score of 5 or greater on the SOGS-R are considered to be indicative of probable pathological gambling.

Design Limitations

In reviewing the results, it is important to keep in mind some of the limitations associated with this study:

- The largest restriction of a cross-sectional design is that causal inferences are not possible. Observed statistical relationships in this study only signify associations between variables. In order to more confidently infer a causal relationship, a longitudinal study is required.
- An important limitation associated with telephone surveys is that the results may not be generalizable to the population at large, particularly those who do not have

access to a telephone or refuse to participate, or those 70 years and older (who were under sampled in the present study).

- The low response rate may represent a selection bias. Unfortunately, the influx of telephone marketing has negatively impacted cooperation levels with telephone surveys.
- The present study employed the population health paradigm to classify the data and examine the relationship between the major health determinants and gambling levels. However, this study does not represent a true test of the relationship between the health determinants and older adult problem gambling. Specifically, there were no indices for Healthy Child Development and Health Services and one-item indicators were used to measure many of the health determinants.

CHAPTER 4: RESULTS

The results are presented in three sections. The first section examines gambling patterns, including the prevalence of gambling and problem gambling, as defined by the SOGS-R, among older adults (60 years and older) in Manitoba. Section 2 explores the psychometric properties of the SOGS-R and Section 3 examines differences between nongamblers and gamblers, as well as factors related to problem gambling.

Gambling Patterns

Gambling Prevalence (nongamblers, nonproblem, problem and probable pathological gamblers)

Participants were presented with a comprehensive list of 23 gambling activities, and asked if they had spent money betting on any of the activities in the past 12 months. The list included regulated as well as unregulated activities. Regulated activities included ticket purchases (lottery tickets, scratch/instant win/break open,), electronic gambling devices (slot machines in a casino and video lottery terminals (VLTs) outside of a casino), casino table games, bingo and horse racing. Unregulated activities included betting on sports teams/events, games of skill (pool, golf, etc.), cards/board games/dice/coins, raffle tickets, mail sweepstakes and gambling on the Internet. Participants were also asked if they had made speculative investments.

Of the total sample, just under one-quarter (22.5%) were classified as non-gamblers, having spent no money on gambling activities in the past year. The majority

(74.7%) of respondents had gambled in the past year, but were not experiencing problems from their gambling. Of the total sample, 1.6 % were gambling at "problem" levels, and a further 1.2% were gambling at a "probable pathological" level (see Figure 4.1). It will be recalled from the methods section that problem gambling was defined as a score of 3 or 4 on the SOGS-R, and probable pathological as a score of 5 or greater. In terms of actual numbers, these rates represent totals of 225 in the non-gambling category, 747 in the non-problem gambling category, 16 problem and 12 probable pathological gamblers.

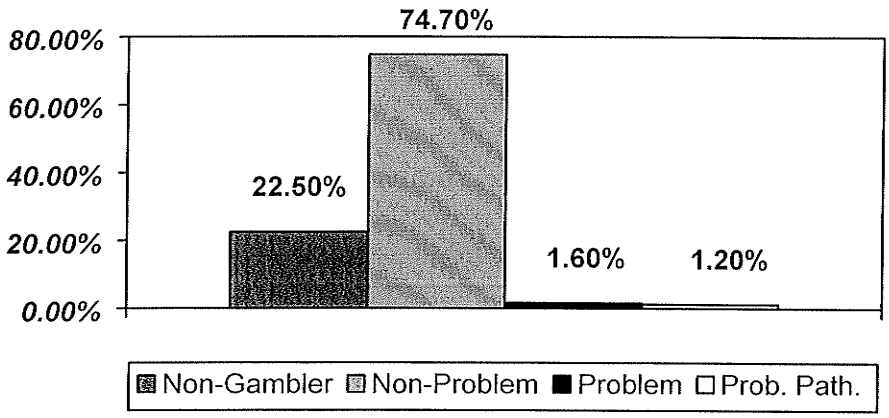

Figure 4.1: Prevalence of Gambling and Problem Gambling

Gambling Activities

Participants were presented with a list of various types of gambling activities and asked if they had spent money on any in the past 12 months. Response options included never, one or two times a year, about once a month, about once a week, several times a week and daily. Table 4.1 shows the percentage of participants who had participated in each type of activity, at any time in the past 12 months, by gambling category.

Table 4.1: Participation in Gambling Activities by Gambling Category in the Past 12 Months

Gambling Activities:	Gambling Category			Total
	Non-Problem n=747	Problem n=16	Prob. Path. n=12	
Lottery tickets	74.2%	87.5%	75.0%	74.5%
Raffle tickets	71.4%	56.3%	41.7%	70.6%*
Slots (Casino)	34.7%	75.0%[a]	91.7%[a]	36.4%***
Scratch tickets/Instant Win/Break Open	29.3%	50.0%	58.3%	30.2%*
Bingo	20.7%	31.3%	50.0%	21.4%*
VLTs (Not in a Casino)	15.3%	62.5%[a]	58.3%[a]	16.9%***
Card/Board games/Dice/Coins	13.3%	18.8%	16.7%	13.4%
Speculate on Stock Market	7.9%	0	0	7.6%
Mail Sweepstakes	7.4%	0	8.3%	7.2%
Table games (Casino)	4.6%	25.0%[a]	16.7%	5.2%***
Horse Races	5.0%	6.3%	8.3%	5.0%**
Sport Teams/Events	4.4%	0	0	4.3%
Games of skill (pool, golf, etc.)	4.3%	6.3%	0	4.3%
Internet	0.4%	6.3%[a]	0	0.5%**

Note: * $p<0.05$, ** $p<0.01$, ***$p<0.001$
Note : [a] significant difference (χ^2) from non-problem gamblers

As shown, the most common gambling activities among all gamblers combined were purchasing lottery tickets (74.5%) and raffle tickets (70.6%). With the exception of these two activities, the majority of non-problem gamblers pursue few other gambling activities. The percentage of probable pathological gamblers that have bet on slots/VLTs in a casino was striking, with 91.7% having engaged in this activity in the past year. Relationships were observed between gambling category and gambling on raffle tickets, slots, scratch tickets, bingo, VLTs, casino table games, horse races and the Internet. Pairwise comparisons revealed that problem and probable pathological gamblers were

more likely than nonproblem gamblers to play slots, VLTs and casino table games. Problem gamblers were the most likely group to gamble on the Internet.

On average, those in the non-problem group participated in 2.9 types of activities in the past year; those in the problem and probable pathological groups each participated in an average of 4.3 types of activities. This difference is statistically significant ($F\ \{2, 772\} = 7.6$, $p<.001$).

Table 4.2 explores the proportion of older adults who had engaged in each gambling activity on a weekly or greater basis. The most frequently pursued gambling activity, among all levels of gamblers, was purchasing lottery tickets. A notable number of individuals who were gambling at problematic levels were also playing bingo, slots/VLTs and purchasing scratch tickets on a regular basis. Frequent gambling on the stock market, sporting events, table games, mail sweepstakes or the Internet was not common among older adults.

The results revealed significant associations between problem gambling level and the frequency of gambling on bingo, scratch tickets, VLTs, slots, table games, and the Internet. Pairwise comparisons showed that individuals gambling at problem and probable pathological levels were more likely than nonproblem gamblers to gamble on VLTs and slots on a weekly basis. Probable pathological gamblers were also more likely to play bingo weekly and problem gamblers were more likely to play table games and purchase scratch tickets.

Table 4.2: Weekly Gambling by Gambling Category

Weekly Gambling Activities:	Gambling Category			Total
	Non-Problem N=747	Problem N=16	Prob. Path. N=12	
Lottery tickets	35.5%	81.3%	66.6%	36.9%
Bingo	9.9%	12.5%	33.3%[a]	10.3%**
Scratch tickets/Instant Win/Break Open	7.5%	25.0%[a]	8.3%	7.9%*
Card/Board games/Dice/Coins	5.4%	6.3%	8.3%	5.4%
VLTs/Slots (Not in a Casino)	2.5%	43.8%[a]	25.0%[a]	3.7%***
VLTs/Slots (Casino)	2.5%	18.8%[a]	33.3%[a]	3.4%***
Raffle tickets	1.3%	6.3%	0	1.4%
Speculate on Stock Market	1.5%	0	0	1.4%
Games of skill (pool, golf, etc.)	1.3%	6.3%	0	1.4%
Table games (Casino)	0.5%	6.3%[a]	0	0.6%***
Sport Teams/Events	0.4%	0	0	0.4%
Horse Races	0.3%	0	0	0.3%
Mail Sweepstakes	0.3%	0	0	0.3%
Internet	0.3%	0	0	0.3%***

Note: * $p<0.05$, ** $p<0.01$, ***$p<0.001$
Note : [a] significant difference (X^2) from non-problem gamblers

Participants who indicated that they had gambled on slots or VLTs in the past year were asked to indicate the locations at which they bet on these games. For all participants, the most common locations were casinos (69%), bar/hotel/lounge (33%) and out-of-province (26%). Few frequented legions (13%), First Nation reserves (7%) or the race track (3%).

Participants were also asked whether a person needed to have skill to win at VLTs or slots. This question was posed to identify any irrational beliefs individuals may have about winning at these games. The majority of all respondents did not feel that skill was

involved: 85% non-problem group, 85% problem group and 83% probable pathological group.

Time and Money Spent

The amount of money spent on gambling in an average month by participants is presented in Table 4.3. As shown, the large majority of non-problem gamblers were spending less than $49 in an average month; and of these, 62% were spending less than $10 per month. In comparison, the largest proportion of individuals in the problem gambling group were spending $50 to $99 per month, and those in the probable pathological group between $100 to $199. Whereas only 6% of non-problem gamblers indicated spending $100 or greater/month, 44% and 80% of problem and probable pathological gamblers, respectively, were spending this amount. The relationship between gambling category and the average amount of money spent on gambling was statistically significant. Compared to non-problem gamblers, those in the problem gambling category were significantly more likely to spend $100 per month or more on gambling, as were those in the probable pathological gambling category.

Table 4.3: Money Spent on Gambling in an Average Month by Gambling Category

$ Spent on Gambling:	Gambling Category			Total
	Non-Problem N=724	Problem N=16	Prob. Path. N=10	N=750
$1 to $49	87.6%	25.0%[a]	20.0%[a]	85.3%***
$50 to $99	6.2%	31.3%[a]	0	6.7%***
$100 or more	6.2%	43.8%[a]	80.0%[a]	8.0%***

Note : * $p<0.05$, **$p<0.01$, *** $p<0.001$
Note : [a] significant difference (χ^2) from non-problem gamblers

The survey also asked participants about the amount of time typically spent gambling in an average week. As shown in Table 4.4, approximately two-thirds (64%) of older adults in the probable pathological gambling category spent a weekly average of two hours or more gambling, compared to 25% of those in the problem gambling category, and approximately 8% of nonproblem gamblers. Individuals in the probable pathological group were more likely than nonproblem gamblers to spend two to five hours gambling in a week, and those in the problem group were more likely than nonproblem gamblers to spend one to two hours. Nonproblem gamblers were most likely to spend less than one hour.

Table 4.4: Amount of Time Spent Gambling by Gambling Category

Amount of Time Spent on Gambling	Gambling Category			Total
	Non-Problem N=727	Problem N=16	Prob. Path. N=11	N=754
Less than 1 hour	82.5%	37.5%[a]	18.2%[a]	80.6%***
1 to 2 hours	9.9%	37.5%[a]	18.2%	10.6%***
2+ to 5 hours	6.2%	18.8%	54.5%[a]	7.2%***
5 hours or more	1.4%	6.3%	9.1%	1.6%*

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$
Note : [a] significant difference (χ^2) from non-problem gamblers

Reasons for Gambling

Participants were presented with a list of possible reasons why people may gamble, and asked to select those that they felt were reasons for themselves. Responses to each response option by problem gambling category are presented in Table 4.5.

Table 4.5: Reasons for Gambling by Gambling Category

Reasons for Gambling	Gambling Category			Total
	Non-Problem N=747	Problem N=16	Prob. Path. N=12	
Support good causes	66.9%	50.0%	45.5%	66.3%
Entertainment or fun	59.1%	87.5%	83.3%	60.1%*
Win money	56.1%	93.8%[a]	83.3%	57.3%**
Be with others/Do things with friends	39.6%	68.8%	41.7%	40.3%
Pass time	32.3%	80.0%[a]	83.3%[a]	34.1%***
Exciting & challenging	24.1%	37.5%	83.3%[a]	25.3%***
Forget problems	6.9%	12.5%	66.7%[a]	7.9%***
Lucky at it	7.3%	12.5%	25.0%	7.7%
To be alone	2.8%	18.8%[a]	18.2%[a]	3.4%***
Good at it	2.4%	12.5%	16.7%[a]	2.9%***

Note: * $p<0.05$, ** $p<0.01$, ***$p<0.001$
Note : [a] significant difference (χ^2) from non-problem gamblers

The results revealed substantial differences between non-problem gamblers and those gambling at problematic levels in the endorsement of items. For those in the non-problem group, the primary reason for gambling was to support good causes (66.9%), followed by entertainment or fun (59.1%) and to win money (56.1%). For those in the problem group, virtually all were gambling to win money (93.8%), for entertainment/fun (87.5%) and to pass time (80.0%). These were the three most common reasons among those in the probable pathological group, with the addition of gambling for the excitement/challenge (83.3%).

Pairwise comparisons showed that probable pathological gamblers were more likely than nonproblem gamblers to gamble to pass time, for the excitement/challenge, to forget problems, to be alone and because they feel that they are good at it. Problem

gamblers were more likely than nonproblem gamblers to gamble to win money, to pass time and to be alone.

In order to gain an appreciation of the meaning of gambling to older adults, participants were asked to rate the importance of gambling as an activity compared to other social/recreational activities. Of the total sample, the large majority (96.6%) indicated that gambling was not important, with 19.3% stating that it "was not very important" and 77.6% "not important at all" (see Table 4.6). There was a significant relationship between the perception of the importance of gambling and gambling categories (χ^2=62.389, df=2, p< .001). Those in the probable pathological gambling category were more likely than non-problem gamblers to perceive gambling as an important activity, relative to other activities (χ^2=68.267, df=1, p<0.001).

Table 4.6: Importance of Gambling as an Activity by Gambling Category

	Gambling Category			
Importance of Gambling:	**Non-Problem N=747**	**Problem N=16**	**Prob. Path. N=12**	**Total N=755**
Important	2.4%	6.3%	45.5%	3.1%
Not important	97.6%	93.8%	54.8%	96.9%

Finally, a question was posed to obtain a historical perspective of gambling activity among this population. The question asked, "Compared to ten years ago, would you say that today you gamble more, less or about the same amount as before" (see table 4.7).

Table 4.7: Gambling Now Compared to 10 Years Ago by Gambling Category

Gambling Now Compared to 10 years ago	Gambling Category			
	Non-Problem N=747	Problem N=16	Prob. Path. N=12	Total N=755
More	20.2%	56.3%[a]	75.0%[a]	21.9% ***
Same amount	68.4%	31.3%[a]	16.7%[a]	66.8%***
Less	11.4%	12.5%	8.3%	11.4%

Note: ***p<0.001
Note : [a] significant difference (χ^2) from non-problem gamblers

Most gamblers indicated that they were gambling approximately the same amount now as they were ten years ago (66.8% of all gamblers combined). Not surprisingly, participants who were gambling at problematic levels were more likely than those in the non-problem group to be gambling more today than ten years ago. There were a significantly higher proportion of problem gamblers and probable pathological gamblers who were gambling more now, compared with non-problem gamblers. Whereas only 20.2% of non-problem gamblers were gambling more now, the corresponding rates for those in the problem and probable pathological groups were 56.3% and 75.0%, respectively

In summary, the majority of older adults gamble, and most do not experience problems related to their gambling. Of those who were gambling at problematic levels, however, the gambling patterns look quite different from nonproblem gamblers. Strong relationships were observed between problematic gambling and playing slots, VLTs and casino table games. Bingo playing was also related to probable pathological gambling, but not problem gambling. Compared to ten years ago, those gambling at problematic levels were far more likely to be gambling more now. This time frame corresponds with

the introduction of VLTs in restaurants and bars and the opening of casinos. A major difference between nonproblem and problem gamblers is that those who are gambling at problematic levels were far more likely to gamble to pass time and for the excitement/challenge.

SOGS-R Properties

This section examines the psychometric properties of the SOGS-R. The SOGS-R consists of items that assess thoughts and behaviours considered indicative of problem gambling. These questions were only asked of those who had gambled in the year prior to the survey. Table 4.8 shows the proportion of affirmative responses to various items on the SOGS-R, by gambling level. A complete listing of the questions, with precise wording, is located in Appendix A. The information is presented to provide a greater appreciation of the characteristics associated with problematic levels of gambling.

Table 4.8: Endorsement of SOGS-R Items by Gambling Category

SOGS-R Items:	Gambling Category			Total
	Non-Problem N=747	Problem N=16	Prob. Path. N=12	
Argued about gambling	0	12.5%	16.7%	0.5%
Gambled more than intended	3.5%	68.8%	91.7%	6.3%
Tried to win back lost money	3.0%	50.0%	91.7%	5.3%
Felt guilty about gambling	2.4%	68.8%	91.7%	5.2%
People criticized your gambling	1.5%	31.3%	63.6%	3.0%
Claimed to be winning when losing	1.6%	25.0%	45.4%	2.7%
Wanted to stop gambling, but didn't think could	0.4%	20.0%	50.0%	1.6%
Borrowed money from household to gamble	0.5%	0	41.7%	1.2%
Borrowed money from spouse/partner to gamble	0	0	25.0%	0.4%
Borrowed money from relatives/in-laws to gamble	0.3%	0	8.3%	0.4%
Loans from banks for gambling	0	0	16.7%	0.3%
Withdrawals on credit cards for gambling	1.7%	18.8%	58.3%	3.0%
Hidden gambling from others	0	0	8.3%	0.1%
Missed work due to gambling	0	6.3%	0	0.1%
Wrote bad cheques to gamble	0	0	8.3%	0.1%
Felt you have problem with gambling	0.1%	6.7%	50.0%	1.0%
Borrowed money from someone and not returned	0	0	0	0
Loan from loan shark for gambling	0	0	0	0
Cashed stocks/bonds to gamble	0	0	0	0
Sold personal/family property to gamble	0	0	0	0

The most common characteristics of problematic levels of gambling, experienced by both those in the problem and probable pathological gambling categories, were gambling more than intended, chasing losses, and experiencing guilty feelings related to gambling. The SOGS-R contains a series of questions related to sources for obtaining money to gamble or pay gambling debts. In this study, the most commonly used means for accessing money were withdrawals on credit cards and borrowing from household funds. Generally, older adults who are experiencing problems with gambling are not borrowing from others, selling property or cashing stocks or bonds as ways to acquire money for gambling purposes. Among those who were gambling at the most severe level, only half felt that they had a problem with gambling, and a same proportion wanted to stop gambling, but did not think that they could.

Table 4.9 shows the frequency of endorsement of the scored SOGS-R items for older adults with total scores of 1, 2, 3 and 4 or greater. For older adults with a total score of 1, the expected endorsement of each item is 5% (1/20), for scores of 2 the expected endorsement of each item is 10% (2/20), for scores of 3 it is 15% (3/20) and 20% (4/20) for scores of 4 or greater. Examination of item endorsement shows that questions 2, 3 and 4 are endorsed at approximately 3 to 4 times higher than expected across total SOGS-R scores of 1, 2, 3 and 4 or greater. Alternatively, questions 8, 9, 11, 13, 14, 16, 17, 18, 19, and 20 have either no endorsement or a very low level.

Table 4.9: Frequency of SOGS-R Item Endorsement by Level of SOGS-R Score

SOGS-R Item	SOGS-R=1 (n=96)	SOGS-R=2 (n=17)	SOGS-R=3 (n=10)	SOGS-R=4 (n=18)
1. Argued about gambling	0	0	10%	16.7%
2. Gambled more than intended	20.8%	35.3%	60%	88.9%
3. Tried to win back lost money	14.6%	47%	50%	77.8%
4. Felt guilty about gambling	13.5%	29.4%	50%	94.4%
5. People criticized your gambling	8.3%	17.6%	20%	55.6%
6. Claimed to be winning when lost	8.4%	23.5%	30%	33.3%
7. Wanted to stop gambling but didn't think could	3.1%	0	20%	38.9%
8. Borrowed money from household funds to gamble	3.1%	5.9%	0	27.8%
9. Borrowed money from spouse/partner to gamble	0	0	0	16.7%
10. Borrowed money from relatives/in-laws to gamble	1.0	5.9%	0	5.6%
11. Loans from banks to gamble	0	0	0	11.1%
12. Cash withdrawals or credit cards to gamble	7.3%	35.3%	10%	50%
13. Missed work due to gambling	0	0	10%	0
14. Wrote bad cheques to gamble	0	0	0	5.6
15. Felt you have a problem with gambling	1.0%	0	0	33.3
16. Borrowed money from someone and not returned	0	0	0	0
17. Loans from loan sharks for gambling	0	0	0	0
18. Cashed in stocks/bonds to gamble	0	0	0	0
19. Sold personal/family property to gamble	0	0	0	0
20. Hidden gambling from others	0	0	0	5.6%

The SOGS-R is intended to be a uni-dimensional scale. This assumption was tested through factor analysis. Specifically, a principal components analysis was performed on the 20 items of the SOGS-R. Because factors are assumed to be correlated, an oblique (oblimin) rotation was used. Because of no or very low endorsement, 10 of the

20 items could not be included in the analysis. The ten remaining items are presented in Table 4.10. With these items, Kaiser's criterion (Eigenvalue > 1.) and visual inspection of the Scree plot both suggested a one-factor solution that accounted for 35.6% of the variance. With the exception of missing work due to gambling, the ten remaining items all loaded on one single factor.

Table 4.10: Factor Loadings for SOGS-R Items

SOGS-R Item	Factor Loading
Tried to win back lost money	.72
Claimed to be winning when lost	.41
Gambled more than intended	.69
People criticized your gambling	.60
Felt guilty about gambling	.66
Wanted to stop gambling but didn't think could	.55
Argued about gambling	.77
Borrowed household funds to gamble	.38
Cash withdrawals or credit cards for gambling	.53
Felt you have a problem with gambling	.53
Missed work due to gambling	.01

The analyses conducted on the psychometric properties of the SOGS-R seriously question the suitability of this scale as a measure of problem gambling among older adults. It appears that many of the items are not appropriate for older adults.

Factors Related to Gambling and Problem Gambling

This section examines relationships between nongamblers and gamblers, and nonproblem and problem gamblers, and indicators of the health determinants identified in

the population health framework. As shown in the previous section, the SOGS-R does not have good psychometric properties. However, because of its widespread use, the following analyses were conducted for the purpose of comparing the results to other data sets.

NonGamblers and Gamblers

a) Income and Social Status

Household income was significantly related to gambling category (χ^2=15.106, df=3, p<0.01). Non-gamblers were significantly more likely than gamblers to have an income of less than $20,000 ($\chi^2$=13.314, df=1, p<0.001). The precise direction of this relationship cannot be determined. It is possible that those with lower incomes do not gamble because they cannot afford to do so. It is also possible that gambling negatively impacted income levels.

Table 4.11: Household Income by Gambling Participation

Household income	Gambling Participation		Total
	Non-Gamblers N=221	Gamblers N=769	N=990
Less than $20 000	42.8%	28.0%	31.2%***
Less than $30 000	16.3%	24.0%	22.3%
Less than $40 000	13.3%	19.0%	17.7%
$40 000 or more	27.7%	29.1%	28.8%

Note: ***p<0.001

b) Social support

A relationship was observed between marital status and gambling participation (χ^2=10.631, df=3, p<0.05). Non-gamblers were twice as likely as gamblers to be single (χ^2=9.264, df=1, p<0.01). This finding is consistent with the income relationship noted above, in that single individuals tend to have lower household incomes.

Table 4.12: Marital Status by Gambling Participation

Marital status	Gambling Participation		Total
	Non-Gamblers N=220	Gamblers N=764	N=984
Single	11.4%	5.5%	6.8%**
Married	53.6%	60.3%	58.8%
Widowed	29.1%	27.0%	27.4%
Divorced	5.9%	7.2%	6.9%

Note: **p<0.01

No relationship was observed between having someone to talk to when dealing with problems and gambling participation (χ^2=1.808, df=3, N.S.)

Table 4.13: Having Someone to Talk to When Dealing with Problem by Gambling Participation

Someone to talk to when having problems	Gambling Participation		Total
	Non-Gamblers N=220	Gamblers N=764	N=984
Most of the time	71.7%	67.3%	68.3%
Some of the time	13.2%	16.6%	15.9%
Not very often	6.8%	6.9%	6.9%
Not at all	8.3%	9.2%	9.0%

c) Education

There was a significant relationship between educational attainment and gambling participation (χ^2=13.501, df=2, p<0.001), although the relationship is not clear. Gamblers are more likely than non-gamblers to have completed high school education (χ^2=12.730, df=1, p<0.01). However, there are no significant differences related to having less than high school, or obtaining post secondary training.

Table 4.14: Educational Attainment by Gambling Participation

Education	Gambling Participation		Total
	Non-Gamblers N=219	Gamblers N=759	N=978
Less than high school	48.9%	39.7%	41.7%
High school complete	14.2%	25.7%	23.1% ***
Post secondary	37.0%	34.7%	35.2%

Note: ***p<0.001

d) Employment and Working Conditions

No significant relationship was observed between employment status and participation in gambling activities (χ^2=1.773, df=1, N.S.).

Table 4.15: Employment Status by Gambling Participation

Employment status	Gambling Participation		Total
	Non-Gamblers N=219	Gamblers N=768	N=987
Retired /unemployed	88.6%	85.0%	85.8%
Employed	11.4%	15.0%	14.2%

e) Biology and Genetic Endowment

Males and females did not differ in whether or not they participate in gambling activities. (χ^2=2.458, df=1, N.S.).

Table 4.16: Gender by Gambling Participation

Gender	Gambling Participation		Total
	Non-Gamblers N=225	Gamblers N=775	N=1000
Male	47.6%	41.7%	43.0%
Female	52.4%	58.3%	57.0%

Table 4.17 examines the relationship between age and whether or not an individual gambles. Generally, as age increases the likelihood of being a non-gambler also increases (χ^2=33.444, df=3, p<0.001). The most likely and least likely age groups to be gamblers were 60-65 year olds and those 75 years and older, respectively.

Table 4.17: Age by Gambling Participation

Age	Gambling Participation		Total
	Non-Gamblers N=221	Gamblers N=769	N=990
60-65	24.4%	36.3%	33.6% ***
66-70	16.3%	25.2%	23.2% **
71-75	24.4%	19.1%	20.3%
Over 75	34.8%	19.4%	22.8% ***

Note: **p<0.01, ***p<0.001

f) Physical Environment

No significant relationship was observed between those living in Winnipeg and those living outside of Winnipeg and participation in gambling activities (χ^2=.093, df=1, N.S.).

Table 4.18: Regional Distribution by Gambling Participation

Region	Gambling Participation		Total
	Non-gamblers N=225	Gamblers N=775	N=1000
Winnipeg City	55.1%	56.6%	56.0%
Other	44.9%	43.7%	44.0%

g) Personal Health Practices and Coping Skills

No relationship was observed between ratings of health status and whether or not an individual participated in some form of gambling activity in the past year (χ^2=2.796, df=4, N.S.).

Table 4.19: Health status by Gambling Participation

Health status	Gambling Participation		Total
	Non-Gamblers N=223	Gamblers N=766	N=989
Very good	26.9%	28.7%	28.3%
Good	40.4%	42.3%	41.9%
Fair	27.4%	24.9%	25.5%
Poor	4.9%	3.1%	3.5%
Very Poor	0.4%	0.9%	0.8%

In addition, there was no relationship between feeling anxious, upset or depressed and gambling participation (χ^2=.537, df=3, N.S.).

Table 4.20: Feeling Anxious, Upset, or Depressed by Gambling Participation

Feeling anxious, upset or depressed	Gambling Participation		Total N=982
	Non-Gamblers N=221	Gamblers N=761	
Most of the time	2.7%	2.2%	2.3%
Some of the time	15.8%	19.8%	18.9%
Not very often	47.5%	42.8%	43.9%
Not at all	33.9%	35.1%	34.8%

There was a significant relationship between alcohol and drug use and whether or not an individual gambled in the year prior to the study (see Table 4.21). Non-gamblers were more likely than gamblers to be abstainers of alcohol (χ^2=47.990, df=1, p<0.001). Not surprisingly, then, gamblers were more likely than non-gamblers to have consumed 5 or more drinks on once occasion (χ^2=8.860, df=1, p<0.01). Gamblers were almost twice as likely as non-gamblers to smoke cigarettes on a daily basis (χ^2=8.697, df=1, p<0.01). No significant relationship was observed between the use of prescription or non-prescription drugs and gambling participation (χ^2=3.912, df=3, N.S.).

Table 4.21: Substance Use by Gambling Participation

Substance use	Gambling Participation		Total
	Non-gamblers	Gamblers	
Alcohol (last year)	**(n=224)**	**(n=772)**	
Not at all	59.4%	33.7%	39.5%***
Not once in the last month	17.0%	24.1%	22.5%
More than once a month	16.5%	31.9%	28.4%***
Daily	7.1%	10.4%	9.6%
5+ drinks (previous month)	**(n=89)**	**(n=508)**	
None	96.6%	85.0%	86.8%**
1-2 times	2.2%	8.5%	7.5%
3+ times	1.1%	6.5%	5.7%
Tobacco (past year)	**(n=225)**	**(n=772)**	
Not at all	89.8%	81.3%	83.2%**
Not once in the last month	1.3%	0.5%	0.7%
More than once a month	0.5%	2.2%	1.8%
Daily	8.4%	16.3%	14.5%**
(Non) Prescription (past year)	**(n=222)**	**(n=773)**	
Not at all	51.8%	59.0%	57.4%
Not once in the last month	10.8%	8.5%	9.0%
More than once a month	12.6%	11.6%	11.9%
Daily	24.8%	20.8%	21.7%

Note: **p<0.01, ***p<0.001

NonProblem and Problem Gamblers

a) Income and Social Status

The majority of participants, in all categories, reported incomes less than $30,000 per year. Household income was significantly related to gambling category (χ^2=17.474, df=9, p<0.05). Pairwise comparisons revealed that nongamblers were more likely than non-problem gamblers to have a household income of less than $20,000. Interestingly, there was no relationship between income and problem gambling.

Table 4.22: Household Income by Gambling Category

Household Income:	Gambling Category				Total
	Non-Gambler N=166	Non-Problem N=582	Problem N=11	Prob. Path. N=8	N=767
Less than 20,000	42.8%	28.0%[a]	27.3%	25.0%	31.2%**
Less than 30,000	16.3%	23.5%	36.4%	37.5%	22.3%
Less than 40000	13.3%	19.2%	9.1%	12.5%	17.7%
40,000 or more	27.7%	29.2%	27.3%	25.0%	28.8%

Note: ** $p<0.01$
Note : [a] significant difference (χ^2) from non- gamblers

b) Social Support

Marital status was used as one indicator of social support. The majority of participants in this study were married, followed my widowed. No relationship was observed between marital status and gambling category (χ^2=12.815, df=9, p=N.S.).

Table 4.23: Marital Status by Gambling Category

Marital Status:	Gambling Category				Total
	Non-Gambler N=220	Non-Problem N=736	Problem N=16	Prob. Path. N=12	N=984
Single	11.4%	5.4%	6.3%	8.3%	6.8%
Married	53.6%	60.1%	68.8%	66.7%	58.8%
Widowed	29.1%	27.2%	25.0%	16.7	27.4%
Divorced	5.9%	7.3%	0	8.3%	6.9%

Another indicator of social support is the extent to which individuals are able to talk to family or friends about problems. Most participants reported being able to speak to

family or friends about problems. No relationship was observed between this variable and gambling category (χ^2=10.872, df=9, p=N.S.) (Table 4.24)

Table 4.24: Whether respondents can talk to family or a friend about problems they are having by gambling category

Someone to told to when having problems	Gambling Category				Total
	Non-Gambler N=205	Non-Problem N=694	Problem N=15	Prob. Path. N=12	N=741
Most of the time	71.7%	67.9%	53.3%	50.0%	68.3%
Some of the time	13.2%	16.0%	26.7%	41.7%	15.9%
Not very often	6.8%	6.8%	13.3%	8.3%	6.9%
Not at all	8.3%	9.4%	6.7%	0	9.0%

c) Education

Table 4.25 explores the relationship between education and gambling involvement. Overall, most respondents (42%) had less than a high school education, 23% had completed high school and 35% had some post secondary education. Some relationships were noted, specifically problem gamblers were more likely than nongamblers to have completed high school. Nongamblers were more likely than nonproblem gamblers to have less than high school. However, there were no relationships between gambling at problematic levels and nonproblem levels and education level.

Table 4.25: Education by Gambling Category

Education:	Gambling Category				Total
	Non-Gambler N=225	Non-Problem N=747	Problem N=16	Prob. Path. N=12	N=1000
Less than high school	48.9%	39.1%[a]	60.0%	50.0%	41.7%*
High school complete	14.2%	25.7%[a]	26.7%	25.0%	23.1%**
Post secondary	37.0%	35.2%	13.3%	25.0%	35.2%

Note: * $p<0.05$, **$p<0.01$
Note: [a] significant difference (χ^2) from non-gamblers

d) Employment and Working Conditions

The majority of participants in all categories were retired or unemployed: 88.6% non-gambler, 85.3% non-problem, 68.8% problem and 91.7% probable pathological. There was no relationship between employment status and gambling level ($\chi^2=5.726$, df=3, NS) However, given most were retired, and therefore in the same employment situation, this is not unexpected.

Table 4.26: Employment Status by Gambling Category

Employment Status:	Gambling Category				Total
	Non-Gambler N=219	Non-Problem N=740	Problem N=16	Prob. Path. N=12	N=987
Retired /unemployed	88.6%	85.3%	68.8%	91.7%	85.8%
Employed	11.4%	14.7%	31.3%	8.3%	14.2%

e) Biology and Genetic Endowment

The total sample was comprised of 57% (n=570) females and 43% (n=430) males. There was a significant relationship between gender and gambling level (χ^2=16.485, df=3, p<0.001). Compared to females, males were more likely to be problem gamblers. Interestingly, no gender differences were observed related to probable pathological gambling.

Table 4.27: Gender by Gambling Category

Gender	Gambling Category				Total
	Non Gambler N=225	Non-Problem N=747	Problem N=16	Prob. Path N=12	N=1000
Males	24.9%	70.7%	3.3%	1.2%	43.0%
Females	20.7%	77.7%	0.4%	1.2%	57.0%

Table 4.28 examines age differences among the various categories of gamblers. No clear relationships were observed between age and problem gambling. Compared to nongamblers, both nonproblem and problem gamblers were more likely to be 60-65 years. Nongamblers were more likely than nonproblem gamblers to be 75 years or older.

Table 4.28: Age Breakdown by Gambling Category

Age	Gambling Category				Total
	Non-Gambler N=221	Non-Problem N=747	Problem N=16	Prob. Path. N=12	N=996
60-65	16.2%	79.6%[a]	2.7%[a]	1.5%	33.6%**
66-70	15.7%	81.3%[a]	1.3%	1.7%	23.2% *
71-75	26.9%	71.1%	1.0%	1.0%	20.3%
Over 75	34.1%	64.6%[a]	0.9%	0.4%	22.8% ***

Note: *p<0.05, **p<0.01, *** p<0.00
Note: [a] significant difference (χ^2) from non-gamblers

f) Physical Environment

The region of the province in which participants resided was used as an indicator of physical environment. There were no differences between individuals living in Winnipeg versus outside of Winnipeg and gambling category (χ^2=3.00, df=3, NS). This is somewhat surprising given that at the time of this study the only casinos in the province were located in Winnipeg.

Table 4.29: Regional Distribution by Gambling Category

Region	Gambling Categories				Total
	Non-Gambler N=225	Non-Problem N=747	Problem N=16	Prob. Path. N=12	N=1000
Winnipeg City	22.1%	74.3%	2.1%	1.4%	56.0%
Other	23.0%	75.2%	0.9%	0.9%	44.0%

To provide further insight into this finding, participation in slots, VLTs and bingo was examined by region. These three activities were selected because of their strong

relationship with problematic levels of gambling. Whereas slots are only available in Winnipeg, VLTs and bingo are accessible throughout the province. Accordingly, the results showed no difference in bingo or VLT participation by region. However, individuals living in Winnipeg were more likely than those residing outside the city to play slots in a casino ((χ^2=14.7, df=1, p<.001). Therefore, although slot playing is more common among individuals living in Winnipeg, the accessibility of gambling activities such as VLTs and bingo throughout the province appears to negate any relationship between region and problem gambling category.

g) Personal Health Practices and Coping Skills

Participants were asked to rate their current health status on a scale that included very good, good, fair, poor and very poor. As shown in Table 4.30, most rated their health as either very good or good: 67% non-gamblers, 71% non-problem gamblers, 57% problem gamblers, 50% probable pathological gamblers. Gambling at problematic levels was not related to health status (χ^2=18.071, df=12, N.S.).

Table 4.30: Ratings of Health Status by Gambling Category

Health Status	Gambling Category				Total
	Non-Gambler N=223	Non-Problem N=738	Problem N=16	Prob. Path. N=12	N=989
Very Good	26.9%	28.6%	43.8%	16.7%	28.3%
Good	40.4%	43.1%	12.5%	33.3%	41.9%
Fair	27.4%	24.4%	43.8%	33.3%	25.5%
Poor	4.9%	3.0%	0%	16.7%	3.5%
Very Poor	0.4%	0.9%	0%	0%	0.8%

An indicator of emotional well-being was obtained by asking participants if they had felt anxious, upset or depressed in the past 12 months (see Table 4.31). Whereas 59% of individuals in the probable pathological group and 47% of those in the problem gambling group reported feeling anxious, upset or depressed most of the time or some of the time, the corresponding rates for the non-problem and non-gambling groups were 21% and 19%, respectively. Additional analyses confirmed that problem gamblers were more likely than non-problem gamblers as well as non-gamblers to report feelings of anxiety or depression some of the time. Also, probable pathological gamblers were more likely than non-gamblers and non-problem gamblers to feel anxiety or depression most of the time. What is not clear, however, is whether gambling-related problems caused the anxiety and depression, or if anxiety and depression led to gambling as a possible escape.

Table 4.31: Feeling Anxious, Upset or Depressed by Gambling Category

Feelings of anxiety, depressions, etc.	Gambling Category				Total
	Non-Gambler N=221	Non-Problem N=734	Problem N=15	Prob. Path N=12	N=982
Most of the time	2.7%	2.0%	0%	16.7[ab]%	2.3% **
Some of the time	15.8%	18.9%	46.7[ab]%	41.7%	18.9% **
Not very often	47.5%	43.6%	20.0%	25.0%	43.9%
Not at all	33.9%	35.4%	33.3%	16.7%	34.8%

Note: * $p<0.05$, **$p<0.01$
Note: [a] significant differences (χ^2) from non-gamblers
: [b] significant differences (χ^2) from non-problem gamblers

A series of questions were posed that asked participants about their use of alcohol, tobacco and prescription or non-prescription drugs for sleep, depression or pain (see Table 4.32).

Table 4.32: Substance Use by Gambling Category

Substance Use	Gambling Category				Total
	Non-Gambler	Non-Problem	Problem	Prob. Path.	
Alcohol (last year)	**(n=224)**	**(n=744)**	**(n=16)**	**(n=12)**	
Not at all	59.4%	33.9%[a]	12.5%[a]	50.0%	39.5% ***
Not once in the last month	17.0%	24.3%	18.8%	16.7%	22.5%
More than once a month	16.5%	31.6%[a]	43.8%[a]	33.3%	28.4% ***
Daily	7.1%	10.2%	25.0%	0%	9.6%
5+ drinks (previous month)	**(n=89)**	**(n=488)**	**(n=14)**	**(n=6)**	
None	96.6%	86.1%[a]	50.0%[ab]	83.3%	86.8% ***
1-2 times	2.2%	8.0%	21.4%[a]	16.7%	7.5% *
3+ times	1.1%	5.9%	28.6%[ab]	0%	5.7% ***
Tobacco (past year)	**(n=225)**	**(n=744)**	**(n=16)**	**(n=12)**	
Not at all	89.8%	82.1%[a]	68.8%	50.0%[ab]	83.2% ***
Not once in the last month	1.3%	0.5%	0%	0%	0.7%
More than once a month	0.4%	1.6%	0%	16.7%[ab]	1.5% ***
Daily	8.4%	15.7%[a]	31.3%[a]	33.3%[a]	14.5% **
(Non) Prescription (past year)	**(n=222)**	**(n=745)**	**(n=16)**	**(n=12)**	
Not at all	51.8%	59.3%	56.3%	41.7%	57.4%
Not once in the last month	10.8%	8.6%	12.5%	0%	9.0%
More than once a month	12.6%	11.4%	12.5%	25.0%	11.9%
Daily	24.8%	20.7%	18.8%	33.3%	21.7%

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$
Note: [a] significant differences (χ^2) from non-gamblers
: [b] significant differences (χ^2) from non-problem gamblers

Overall, older adults in this study consumed alcohol infrequently, and rarely consumed five or more drinks on one occasion. Most did not use tobacco products, and of those who did, the majority reported a daily habit. The use of prescription or non-prescription drugs for sleep, depression or pain was quite common, with 43% having used these medications in the past year.

Problem gamblers are more likely than nongamblers to consume alcohol, drink five or more drinks on one occasion, and use tobacco products. All gamblers (nonproblem, problem, probable pathological) were more likely than nongamblers to use tobacco products on a daily basis. Interestingly, whereas alcohol use was related to problem gambling, it had no relationship with probable pathological gambling. Furthermore, no relationship was observed between the use of non/prescription drugs and gambling category.

Predictors of Problem versus Nonproblem Gambling

Expanding on the previous analyses, a series of binary logistic regressions were conducted to analyze the relationship between the health determinants indicators (see table 3.4 in the methods section) and problem gambling. Separate models were run for each health determinant category in order to gain an understanding of the unique association of each health determinant. In the following analyses, non-problem gamblers were compared with those who have experienced some gambling problems (problem and probable pathological gamblers combined).

Originally, a multiple regression analysis was conducted to examine the relationship of the all the health determinant indicators to an individual's SOGS-R score.

The model was significant (F{14, 352)=2.591, p>0.001), and explained 9.3% of the variation in the dependent variable. As shown in Table 4.33, the following variables were significant in the model: anxiety in the past year, region, use of alcohol in the past 12 months, and use of tobacco in the past 12 months.

Table 4.33: Multiple Analysis (SOGS Score by Health Determinants)

Variables in the model:	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.786	.604		1.302	.194
Gender	-.120	.101	-.069	-1.185	.237
Feeling anxious, upset, or depressed	-.349	.118	-.161	-2.966	.003
Region	-.242	.092	-.137	-2.625	.009
Educational attainment	-1.694E-02	.099	-.009	-.171	.864
Employment status	7.598E-02	.127	.033	.601	.549
Health status	-3.247E-02	.114	-.016	-.284	.776
Talk to others/friends about problems	-2.388E-02	.131	-.010	-.182	.856
Marital status	.104	.107	.058	.975	.330
Alcohol consumption in the past 12 months	.209	.096	.120	2.170	.031
Tobacco consumption in the past 12 months	.123	.060	.111	2.066	.040
(Non)prescription drugs in the past 12 months	3.487E-02	.059	.034	.591	.555
5+ alcohol drinks on one occasion	5.907E-02	.095	.034	.623	.534
Age	4.887E-02	.057	.049	.850	.396
Household income	-.189	.125	-.088	-1.515	.131

a Dependent Variable: SOGSCORE

Upon closer examination, however, it became evident that the model was not linear, and therefore the results might not reflect the true relationship between the health determinants and SOGS-R scores (See figure 4.3 and 4.4). To address this problem, the

SOGS score variable was log transformed . However, this procedure did not effectively produce a linear relationship (see figure 4.5 and 4.6).

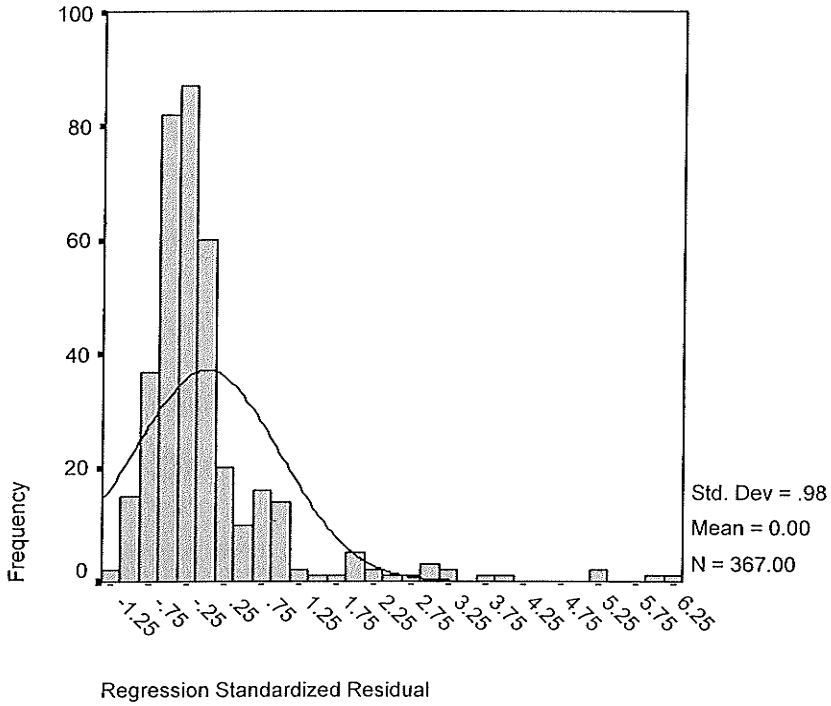

Figure 4.2: Histogram, dependent variable SOGSCORE

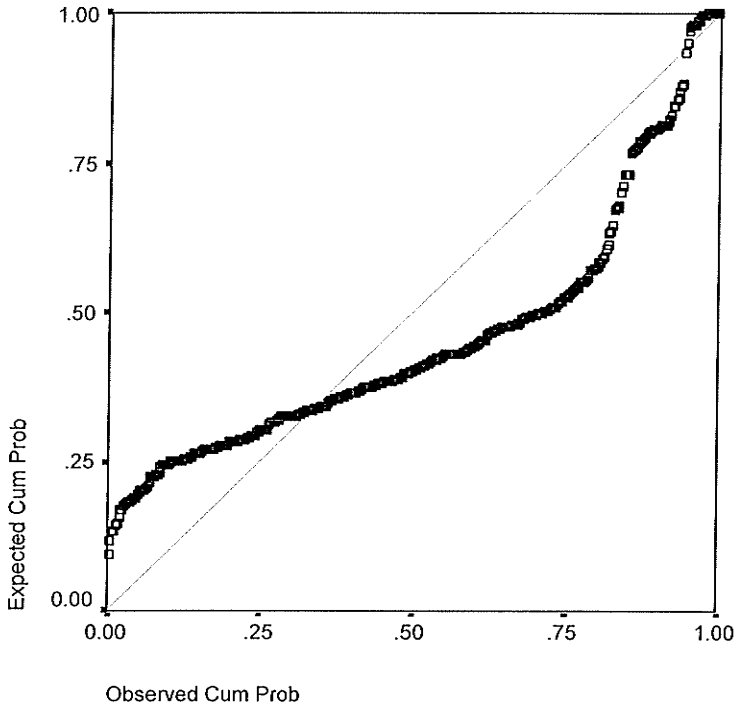

Figure 4.3: Normal P-P Plot of Regression, dependent variable SOGSCORE

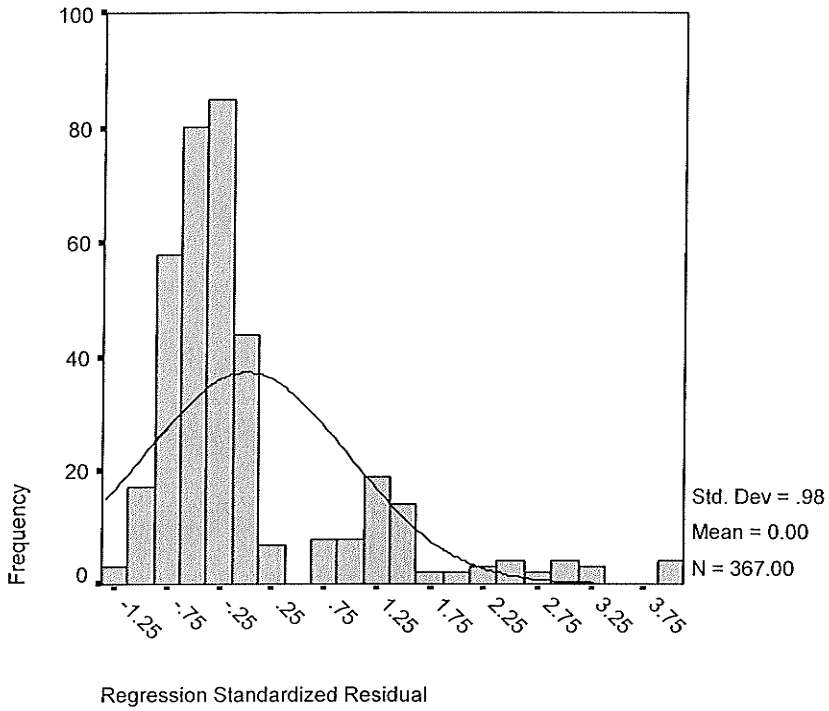

Figure 4.4: Histogram, Log Transformed SOGS-R Score

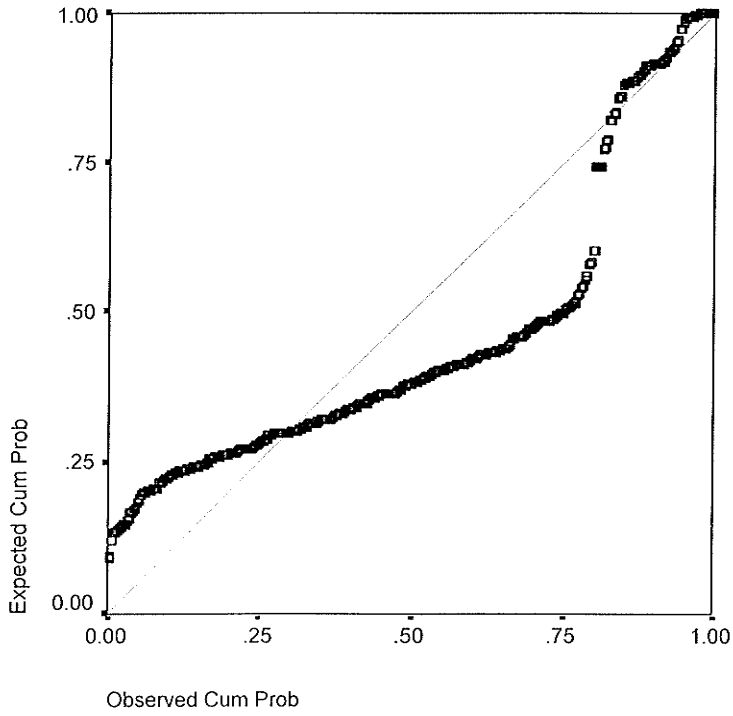

Figure 4.5: Normal P-P Plot for logged SOGS-R Score

Assumptions underlying linear regression are that the dependent variable is normally distributed, and that there is a linear relationship between the dependent variable and the independent variables. As shown in the above graphical representations, both of these assumptions were violated. Violation of these assumptions creates biased results; specifically, the beta coefficients, standard error of the estimate and of the betas, the t-values, F-value, and the R^2 cannot be relied upon.

Consequently, it was not feasible to conduct linear regression analysis that used SOG-R scores as the dependent variable. To alleviate this limitation, two alternative approaches were employed. First, a series of logistic analyses were conducted that dichotomized the gambling score into non-problem and problem gamblers. Intuitively, this type of analysis is important to determine the factors most related to problematic versus nonproblem gambling. Second, a multiple regression was conducted in which percentage of income spent on gambling was used as the dependent variable. The results from this analysis will be discussed in the section following the logistic regression results presented below.

Income and social status

The first model looked at the effect of income on the dependent variable. Household income was recoded into a dichotomy that compared those with household incomes of less than $20,000 to the rest of the population. The results showed that income was not significantly related to problematic gambling (X^2=0.026, df=1, N.S.).

Social support

The second model looked at the relationship of social support to gambling levels. The variables entered into this model were whether respondents felt that they could talk to a family/friend about problems, and the effect of being singe/divorced/widowed. Neither of these variables were significantly related to the outcome variable (X^2=1.375, df=2, N.S.).

Education

Next, the effect of educational attainment on gambling levels was examined. Educational level was recoded into a dichotomy comparing those with less than high school education with the rest of the sample. The model was not significant (X^2=2.879, df=1, N.S.)

Employment and Working Conditions

This model examined the effect of being retired or unemployed on gambling level. This model was not significant (X^2=0.862, df=1, p<0.353).

Biology and Genetic Endowment

Gender and age served as indicators of the biology and genetic endowment health determinant. Age was recoded into a three category variable: 60-65 years of age, 66-70 years of age, and those who were 71 years of age or older. The model was deemed significant (X^2=10.394, df=3, p<0.01), and it explained 1.3% (Cox & Snell R Square) to 5.0% (Nagelkerke R Square) of the variation in the dependent variable. As shown in Table 4.34, males were 2.96 times more likely than females to gamble at problematic levels. Age, however, did not make a significant contribution.

Table 4.34: Biology and Genetic Endowment Logistic Model

Variables in the model:	B	Sig.	Exp(B)	CI for Exp (B)	
				Lower	Upper
Constant	-4.242	.000	.014		
Gender					
Male	1.087	.009	2.966	1.319	6.674
Female (reference)			1.000		
Age		.319			
60-65 years old	.695	.142	2.004	.792	5.071
66-70 years old	.297	.587	1.346	.461	3.932
71 or older (reference)			1.000		

Personal Health Practices and Coping Skills

The variables included in this model were alcohol, tobacco and (non)prescription drug use, consuming five or more alcoholic drinks on one occasion, feelings of anxiety or

depression and general health status. This model was significant (X^2=20.252, df=9, p<0.05), and explained 4.0% (Cox & Snell R Square) to 14.4% (Nagelkerke R Square) of the variation in the dependent variable.

As shown in Table 4.35, those who report feelings of anxiety and depression were 4.0 times more likely than those who did not report such feelings to be problem or probable pathological gamblers.

Table 4.35: Personal Health Practices and Coping Skills Logistic Model

Variables in the model:	B	Sig.	Exp(B)	CI for Exp (B)	
				Lower	Upper
Constant	-2.684	0.08	.068		
Health Status					
Fair/poor/very poor	.717	.184	2.049	.711	5.905
Very good/good (reference)			1.000		
Tobacco consumption		.865			
Not at all	-.292	.612	.746	.241	2.313
Less than once a month/2-3 times a month	-4.572	.847	.010	.000	1.67E+18
Once or more a week/daily (reference)			1.000		
(Non) prescription		.442			
Not at all	.499	.457	1.647	.442	6.135
Less than once a month/2-3 times a month	.998	.202	2.713	.585	12.575
Once or more a week/daily (reference)			1.000		
5+ drinks in previous year		.216			
Not at all	-1.225	.115	.294	.064	1.346
Less than once a month/2-3 times a month	-.484	.575	.616	.114	3.338
Once or more a week/daily (reference)			1.000		
Anxiety or depression					
Some or most of the time	1.387	.008	4.001	1.432	11..178
Not very often/not at all (reference)			1.000		
Alcohol consumption					
Less than once a month/2-3 times a month	-.983	.070	.374	.129	1.083
Once or more a week/daily (reference)			1.000		

Physical Environment

Finally, the effect of the location of residence on gambling level was examined. Those living in Winnipeg were compared to respondents living elsewhere. The model was insignificant, showing no relationship between the dependent variable and region of residence (X^2=2.834, df=1, N.S.)

In summary, this section examined the relationship between various health determinant indicators and problematic levels of gambling. One of the most interesting finding in this examination is the lack of observed relationships. That is, problematic levels of gambling were not related to income, education, employment, or social support. The only variables that distinguished problem from nonproblem gamblers were being male and feeling anxiety/depression.

Factors Associated with Percent of Income Spent on Gambling

As shown earlier, examination of the psychometric properties of the SOGS-R revealed that it might not be an appropriate measure of problem gambling with older adult populations. As such, another model was run, this time using percentage of income spent on gambling as the outcome variable. Perhaps not a precise measure of 'problem gambling', intuitively it makes sense that gambling-related problems would generally increase with the percentage of income spent on gambling. Examination of the relationship between SOGS-R scores and percentage of income spent on gambling revealed a significant, moderate correlation ($r=0.448$, $p<0.001$).

A multiple regression was conducted with the same health determinant indicators used in the previous section, with the exception of income. Income was not included as a predictor variable because it was used to construct the dependent variable. Percentage of income spent on gambling was constructed from two questions: average amount spent on gambling in a month and yearly income. For each question, the categorical response categories were recoded to the median value. Amount spent on gambling in an average month was multiplied by 12 to obtain the average yearly amount. Percent of income on gambling was obtained by dividing the average amount spent in a year on gambling by yearly income. For the regression analysis, the log of percentage of income spent on gambling was used in order to produce a normal distribution. Finally, it is important to note that 233 participants refused to provide their income. As such, the results need to be interpreted with caution due to the high proportion of missing cases.

A full model was run that included all of the indicators of the health determinants (see methods section). As shown in table 4.36, a number of coefficients were not significant in the model. Consequently gender, marital status, age, anxiety/depression, alcohol use, region, perceived health status, ability to talk to family/friend, and prescription drugs were removed from the final model.

Table 4.36: Full model –Predictors of Percent of Income Spent on Gambling

Variables in the model:	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.099	.947		1.160	.247
Gender	7.144E-02	.160	.026	.446	.656
Feeling anxious, upset, or depressed	.111	.186	.033	.594	.553
Educational attainment	-.403	.150	-.142	-2.690	.007
Employment status	-.568	.197	-.161	-2.888	.004
Health status	-.257	.177	-.081	-1.447	.149
Talk to others/friends about problems	-.300	.209	-.077	-1.431	.153
Region	-.167	.145	-.061	-1.154	.249
Marital status	-.138	.162	-.049	-.852	.395
Alcohol consumption in the past 12 months	6.339E-02	.151	.023	.420	.675
Tobacco consumption in the past 12 months	.184	.094	.106	1.959	.051
(Non) prescription drugs in the past 12 months	2.161E-02	.092	.013	.234	.815
5+ drinks on one occasion	.250	.148	.094	1.685	.093
Age	-6.592E-02	.090	-.042	-.730	.466

a Dependent Variable: LNMONEY

The reduced model was significant ($F\{3, 573\}=9.136$, $p<0.001$), and explains 4.6% of variation in the dependent variable. Table 4.37 indicates a significant relationship between percent of income spent on gambling and educational attainment, employment status, and tobacco use. Thus, as level of education increases, the percentage of income spent on gambling declines. Additionally, retired or unemployed individuals, compared to all others, spend a greater percentage of their income on gambling. Finally, percentage of income spent on gambling increases with tobacco use. In all, educational attainment and retirement status were the best predictors of the percentage of income spent on gambling, followed by tobacco use.

Table 4.37: Reduced model – Predictors of Percent of Income Spent on Gambling

Variables in the model:	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.215	.270		.795	.427
Educational attainment	-.369	.115	-.132	-3.213	.001
Employment status	-.469	.149	-.130	-3.160	.002
Tobacco consumption in the past 12 months	.202	.072	.114	2.782	.006

a Dependent Variable: LNMONEY

Chapter 5: Discussion

This research provides an important contribution to the literature by providing an in-depth examination of the nature of gambling and problem gambling among older adults in Manitoba. Anecdotal reports highlight the increasing number of older adults who are experiencing gambling-related problems. However, very little empirical information exists that specifically examines the gambling patterns of older adults. This study had three main objectives: to describe the gambling patterns among older adults, to examine the utility of existing measures of problem gambling with an older adult population, and to examine predictors of problem gambling using a population health paradigm to classify the data. The findings related to each objective are discussed separately below. This section concludes with an examination of the limitations of this study and directions for further research.

Gambling Patterns

This study shows gambling to be a fairly common activity among adults 60 years and older in Manitoba. The large majority gamble responsibly, and do not experience problems related to their gambling. The profile of a typical older gambler is an individual who purchases lottery or raffle tickets to support good causes, win money, or for the entertainment value; and spends less than $50/month on gambling activities. Compared to other social or recreational activities, gambling is generally not viewed as an important activity.

For just under 3% of older adults, however, involvement in gambling is creating problems. In this study, 1.6% of participants were gambling at problem levels defined as 3 to 4 on the SOGS-R, and 1.2% were gambling at probable pathological levels as defined as 5 or more on the SOGS-R. Table 5.1 compares gambling prevalence rates observed among older adults in this study, with those obtained for the general population of adults and youth (12 to 17 years old) in Manitoba. Direct comparisons with the youth rates are not possible due to variations in the measurement instruments used to measure problem gambling. Nonetheless, the results indicate that older adults may be less likely than the general population of adults and youth to gamble at problematic levels.

Table 5.1: Comparison of Gambling Prevalence Rates*

	Non-Gambler	Non-Problem	Problem	Prob Path
Manitoba Youth* (Wiebe, 1999)	21.8%	67%	8%	3.2%
Manitoba Adults (Criterion Research, 1995)	8%	88%	2.4%	1.9%
Manitoba Older Adults	22.5%	74.7%	1.6%	1.2%

* For youth, "problem" is classified as "at-risk" and "probable pathological" as "problem"

Based on the available evidence, it is possible that the problem gambling rates are actually higher than what was observed in the present study. For instance, in a study conducted by the Productivity Commission in Australia (Productivity Commission, 1999), most problem gamblers in treatment admitted that they would not have disclosed the full extent of their gambling if randomly interviewed. In addition, among pathological gamblers, a common characteristic, in fact a DSM criteria, is concealing the extent of

their gambling. Nonetheless, the results obtained in this study are consistent with those obtained in the NORC (1999) study which also observed the lowest problem rates among individuals 65 years and older. Therefore, although there is much anecdotal information regarding gambling-related problems among older adults, prevalence rates are still lowest among this group. It is possible that the prevalence of problem gambling among older adults has increased with the expansion of the gambling industry. However, as a baseline study, the results cannot reliably speak to changes that may have occurred overtime.

Compared to the typical older gambler, the profile of individuals who are gambling at problematic levels looks quite different. In terms of gambling activities, a strong relationship was observed between engaging in problematic levels of gambling and playing slots/VLTs. This finding supports the relationship that has been observed between continuous games and problem gambling in other groups (Dickerson, 1993). Continuous games are characterized by a short time span between placing a wager and obtaining the outcome. The sequence of wager-play-outcome occurs rapidly and can be repeated frequently, as with slots/VLTSs. In a study conducted with gambling treatment clients in Australia, the majority sought help with regard to their playing of electronic gambling machines (Australian Productivity Commission, 1999).

Given the predominance of slots and VLT playing among those experiencing problems, it would be beneficial to examine whether there are elements in the manufacturing of these games that increase problematic play. Specifically, how do these games interact with mental processes? Another area for investigation is how older adults view using the "new technology" of slots/VLTs. Given that this generation was not

brought up with computers, older adults may perceive the use of these machines as fitting in with the times.

In a related manner, it would also be beneficial to explore the relationship between patterns of gambling activities and the development of problems. The gambling activities engaged in by the highest proportion of problem gamblers are casino table games, slots and VLTs. However, it is important to keep in mind that the activity itself is not necessarily the cause of the problem. Perhaps there is an underlying sequence associated with the types of gambling activities people engage in and the development of problems. If such a pattern exists, if would provide valuable information for the development of prevention programs in this area. This study highlights the need to examine the issue of gambling from a broad perspective, one which looks at the continuum of gambling from non-problem gambling to problem and probable pathological gambling, and the required interventions along the way.

Compared to non-problem gamblers in the present study, those who are gambling at problematic levels are more likely to gamble on a weekly or greater basis, thereby spending more time and money on gambling. In this study, the majority of those gambling at problematic levels were spending $100 or more in a month on gambling. Given that many in this age group are living on fixed incomes, and that most in this study have incomes less than $30,000, this could have significant impacts on major life areas. To learn more about the impact of gambling, it would be beneficial to examine the areas that older adults are sacrificing in order to spend money gambling. For instance, are they using savings now that will be needed to cover basic living expenses later on? Are they modifying daily living expenses, such as groceries and housing, and using these savings

for gambling? The exploration of areas such as these could provide important insight into the ways in which gambling involvement affects major life areas.

Similar to non-problem gamblers, those in the problem gambling categories gamble for the entertainment and to win money. Unlike non-problem gamblers, however, those gambling at problematic levels also gamble to pass time and forget problems. These reasons are similar to those obtained in a study conducted by McNeilly (1999) that found boredom, feeling part of the action, and passing time to be common motivations for gambling among older problem gamblers. These underlying reasons suggest a lack of alternative activities and leisure options. Another possibility is that gambling provides an escape from loneliness and possibly depression. This, in turn, could relate to circumstances such as loss of significant relationships, low feelings of worth associated with retirement and isolation.

Only 50% of individuals in the probable pathological category and 6% of those in the problem gambling category felt that they had a problem with gambling. This lack of awareness, or perhaps denial, represents a challenge to treatment professionals wanting to respond to older adults who are experiencing gambling-related problems. A further challenge is the lack of observable signs. The most common indicators of problem gambling found in the present study included gambling more than intended and feeling guilty about gambling. Most are obtaining money to gamble by using household funds or making withdrawals on credit cards. They are not borrowing from family or friends, writing bad cheques or cashing in savings. Unless the individual specifically identifies gambling as a problem, it is easy to see how many of these signs could go unnoticed or be attributed to behaviour other than gambling.

These results provide direction for public awareness initiatives designed to inform individuals of the signs of problem gambling, as well as ways to gamble responsibly. Messages could emphasize potential indicators of problems, such as gambling more than intended, feeling guilty about gambling, and using money intended for basic living expenses to gamble. Responsible gambling messages could promote the importance of setting and keeping time and money limits when gambling, not borrowing money for gambling purposes, and treating gambling as a form of entertainment where you hope to win, but expect to lose. Given the relationship between problem gambling and VLTs and slot playing, it would be important that public awareness messages were displayed near these gambling sites. Unfortunately, there is limited information on the components of effective gambling public awareness campaigns, and even less specific to gambling and older adults. It would be essential to include the target audience in the development and delivery of messages designed to promote responsible gambling and prevent problem gambling.

Seniors are an interesting group in terms of their willingness to volunteer and the potential work force that could be mobilized to spread a prevention message. As found in the 1997 National Survey on Giving, Volunteering and Participating (NSGVP), older adults are a highly valuable resource for the voluntary sector (Statistics Canada, 1998). Overall, 19% of seniors participate in volunteer work, and more than any other group, older adults tend to devote far more of their time to volunteering (Statistics Canada, 1998; Transition Magazine, 1998).

In this regard, there could be further opportunities for organizations such as the Addictions Foundation of Manitoba to create a seniors advisory council that could play a

role in the development, review and rollout of programs and research. Basically, this approach involves using the target audience to reach the target group, as well as allowing them to drive the processes. It also appeals to a broader agenda of bringing seniors back to the workforce and integrating them into meaningful activities.

The traditional approach of expecting people with addiction concerns to approach an organization and receive assistance from a counsellor may not work with older adults. Perhaps they require something more informal; an approach that encompasses a personal touch. In their extensive review of programs for seniors in Canada, MacLeod and Associates (1997) highlighted the importance of using peers in the development of any strategy. The use of peers can strengthen the relevance, accessibility and awareness of strategies.

In terms of prevention strategies, much of the gambling prevention programs consist of posters and advertisements. Again, it is unknown whether this approach is effective with older adults. More research is needed to examine the best mechanisms for effectively reaching older adults with prevention and intervention messages (Macleod and Associates, 1997).

SOGS-R Properties

Increasingly, attention is being directed at estimating older adult gambling and problem gambling as a result of the expansion of legalized gambling throughout North America. However, there have been questions regarding the appropriateness of existing screening measures to assess problem gambling. One of the main concerns is that existing screens are based on findings from treatment populations, and may not be a good

indicator of problem gambling in general population samples. The results of this study build upon the emerging research examining the psychometric properties of instruments designed to assess problem gambling in community based populations (Cox et al., 2000; Wiebe, Cox and Mehmel, 2000). It is the first study to specifically examine the appropriateness of the SOGS-R with an older adult sample.

Examination of item distribution among older adults with SOGS-R scores of 1,2, 3 and 4 revealed consistent trends of both over and under-endorsement of certain items. Two items in particular were endorsed two to three times higher than expected: (1) gone back another day to win back lost money, and (2) spent more time/money gambling than intended. Alternatively, several items were endorsed at rates much lower than expected, or were not endorsed at all. Examples of under-endorsed items include hiding gambling from others, borrowing money to gamble and missing work to gamble.

These results may signify the need for some type of weighting procedure, specifically when it comes to the items that were over-endorsed. In other words, items do not appear to equally contribute to the total score. If some items are more important (e.g., prognostic significance) they should be given more weight in determining the total score. It is possible that there are some very important differences in which items are endorsed by problem gamblers, compared to nonproblem gamblers. By not taking this into account, prevalence estimates may be inflated, especially related to "problem" gamblers who might only endorse two or three items. The other option to weighting is to view these items as outliers, and to delete them from the instrument.

Examination of the SOGS-R items suggests that many of the items may not apply to older adults. The most obvious is the item that asks respondents if they have missed

work due to their gambling. Given that the large majority of older adults are retired, this item is not meaningful. In addition, ten of the twenty items on the SOGS-R relate to borrowing money. Inspection of the endorsement of these borrowing items shows them to be among the least likely endorsed. This may relate to the beliefs and values of this generation. Compared to baby boomers, where borrowing money for things is common, it may not the norm for today's older adults.

The results from the factor analysis suggested a one-factor solution that consisted of a total of ten items. Nine of the original twenty items had to be deleted due to lack of endorsement, and one had a low factor loading. It is unclear whether the ten items that remain reflect the dimensions underlying problematic levels of gambling. What is clear, however, is that the twenty items on the SOGS-R do not represent a uni-dimensional measure of problematic levels of problem gambling among older adults.

The results clearly show the need for either the refinement of existing measures of problem gambling or the development of a new measure specific to older adults. Problem gambling, as currently defined by existing measures, does not appear to represent the characteristics underlying problem gambling among older adults. That is, problematic gambling may have less to do with borrowing money, and more to do with what is being compromised as a result of time and money being spent on gambling. With many older adults having a fixed income, even small amounts of money spent on gambling could have significant impacts on major life areas.

Factors Related to Problem Gambling

Although a number of prevalence studies have examined the relationship between problem gambling and demographic, social and personal variables, there has been no framework guiding the classification of variables. This study utilized the population health paradigm to examine the relationship of the health determinants to problematic levels of gambling. It is important to remember that this study did not test the adequacy of the population health model in explaining problem gambling among older adults. That is a worthwhile area for further study. The present study used the population health framework to categorize the data for the purpose of examining possible predictors of problem gambling among older adults.

The first set of analyses examined the relationship between indicators of the health determinants and problem gambling as measured by the SOGS-R. Although major concerns were identified with the SOGS-R, these analyses were conducted in order to compare findings with other research in this area.

Consistent with some past research, no relationships were observed between income, education, employment and gambling levels, as measured by the SOGS-R (National Council of Welfare, 1996). However, the results did reveal relationships between SOG-R scores and gender, consumption of alcohol, tobacco use, and anxiety/depression.

The relationship between gender and problem gambling rates has also been observed in studies with general adult populations (Korn, 2000; National Council of Welfare, 1996). Consistently, males are more likely than females to be involved in problematic levels of gambling. Given that gambling has traditionally been more of a

male-dominated behaviour, this finding is not unexpected. However, with the recent wide expansion and accessibility of gambling, and increasing acceptance among society, this gender difference may become less pronounced in time.

The relationship between substance use and problem gambling that was observed in the present study has also been noted elsewhere. For instance, in his review of the research, Korn (2000) observed a strong relationship between problem gambling and substance abuse. The relationship between gambling problems and substance use may be in part due to the manner in which certain individuals respond to stress and painful events. Untangling the precise relationship between substance use and problem gambling is an area worthy of further investigation.

In the present study, problem gambling was associated with higher ratings of anxiety and depression. This finding is consistent with the clinical observations of older adults believed to be relief-escape problem gamblers (McNeilly and Burke, 1998). In a study conducted with geriatric outpatients, McNeilly and Burke (1998) observed an increasing number of older adults who present themselves for the treatment of an affective disorder, and who also have undetected gambling problems. Based on these findings, the authors stressed the need for assessments of problem gambling behaviours as a routine portion of geriatric clinical evaluations. At a more general level, it may be worthwhile to target family physicians, and increase their awareness of the signs of problem gambling and available treatment services.

However, without longitudinal data, one cannot be certain of the causal priority between gambling problems and depression/anxiety. Gambling problems may cause depression and anxiety, or they may be the result of using gambling to relieve stress

caused from other circumstances. Most likely, it is a combination of the two: in some cases the relationship occurs because gambling causes a health problem and in other situations the gambling problem results from a health problem. Either way, this finding highlights the need for prospective studies that are able to examine causal patterns. This information would be invaluable to the development of strategies designed to prevent and treat gambling problems.

Because of the poor psychometric properties of the SOGS-R with this population, additional analyses were conducted to examine the variables that best predicted the percentage of income spent on gambling. The rationale being that the greater the percentage of income spent on gambling, the more likely it would be that individuals would experience problems. The results showed that the best predictors of the percentage of income spent on gambling were education level, employment status and tobacco use.

Retirement has two primary implications for older adults: decreased income and increased leisure time. Gambling offers a means of filling leisure time and the potential for winning money. The precise role of education level with percent of income spent on gambling is unclear. Less education has been found to be an important predictor of other "addictive" behaviours, including alcohol consumption, illicit drug use, and tobacco use (Single, 2000).

However, it is important to view the results related to percentage of income with caution. Further research is needed to explore the utility of using percentage of income spent on gambling as an indicator or problem gambling.

Future Research

One of the major assumptions of the proposed research is that higher scores on the SOGS-R are associated with increased gambling problems among older adults. Because of uncertainties of the appropriateness of the SOGS-R with general population samples, and the lack of research examining the utility of this measure with older adults, this may not be accurate. At the same time, the relationship between SOGS-R scores and other relevant variables suggests that the SOGS-R is differentiating between different levels of problem gambling. Specifically, significant relationships were observed between SOGS-R scores and time and money spent on gambling, gambling frequency, and feelings of depression and anxiety.

The examination of the psychometric properties of the SOGS-R revealed lack of endorsement of many items, and over endorsement of others. Factor analysis showed that only ten of the twenty items loaded on one dimension. It is uncertain whether these items best reflect problem gambling among older adults. It is beyond the scope of this study to delineate specific item content for new older adult gambling tools. However, some general guidelines in the continuing development of assessment instrumentation for gambling problems in older adults are suggested:

1. It is necessary to include both non-affected older adults in the community as well as older adults currently experiencing significant problems related to gambling. In this regard, it is important to remember that the SOGS-R was developed largely with Gamblers Anonymous members and institutional data.

2. Although there is no widely accepted gold standard, it will be necessary to determine the sensitivity and specificity of any new gambling measure against clinical interviews conducted by treatment providers.

The present study employed the population health paradigm to classify the data and examine the relationship between the major health determinants and gambling levels. An important topic for future research is the examination of the relationship between problem gambling among older adults and the full spectrum of health determinants, using validated measures of various indices.

Because of the low number of problem gamblers identified in the present study, observed relationships between problem gambling and other variables may be unstable. With a low prevalence rate, larger samples are needed to gain a better understanding of the factors associated with problem gambling.

In this regard, the best research design is a prospective study. As a cross-sectional study, the present study cannot address cause and effect relationships. For instance, it is not clear whether feelings of anxiety and depression caused gambling problems, or resulted from such problems. Prospective research would allow for a more accurate examination of the factors associated with the onset, maintenance and termination of problem gambling. This research would provide important directions for the development of treatment and prevention strategies in this area.

Future studies are needed to duplicate the prevalence rates and gambling patterns observed in the present study. In a related manner, it is also not clear whether the results apply to the next generation of seniors who may have attitudes quite different from the

current generation, which may affect their involvement with gambling. As such, a worthwhile area of investigation is the gambling patterns of people 45 to 60 years old. This information could produce some forecasting, and perhaps directions for pre-messaging.

Finally, the low response rate may present a selection bias. Unfortunately, the influx of telephone marketing has negatively impacted cooperation levels with telephone surveys. Future research in this area needs to consider other methods of data collection, including surveys with older participants at gambling venues, senior centres, etc.

The present study has provided an important contribution by providing insight into the role of gambling in the lives of older adults. Gambling is a popular activity among this age group, and most do not suffer any ill effects. However, there are those who are being negatively affected by their gambling. It is essential that problem gambling public awareness messages, prevention initiatives and treatment strategies be developed that are appropriate and targeted. In this regard, the collection of qualitative information from older adults is essential. Ultimately, the development of treatment resources and messages designed to inform older adults of the signs of a gambling problem and ways to gamble responsibly needs to be driven by the target group to ensure appropriateness and accessibility. Finally, there is much to be learned about the characteristics of problem gambling among older adults. The results of this study seriously question whether existing problem gambling assessment tools are appropriate. Qualitative research could enhance understanding of this construct and ultimately lead to the development of measures that accurately capture the essence of a gambling problem among older adults.

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Appendix A

Manitoba Older Adults Gambling

SOGS – R QUESTIONS

1. In the past 12 months how often have you gone back another day to win back money you lost? **READ LIST**

Almost always.....1
Most of the time.....2
Sometimes.....3
Never.....4
Don't know.....5
Refused.....6

2. In the past 12 months, have you ever claimed to be winning money from these activities when in fact you lost? **READ LIST**

Almost always.....1
Most of the time.....2
Sometimes.....3
Never.....4
Don't know.....5
Refused.....6

3. In the past 12 months, have you spent more time or money gambling than you intended?

Yes.....1
No.....2
Don't know.....3
Refused.....4

4. In the past 12 months, have people ever criticized your gambling?

Yes.....1
No.....2
Don't know.....3
Refused.....4

5. In the past 12 months, have you ever felt guilty about the way you gamble or about what happens when you gamble?

Yes.....1
No.....2
Don't know.....3
Refused.....4

6. In the past 12 months, have you ever felt that you would like to stop gambling, but didn't think that you could?

Yes.....1
No.....2
Don't know.....3
Refused.....4

7. In the past 12 months, have you ever hidden betting slips, lottery tickets, gambling money or other signs of gambling from your spouse or partner, children, or other important people in your life?

Yes 1
No.....2
Don't know.....3
Refused 4

In the past 12 months, have you ever argued with people you live with over how you handle money?

Yes 1
No.....2 **GO TO S40**
Don't know.....3 **GO TO S40**
Refused .....4 **GO TO S40**

8. Have these money arguments ever centred on your gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

9. Have you ever missed time from work due to gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

10. In the past 12 months have you ever borrowed money from someone and not paid them back as a result of your gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

I am going to read a list of ways in which some people get money for gambling. Can you tell me which of these, if any, you have used to get money for gambling or to pay gambling debts.

11. In the past 12 months have you ever borrowed from household money to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

12. In the past 12 months have you ever borrowed money from your spouse or partner to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

13. In the past 12 months have you ever borrowed money from other relatives or in-laws to gamble or pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

14. In the past 12 months, have you ever gotten loans from banks, loan companies or credit unions for gambling or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

15. In the past 12 months, have you ever made cash withdrawals on credit cards such as VISA or MasterCard to get money to gamble or to pay gambling debts? **(DOES NOT INCLUDE ATM OR INSTANT CASH CARDS)**

Yes 1
No.....2
Don't know.....3
Refused 4

16. In the past 12 months have you ever gotten loans from loan sharks to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

17. In the past 12 months, have you cashed in stocks, bonds or other securities to gamble or pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

18. In the past 12 months have you ever sold personal or family property to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

19. In the past 12 months have you ever borrowed money from your chequing account by writing cheques that bounced to get money for gambling or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

20. In the past 12 months have you felt you had a problem with betting money or gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

APPENDIX B

MANITOBA OLDER ADULTS GAMBLING TELEPHONE QUESTIONNAIRE

GENDER: Male .....1 Female.....2

REGION Winnipeg.....1 Eastern.....2 Western .....

Northern 4

Hello, my name is (first & last name) and I'm calling from Viewpoints Research. We're a professional public opinion research company and today we're calling a random sample of Manitoba residents on behalf of Manitoba Health and the Addictions Foundation of Manitoba.

This survey is on the gambling activities and attitudes of Manitobans and we'd like to include your views. I'd like to assure you that we are not trying to sell anything and all of your answers will remain confidential.

For this survey, we need to speak with adults who are 60 years of age or older? Are you or is anyone in your household 60 years of ago or older?

IF RESPONDENT QUALIFIES, GO TO BEGIN SURVEY.

IF OTHER PERSON ASK TO SPEAK TO THAT PERSON. RE-READ INTRODUCTION.

IF BOTH OR MORE THAN ONE, ASK TO SPEAK TO THE PERSON WHOSE BIRTHDAY COMES NEXT.

IF QUALIFIED PERSON NOT AVAILABLE, ARRANGE A TIME TO CALL BACK. Could I please have the first name of that person so I can ask for them when I call back?

CALL BACK:

Name:_____

Date/Time:_____

IF NO OR NOT SURE:

Manitoba Health and The Addictions Foundation would really appreciate your cooperation on this study. If you like, I can have Jamie Wiebe, the person responsible for this project at the AFM, give you a call to provide you with more information before you make a final decision about whether to participate. Would you like her to give you a call?

IF YES, Can I please have your name to provide to her?

Name:_____

What time of day is it best to reach you? _____

Is this the best number to reach you at or is there another number?

(ALTERNATE PHONE NUMBER) ___ ___ ___ - ___ ___ ___ ___

IF RESPONDENT WOULD PREFER TO CALL AFM DIRECTLY THEN

SAY:

You can call Jamie Wiebe, the person responsible for this project at the Addictions Foundation. You can call her. **(FOR LONG DISTANCE RESPONDENTS THEY CAN CALL HER COLLECT).** I will re-contact you in a week to give you time to speak with her. Can I please have your first name so I know who to ask for when I call back?

NAME:_____ CALL BACK:_____
IF PERSON STILL REFUSES, THANK AND TERMINATE
IF PERSON NEVER GAMBLES, DOESN'T BELIEVE IN GAMBLING, ETC
SAY: We understand that not everyone gambles, but your opinions are still very important to us.

BEGIN SURVEY HERE

I'd like to begin the survey now if this is a good time. It will take approximately 15 minutes depending on how many questions apply to you. Before we start, I'd like to assure you that your participation is voluntary and that any information you provide will be kept completely confidential. If there are any questions that you do not wish to answer, please feel free to point these out to me and I'll go on to the next question.

As you know people bet money and gamble on many different things including buying lottery tickets playing bingo or card games with their friends. I am going to list some activities that you might have bet money on. For each activity, if you haven't participated in the last 12 months just say so, otherwise I'd like you to tell me how often in the last year you've participated in the activity.

Q1 In the last 12 months, how often, if at all, did you buy Lottery tickets like the 649, Super 7, or Pick 3? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q2 In the last 12 months, how often, if at all, did you buy instant win or scratch tickets like break open, pull tab, or Nevada strips? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q3 In the last 12 months, how often, if at all, did you buy raffle or fundraising tickets to win money or a prize? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q4 In the last 12 months, how often, if at all, did you bet on horse races, either live at the track or off-track? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q5 In the last 12 months, how often, if at all, did you bet on sports teams or sporting events? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q6 In the last 12 months, how often, if at all, did you bet or spend money on bingo? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q7 In the last 12 months, how often, if at all, did you bet or spend money on card games or dice games? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q8 In the last 12 months, how often, if at all, did you bet or spend money on table games such as black jack, roulette, or pai gow (pie gow) in a casino? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q9 In the last 12 months, how often, if at all, did you bet or spend money on coin slot machines or other gambling machines in a casino? **(IF ASKED THIS INCLUDES CHARITY CASINOS)** Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q10 In the last 12 months, how often, if at all, did you bet or spend money on VLTs (video lottery terminals) ***not*** in a casino? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

IF RESPONDENT ANSWERED YES TO Q9 OR Q10 OR BOTH

THEN ASK Q11 AND Q12.

IF RESPONDENT ANSWERED NEVER / DON'T KNOW/REFUSED

TO BOTH Q9 AND Q10 THEN GO TO Q13.

Q11 At which locations did you bet money on VLTs or slots machines? **READ LIST. CIRCLE ALL MENTIONS**

Casinos.....1
A Bar, hotel or lounge.....2
Legions.....3
Race track.....4
First nation / Reserve.....5
Out of province.....6

Other (SPECIFY)_____.....7
Don't know.....8
Refused.....9

Q12 In general, do you think to win at VLT's or slot machines a person needs to have a *lot* of skill, a *little* skill, or do you think there is no skill involved in this type of gambling?

A lot of skill.....1
A little skill.....2
No skill.....3
Don't know.....4
Refused.....5

Q13 In the last 12 months, how often, if at all, did you bet on games of skill such as pool, golf, bowling, darts or any other game of skill? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q14 In the last 12 months, how often, if at all, did you bet or spend money on mail sweepstakes? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q15 In the last 12 months, how often, if at all, did you spend money gambling on the Internet? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q16 In the last 12 months, how often, if at all, did you personally speculate on the stock market? Would you say.....**READ LIST**

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

IF RESPONDENT ANSWERS "NEVER" TO ALL OF THE ACTIVITIES (Q1-16) SKIP TO Q52

Q17 In the last 12 months how often, if at all, have you taken any trips out of the province for gambling purposes?

Daily.....1
Several times a week.....2
About once a week.....3
About once a month.....4
One or two times a year.....5
Never.....6
Don't know.....7
Refused.....8

Q18 Can you give me an idea of the amount that you spend on gambling in an average month? **IF HESITANT, SAY**: I'm just looking for an approximate amount. **IF STILL**

HESITANT THEN READ LIST. IF RESPONDENT ASKS IF THIS INCLUDES LOSSES SAY YES

$1 to $10 01
$11 to $49 02
$50 to $99 03
$100 to $199 04
$200 to $299 05
$300 to $399 06
$400 to $499 07
$500 to $599 08
$600 to $699 09
$700 to $799 10
$800 to $899 11
$900 to $999 12
More than $1000 13
Don't know 14
Refused 15

People gamble for different reasons. When you gamble, please tell me whether or not each of the following is a reason for you. **READ LIST ROTATE**

		Yes	No	DK
Q19	To be with others or to do things with your friends	1	2	3
Q20	Because it's exciting and challenging	1	2	3
Q21	Because you're lucky	1	2	3
Q22	To win money	1	2	3
Q23	To support good causes	1	2	3
Q24	To pass the time	1	2	3
Q25	For entertainment or fun	1	2	3
Q26	To forget problems for awhile	1	2	3
Q27	Because you're good at it	1	2	3
Q28	To be alone	1	2	3

Q29 Compared to other recreational or social activities, how important is gambling to you? Would you say it is.....**READ LIST**?

Very important 1
Somewhat important 2
Not very important 3
Not important at all 4
Don't know 5
Refused 6

Q30 In an average week how much time do you usually spend gambling? …Do you spend…..**READ LIST**

Less than 1 hour 1
1 to 2 hours.....2
Longer than 2 hours but up to 5 hours 3
Longer than 5 hours but less than 12 hours 4
12 hours or more 5
Don't know / Refused.....6

SOGS – R QUESTIONS

The next few questions have been used in similar surveys with other people throughout Canada. There are no right or wrong answers to the questions that follow. We want to know what **your** experiences have been. Some of these questions may not apply to you, but please try to be as accurate as possible in your answers and remember that all this information is confidential.

S31 In the past 12 months how often have you gone back another day to win back money you lost? **READ LIST**

Almost always.....1
Most of the time 2
Sometimes.....3
Never.....4
Don't know 5
Refused 6

S32 In the past 12 months, have you ever claimed to be winning money from these activities when in fact you lost? **READ LIST**

Almost always.....1
Most of the time 2
Sometimes.....3
Never.....4
Don't know 5
Refused 6

S33 In the past 12 months, have you spent more time or money gambling than you intended?

Yes 1
No.....2
Don't know 3
Refused 4

S34 In the past 12 months, have people ever criticized your gambling?

Yes 1
No.....2
Don't know 3
Refused 4

S35 In the past 12 months, have you ever felt guilty about the way you gamble or about what happens when you gamble?

Yes 1
No.....2
Don't know.....3
Refused 4

S36 In the past 12 months, have you ever felt that you would like to stop gambling, but didn't think that you could?

Yes 1
No.....2
Don't know.....3
Refused 4

S37 In the past 12 months, have you ever hidden betting slips, lottery tickets, gambling money or other signs of gambling from your spouse or partner, children, or other important people in your life?

Yes 1
No.....2
Don't know.....3
Refused 4

S38 In the past 12 months, have you ever argued with people you live with over how you handle money?

Yes 1
No.....2 **GO TO S40**
Don't know.....3 **GO TO S40**
Refused .....4 **GO TO S40**

S39 Have these money arguments ever centred on your gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

S40 Have you ever missed time from work due to gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

S41 In the past 12 months have you ever borrowed money from someone and not paid them back as a result of your gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

I am going to read a list of ways in which some people get money for gambling. Can you tell me which of these, if any, you have used to get money for gambling or to pay gambling debts.

S42 In the past 12 months have you ever borrowed from household money to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S43 In the past 12 months have you ever borrowed money from your spouse or partner to gamble or to pay gambling debts? **IF RESPONDENT HAS NO SPOUSE/PARTNER ENTER NO**

Yes 1
No.....2
Don't know.....3
Refused 4

S44 In the past 12 months have you ever borrowed money from other relatives or in-laws to gamble or to pay gambling debts? **(INCLUDES CHILDREN AND OTHER FAMILY MEMBERS)**

Yes 1
No.....2
Don't know.....3
Refused 4

S45 In the past 12 months, have you ever gotten loans from banks, loan companies or credit unions for gambling or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S46 In the past 12 months, have you ever made cash withdrawals on credit cards such as VISA or MasterCard to get money to gamble or to pay gambling debts? **(DOES NOT INCLUDE ATM OR INSTANT CASH CARDS)**

Yes 1
No.....2
Don't know.....3
Refused 4

S47 In the past 12 months have you ever gotten loans from loan sharks to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S48 In the past 12 months, have you cashed in stocks, bonds or other securities to gamble or pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S49 In the past 12 months have you ever sold personal or family property to gamble or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S50 In the past 12 months have you ever borrowed money from your chequing account by writing cheques that bounced to get money for gambling or to pay gambling debts?

Yes 1
No.....2
Don't know.....3
Refused 4

S51 In the past 12 months have you felt you had a problem with betting money or gambling?

Yes 1
No.....2
Don't know.....3
Refused 4

Q52 In the past 12 months, has someone else's gambling ever caused any problems for you?

Yes 1
No.....2 **GO TO Q54**
Don't know / Refused.....3 **GO TO Q54**

Q53 Whose gambling caused problems for you? **CIRCLE ALL MENTIONS**

Spouse 1
Child 2
Grandchild 3
Friend 4
Parent 5
Other 6
Don't know / Refused 7

Q54 Compared to 10 years ago, would you say that today you gamble more, less or about the same amount as before? **IF RESPONDENT SAYS MORE/LESS, ASK:** Would that be a lot more/less or a little more/less than before?

A lot more 1
A little more 2
Same amount 3
A little less 4
A lot less 5
Don't know / Refused 6

DEMOGRAPHICS

Now we would like to get some basic information from you. Like all your other answers, we will not tell anyone what you say. To begin with....

Z1 Gender **DO NOT ASK**

Male 1
Female 2

Z2 Are you single, married, widowed or divorced?

Single 1
Married 2
Widowed 3
Divorced 4
Don't know / Refused 5

Z3 What is the highest level of formal education that you have completed?

Did not complete high school 1
High school graduate 2
Some college/technical 3
College/technical graduate 4
Some university 5
University graduate 6
Post-graduate university 7
Don't know / Refused 8

Z4 Can you tell me your age please? ___ ___

IF RESPONDENT REFUSES, OFFER TO READ CATEGORIES AND HAVE HIM/HER TELL YOU WHICH CATEGORY HE/SHE FALLS INTO?

60 to 62 1
63 to 65 2
66 to 70 3
71 to 75 4
76 to 80 5
81 to 85 6
86 to 90 7
Over 90.....8
Don't know / Refused.....9

Z5 Would you say that your total household income before taxes is...?
Less than $20,000 1
Less than $30,000 2
Less than $40,000 3
Less than $60,000 4
Less than $80,000 5
$80,000 or more 6
Don't know / Refused.....7

Z6 Are you currently employed outside the home on a full time or part-time basis or are you retired?
Employed full time 1
Employed part time.....2
Retired.....3
Unemployed.....4
Don't know / Refused.....5

Z7 How would you rate your current health status? Would you say you are in very good health, good health, fair, poor or very poor health?
Very good.....1
Good.....2
Fair 3
Poor.....4
Very poor 5
Don't know / Refused.....6

PERSONAL / ALCOHOL & DRUGS USE

Next, I'd like to ask you a few questions about your feelings in general and about alcohol and drug use. Please answer honestly and remember that I will not tell anyone what you tell me.

D8 How often have you felt anxious, upset, or depressed in the past 12 months? Would you say .....**READ LIST**

Most of the time 1
Some of the time 2
Not very often 3
Not at all 4
Don't know 5
Refused 6

D9 Can you talk to family or a friend about problems you are having…**READ LIST**?

Most of the time 1
Some of the time 2
Not very often 3
Not at all 4
DO NOT READ
Depends / Don't have problem 5
Don't know 6
Refused 7

D10 In the past 12 months how often have you used alcohol. Would you say…**READ LIST**

Not at all .....1 **GO TO D12**
Less than once a month 2
2 – 3 times a month 3
Once or more a week 4
Once or more a day 5
Don't know .....6 **GO TO D12**
Refused .....7 **GO TO D12**

D11 How many times in the last month have you had 5 or more drinks of alcohol at one time. **IF THEY ASK:** One drink means one bottle or glass of beer or cooler, one glass of wine or one mixed drink with one and a half ounces of liquor such as whisky, vodka, rum, gin, etc.

Never had more than 5 drinks at once 1
Not once in the last month 2
Once in the last month 3
Twice in the last month 4
Three times in the last month 5
Four times in the last month 6
Five or more times in the last month 7
Don't know 8
Refused 9

D12 In the past 12 months have you used tobacco products, like cigarettes? Would you say you've used them…..? **READ LIST**

Not at all.....1
Less than once a month.....2
2 – 3 times a month.....3
Once or more a week 4
Once or more a day.....5
Don't know.....6
Refused 7

D13 In the past 12 months have you used prescription or non-prescription drugs for sleep, depression or pain?

Not at all.....1
Less than once a month.....2
2 – 3 times a month.....3
Once or more a week 4
Once or more a day.....5
Don't know.....6
Refused 7

That ends our survey. I would like to thank you very much for taking the time to answer our questions. We are doing a follow-up study and we may want to call you back in the next few months to interview you again about some of these issues. Would you be interested in participating again?

Yes 1
No.....2
Don't know / Refused.....3

IF YES, SAY: Great. Can I confirm that your home phone number is (__ __ __) __ __ __ - __ __ __ __
And is there another number where you can be reached? (__ __ __) __ __ __ - __ __ __ __
And may I have your first name or initial so that we may ask for you when we call back?
First _____

IF NO, OR NOT SURE SAY: I understand. But just before I go, I'd like to confirm that your home phone number is (__ __ __) __ __ __ - __ __ __ __

APPENDIX C

MANITOBA OLDER ADULTS GAMBLING

PAIR WISE COMPARISON

C 4.1: Participation in Gambling Activities by Gambling Category in the Past 12 Months---pair wise comparison between non-problem versus problem and prob-pathological gamblers

Gambling Activities:	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	sig	χ^2	sig	χ^2	sig
Lottery tickets	1.464	.226	.004	.948	1.467	.480
Raffle tickets	1.736	.188	5.043	.025	6.628	.036
Slots (Casino)	11.124	.001	16.739	.000	27.098	.000
Scratch tickets/Instant Win/Break Open	3.206	.073	4.755	.029	7.758	.021
Bingo	1.042	.307	6.046	.014	6.941	.031
VLTs (Not in a Casino)	25.683	.000	16.351	.000	39.781	.000
Card/Board games/Dice/Coins	.409	.523	.119	.730	.518	.772
Speculate on Stock Market	1.370	.242	1.028	.311	2.394	.302
Mail Sweepstakes	1.270	.260	.016	.898	1.289	.525
Table games (Casino)	13.841	.000	3.837	.050	16.677	.000
Horse Races	.056	.813	.284	.594	.333	.847
Sport Teams/Events	.739	.390	.554	.457	1.292	.524
Games of skill (pool, golf, etc.)	.146	.702	.537	.464	.691	.708
Internet	10.274	.001	.048	.826	10.498	.005

C 4.2: Weekly Gambling by Gambling Category

Weekly gambling activities:	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	sig	χ^2	sig	χ^2	sig
Lottery tickets						
Raffle tickets	2.659	.103	.163	.687	2.876	.237
Slots (Casino)	14.693	.000	38.102	.000	46.475	.000
Scratch tickets/Instant Win/Break Open	6.624	.010	.012	.913	6.622	.036
Bingo	.117	.732	7.030	.008	7.086	.029
VLTs (Not in a Casino)	80.808	.000	21.161	.000	89.136	.000
Card/Board games/Dice/Coins	.025	.875	.205	.651	.226	.893
Speculate on Stock Market	.239	.625	.179	.672	.418	.811
Mail Sweepstakes	.043	.836	.032	.858	.075	.963
Table games (Casino)	7.858	.005	.065	.799	8.059	.018
Horse Races	.043	.836	.032	.858	.075	.963
Sport Teams/Events	.065	.800	.048	.826	.113	.945
Games of skill (pool, golf, etc.)	2.659	.103	.163	.687	2.876	.237
Internet	.043	.836	.032	.858	.075	.963

C 4.3: $ Spent on Gambling in an Average Month by Gambling Category

$ Spent on Gambling in an average month	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	sig	χ^2	sig	χ^2	sig
$1 to $49	51.569	.000	38.927	.000	83.532	.000
$50 to $99	15.572	.000	.662	.416	16.491	.000
$100 or more	33.757	.000	80.157	.000	101.351	.000

C 4.4: Amount of Time Spent Gambling by Gambling Category*

Amount of times spent gambling	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	sig	χ^2	sig	χ^2	sig
Less than 1 hour	21.109	.000	29.849	.000	48.218	.000
1 to 2 hours	12.689	.000	.823	.364	13.245	.001
2+ to 5 hours	4.087	.043	39.387	.000	41.410	.000
5 hours or more	2.550	.110	4.393	.036	6.384	.041

C 4.5: Reasons for Gambling by Gambling Category

Reasons for Gambling	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	Sig	χ^2	sig	χ^2	sig
Support Good Causes	2.019	.155	2.249	.134	4.175	.124
Entertainment or fun	5.247	.022	2.875	.090	8.012	.018
Win Money	9.035	.003	3.554	.059	12.422	.002
Be With Others/Do things with friends	5.526	.019	.021	.886	5.535	.063
Pass Time	15.035	.000	13.852	.000	28.035	.000
Exciting & Challenging	1.529	.216	22.087	.000	23.224	.000
Forget problems	.769	.380	58.717	.000	58.530	.000
Lucky at it	.618	.432	5.283	.022	5.753	.056
To be alone	12.947	.000	8.627	.003	19.635	.000
Good at it	6.188	.013	9.275	.002	14.103	.001

C 4.6: Importance of Gambling as an Activity by Gambling Category

Overall: χ^2=67.389, df=2, p<0.000
Non-problem with problem: χ^2=.951, df=1, p<.329
Non-problem with prob.path: χ^2=68.267, df=1, p<.000

C 4.7: Gambling Now Compared to 10 Years Ago by Gambling Category

Gambling now compared to 10 years ago	Gambling Category				Total	
	Non-Problem with problem gamblers Df=1		Non-Problem with prob. Path. gamblers Df=1		Df=2	
	χ^2	sig	χ^2	sig	χ^2	sig
More	12.252	.000	21.272	.000	32.067	.000
Same amount	9.840	.002	14.387	.000	23.501	.000
Less	.018	.893	.111	.739	.131	.937

C 4.11: Household Income by Gambling Participation

Household Income	Non-gamblers with gamblers Df=1	
	χ^2	sig
Less than 20 000	13.314	.000
Less than 30 000	4.446	.035
Less than 40 000	2.913	.088
40 000 or more	.126	.723

C 4.12: Marital Status by Gambling Participation

Marital Status	Non-gamblers with gamblers Df=1	
	χ^2	sig
Single	9.264	.002
Married	3.170	.075
Widowed	.388	.533
Divorced	.442	.506

C 4.14: Educational Attainment by Gambling Participation

Educational attainment	Non-gamblers with gamblers Df=1	
	χ^2	sig
Less than high school	5.918	.015
High school complete	12.730	.000
Post secondary	.407	.524

C 4.17: Age by Gambling Participation

Age	Non-gamblers with gamblers Df=1	
	χ^2	sig
60-65	10.793	.001
66-70	7.689	.006
71-75	3.001	.083
Over 75	23.308	.000

C 4.21: Substance Use by Gambling Participation

Substance use:	Non-gamblers with gamblers Df=1	
	χ^2	Sig.
Alcohol (last year)		
Not at all	47.990	.000
Not once in the last month	5.062	.024
More than once a month	20.106	.000
Daily	2.067	.151
5+ drinks (previous month)		
None	8.860	.003
1-2 times	4.200	.040
3+ times	4.070	.044
Tobacco (past year)		
Not at all	8.880	.003
Not once in the last month	1.661	.198
More than once a month	2.554	.110
Daily	8.697	.003
(Non) Prescription (past year)		
Not at all	3.645	.056
Not once in the last month	1.083	.298
More than once a month	.155	.694
Daily	1.581	.209

C 4.22: Household Income by Gambling Category

Household Icome	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
Less than 20 000	13.097	.000	1.019	.313	.990	.320	.003	.957	.035	.851	13.350	.004
Less than 30 000	3.993	.046	2.885	.089	2.412	.120	.980	.322	.850	.357	6.329	.097
Less than 40 000	3.152	.076	.158	.691	.004	.951	.722	.396	.232	.630	3.908	.272
40 000 or more	.141	.707	.001	.975	.028	.867	.020	.889	.068	.795	.212	.976

C 4.25: Education by Gambling Category

Education	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
Less than high school	6.660	.010	.697	.404	.006	.939	2.694	.101	.591	.442	9.102	.028
High school complete	12.638	..000	1.728	.189	1.066	.302	.007	.931	.003	.957	12.742	.005
Post secondary	.223	.637	3.431	.064	.706	.401	3.110	.078	.544	.461	4.000	.261

C 4.27: Gender by Gambling Category

Overall: χ^2=16.458, df=3, p<0.001

		χ^2	Sig
Non-gamblers With	Non-problem	3.334	.068
	Problem	9.534	.002
	Prob. Path	.159	.691
Non-problem With	Problem	14.117	.000
	Prob. Path	.005	.946

C 4.28: Age by Gambling Category

Age	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
60-65	9.856	.002	7.738	.005	1.787	.181	2.847	.092	.179	.672	13.896	.003
66-70	7.652	.006	.066	.798	2.325	.127	.350	.554	.409	.522	8.508	.037
71-75	2.758	.097	1.178	.278	.376	.540	.467	.494	.053	.819	3.494	.322
Over 75	21.908	.000	3.351	.067	3.591	.058	.517	.472	.972	.324	24.613	.000

C 4.30: Ratings of Health Status by Gambling Category

Health Status	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
Very Good	.240	.624	2.100	.147	.615	.433	1.751	.186	.826	.364	2.926	.403
Good	.523	.470	4.894	.027	.234	.628	5.999	.014	.459	.498	6.690	.082
Fair	.801	.371	1.971	.160	.203	.652	3.147	.076	.510	.475	4.077	.253
Poor	1.967	.161	.827	.363	3.00	.083	.491	.483	7.140	.008	8.587	.035
Very Poor	.519	.471	.072	.788	.054	.816	.153	.696	.115	.735	.769	.857

C 4.31: Feeling Anxious, Upset or Depressed by Gambling Category

Feeling anxious, upset or depressed	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
Most of the time	.356	.551	.418	.518	6.682	.010	.313	.576	11.337	.001	11.545	.009
Some of the time	1.096	.295	9.126	.003	5.340	.021	7.202	.007	3.916	.048	12.934	.005
Not very often	1.054	.305	4.283	.038	2.320	.128	3.337	.068	1.663	.197	6.418	.093
Not at all	.165	.685	.002	.962	1.534	.215	.028	.867	1.823	.177	1.950	.583

C 4.32: Substance Use by Gambling Category

Substance Use	Non-gamblers						Non-problem				Total	
	With non-problem Df=1		With problem Df=1		With prob. Path Df=1		with problem gamblers Df=1		with prob. Path. gamblers Df=1		Df=3	
	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig	χ^2	sig
Alcohol (last year)												
Not at all	46.750	.000	13.333	.000	.414	.520	3.215	.073	1.367	.242	52.344	.000
Not once in the last year	5.333	.021	.034	.855	.001	.979	.266	.606	.378	.539	5.727	.126
More than once a month	19.348	.000	7.397	.007	2.244	.134	1.068	.301	.017	.897	21.258	.000
Daily	1.889	.169	6.234	.013	.919	.338	3.635	.057	1.363	.243	7.501	.058
5+ drinks (previous month)												
None	7.784	.005	30.005	.000	2.464	.116	13.930	.000	.037	.848	24.293	.000
1-2 times	3.763	.052	9.636	.002	3.822	.051	3.205	.073	.599	.439	8.312	.040
3 + times	3.546	.060	19.732	.000	.068	.794	11.347	.001	.379	.538	17.523	.001

Tobacco (past year)												
Not at all	7.493	.006	6.432	.011	16.785	.000	1.885	.170	8.121	.004	19.479	.000
Not once in the last year	1.525	.217	.216	.642	.162	.687	.086	.769	.065	.799	1.773	.621
More than once a month	2.059	.151	.054	.817	33.482	.000	.215	.643	19.526	.000	27.200	.000
Daily	7.591	.006	8.664	.003	8.053	.005	2.801	.094	2.723	.099	14.573	.002
(Non) Prescription (past year)												
Not at all	3.968	.046	.118	.731	.468	.494	.062	.804	1.524	.217	5.202	.158
Not once in the last year	1.019	.313	.044	.834	1.446	.229	.302	.582	1.126	.289	2.454	.484
More than once a month	.240	.624	.000	.990	1.520	.218	.018	.892	2.123	.145	2.253	.522
Daily	1.700	.192	.294	.588	.442	.506	.035	.851	1.146	.284	2.736	.434