manitoba gambling research PROGRAM

Life Interference due to Gambling in Three Canadian Provinces

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Sponsoring Organization: University of Manitoba

Report submitted to the Manitoba Gambling Research Program – April, 2019

Abstract

The gambling landscape among provinces in Canada is diverse. Yet, few studies have investigated provincial differences related to life interference due to gambling. The objectives of the current study were to examine: (1) provincial differences with regard to gambling types and (2) if gender, family history of gambling, and alcohol or drug use while gambling were related to an increased likelihood of life interference in three Canadian provinces. Data were drawn from the 2013 and 2014 cycles of the Canadian Community Health Survey from Manitoba, Saskatchewan, and British Columbia (n = 30,150). Analyses were conducted stratified by provinces and also combined using logistic regression models. Provincial differences were noted with individuals from British Columbia compared to Manitoba being less likely to play VLTs outside of casinos, play live horse racing at a track or off track, and participate in sports gambling. Those in Saskatchewan compared to Manitoba were more likely to play VLTs inside a casino. When examining all provinces combined, family history of gambling was associated with increased odds of life interference. Gender was not associated with life interference. Provincial differences were noted, which may be in part related to differences in gambling landscapes. Family history of gambling may have clinical relevance for understanding which individuals may be more likely to experience life interference due to gambling. Further research is needed to clarify the link between alcohol and drug use while gambling and life interference due to gambling as the models in the current research were likely underpowered.

Keywords: Problem gambling · Provinces · Interference · Family history of gambling · Video lottery terminals (VLTs)

Introduction

Legalized gambling has widely expanded in Canada over the past several decades with exclusive control over gambling regulated at the provincial level (Campbell and Smith 1998; Korn 2000; Stevens 2005). Importantly, with provinces mandating gambling regulations, provincial differences with regard to availability and accessibility of gambling have evolved in Canada over time. Problem gambling refers to gambling behavior that has a negative impact on the gambler, others in his or her social network, or the community as indicated through problem gambling behaviors and gambling concerns (Ferris and Wynne 2001). Interestingly, research has indicated that in 2002, past 12-month prevalence of problem gambling in Canada was 2.0% with notable interprovincial variability (Cox et al. 2005). Specifically, the highest provincial prevalence of problem gambling (Manitoba and Saskatchewan with 2.9%) corresponded with the provinces with the highest concentration of video lottery terminals (VLTs) in the community combined with permanent casinos (Cox et al. 2005). Increased availability of casinos has also been found to be related to increased likelihood of gambling and gambling related problems in four Canadian provinces (Philander 2019). These findings highlight the need to further examine and understand provincial differences with regard to problem gambling and other problems such as life interference due to gambling.

In addition to availability of gambling, we currently know that certain types of gambling and higher gambling involvement are associated with increased odds of problem gambling (Afifi et al. 2010b, 2014; LaPlante et al. 2011, 2013; Welte et al. 2009). Specifically, nationally representative data of women in Canada indicated that gambling on VLTs outside of casinos, gambling on VLTs inside casinos, and other casino games were the three types of gambling associated with the largest odds of problem gambling (Afifi et al. 2010b). These findings are consistent with other research indicating that VLTs have strong associations with gambling problems and distress (Doiron and Nicki 2001; Dowling et al. 2016; MacLaren 2016; Ronzitti et al. 2016; Scalese et al. 2016). However, other studies have also indicated that gambling involvement (i.e., the number of games played) is an important factor for understanding gambling problems (Afifi et al. 2014; LaPlante et al. 2011; LaPlante et al. 2013; Welte et al. 2009; Yeung and Wraith 2017).

From a public health perspective, it is important to examine how gambling types and number of games played are related to problem gambling, but it may also be informative to understand what factors are related to an increased likelihood of life interference due to gambling. It has been stated that gambling related harm occurs across many life domains and can include family, friends, and the broader community (Langham et al. 2016). However, research has not specifically examined interprovincial differences in Canada with regard to life interference, which may include inference with home responsibilities, ability to attend school or work, to form and maintain close relationships with other people, or with social life due to gambling. Furthermore, it is not known if gambling on specific gambling types may vary by provinces with different gambling landscapes and if certain factors such as gender, family history of problem gambling, and alcohol or drug use while gambling would increase odds of any life interference.

Although data indicate that women are just as likely as men to participate in gambling (Welte et al. 2002), gender differences have been found among men and women problem gamblers (Afifi et al. 2010a). Previous research has indicated that men compared to women are more likely to be problem gamblers with men being more likely to prefer risker games and women more likely to prefer chance-based games (Stark et al 2012). Other gender differences include being aged 40–59 years, having lower levels of income, and increased levels of stress were associated with increased odds of problem gambling among women relative to men and women compared to men were more likely to gamble to forget about problems or depressed feelings (Afifi et al. 2010a). Therefore, it is possible that gender may also be related to life interference. It has been recommended that a gendered approach is necessary for understanding unique factors related to women and problem gambling (McCarthy et al. 2018). Further examination of gender and possible life interference would be in keeping with this public health recommendation.

In addition, although a dearth of research has been conducted on family history of gambling problems, some data indicate that having a parent with addiction problems is associated with an increased likelihood of gambling problems for offspring (Schreiber et al. 2012; Dowling et al., 2018). It is unknown if a family history of gambling problems would be related to life interference due to gambling. Finally, alcohol and/or drugs while gambling has been found to be associated with poor outcomes (Cronce et al. 2017; Cronce and Corbin 2010; Dowling et al. 2017). In addition, alcohol has been found to be associated with an increased likelihood of at-risk gambling (Jun et al., 2019). It is possible that alcohol and/or drug use while gambling may also be related to an increased likelihood of life interference. Gender, family history of gambling and using alcohol and/or drugs while gambling could be individual-level factors related to a greater likelihood of life interference and, therefore, may have clinical relevance and be important with regard to intervention strategies.

From a public health perspective, it is important to be mindful of the risk and benefits related to gambling and to strive to make sure that policies are developed and updated to ensure that known risks related to gambling and gambling-related problems are minimized. The current study uses a public health approach to generate an updated understanding of the current gambling landscape within three Canadian provinces (i.e., Manitoba, Saskatchewan, and British Columbia); examine provincial differences in Canada with regard to gambling types; and identify factors that may be related to an increased likelihood of life interference. Specifically, the objectives of the current study were: (1) to examine gambling availability in Manitoba, Saskatchewan, and British Columbia; (2a) to compute an updated provincial prevalence of frequency of play on different gambling types, (2b) number of games played, and (2c) past 12-month prevalence of gambling problems; (3) to compute the prevalence of life interference due to gambling among those scoring three or higher on the Problem Gambling Severity Index (PGSI), a subset of the Canadian Problem Gambling Index (CPGI); (4) to compare provincial differences in the odds of gambling on each type of game, and (5) to determine if gender, family history of gambling problems, and consuming alcohol or drugs while gambling was associated with life interference.

Methods

Data were drawn from two cycles of the Canadian Community Health Survey (2013 and 2014; CCHS 2013/14) (Statistics Canada 2013, 2014). Data were collected between January 2013 and December 2014 using a random, multistage, stratified, cluster design to select private dwelling Canadian residents age 12 years and older in the 10 provinces and 3 territories. Surveys were conducted using face-to-face and computer-assisted personal interviews by trained interviewers. The provincial sampling frames excluded Canadians from First Nations, Inuit, or Métis Reserve communities or those living on Crown land, those living in institutions, and full-time members of the Canadian Forces (collectively less than 3% of the total Canadian population). The individual 2013 and 2014 data collections were designed to be combined together to increase sample size, and sampling frames ensured that all cases were independent. The total sample size for the CCHS 2013/14 was 128,310, with a response rate of 66.2%, and the survey was divided into annual common content and optional content. In the CCHS 2013/14 surveys, gambling data were part of the optional content and therefore were only collected from British Columbia (n = 15,340), Saskatchewan (n = 7370), Manitoba (n = 7440), and Quebec (n = 24,145). Data from Quebec were excluded from this analysis due to uncertainty of the English to French translation for the gambling interference module. The total sample size for the current analysis including data from Manitoba, Saskatchewan, and British Columbia was n = 30,150.

The frequencies of 13 different gambling activities in the past 12-months were assessed in the CCHS 2013/14 using the CPGI (Ferris and Wynne 2001). The 13 gambling activities included: (1) instant win/scratch tickets or daily lottery tickets (e.g., Keno, Pick 3, Encore, Banco, Extra); (2) lottery tickets such as 6/49 or Lotto Max, raffles, or fund-raising tickets; (3) Bingo; (4) VLTs outside of the casino; (5) coin slots or VLTs inside at a casino; (6) casino games other than coin slots or VLTs (e.g., poker, roulette, blackjack, Keno); (7) Internet or arcade gambling; (8) live horse racing at the track or off track; (9) sport gambling such as sports lotteries (e.g., Sports select, Pro-Line, Miseau- jeu, Total), sports pool or sporting events; (10) speculative investments (i.e., high risk stocks) such as stocks options, or commodities; (11) games of skill such as pool, golf, bowling, or darts; (12) spent money playing cards or board games with family or friends; and (13) other forms of gambling such as dog racing, gambling at casino nights/ country fairs, bet on sports with a bookie, or gambling pools at work. Respondents were asked how often they participated in each gambling activity and could indicate daily, two to six times per week, about once a week, two to three times per month, about once a month, six to 11 times per year, one to five times per year, or never. For each gambling type, categories were collapsed in the ordinal scale as required by Statistics Canada to protect respondent confidentiality in cases of low category prevalence. Variables were also computed to indicate total number of types of gambling (1, 2, 3 or more).

Problem gambling in the past 12-months was assessed in the CCHS 2013/14 using the Problem Gambling Severity Index (PGSI), a subset of the CPGI. The PGSI includes nine items used to determine level of gambling problems. Those who self-report that they were not a gambler were not asked the nine gambling severity

questions. The PGSI uses the frequency (never, sometimes, most of the time, almost always) to assess level of gambling problems. The scores are summed with a possible range of 0–27. The type of gambler was computed based on recommendations from Currie et al. as follows: non-gambler (i.e., no gambling activity in the past 12-months), non-problem gambler (score = 0), low risk gambler (score of 1 through 4), and problem gambler (score of 5 or higher) (Currie et al. 2013).

Respondents who scored 3 or more on the PGSI were asked to indicate during the past 12-months, how much did his or her gambling activities interfere with daily activities and responsibilities. Five life domains were individually assessed including home, work, school, relationships, and social life. Interference in each of these domains was assessed on a scale of 0 (no interference) to 10 (very severe interference). Dichotomous variables were computed based on whether the respondent experiences any interference in each individual domain [no interference (score of 0) vs. any interference (score of 1 through 10)] and overall (i.e., any interference in one or more domains). A dichotomous any severe interference variable was also computed by Statistics Canada based on whether the respondent reported a score of 4 or higher on one or more domains.

Family history of gambling was assessed with an item from the CPGI that asked respondents if anyone in their family has ever had a gambling problem (yes or no). This question was only assessed among respondents with a PGSI score of 3 or more.

Respondents were asked if in the past 12 months they had used alcohol or drugs while gambling (yes or no). This question was only assessed among respondents with a PGSI score of 3 or more.

Covariates in adjusted modes included: gender (men and women), age (continuous), marital status (married/common-law, separated/divorced/widowed, single), education (less than high school, high school or equivalent, some post-secondary, trade/college/university certificate or diploma, university bachelor's degree or higher), and income (less than $30,000, $30,000 to $49,999, $50,000 to $79,999, $80,000 or more).

Statistical analyses were computed using Stata Software. Statistical sampling weights computed by Statistics Canada were applied in all analyses. To account for the complex sampling design of the CCHS 2013/14, bootstrapping using bootstrap weights computed by Statistics Canada was used as a variance estimation method to produce standard errors and 95% confidence intervals (CI). First, data from Table 1 were retrieved from the Canadian Partnership for Responsible Gambling Digest (Canadian Partnership for Responsible Gambling 2015) to compare gambling availability in 2013/14 in Manitoba, Saskatchewan, and British Columbia. Data retrieved from the Canadian Partnership for Responsible Gambling are public and free to use. Second, descriptive statistics were computed for the past 12-month prevalence of each gambling type, total number of gambling types played, problem gambling, and life interference within each of the three provinces and among all three provinces combined. Third,

logistic regression models were computed to compare provincial differences in the odds of gambling types after adjusting for age, gender, marital status, education, and income. Finally, logistic regression models were used to determine if gender, family history of gambling problems, and consuming alcohol or drugs while gambling was associated with life interference in each individual province and in all three provinces combined.

Results

Table 1 provides a description of the availability of gambling in Manitoba, Saskatchewan, and British Columbia. In 2013/14, all three provinces had casinos with Manitoba having the fewest (4) and British Columbia having the most (17). Only British Columbia had VLTs in bingo facilities. Only Manitoba had VLTs available at race tracks. The concentration of VLTs in bars and lounges was the highest in Manitoba (6.49 per 1000 population) and Saskatchewan (4.63 per 1000 population) and the lowest in British Columbia (0.75 per 1000 population).

The past 12-month prevalence of each gambling type, number of games played, problem gambling, and life interference for each of the three provinces and for all three provinces combined are presented in Table 2. The past 12-month prevalence of low risk and problem gambling among all three provinces combined was 3.0 and 0.5%, respectively. The past 12-month prevalence of low risk gambling ranged from 2.6% (British Columbia) to 3.8% (Manitoba). The range of past 12-month problem gambling among the three provinces ranged from 0.4% in British Columbia to 0.9% in Manitoba. Among individuals scoring three or more in the PGSI, 43.2% indicated any life interference due to gambling and 12.5% experienced severe life interference.

Table 3 presents the findings for the provincial differences in the odds of gambling on each gambling type. Provincial differences were noted. British Columbia compared to Manitoba had decreased odds of playing VLTs outside of the casino, live horse racing at the track or off track, and sports gambling. Saskatchewan compared to Manitoba had an increased odds of gambling on coin slots or VLTs inside a casino [AOR 1.30; 95% confidence interval (CI) 1.12, 1.52].

The relationships between gender, family history of problem gambling, and alcohol or drug use while gambling and any life interference are presented in Table 4. Significant associations between gender and any life interference were not found in any of the three provinces. Family history of gambling problems was associated with an increased likelihood of life interference due to gambling in Manitoba (OR 10.96; 95% CI 2.44–49.33) and overall in the three provinces combined (OR 3.62; 95% CI 1.46–8.92). Family history of gambling problems also had a moderate effect size,but did not reach statistical significant in data from British Columbia (OR 3.40; 95% CI 0.99–11.68). Significant associations between alcohol or drug use while gambling and any life interference were not found in any of the provinces. Although similar to family history of gambling in British Columbia, ORs were moderate with wide confidence intervals, which may indicate a underpowered models and a possible type II error for these models.

Discussion

The novel findings from the current study include: (1) provincial differences exist with regard to gambling types, (2) men and women are equally likely to experience life interference due to gambling; (3) family history of gambling is associated with life interference due to gambling. In addition to these novel findings, the current study also provides an updated past 12-month prevalence of frequency of play on individual gambling types, and low risk and problem gambling among three Canadian provinces and in all three provinces combined. As well, while not statistically significant, models may have been underpowered and data may indicate that using alcohol or drugs while gambling may be clinically relevant for understanding life interference. We are not able to make conclusions about this relationship based on the current data. Future research in this area is needed.

The past 12-month prevalence of low risk and problem gambling among the three provinces in the current study was 3.5% using the revised recommended algorithm for computing problem gambling using the PGSI (Currie et al. 2013). Previous data from 2002 that assessed gambling at the national level in Canada using the original PGSI coding indicated that the past 12-month prevalence of problem gambling was 2.0% (Cox et al. 2005). The limitation of using the newly recommended revised coding is that comparisons of prevalence estimates cannot be made. To further limit comparability, the current study only included three provinces compared to 10 provinces in the 2002 study. For these reasons, it is important to highlight that it is not possible to determine if changes in prevalence have occurred over time and the prevalence from these two studies should not be compared. Future data collection at the national-level in Canada should include problem gambling so that it can be determined if changes in the prevalence of problem gambling have occurred over time.

The gambling landscape has provincial variation across Canada. This is important to consider when examining gambling types, gambling problems, and life interference due to gambling. Data from Table 1 indicates that British Columbia has the highest number of casinos, but the lowest concentration of VLTs within the community. Manitoba and Saskatchewan are more similar with fewer casinos and higher concentration of VLTs within the community. This is important to consider along with the provincial differences in gambling types. Respondents from Manitoba and Saskatchewan had similar odds with regard to VLTs outside a casino, while respondents from British Columbia had significantly decreased odds of this type of gambling. Respondents from British Columbia compared to those in Manitoba also have significantly lower odds of live horse race gambling and sports gambling. However, Saskatchewan respondents compared to Manitoba respondents had significant higher odds of coin slots or VLTs inside a casino. Previous research has indicated that accessibility to fewer types of legal gambling venues corresponds to decreases in frequent gambling (Welte et al. 2016). It may be an important public health strategy to further examine the variability in the gambling landscapes across provinces in Canada with more detailed data in relation to provincial differences with the goal of reducing the availability of gambling types and possibly gambling problems.

From a clinical perspective, the current data indicate that gender and family history of gambling may be important factors to consider with regard to life interference. Importantly, data indicated that men and women are equally likely to experience life interference due to gambling. This an important novel finding because previous research has indicated that although men and women are just as likely to gamble (Welte et al. 2002), men are more likely than women to have gambling problems (Castrén et al. 2013; Husky et al. 2015; Merkouris et al. 2016). Although, this may still be true, it is important for clinicians to know that women are equally as likely as men to experience life interference due to gambling. Family history of gambling was associated with life interference due to gambling. The relationship may be due to genetics, social norms, or modelled behaviour, which cannot be determined from out data. Regardless of the mechanism, knowing about a family history of gambling may be an indicator of who is more likely to have life interference. Finally, although statistical significance was not reached, respondents indicating that they have used alcohol and drug use while gambling were more likely to have life interference. The odds ratios across all three provinces and overall were moderate to high in effect size. This may be an indicator of a Type II error and underpowered models. For this reason, it is important to still consider alcohol and drug use while gambling as a potential behaviour associated with increased likelihood of life interference and one that may be clinically important as well as important with regard to policy development. Further research in this area is warranted.

The limitations of the current study should be considered when interpreting the findings. First, the data are cross-sectional in nature. Inferences regarding causation cannot be made. Second, only four Canadian provinces were asked items about gambling and gambling- related problems. This means that an updated national prevalence or comparisons across all provinces and territories could not be computed. Third, life interference due to gambling was only asked of respondents who scored three or more on the PGSI. From a public health perspective, it would have been even more informative if inference questions were asked of all individuals.

Gambling landscapes continue to expand and change across the provinces in Canada. However, research has not been adequate to understand how these changes correspond with likelihood to gambling on specific types of gambling and life interference. Research should be conducted before changes to the gambling landscapes are implemented and reassessed after changes are made so that evidence can inform decisions with the goal of reducing the likelihood of life interference and other harms related to gambling. With regard to life interference, men and women are equally likely to experience life interference due to gambling. Future research should determine if gender specific interventions to reduce life interference are necessary and effective.

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Acknowledgements

Preparation of this article was supported by a Canadian Institutes of Health Research (CIHR) New Investigator Award (Afifi) and the Manitoba Gambling Research Program of Manitoba Liquor & Lotteries (Afifi); however, the findings and conclusions of this paper are those solely of the authors and do not necessarily represent the views of Manitoba Liquor & Lotteries.

Table 1

Table 1: Number of Casinos and Presence of VLTs outside of a Casino in 2013-2014 in Manitoba, Saskatchewan and British Columbia			
	Manitoba	Saskatchewan	British Columbia
Total Number of Casinos	4	8	17
Presence of VLTs at a Bingo Facility	No	No	Yes
Presence of VLTs at a Racetrack	Yes	No	No
Presence of VLTs in bars, lounges, etc.	Yes	Yes	No
VLT units outside of Casinos per 1,000 population aged 18 years and older	6.49	4.63	0.75

Data Retrieved from: Canadian Partnership for Responsible Gambling (2015). 2013-2015 Gambling Data and Statistics, Digest. Accessed at: http://cprg.ca/Digests.

Table 2

Table 2: The prevalence of frequency of gambling types, number of games played, problem gambling, and life interference due to gambling among three Canadian Provinces				
Gambling Type and Frequency of Play	Manitoba % (95% CI)	Saskatchewan % (95% CI)	British Columbia % (95% CI)	All three Provinces Combined % (95% CI)
Instant win/scratch tickets or daily lottery tickets				
Never	69.8 (67.1, 72.4)	71.6 (69.3, 73.8)	71.0 (67.5, 74.3)	70.9 (69.1, 72.7)
Between 1 and 5 times a year	13.4 (12.0, 15.0)	13.3 (12.2, 14.5)	14.6 (12.9, 16.5)	14.2 (13.1, 15.4)
Between 6 and 11 times a year	4.1 (2.7, 6.2)	2.8 (2.2, 3.6)	3.6 (2.8, 4.6)	3.6 (2.9, 4.5)
About once a month	4.6 (3.8, 5.6)	4.6 (3.9, 5.5)	4.1 (3.7, 4.7)	4.3 (3.9, 4.7)
2 to 3 times a month	2.9 (2.1, 4.0)	2.9 (2.4, 3.6)	2.9 (1.7, 4.9)	2.9 (2.0, 4.3)
About once a week	3.8 (3.1, 4.7)	3.6 (2.5, 5.1)	2.6 (2.2, 3.2)	3.0 (2.7, 3.3)
More than once a week	1.3 (0.7, 2.2)	1.2 (0.7, 2.0)	1.1 (0.5, 2.4)	1.1 (0.7, 1.9)
Lottery tickets such as 6/49 or Lotto Max, raffles, or fundraising				
Never	46.6 (40.8, 52.4)	46.5 (43.9, 49.2)	48.7 (45.3, 52.0)	48.0 (46.1, 49.8)
Between 1 and 5 times a year	19.9 (15.5, 25.1)	20.4 (18.7, 22.2)	20.7 (19.5, 21.9)	20.5 (19.3, 21.8)
6 to 11 times per year	6.0 (4.9, 7.2)	5.4 (4.1, 7.0)	6.6 (5.3, 8.1)	6.3 (5.4, 7.3)
About once a month	6.9 (5.9, 8.1)	7.6 (6.4, 9.1)	6.3 (5.6, 7.2)	6.6 (6.1, 7.2)
2 to 3 times per month	6.3 (5.3, 7.4)	6.2 (5.4, 7.1)	5.9 (5.0, 7.0)	6.1 (5.4, 6.7)
About once a week	11.2 (9.6, 13.2)	10.5 (9.3, 11.7)	8.3 (5.9, 11.5)	9.1 (7.3, 11.4)
More than once a week	3.2 (2.6, 3.8)	3.4 (2.6, 4.5)	3.6 (2.5, 5.0)	3.5 (2.6, 4.5)
Bingo				
Never	92.7 (90.4, 94.4)	95.2 (94.1, 96.2)	97.4 (96.5, 98.0)	96.2 (95.4, 96.9)
Between 1 and 5 times a year	4.0 (3.0, 5.4)	2.9 (2.2, 3.7)	1.7 (1.4, 2.1)	2.3 (2.0, 2.6)

6 to 11 times per year	0.5 (0.4, 0.8)	0.2 (0.03, 1.4)	0.2 (0.1, 0.3)	0.3 (0.2, 0.4)
About once a month	0.6 (0.2, 1.8)	0.5 (0.2, 1.1)	0.2 (0.1, 0.4)	0.3 (0.2, 0.5)
2 to 3 times per month	0.5 (0.2, 1.6)	0.4 (0.2, 0.6)	0.2 (0.1, 0.3)	0.3 (0.2, 0.4)
About once a week	1.2 (0.8, 1.8)	0.4 (0.04, 4.2)	0.3 (0.04, 1.7)	0.5 (0.2, 1.4)
More than once a week	0.4 (0.2, 1.0)	0.4 (0.3, 0.8)	0.1 (0.02, 1.1)	0.2 (0.1, 0.4)
VLTs outside of the casino				
Never	86.8 (82.1, 90.4)	89.3 (86.6, 91.4)	98.5 (98.2, 98.8)	95.1 (93.7, 96.2)
Between 1 and 5 times a year	7.3 (4.7, 11.2)	6.3 (4.9, 8.0)	1.0 (0.8, 1.3)	2.9 (2.1, 3.9)
6 to 11 times per year	1.3 (0.6, 2.9)	1.0 (0.7, 1.6)	0.07 (0.01, 0.3)	0.4 (0.3, 0.7)
About once a month	1.9 (1.5, 2.5)	1.8 (1.2, 2.7)	0.08 (0.04, 0.2)	0.7 (0.5, 0.9)
2 to 3 times per month	1.3 (0.9, 1.8)	1.0 (0.6, 1.5)	0.2 (0.1, 0.6)	0.5 (0.3, 0.8)
About once a week	0.6 (0.2, 1.7)	0.5 (0.3, 0.7)	0.02 (0.0, 38.0)	0.2 (0.1, 0.5)
More than once a week	0.7 (0.5, 1.1)	0.3 (0.06, 1.0)	0.1 (0.03, 0.4)	0.2 (0.2, 0.4)
Coin slots or VLTs inside a casino				
Never	83.3 (81.6, 84.9)	79.1 (77.3, 80.8)	83.3 (82.2, 84.5)	82.7 (81.9, 83.5)
Between 1 and 5 times a year	11.9 (10.5, 13.4)	14.6 (12.3, 17.3)	12.4 (11.2, 13.7)	12.7 (11.5, 13.9)
6 to 11 times per year	1.6 (1.0, 2.4)	1.9 (1.2, 3.0)	1.3 (0.7, 2.5)	1.5 (1.0, 2.2)
About once a month	1.5 (0.7, 3.1)	2.4 (1.7, 3.2)	1.2 (0.8, 1.9)	1.4 (1.0, 2.0)
2 to 3 times per month	0.8 (0.6, 1.2)	1.1 (0.8, 1.7)	0.8 (0.6, 1.1)	0.8 (0.6, 1.1)
About once a week	0.4 (0.3, 0.7)	0.6 (0.2, 1.9)	0.6 (0.3, 1.4)	0.6 (0.3, 1.2)
More than once a week	0.5 (0.2, 1.4)	0.3 (0.1, 0.8)	0.3 (0.2, 0.5)	0.4 (0.2, 0.5)
Casino games other than coin slots or VLTs (e.g., poker, roulette, blackjack, Keno)				
Never	93.8 (90.1, 96.2)	92.7 (89.4, 95.0)	92.5 (86.4, 95.9)	92.7 (87.7, 95.8)
Between 1 and 5 times a year	4.5 (2.6, 7.9)	5.5 (3.6, 8.2)	5.8 (3.0, 10.8)	5.5 (3.0, 9.7)
6 to 11 times per year	0.5 (0.2, 1.0)	0.6 (0.4, 1.0)	0.6 (0.4, 1.0)	0.6 (0.4, 0.9)
About once a month	0.4 (0.1, 1.2)	0.8 (0.3, 2.1)	0.5 (0.3, 1.0)	0.6 (0.3, 0.9)

2 to 3 times per month	0.5 (0.2, 1.5)	0.2 (0.1, 0.7)	0.5 (0.2, 1.3)	0.4 (0.2, 1.0)
About once a week or more	0.4 (0.1, 1.2)	0.2 (0.1, 0.9)	0.2 (0.1, 0.3)	0.2 (0.1, 0.4)
Internet or arcade gambling				
Never	98.5 (97.6, 99.1)	98.9 (98.3, 99.3)	98.6 (97.8, 99.1)	98.6 (98.0, 99.1)
Between 1 and 5 times a year	0.8 (0.4, 1.8)	0.5 (0.3, 1.0)	0.8 (0.5, 1.3)	0.8 (0.5, 1.2)
More than 6 times a year	0.6 (0.4, 1.1)	0.5 (0.3, 1.0)	0.6 (0.4, 1.0)	0.6 (0.4, 0.9)
Live horse racing at the track or off track				
Never	95.2 (92.9, 96.8)	96.6 (93.9, 98.2)	97.5 (95.9, 98.5)	97.0 (95.0, 98.2)
Between 1 and 5 times a year	4.3 (3.0, 6.1)	3.0 (1.6, 5.4)	2.2 (1.3, 3.6)	2.7 (1.6, 4.3)
More than 6 times a year	0.5 (0.2, 1.3)	0.4 (0.2, 0.9)	0.3 (0.2, 0.6)	0.3 (0.2, 0.7)
Sports gambling such as sports lotteries (e.g., Sports select, Pro-line, Mise-au-jeu, Total), sports pool or sporting events				
Never	92.6 (89.0, 95.1)	93.7 (91.8, 95.1)	96.3 (95.0, 97.3)	95.3 (93.5, 96.6)
Between 1 and 5 times a year	4.7 (3.1, 7.1)	4.6 (3.3, 6.3)	2.5 (2.1, 2.9)	3.2 (2.5, 4.0)
6 to 11 times per year	0.4 (0.2, 0.9)	0.4 (0.2, 0.7)	0.5 (0.2, 1.1)	0.4 (0.2, 0.8)
About once a month	0.6 (0.3, 1.1)	0.3 (0.1, 0.9)	0.2 (0.1, 0.3)	0.3 (0.2, 0.4)
2 to 3 times per month	0.5 (0.2, 1.1)	0.2 (0.1, 0.5)	0.2 (0.1, 0.6)	0.3 (0.1, 0.6)
About once a week	0.8 (0.3, 2.2)	0.5 (0.2, 1.1)	0.3 (0.1, 1.0)	0.4 (0.2, 1.0)
More than once a week	0.4 (0.2, 0.7)	0.4 (0.2, 0.9)	0.1 (0.04, 0.2)	0.2 (0.1, 0.3)
Speculative investments (i.e., stocks) such as stock options, or commodities				
Never	97.2 (95.6, 98.2)	95.8 (92.4, 97.8)	97.2 (96.4, 97.8)	97.0 (96.5, 97.4)
Between 1 and 5 times a year	1.8 (1.3, 2.6)	2.4 (1.4, 4.1)	1.5 (0.8, 2.7)	1.7 (1.3, 2.1)

6 to 11 times per year	0.3 (0.1, 0.7)	0.2 (0.1, 0.4)	0.3 (0.2, 0.5)	0.3 (0.2, 0.5)
About once a month	0.2 (0.1, 0.6)	0.5 (0.3, 1.1)	0.4 (0.1, 1.1)	0.4 (0.2, 0.9)
2 to 3 times per month	0.1 (0.04, 0.4)	0.6 (0.2, 1.7)	0.2 (0.01, 4.8)	0.2 (0.1, 0.9)
About once a week	0.2 (0.1, 0.6)	0.1 (0.03, 0.4)	0.1 (0.02, 0.3)	0.1 (0.1, 0.2)
More than once a week	0.2 (0.1, 0.7)	0.4 (0.2, 1.1)	0.4 (0.2, 1.1)	0.4 (0.1, 1.0)
Games of skill such as pool, golf, bowling, or darts				
Never	96.0 (93.9, 97.4)	95.2 (94.1, 96.1)	96.7 (95.8, 97.4)	96.4 (95.9, 96.8)
Between 1 and 5 times a year	2.3 (1.1, 4.6)	2.8 (2.1, 3.6)	2.1 (1.5, 2.9)	2.2 (1.9, 2.6)
6 to 11 times per year	0.6 (0.3, 1.3)	0.7 (0.3, 1.5)	0.4 (0.2, 0.8)	0.5 (0.3, 0.7)
About once a month	0.5 (0.3, 0.8)	0.5 (0.3, 0.9)	0.2 (0.1, 1.0)	0.3 (0.2, 0.6)
2 to 3 times per month	0.2 (0.04, 0.8)	0.2 (0.1, 0.7)	0.2 (0.1, 0.5)	0.2 (0.1, 0.4)
About once a week	0.2 (0.1, 0.7)	0.3 (0.2, 0.6)	0.2 (0.1, 0.4)	0.2 (0.2, 0.3)
More than once a week	0.2 (0.1, 0.6)	0.2 (0.1, 0.7)	0.2 (0.1, 0.3)	0.2 (0.2, 0.3)
Spent money playing cards or board games with family or friends				
Never	89.5 (87.6, 91.2)	90.0 (87.0, 92.3)	90.6 (88.6, 92.3)	90.3 (88.3, 92.0)
Between 1 and 5 times a year	6.1 (4.8, 7.6)	6.4 (4.9, 8.5)	6.6 (4.5, 9.5)	6.5 (4.7, 8.9)
6 to 11 times per year	1.2 (0.7, 2.2)	1.2 (0.8, 1.8)	1.0 (0.8, 1.3)	1.1 (0.8, 1.4)
About once a month	1.6 (1.1, 2.4)	1.0 (0.7, 1.6)	0.7 (0.6, 0.9)	0.9 (0.8, 1.1)
2 to 3 times per month	0.5 (0.3, 0.9)	0.5 (0.3, 1.0)	0.5 (0.2, 1.1)	0.5 (0.2, 0.9)
About once a week	0.7 (0.4, 1.5)	0.6 (0.4, 0.9)	0.4 (0.2, 0.9)	0.5 (0.3, 0.8)
More than once a week	0.3 (0.2, 0.7)	0.4 (0.2, 0.6)	0.3 (0.1, 1.0)	0.3 (0.1, 0.7)
Other forms of gambling such as dog racing, gambling at casino nights/country fairs, bet on sports with a bookie, or gambling pools at work				

Never	96.6 (95.7, 97.4)	96.1 (94.3, 97.4)	96.3 (93.4, 97.9)	96.3 (94.2, 97.7)
Between 1 and 5 times a year	2.6 (2.0, 3.4)	2.8 (1.8, 4.4)	2.6 (1.3, 5.0)	2.6 (1.5, 4.5)
6 to 11 times per year	0.1 (0.01, 0.3)	0.3 (0.1, 0.6)	0.1 (0.03, 0.6)	0.2 (0.1, 0.4)
About once a month	0.3 (0.1, 0.7)	0.3 (0.1, 0.8)	0.3 (0.2, 0.7)	0.3 (0.2, 0.6)
2 to 3 times per month	0.1 (0.02, 0.2)	0.2 (0.1, 0.6)	0.2 (0.1, 0.5)	0.2 (0.1, 0.4)
About once a week or more	0.3 (0.1, 0.7)	0.3 (0.2, 0.5)	0.5 (0.3, 0.8)	0.4 (0.3, 0.6)
Gambling Involvement				
None	33.4 (27.5, 39.8)	32.6 (30.8, 34.4)	36.5 (34.3, 38.7)	35.4 (34.3, 36.4)
1 type	23.0 (21.1, 24.9)	24.8 (21.7 (28.3)	25.7 (24.4, 26.9)	25.1 (23.9, 26.3)
2 types	19.9, (16.4, 23.8)	18.5 (16.9, 20.2)	19.2 (16.5, 22.1)	19.2 (17.7, 20.8)
3 or more types	23.8 (21.3, 26.5)	24.1 (20.8, 27.9)	18.7 (17.2, 20.3)	20.4 (18.6, 22.3)
Problem Gambling				
Non-gambler (no gambling past 12 months)	43.8 (34.9, 53.2)	44.3 (41.2, 47.4)	51.8 (50.1, 53.5)	49.3 (46.5, 52.1)
Non-problem gambler (CPGI score = 0)	51.5 (43.0, 59.9)	51.3 (48.3, 54.2)	45.2 (42.6, 47.9)	47.2 (43.8, 50.7)
Low risk gambler (CGPI score = 1 or 4)	3.8 (3.1, 4.6)	3.7 (3.1, 4.5)	2.6 (1.6, 4.3)	3.0 (2.3, 3.9)
Problem gambler (CPGI score = 5 or higher)	0.9 (0.6, 1.5)	0.7 (0.5, 1.1)	0.4 (0.2, 0.6)	0.5 (0.4, 0.7)
Life Interference due to Gambling among repondents scoring 3 or more on the PGSI				
Home	33.0 (19.7, 49.6)	29.7 (16.5, 47.4)	34.0 (17.6, 55.3)	33.0 (19.2, 50.5)
Work/School	--	--	--	8.4 (3.7, 18.3)
Relationships	12.7 (3.1, 40.1)	9.8 (5.0, 18.5)	12.8 (6.6, 23.3)	12.3 (8.0, 18.4)
Social life	19.3 (10.2, 33.4)	19.8 (7.3, 43.7)	18.6 (7.4, 39.5)	19.0 (11.7, 29.3)
Any interference	42.5 (25.2, 61.8)	45.0 (30.6, 60.4)	43.0 (21.1, 68.0)	43.2 (26.4, 61.8)

Any severe interference	16.9 (9.3, 28.7)	12.1 (6.0, 22.9)	10.6 (4.6, 22.6)	12.5 (8.1, 18.8)

Table 3

Table 3: Provincial differences in the odds of gambling on each type of game	
	AOR (95% CI)
Province	**Instant win/scratch tickets or daily lottery tickets**
Manitoba	1.00
Saskatchewan	0.91 (0.80, 1.04)
British Columbia	0.92 (0.72, 1.18)
	Lottery tickets such as 6/49 or Lotto Max, raffles, or fundraising
Manitoba	1.00
Saskatchewan	0.97 (0.74, 1.29)
British Columbia	0.84 (0.68, 1.03)
	Bingo
Manitoba	1.00
Saskatchewan	0.65 (0.51, 0.81)
British Columbia	0.35 (0.28, 0.43)
	VLTs outside of the casino
Manitoba	1.00
Saskatchewan	0.77 (0.59, 1.01)
British Columbia	0.10 (0.06, 0.16)***
	Coin slots or VLTs inside a casino
Manitoba	1.00
Saskatchewan	1.30 (1.12, 1.52)***
British Columbia	1.00 (0.88, 1.14)
	Casino games other than coin slots or VLTs (e.g., poker, roulette, blackjack, Keno)
Manitoba	1.00
Saskatchewan	1.17 (0.85, 1.61)
British Columbia	1.29 (0.86, 1.92)
	Internet or arcade gambling
Manitoba	1.00
Saskatchewan	0.73 (0.36, 1.50)
British Columbia	0.95 (0.54, 1.65)
	Live horse racing at the track or off track
Manitoba	1.00
Saskatchewan	0.67 (0.44, 1.03)
British Columbia	0.49 (0.33, 0.73)***
	Sports gambling such as sports lotteries (e.g., Sports select, Pro-line, Mise-au-jeu, Total), sports pool or sporting events
Manitoba	1.00
Saskatchewan	0.81 (0.54, 1.21)
British Columbia	0.50 (0.39, 0.64)***
	Speculative investments (i.e., stocks) such as stock options, or commodities

Manitoba	1.00
Saskatchewan	1.51 (0.94, 2.45)
British Columbia	0.98 (0.58, 1.67)
	Games of skill such as pool, golf, bowling, or darts
Manitoba	1.00
Saskatchewan	1.16 (0.72, 1.89)
British Columbia	0.82 (0.44, 1.52)
	Spent money playing cards or board games with family or friends
Manitoba	1.00
Saskatchewan	0.92 (0.74, 1.15)
British Columbia	0.92 (0.78, 1.10)
	Other forms of gambling such as dog racing, gambling at casino nights/country fairs, bet on sports with a bookie, or gambling pools at work
Manitoba	1.00
Saskatchewan	1.13 (0.75, 1.71)
British Columbia	1.09 (0.54, 2.22)

AOR: Adjusts for SES (age, gender, marital status, education, and income)

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 4

Table 4: The relationships between gender, family history of problem gambling, and alcohol or drug use while gambling and any life interference		
	Any Life Interference Due to Gambling	
	% (95% CI)	OR (95% CI)
Manitoba		
Gender		
Men	43.8 (23.6, 66.3)	1.00
Women	40.8 (19.9, 65.7)	0.88 (0.23, 3.36)
Family history of problem gambling		
No	23.0 (12.7, 38.0)	1.00
Yes	76.6 (34.1, 95.4)	10.96 (2.44, 49.33)**
Alcohol or drug use while gambling		
No	35.1 (17.8, 57.4)	1.00
Yes	48.1 (15.6, 82.3)	1.72 (0.15, 19.14)
Saskatchewan		
Gender		
Men	51.9 (29.6, 73.5)	1.00
Women	37.2 (17.0, 63.2)	0.55 (0.09, 3.50)
Family history of problem gambling		
No	44.5 (27.7, 62.6)	1.00
Yes	42.1 (17.0, 72.1)	0.91 (0.17, 4.98)
Alcohol or drug use while gambling		
No	36.5 (19.0, 58.4)	1.00
Yes	57.6 (32.5, 79.3)	2.37 (0.41, 13.81)
British Columbia		
Gender		
Men	46.3 (21.1, 73.6)	1.00
Women	36.7 (18.2, 60.1)	0.67 (0.21, 2.12)
Family history of problem gambling		
No	32.2 (16.5, 53.5)	1.00
Yes	61.8 (33.6, 83.8)	3.40 (0.99, 11.68)
Alcohol or drug use while gambling		
No	36.6 (22.6, 53.3)	1.00
Yes	57.7 (11.5, 93.5)	2.36 (0.25, 22.28)
All Three Provinces Combined		
Gender		

Men	46.6 (29.6, 64.4)	1.00
Women	38.0 (20.6, 59.1)	0.70 (0.33, 1.51)
Family history of problem gambling		
No	32.2 (20.9, 46.0)	1.00
Yes	63.2 (33.8, 85.2)	3.62 (1.46, 8.92)**
Alcohol or drug use while gambling		
No	36.3 (25.4, 48.8)	1.00
Yes	54.1 (24.4, 81.2)	2.07 (0.66, 6.49)

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$