



Gambling among Immigrants to Canada: A Quantitative Investigation Using the Canadian Community Health Survey

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Abstract

We use data from the Canadian Community Health Survey (CCHS) to compare the prevalence and severity of gambling behaviour between recent immigrants (in Canada for less than 10 years), established immigrants (in Canada for more than 10 years), and native-born Canadians between the ages of 18 and 64. The CCHS is a repeated cross-sectional survey collecting information related to the health status, health care utilization and determinants of health for the Canadian population. Starting in 2002, the CCHS includes a module on problem gambling based on the Canadian Problem Gambling Index (CPGI), which asks respondents about their gambling behaviour and administers the Problem Gambling Severity Index (PGSI) to further identify at-risk and problem gamblers. We examine how the frequency of gambling, types of gambling, and prevalence of pathological gambling differ between the three populations, using data from the years in which the gambling module was administered (2002, 2005, 2007, 2009/10, 2011/12 and 2013/14). We also develop statistical models to investigate the degree to which differences in socio-economic characteristics account for differences in both the frequency of gambling and the prevalence of problem gambling between the two populations. In Canada in 2002 (the only year in which the gambling module was administered to respondents in all provinces), we find that established immigrants and non-immigrants were similar in terms of the frequency with which they gamble (for example, 59 percent of non-immigrants and 55 percent of established immigrants participated 5-11 times in at least one gambling activity in the previous year). In contrast, only 34 percent of recent immigrants gambled met this criteria. Using a multinomial logit that pools data across years, we find that immigrant gambling participation rates of immigrants converge to those of non-immigrants as the number of years in Canada increases. Problem gambling is difficult to measure accurately in the CCHS, given that respondents are allowed to voluntarily bypass the questionnaire used to identify high-risk gambling. We use imputation methods to attempt to overcome this shortcoming. We find that for our preferred measure of problem gambling, the prevalence of problem gambling for immigrants and non-immigrants are 1.6 percent and 1.4 percent in 2002. This difference is not statistically significant at conventional levels. Caution should be exercised in extrapolating these findings to the present, as availability of gambling opportunities, attitudes towards gambling and the composition of immigrants (e.g. on the basis of source country) may have all changed over the subsequent two decades. In addition, there may be subgroups of immigrants that are at greater risk for problem gambling based on, for example, attitudes towards gambling in one's country of origin or labour market experiences in Canada. Given the rarity of problem gambling in general and the small sample sizes for some subgroups of interest, the CCHS may not be a suitable resource for identifying pockets of at-risk immigrants.

1 Introduction

Canada experienced a rapid increase in legalized gambling during the 1990s. By 2000, there were 50 permanent casinos, 21,000 slot machines, 38,000 video lottery terminals (VLTs), 20,000 annual bingo events, and 44 permanent horse race tracks in Canada (Azmier, 2000). Canadians wagered \$6.8 billion annually on government-run gambling activities in 1997, more than twice the amount in 1992 (Korn, 2000).

During the same period, Canada also saw a rapid increase in the number of immigrants. Less than 100,000 immigrants landed in Canada in 1986. By 2000, the number of landed immigrants surpassed 220,000. By the end of the 20th century, more than 15 percent of Canadians were foreign born (Statistics-Canada, 2016). Prior to the late 1990s, immigration flows to Manitoba as a share of the population lagged the national average. In response, the province lobbied the federal government for a provincial role in the recruitment and selection of economic immigrants. The result was the Manitoba Provincial Nominee Program, which was created by an agreement signed with the Federal Government in 1998 (Pandey & Townsend, 2011). By 2008, the immigration rate to Manitoba was 9.3 immigrants per 1000 residents, well in excess of the national average of 7.4 per 1000.

Little is known about the gambling behaviour of immigrants. The question, however, is an important one. Given that immigrants constitute a sizeable share of the population in Canada, research on gambling behaviour and policies that address problem gambling clearly have to account for this important demographic group. Moreover, the expansion of government-run gambling activities during the 1990s provided easier access to gambling for the increasing number of new immigrants.¹ As newcomers, immigrants often face many social, economic, and cultural challenges. These unique challenges might trigger experiences with gambling that differ from those of native-born Canadians. The increase in newcomers to the country - and to the province of Manitoba particularly - may require new strategies for advocating responsible gambling behaviour and reaching out to problem gamblers requiring treatment. There is, however, no existing research that systematically studies gambling behaviour among immigrants to Canada.

We use data from the Canadian Community Health Survey (CCHS) to document the gambling behaviour among immigrants and compare this behaviour to that of non-immigrants. The CCHS is a repeated cross-sectional survey that collects information on health determinants and health outcomes of the Canadian population. It includes a module on problem gambling, which asks respondents about their gambling behaviour and administers a survey to further identify at-risk and problem gamblers. We explore aspects such as the frequency of gambling, participation in various types of gambling, and the prevalence of pathological gambling among immigrants. We further distinguish between recent immigrants (those who have been in Canada for fewer than 10 years) with established immigrants (those who have been in Canada for 10 or more years). We also assess how these aspects of gambling behaviour differ from those of non-immigrants. The masterfiles of the CCHS, available through Statistics Canada's Manitoba Research Data Centre (MRDC), contain information on immigrants' country of birth, which will allow us to further examine whether particular groups of immigrants are more likely to gamble and/or are more prone to problem gambling. We also use econometric models to identify the economic, social and cultural factors that influence the gambling behaviour of immigrants. We exploit information in the CCHS on income, labour market experience, detailed demographics, and other immigrants

¹In an article for the National Post, Quan (2017) suggested that some casinos in fact aggressively target certain ethnic groups and immigrants.

characteristics to identify those factors that contribute to gambling behaviour in general and to problem gambling in particular. We also explore the potential for differences in these factors to account for differences in gambling behaviour between immigrants and native-born Canadians. These findings provide a new and comprehensive picture of gambling among immigrants, and may also inform policymakers about strategies required to advocate responsible gambling among immigrants.

Several studies have pointed out that gambling could be prevalent among immigrants in Canada. Some of the existing research take the form of case studies (Lai, 2006; Lee, Fong, & Solowoniuk, 2007). Blaszczyński, Huynh, Dumlao, and Farrell (1998) and Papineau (2005) use surveys to understand gambling problems among a Chinese-speaking community and among older Chinese in Canada. While informative, these two studies nevertheless cover only a small portion of immigrants to Canada.² By using individual-level data from the Canadian Community Health Survey, we present a representative picture of gambling problems among immigrants in Canada.

Immigrants often face many challenge as newcomers to Canada. Several existing studies suggest that culture and family play a key role in shaping gambling practice of immigrants (Lam, 2006; Ji, McGeorge, Li, Lee, & Zhang, 2015; Luo & Ferguson, 2017; Canale et al., 2017). These hypotheses, however, have not been tested using representative samples of immigrants to Canada. Exploiting rich information in the CCHS including country of origin (as a proxy for culture) and detailed demographics, we quantify the relationship between culture, family structure and gambling behaviour among Canadian immigrants. While the CCHS has been exploited to examine problem gambling in previous studies, to our knowledge, none have focused on immigrant gambling behaviour.³

In addition, we focus on the labour market experience as a novel mechanism for explaining gambling practice, which has not been extensively explored. It has been well documented that many immigrants struggle in the labour market after landing (Buzdugan & Halli, 2009; Oreopoulos, 2011; Stobbe & Harris, 2013). A recent advance in economic theory of gambling suggests that gambling could be rationalized when gambling winnings are viewed as “earnings without working” by gamblers (Nyman, Welte, & Dowd, 2008). This theory predicts that gambling will be particularly attractive to individuals that are disadvantaged in the labour market. A study using data on non-pathological gambling behaviour in the United States find some evidence in support of this theory (Nyman, Dowd, Hakes, Winters, & King, 2013). Given the disadvantages that immigrants face in the Canadian labour market, gambling may be particularly attractive for these newcomers to Canada. Alternatively, gambling may be viewed as a release for anxiety or depression related to poor labour market outcomes, possibly arising due to discrimination (Lai, 2006).

We address two related sets of questions in this paper. First, how does the gambling behaviour of immigrants compare with that of non-immigrants in terms of frequency and/or choice of gambling activities and, if there are any differences, are they explained by differences in socio-economic factors? Second, does the prevalence of problem gambling differ between immigrants and non-immigrants, and if so, do socio-economic differences between the two groups account for these differences? In our analysis, we distinguish between new immigrants, established immigrants and non-immigrants.

²There are many studies on gambling problems in Canada in general, that do not focus specifically on immigrants. See Ladouceur (1991), Ladouceur (1996), Doiron and Nicki (2001), Cox, Kwong, Michaud, and Enns (2000) and Williams, West, and Simpson (2008), among others.

³For example, Cox, Yu, Afifi, and Ladouceur (2005) use the public use data from Cycle 1.2 of the CCHS to compare the prevalence of problem gambling across provinces in the year 2002. Afifi, Cox, Martens, Sareen, and Enns (2010) use the same data to examine the relationship between social-economic characteristics and problem-gambling behaviour, excluding immigrant status, while Humphreys, Nyman, and Ruseski (2016) use this data to examine the effect of recreational gambling on health outcomes.

2 Methods

2.1 Data

We use data from the master files⁴ of the Canadian Community Health Survey (CCHS) for the following years: 2002 (Cycle 1.2), 2005 (Cycle 3.1), 2007 (Cycle 4.1), 2007-08 (Annual Component), 2010 (Annual Component) and 2013-14 (Annual Component). We restrict our attention to individuals between the ages of 18 and 64 that were living in one of the ten provinces in the survey year.

The above surveys were chosen because in each year, the CCHS included the Problem Gambling Module (PGM), which is based on the Canadian Problem Gambling Index (CPGI). In Cycle 1.2 (2002), the PGM was applied to all respondents. In subsequent years, the module was optional. Optional modules are completed at the request of local health regions and are typically coordinated at the provincial level (Statistics Canada, 2010). Table A1 in Appendix A indicates the provinces in which the PGM was administered in each survey.⁵ Given that the 2002 survey is the only one that is representative of Canada, much of our analysis focuses on this year. However, we also pool this data with subsequent years to examine trends in gambling behaviour over our period of analysis.

The problem gambling module includes questions asking respondents about the frequency in which they engaged in each of thirteen categories of gambling activities in the past year. Respondents that participated in at least one of the thirteen activities six or more times in the past year are asked to complete nine questions based on the Problem Gambling Severity Index (PGSI).⁶ The PGSI is used to classify participants into four categories: non-problem gambler, low-risk gambler, moderate-risk gambler, and problem gambler.⁷ If a respondent indicates on the first question of the PGSI that s/he is “not a gambler”, no further questions from the PGSI are asked and the individual is classified as “not a gambler.” In addition, respondents that indicated that they never participated in any of the thirteen categories of gambling activities are classified as “non-gamblers,” while respondents who participated at most five times per year in any given activity are classified as non-problem gamblers and are not further assessed using the PGSI.

The CCHS also includes detailed demographic information (e.g., age, immigrant status and country of birth) and socio-economic data (e.g., income and employment status). We use the following information in our analysis:

1. Source region (immigrants only): Although information at the country-level is available, for many countries there were only a small number of respondents. We thus elected to use broad regions as imperfect proxies for the role that ethnicity and religiosity play in shaping attitudes towards gambling. The regions are Europe, Africa, Asia, South America and a category combining North America with Oceania.

⁴The master files, which are accessible through Statistic Canada's Research Data Centre (RDC) network, contain variables, including country of birth and years in Canada of immigrants, which are not available in the public-use microfiles (PUMFs).

⁵Although the gambling module was administered in Quebec and Ontario in 2003 (Cycle 2.1), it was only done for a subset of health regions within each province. As this sample will not be representative of the populations of these provinces, we elect to exclude 2003 from our analysis.

⁶The PGSI is a commonly used instrument for identifying problem gambling behaviour (Holtgraves, 2009).

⁷Based on their answers to the PGSI, respondents are given a score between zero and twenty-seven. The first category corresponds to a score of zero on the PGSI, while the later three categories correspond to scores of 1-2, 3-7, and 8 or more respectively.

2. Marital status: We distinguish between individuals that are married, individuals that are either separated, divorced or widowed, and individuals that are single. Marital status may influence attitudes towards gambling.
3. Educational Attainment: We use the categories available in the CCHS (up to grade 8, Grades 8-13 without a high school diploma, some post-secondary but no diploma, trade certificate, college certificate, university certificate, bachelor's degree and graduate/professional degree). These variables may provide additional information about economic status beyond what is available in the limited income variables (see below). In addition, more educated individuals may better understand the odds associated with various gambling activities when deciding whether or not to participate.
4. Province of residence: Gambling opportunities vary by province, which may influence behaviour. For example, Ontario and British Columbia were the only two provinces in which video lottery terminals (VLTs) were not available outside of casinos.
5. Income: Measures of income are available at both the personal and household level. These are expressed in 2002 real dollars.

2.2 Methodology

In addition to presenting various tabulations, we model gambling behaviour using a logistic regression model. The model specification is of the form:

$$gamb_{it} = X_{it}\beta + \sum_{p=1}^P \gamma_p \cdot prov_{ipt} + \sum_{t=1}^T \lambda_t \cdot year_t + \alpha_1 \cdot (imm_{it} \cdot YSA_{it}) + \alpha_2 \cdot (imm_{it} \cdot YSA_{it}^2) + \epsilon_{it}, \quad (1)$$

where $gamb_{it}$ is an indicator for individual i in survey year t indicating whether or not the individual gambles, X_{it} is a vector of demographic controls (e.g., sex, quadratic in age, marital status) and socio-economic controls (the educational attainment, employment status, and income variables described in Section 2.1), $prov_{it}$ is a set of indicators indicating the province of residence of an individual, imm_{it} is an indicator of whether or not an individual is an immigrant, $year_{it}$ is a set of indicator variables indicating the survey year in which an individual is included, and YSA_{it} indicates years since arrival to Canada. The latter variable takes into account the economic and cultural integration of new immigrants. The logistic regression model was chosen because, as we show in section 3.4, the probability of problem gambling is low for both immigrants and non-immigrants. Although linear probability models are easier to interpret, unlike the logistic model, they are not well suited to applications where the probability of the modeled event occurring is near zero.

We also estimate variants of the model in which the outcome of interest is the prevalence of problem gambling. Following Williams and Volberg (2010), we depart from the definition of problem gambler used in the CCHS, instead opting to identify problem gamblers as those with a score of 5 or greater on the PGSI. The prevalence of problem gambling, using the definition of the PGSI, is rare (~ 1 percent in the 2013/14 CCHS) and arguably underestimates the percentage of the population that would be identified in a clinical setting as problem gamblers (Williams & Volberg, 2010).

2.3 Limitations

Studying problem gambling using the CCHS is complicated by the high fraction of individuals that self-identify as “not a gambler,” as these individuals reach the threshold in gambling frequency for assessment under the PGSI, but are not subsequently assessed.⁸ Simply deleting these individuals may result in biased estimates of the prevalence of problem gambling. If these individuals are more like problem gamblers, then excluding them will understate the prevalence of problem gambling. Conversely, if they are more like non-problem gamblers, the prevalence of problem gambling will be overstated.⁹

To address the potential censoring issue, we use self-reported frequency of participation in the gambling activities reported in the CPGI, along with the demographic and socio-economic characteristics used in our other models to estimate an ordered logit model of the severity score in the PGSI for the subgroup that completed the full battery of questions. We then use this model and a random number generator to impute a score on the PGSI for each individual that self-identified as “not a gambler.” The imputed value of the PGSI are then used to assign individuals as either problem or non-problem gamblers. The model of the prevalence of problem gambling is estimating using multiple imputation methods.¹⁰

There are also issues with using a survey like the CCHS when one of the outcomes of interest is rare¹¹ and the sample size for subgroups of the primary group of interest (immigrants) is also relatively small. In order for estimates of proportions for various subgroups from the CCHS to be released publicly, Statistics Canada requires that there must be at least 5 observations in the numerator. There were 3950 immigrants in the 2002 data, implying that roughly 60 individuals in the survey meet the requirement for classification as a problem gambler. Dividing this group up to look at various subgroups of interest (e.g. by country of origin) is prohibitive unless the number of subgroupings is kept to a minimum (and chosen carefully to meet the requirements for release).

3 Results

3.1 Summary Statistics

Table 1 presents summary statistics for our three groups of interest in 2002: native-born Canadians, recent immigrants (migrated to Canada less than 10 years) prior to the survey year, and established immigrants (migrated to Canada 10 or more years prior to the survey year). We differentiate between recent and established immigrants as the former group is more likely to face challenges associated with adjusted to a new home country, which may in turn influence gambling behaviour.

A comparison of the course region of recent versus established immigrants shows how patterns of immigration have changed over time in Canada; recent immigrants were more likely to come

⁸As we show in Section 3.4, approximately a quarter of our sample self-identifies as such.

⁹The classification of infrequent gamblers as “non-problem gamblers” may also be problematic if some individuals in this category have long-standing gambling problems that may resurface in the future (Williams & Volberg, 2010).

¹⁰Additional details are provided in Section 3.4

¹¹Using the measure of problem gambling described in section 2.2, roughly 1.5 percent of the Canadian population aged 18-64 met the criteria for problem gambling at the time of the 2002 CCHS, with little difference between immigrants and non-immigrants.

Table 1: Summary Statistics by Immigrant Status, 2002 CCHS

	Non-immigrant	Recent Immigrant	Established Immigrant
<i>I. Source Region and Years in Canada (Immigrants only)</i>			
North America & Oceania		0.04	0.07
South America		0.09	0.15
Europe		0.21	0.41
Africa		0.07	0.06
Asia		0.59	0.31
Years in Canada		4.29	26.08
Years in Canada - Squared		25.98	814
<i>II. Sex and Age</i>			
Male	0.5	0.5	0.49
Female	0.5	0.5	0.51
Age	39.8	34.9	45
Age squared	1748.2	1324	2157.3
<i>III. Marital Status</i>			
Married	0.65	0.72	0.73
Separated/Divorced/Widowed	0.09	0.05	0.11
Single	0.26	0.24	0.16
<i>IV. Educational Attainment</i>			
Up to Grade 8	0.04	0.04	0.07
Grades 9-13, No H.S. Diploma	0.13	0.07	0.1
H.S. Diploma	0.21	0.17	0.2
Some Post-secondary, No Diploma	0.1	0.08	0.07
Trade Certificate	0.13	0.06	0.1
College Certificate	0.19	0.14	0.18
University Certificate	0.03	0.05	0.03
Bachelor's Degree	0.12	0.25	0.17
Graduate/Professional Degree	0.05	0.15	0.08
<i>V. Worked at Job or Business in Previous Week</i>			
Worked	0.72	0.61	0.74
Didn't Work or Unable to Work	0.28	0.39	0.26
<i>VI. Province/Region of Residence</i>			
Atlantic Canada	0.1	0.01	0.01
Quebec	0.27	0.15	0.15
Ontario	0.34	0.55	0.55
Manitoba	0.04	0.02	0.03
Saskatchewan	0.04	0.01	0.01
Alberta	0.1	0.07	0.09
British Columbia	0.12	0.19	0.17
<i>VII. Income (\$2002) - Only individuals with non-zero reported income.</i>			
Log of Household	10.87	10.43	10.9
Log of Personal	10.12	9.69	10.23
N	23,093	1,092	2,733

from Asia, while established immigrants were more likely to have arrived from Europe. The sex distribution across all three groups is similar, while recent immigrants skew younger than either non-immigrants or established immigrants. Immigrants are more likely to be married than non-immigrants. The educational attainment of immigrants is on the whole greater than that non-immigrants, with a greater fraction of the former grouping having either a bachelor's degree or graduate/professional degree. This pattern is even more pronounced for recent immigrants.¹² Recent immigrants were less likely to have worked in the previous week; this may reflect a combination of higher unemployment rates, as immigrants struggle to find work that matches their skills, and lower participation rates, as new immigrants acquire new skills to better match the needs of the Canadian labour market. Residence patterns between immigrants and non-immigrants are also markedly different, with immigrants residing in greater proportions in Ontario and British Columbia and in lesser proportions in the Atlantic and Prairie provinces.¹³ Despite their educational attainment, recent immigrants have lower household and personal income, though this will partly reflect lower levels of workplace experience as a result of being younger on average.

3.2 Prevalence and Determinants of Gambling Participation

To establish preliminary patterns, we use the three groups presented in Section 3.1: non-immigrants, recent immigrants, and established immigrants. We construct three measures of gambling participation, based on different thresholds. The first indicates any participation in at least one of the thirteen activities reported in the CCHS in the previous year. The second requires at least one activity be engaged in at least six times in the prior year (i.e. the threshold for being administered the PGSI). The third measure looks at more frequent gambling, requiring that individuals participated in at least one activity weekly. To ensure that our figures are nationally representative, we initially restrict our attention to 2002.¹⁴ The proportion of individuals in each group meeting each threshold of gambling participation is reported in Table 2.

Immigrant estimates that are statistically different at a .05 level from those of non-immigrants are indicated with an asterisk next to the estimate. Across all three intensity levels, two patterns emerge. First, in 2002, established immigrants are no more likely to gamble than non-immigrants. For example, 76 percent of established immigrants gambled at least once in the previous year, compared to 82 percent of non-immigrants. Using the threshold for administration of the PGSI (6-11 times in the previous year), only 55 percent of established immigrants participated in at least one activity with at least this frequency, compared to 59 percent of non-immigrants. Second, recent immigrants are less likely to gamble at any given intensity level than either established immigrants or non-immigrants. For example, only 34 percent of recent immigrants engaged in at least one gambling activity with sufficient frequency to be eligible for the PGSI. Compared to new immigrants, established immigrants have patterns that are more similar to those of non-immigrants. Whether this implies that immigrants' behaviour converges to that of non-immigrants as they acculturate to Canada or that newer immigrants have different attitudes towards gambling is a

¹²That Canadian immigrants have higher average educational attainment and are increasingly from non-European countries is well-understood in the literature on economic outcomes of immigrants. See for example Aydemir and Skuterud (2005).

¹³The Provincial Nominee Programs were created in an attempt to distribute immigrants and the accompanying economic benefits they bring to Canada more evenly across the country. See Pandey and Townsend (2011) for further details.

¹⁴Prevalence at a provincial level by year is reported in Table B1. Consistent with the year effects in our subsequent models, the prevalence of gambling activity falls across provinces between 2002 and 2014.

Table 2: Percentage of Individuals that Gamble by Frequency, Region and Immigrant Status, 2002

Participation in Gambling in 2002 by Region, Immigration Status and Frequency				
Region		Non-immigrant	Recent immigrant	Established immigrant
	Proportion that participating in at least one gambling activity in the past year...			
All provinces	...at least once.	82	56*	76*
	...6-11 times.	59	34*	55*
	...about once a week.	30	14*	32
	N	23,400	1,100	2,800
Atlantic Canada	...at least once.	81	63	66*
	...6-11 times.	61	33*	43*
	...about once a week.	35	9*	27
	N	5,100	50	100
Quebec	...at least once.	84	50*	78*
	...6-11 times.	62	35*	61
	...about once a week.	36	20*	38
	N	3,750	100	150
Ontario	...at least once.	82	58*	76*
	...6-11 times.	57	33*	53
	...about once a week.	29	14*	31
	N	7,500	650	1,550
Prairies	...at least once.	79	49*	71*
	...6-11 times.	55	29*	52
	...about once a week.	26	8*	31*
	N	4,800	200	450
British Columbia	...at least once.	80	59*	78
	...6-11 times.	59	38*	56
	...about once a week.	25	12*	32*
	N	2,200	200	500

Note: All percentages are calculated using the sample weights of the 2002 Canadian Community Health Survey. N is the number of individuals in a given cell and is rounded to the nearest 50. Asterisks next to immigrant estimates indicate the percentage differs from the corresponding percentage for non-immigrants at a .05 level of significance, based on a survey-design-based F-test.

question that we address in the analysis that follows.

In Table 2, we also analyze gambling patterns across five regions of Canada: Atlantic Canada, Quebec, Ontario, the Prairies and British Columbia. The overall pattern across the groups of interest are very similar across the five regions, suggesting that regional differences in place of residence do not play an important role in explaining the differences in behaviour between recent immigrants, established immigrants and non-immigrants.

To analyze the patterns further we estimate a series of logit models as outlined in Section 2.2. The dependent variable is an indicator that the individual reached the intensity of gambling in at least one activity sufficient to meet the threshold for administration of the PGSI (i.e. participating in at least one activity six or more times in the previous year).¹⁵ Given the large number of independent variables, only the results for key variables of interest (i.e. those relating to immigrant status) are presented in Table 3. The remaining coefficient estimates are presented in Tables A2 and A3 in Appendix B.

Again, we initially limit our sample to the 2002 data. Model (1) in Table 3 includes controls for immigrant status, a quadratic function in years in Canada (for immigrants), educational attainment, age, sex, marital status, employment status in the previous week and province of residence.¹⁶ The basic patterns from Table 2 are replicated; immigrants are less likely to gamble than non-immigrants, even after controlling for differences in characteristics, but as the quadratic in years in Canada indicates, the difference decreases with years in Canada. This suggests that immigrant gambling behaviour converges to that of non-immigrants with time spend in Canada.

Several other patterns are evident in our initial model.¹⁷ Men are more likely to gamble than women. Gambling participation increases with age. People that are married or in a common-law relationship are more likely to gamble than those that have never married.¹⁸ Gambling tends to decrease with educational attainment. Those that worked in the week prior to the survey were more likely to gamble relative to those that did not.¹⁹

In Model (2), we distinguish between immigrants born in different parts of the world. Again, the basic pattern holds; immigrants are less likely to gamble than non-immigrants regardless of where they were born, though the difference decreases again with time in Canada. There are differences between regions — for example, immigrants from Africa appear to be more adverse to gambling than immigrants as a whole, while those from Asia, though less likely to gamble than comparable non-immigrants, appear to be more likely to gamble than immigrants from other regions. Inclusion of region of birth has little effect on the coefficient estimates of the remaining variables.

¹⁵Qualitatively, the results are similar using the other two measures of gambling intensity presented in Table 2.

¹⁶Standard errors are adjusted by clustering at a provincial level to allow for unobserved correlations across individuals in the same province.

¹⁷The full set of coefficient estimates are presented in column (1) of Table A2 in Appendix B.

¹⁸In instances of pathological gambling, marital status and other explanatory variables may be endogenous. Our intent is to describe the correlates with gambling, rather than establish a causal model.

¹⁹This is consistent with the Nyman hypothesis.

Table 3: Logit Model of Probability of Participating in at Least One Gambling Activity 6+ Times in the Previous Year - Selected Coefficients

	Model						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>							
Immigrant	-0.866*** (0.046)						
From North American country other than Canada		-1.459*** (0.278)	-1.298*** (0.157)	-1.162*** (0.192)	-1.061*** (0.195)	-1.058*** (0.191)	-1.021*** (0.193)
From South or Central America, or Caribbean		-1.046*** (0.124)	-0.921*** (0.171)	-0.774** (0.236)	-0.649** (0.243)	-0.658** (0.230)	-0.610** (0.238)
Europe		-1.028*** (0.133)	-0.921*** (0.056)	-0.741*** (0.060)	-0.646*** (0.069)	-0.648*** (0.060)	-0.613*** (0.066)
Africa		-1.401*** (0.286)	-1.380*** (0.082)	-1.245*** (0.132)	-1.099*** (0.134)	-1.128*** (0.122)	-1.067*** (0.129)
Asia		-0.726*** (0.056)	-0.852*** (0.052)	-0.769*** (0.077)	-0.634*** (0.090)	-0.635*** (0.072)	-0.585*** (0.083)
Oceania		-0.389** (0.126)	-0.461** (0.170)	-0.263 (0.266)	-0.186 (0.271)	-0.180 (0.274)	-0.153 (0.276)
Years in Canada (YC)	0.049*** (0.005)	0.0535*** (0.006)	0.0454*** (0.005)	0.0401*** (0.008)	0.0336*** (0.008)	0.0342*** (0.007)	0.0317*** (0.008)
YC ² ($\div 10$)	-0.008*** (0.001)	-0.008*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)	-0.005** (0.002)	-0.005*** (0.001)	-0.005** (0.002)
Survey data	2002	2002	all years	all years	all years	all years	all years
Includes Household or Personal Income	No	No	No	No	Household	Personal	Both
Excludes individuals with non-positive or missing income	No	No	No	Yes	Yes	Yes	Yes

6

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. The dependent variable is an indicator variables that takes on a value of one if the individual reported participating in at least one gambling activity six or more times in the previous year. Additional explanatory variables include gender, a quadratic in age, marital status, educational attainment, labour force status, and provincial and year dummies.

In Model (3), we include data for the remaining surveys for years in which the PGM is available. We also include year dummies and the contemporaneous provincial unemployment rate. Provincial variation in unemployment does not appear to be a significant predictor of gambling behaviour.²⁰ Inclusion of additional years of provincial data does not greatly alter the results, though the coefficients on the year dummies suggest that gambling participation decreased in subsequent years. Model (4) is identical to model (3), except that all individuals for whom household and personal income is unavailable are dropped. A comparison between the model estimates with and without these individuals shows that most of the patterns from the earlier models remain intact, with some differences on the signs and significance of the coefficients on the marital status variables and provincial dummies.

We estimate three additional models which include the logarithm of real household income (Model 5), the logarithm of real personal income (Model 6), and the logarithms of both types of real income (Model 7). Again, the key patterns remain intact with the inclusion of these variables. Immigrants, with the exception of those from the Oceania region, are less likely to gamble than non-immigrants, though this difference diminishes with time in Canada. Gambling tends to increase with increases in either personal or household income. The prior relationships between gambling participation and educational attainment, sex, age, and work participation all continue to hold.

3.3 Gambling Activities

In this section, we look at whether participation in different gambling activities differs between the immigrant and non-immigrant populations. As before, we further distinguish between recent and established immigrants. For each activity, we look at the fraction of individuals in each group that have participating at least once in the preceding year. Results are shown in Table 4.

For all three groups in 2002, the highest participation rates are for lottery tickets, followed by instant win tickets and then VLTs at casinos. With the exception of internet games, participation by recent immigrants is lower than non-immigrants for all of the activities; save for this activity, the proportion of recent immigrants engaging in a given activity is lower and statistically different at a .05 level from the proportion of non-immigrants. For most gambling activities, participation rates for established immigrants are also lower than those of non-immigrants. The exceptions are lottery tickets, other games at casinos, internet/arcade gambling, and speculative investment; for this activities there is no statistically significant difference between the proportion of non-immigrants and established immigrants participating at least once in these activities. For VLTs outside of casinos, the differences may reflect differences in the provinces in which immigrants and non-immigrants tend to live. In particular, in 2002, immigrants were more likely than non-immigrants to live in Ontario and British Columbia, which are the only two provinces to forbid VLTs outside of casinos.

3.4 Prevalence of Problem Gambling

The process by which the PGSI is administered raises some concerns about the usefulness of the CCHS in establishing the prevalence of problem gambling. First, a subset of individuals that participated in no gambling activity more than five times in the previous year are classified as “non-problem gamblers” without being administered the PGSI. This raises the possibility of

²⁰The combination of year effects and provincial effects may capture most variation in unemployment arising from the business cycle.

Table 4: Percentage Spending Money on each Activity at Least Once in the Previous Year, by Group, 2002

Spent Money on...	Non-Immigrants	Recent Immigrants	Established Immigrants
Instant Win Tickets	42	19*	33*
Lottery Tickets	70	47*	68
Bingo	10	2*	4*
Cards/Board Games	12	5*	9*
VLTs outside Casinos	8	3*	3*
VLTs at Casinos	23	11*	18*
Other games at casinos ¹	8	4*	7
Internet/arcade gambling	1	1	1
Live Horse Racing	5	1*	3*
Sports Lotteries	7	2*	5*
Speculative Investment	6	4*	7
Games of skill ²	8	3*	4*
Other forms of gambling ³	5	1*	4*
Observations (nearest 50)	23,400	1,150	2,800

Note: All percentages are computed using the sample weights of the 2002 Canadian Community Health Survey. N is the number of individuals in a given cell and is rounded to the nearest 50. Asterisks next to immigrant estimates indicate the percentage differs from the corresponding percentage for non-immigrants at a .05 level of significance, based on a Pearson's Chi-squared test.

¹ Includes table games like roulette and blackjack.

² Includes pool, golf, bowling and darts.

³ Includes dog races, gambling at country fairs, and betting on sports with a bookie.

Table 5: Percentage of Individuals, by Gambling Type and Immigrant Status, 2002

Type of Gambler	Non-immigrant	Immigrant
Non-gambler	18.5	30.5*
Non-problem gambler - infrequent gambler	23	21.5
Non-problem gambler - assessed	27.5	21*
Low-risk gambler	3.5	2.5*
Moderate-risk gambler	1.5	1.5
Problem gambler	0.5	0.5
Not a Gambler	25.5	23*
N	23,400	3,950

Note: All percentages are calculated using the sample weights of the 2002 CCHS. Figures are rounded to the nearest 0.5. N is the number of individuals in a given cell and is rounded to the nearest 50. Asterisks next to immigrant estimates indicate the percentage differs from the corresponding percentage for non-immigrants at a .05 level of significance, based on a survey design-based F-test.

masking some problem gambling among infrequent gamblers (i.e. “false negatives”). Second, individuals that meet the threshold for the PGSI are allowed to self-identify as “not a gambler” on the first question of the PGSI and avoid the remaining questions. This raises the question of how these individuals would have been classified if they had completed the PGSI.

Table 5 presents the breakdown of immigrants and non-immigrants into the categories assigned and reported according to the methodology of the CCHS for 2002.²¹ We further separate non-problem gamblers into those that were assigned into the category based on reported frequency of gambling activities (“infrequent gamblers”) and those that were assigned into the category on the basis of the PGSI (“assessed”). As our previous results suggest, immigrants are more likely to be non-gamblers; this difference is statistically significant at a .05 level. Non-immigrants are more likely to be non-problem gamblers (either based on infrequent gambling or assessment by the PGSI). The frequency of assessed problem gambling is similar between the two groups, while non-immigrants are slightly more likely to identify as “not a gambler.”

To assign individuals identifying as “not a gambler” into one of the assessment categories of the PGM, we use imputation methods. First, we use the individuals that completed the PGSI to estimate a model of gambling severity using an ordered logit. In addition to the variables from model (3) of Table 3, we also include the frequency of participation in each of the thirteen gambling activities reported in the PGM.²² Although the severity index runs from 0 to 27, we top-code at 9 and above, given that individuals in this range are uncommon and that scores above eight provide no additional information in that all individuals with scores in this range are assigned to the problem gambler category.

The coefficient estimates of the model are reported in Table A4 of Appendix B. Frequent participation in instant win tickets, bingo, VLT machines (both inside and outside casinos), other casino games,

²¹We do not further distinguish between recent and established immigrants, as the number of recent immigrants that are problem gambling falls below Statistics Canada’s requirements for release.

²²Cox et al. (2000) find that certain gambling activities (e.g. VLTs) are associated with pathological gambling, while others (e.g. lottery tickets) are not.

internet gambling, and live horse racing are all associated with an increased prevalence of problem gambling. In contrast, frequent participation of lotto ticket purchases (the gambling activity that the most people participate in at least once a year) is not associated with problem gambling.²³

Table 6: Imputed distribution of gambling types, by immigrant and actual gambling status, 2002

Assigned status	Actual gambling type in the CCHS			
	Not a gambler		Non-problem gambler (assessed)	
	Non-immigrants	Immigrants	Non-immigrants	Immigrants
Non-problem gambler (assessed)	91.1	88.7	88	86.7
Low-risk gambler	5.9	7.4	7.6	8.7
Moderate-risk gambler	2.4	3	3.4	3.6
Problem gambler	0.7	0.9	1	1

Note: All proportions are weighted using the sample weights of the 2002 Canadian Community Health Survey. Imputed gambling type is assigned by using an ordered logit to fit the severity score from the PGSI on observed gambling behaviour and socioeconomic characteristics for the sample that was assessed a score and then using the model to fit the probability of each individual having a score between 0 and “8 and above” (the top-coded category).

We use our model to calculate the fitted probabilities for each individual of having a severity index from zero to the top-coded category. For individuals in the “not a gambler” category we are thus able to generate a probability of being in each of the gambling types assigned on the basis of the PGSI.²⁴ Using the survey weights, we generate a predicted distribution of types from the model for these individuals. The results are shown in Table 6 for immigrants and non-immigrants. For comparison, we also generate a fitted distribution for the “assessed non-problem gamblers.” Given the probabilistic nature of the model, a fraction of these individuals will be forecast by their characteristics and the model to be in the at-risk and problem-gambling categories.

For those in the “assessed non-problem gambler” category, the model assigns 12 percent of non-immigrants and 13.3 percent of immigrants to being in one of the three at-risk/problem-gambling categories. In comparison, for those in the “not a gambler” category, only 8.9 percent of non-immigrants and 11.3 percent of immigrants are assigned to the at-risk/problem-gambling category by the model, suggesting that based on observable characteristics and observed gambling frequency, individuals in the “not a gambler” category are similar to the non-problem gambling group.²⁵

Next, we estimate logit models of the conditional probability of being a problem gambler. Williams and Volberg (2010, pg.7) review the practices of gambling researchers using survey data and various diagnostic tools. They argue that using a PGSI score of 8+ to identify problem gamblers is too stringent, missing individuals with lower scores that would be identified as problem gamblers in a clinical setting. Conversely using a PGSI score of 3+ is too permissive, resulting in the misclassification of recreational gamblers that would not subsequently meet the clinical criteria for being a problem

²³These findings are similar to Cox et al. (2000); see fn. 22.

²⁴Given that they exhibit gambling behaviour unlike those included in the model, the model is not suited to similarly assign a severity index to the “infrequent gamblers.”

²⁵Oguzoglu (2018) uses the 2013-14 CCHS to explore the relationship between VLT proximity and gambling behaviour. He treats individuals in the “not a gambler” group as equivalent to being in the “non-problem gamblers” group.

gambler. Williams and Volberg suggest using a PGSI of 5+ as the best practice to balance the trade-off between “false positives” and “false negatives.” We follow this suggestion and re-classify problem gamblers as individuals with a PGSI of 5+. We use the imputed severity from our previous model to assign fitted probabilities that each individual that self-identified as “not a gambler” would have meet this alternative criteria for being a problem gambler.²⁶

The logit models for the conditional prevalence of problem gambling include the same explanatory variables as the models of the gambling participation. For the logit models, each individual classified as “not a gambler” is given an imputed PGSI score, which is assigned using the model of gambling severity described above and presented in Table 6. This involves random number generation for each individual in the “not a gambler” category. Model parameters (and standard errors) of the logit model of the conditional probability of being a problem gambler are then estimated pooling observations with and without imputed “problem-gambling” status. The estimation procedure is then repeated a number of times with new draws of the random variable used for imputation, and the various estimates (and standard errors) are averaged to produce a single set of parameter estimates.²⁷ We use 20 repetitions and a fixed random seed to estimate each model.²⁸ Coefficient estimates for the variables relating to immigrant status are presented in Table 7. The remaining coefficients are presented in Table A6 of Appendix B.

²⁶Using this measure, 1.6 percent of non-immigrants and 1.4 percent of immigrants are problem gamblers.

²⁷For an introduction to multiple imputation methods, see McKnight, McKnight, Sidani, and Figueredo (2007).

²⁸Using our data, the multiple imputation commands in STATA and the random seed we use, it should be possible to replicate exactly our results.

Table 7: Logit Model of Probability of Problem Gambling (PGSI 5+),
Selected Coefficients

	(1)	Model		(4)	(5)	(6)	(7)
	(2)	(3)					
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>							
Immigrant	-0.355 (0.500)						
From North American country other than Canada	-1.793* (0.949)	-1.193** (0.568)	-1.263** (0.585)	-1.269** (0.591)	-1.267** (0.589)	-1.270** (0.592)	
From South or Central America, or Caribbean	-1.309 (0.781)	-0.772* (0.398)	-1.012* (0.507)	-1.019** (0.496)	-1.017* (0.510)	-1.020** (0.499)	
Europe	-0.78 (0.655)	-0.393 (0.357)	-0.182 (0.354)	-0.187 (0.346)	-0.186 (0.349)	-0.188 (0.344)	
Africa	-1.055 (1.330)	-0.162 (0.389)	-0.305 (0.633)	-0.313 (0.617)	-0.31 (0.639)	-0.314 (0.621)	
Asia	0.031 (0.532)	-0.016 (0.262)	0.194 (0.363)	0.187 (0.354)	0.188 (0.366)	0.185 (0.358)	
Oceania							
Years in Canada (YC)	0.037 (0.048)	0.037 (0.047)	0.041** (0.021)	0.02 (0.035)	0.021 (0.034)	0.02 (0.036)	0.021 (0.035)
YC ²	-0.0006 (0.0010)	-0.0004 (0.0012)	-0.006 (0.0005)	-0.0002 (0.008)	-0.0002 (0.0008)	-0.0002 (0.0008)	-0.0002 (0.0008)
Survey data	2002	2002	all years	all years	all years	all years	all years
Income	No	No	No	No	Household	Personal	Both
Excludes individuals with non-positive or missing income	No	No	No	Yes	Yes	Yes	Yes

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. An individual is considered to be a problem gambler if his or her problem gambling severity index is five or above. Additional explanatory variables include gender, a quadratic in age, marital status, educational attainment, labour force status, and provincial and year dummies.

For Model (1), which uses only the 2002 data and does not exploit information on region of birth, the immigrant status coefficient is negative (and not statistically significant). Expanding the model to include region of birth using only the 2002 data (Model (2)) does not greatly alter the results. Immigrants are again generally less likely to be problem gamblers, though with the exception of other North American countries, the differences are again not statistically significant. This pattern continues to hold with the inclusion of additional survey years and various measures of income (Models (3)-(7)), with the caveat that the negative coefficient for immigrants from South America, Central America or the Caribbean is also now statistically significant.

For the remaining variables in the model, sex, age, marital status and education are all predictors of problem gambling status. In particular, being male, having been either separated or divorced or having never been married, or having 8-13 years of education without earning a high school diploma are all associated with a higher likelihood of problem gambling.

4 Discussion

Using the CCHS, we compared the gambling behaviour of immigrants with non-immigrants. We find that in 2002, recent immigrants are markedly less likely to gamble than non-immigrants. However, logit analysis pooling using either just the 2002 data or pooling data across years indicates that the difference diminishes with time spent in Canada. Lower participation by recent immigrants holds after adjusting for country of birth, educational attainment, sex, age, province of residence, marital status and employment status. On the whole, immigrants and non-immigrants participate in similar types of gambling activities, with lottery tickets and instant win tickets being the most common activities.

Our findings also indicate that in 2002, the prevalence of problem gambling was similar for immigrants and non-immigrants (1.4 percent versus 1.6 percent using our imputed measure). Again, these findings hold with and without adjusting for differences in socioeconomic characteristics in the two groups and also after accounting for different regions of origin for immigrants. The frequency of gambling of immigrants tend to converge to that of the non-immigrants as more time is spent in Canada. This parallels findings on mental health using the CCHS; recent immigrants report better mental health than comparable non-immigrants, but the difference fades for longer term immigrants (Lou & Beaujot, 2005).

Our findings suggest that the prevalence of problem gambling was similar for immigrants and non-immigrants in 2002. This finding comes with several important caveats. First, the implementation of the PGSI in the CCHS, and particularly the option for respondents to bypass the PGSI altogether by self-identifying as “non a gambler” raises the possibility that problem gambling is under-reported in general in the survey. We attempted to address this problem using imputation methods, relying on a combination of reported gambling behaviour and socioeconomic information. Imputation may still fail to yield appropriate figures if immigrants and non-immigrants differ in how they self-select into the “not a gambler” category. For example, it is possible that non-immigrant respondents in this category are more like non-problem gamblers than are immigrants. This issue has been addressed in the 2018 CCHS, which no longer allows individuals to bypass the PGSI.²⁹

A second problem arises from a combination of the limited size of the immigrant sample in the

²⁹This data was only being made available in the Manitoba Research Data Centre after we had completed our analysis. It is also a relatively small survey that is not comparable in design to previous waves of the CCHS.

CCHS and the nature of the information collected in the CCHS. The size of the CCHS makes it difficult to divide immigrants into smaller subgroups and compare gambling behaviour across subgroups. This potentially masks increased probabilities of gambling and possibly problem gambling for individuals from, for example, specific countries. Moreover, the CCHS does not include measures of some variables that may influence one's attitudes towards gambling (e.g. religiosity) or that may shape ones' attitudes towards gambling over time (e.g. past performance in the labour market). Some of the latter issues likely would require a large survey that was designed specifically to look at immigrant gambling behaviour, or at least surveys targeted at specific immigrant communities that may have a greater propensity towards gambling based on home country practices.

A final problem is related to the heavy reliance on the 2002 data in our analysis. This is necessitated because only the 2002 data allows for a national perspective of gambling. A combination of changes in immigration policy, leading to greater dispersion of immigrants across Canada (and provincial differences in gambling opportunities), shifts in the ethnicity of immigrations (and particular the shift away from European immigrants towards Asian immigrants) and changes in gambling attitudes make it unclear that these results can be generalized to the present.

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A Administration of the Problem Gambling Module

Table A1 indicates (with an “x”) the province(s) in which the Problem Gambling Module was administered for each survey year.

Table A1: Administration of the Problem Gambling Module by Province and Survey

Province	2002	2003	2005	2007	2009/10	2011/12	2013/14
Newfoundland/Labrador	x						
P.E.I	x						
Nova Scotia	x						
New Brunswick	x		x		x		
Quebec	x			x			x
Ontario	x	x		x			
Manitoba	x						x
Saskatchewan	x	x		x			x
Alberta	x				x		
British Columbia	x						x

B Supplemental Findings

Table B1: Gambling Participation by Province, Year and Intensity

Year	Province						
	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British columbia
	Proportion that participating in at least one gambling activity in the past year...						
2002	...at least once.	0.81	0.82	0.78	0.78	0.80	0.77
	...6-11 times.	0.61	0.61	0.54	0.58	0.57	0.57
	...about once a week.	0.38	0.36	0.28	0.31	0.25	0.25
2005	...at least once.	0.80					
	...6-11 times.	0.60					
	...about once a week.	0.35					
2007	...at least once.		0.76	0.72		0.74	
	...6-11 times.		0.53	0.48		0.51	
	...about once a week.		0.28	0.24		0.20	
2008	...at least once.		0.74	0.68		0.76	
	...6-11 times.		0.50	0.44		0.51	
	...about once a week.		0.27	0.22		0.20	
2009	...at least once.	0.76				0.72	
	...6-11 times.	0.53				0.47	
	...about once a week.	0.28				0.21	
2010	...at least once.	0.80				0.70	
	...6-11 times.	0.58				0.47	
	...about once a week.	0.32				0.20	
2013	...at least once.		0.69	0.76	0.74		0.70
	...6-11 times.		0.43	0.53	0.49		0.42
	...about once a week.		0.20	0.23	0.21		0.16
2014	...at least once.		0.65	0.69	0.70		0.66
	...6-11 times.		0.37	0.39	0.41		0.38
	...about once a week.		0.17	0.18	0.16		0.15

Note: All proportions are calculated using survey weights.

Table A2: Logit Model of Participation in At Least One Gambling Activity
6+ Times in the Previous Year, All Coefficients, Models 1-4

	Model		
	(1)	(2)	(3)
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>			
Immigrant	-0.8664*** (0.0460)		
From North American country other than Canada		-1.4587*** (0.2781)	-1.2979*** (0.1567)
Immigrant from South or Central America, or Caribbean		-1.0460*** (0.1240)	-0.9206*** (0.1712)
Europe		-1.0282*** (0.1333)	-0.9213*** (0.0557)
Africa		-1.4009*** (0.2860)	-1.3799*** (0.0818)
Asia		-0.7257*** (0.0555)	-0.8524*** (0.0523)
Oceania		-0.3890** (0.1261)	-0.4613** (0.1704)
Years in Canada (YC)	0.0487*** (0.0049)	0.0535*** (0.0058)	0.0454*** (0.0052)
YC ²	-0.0008*** (0.0001)	-0.0008*** (0.0001)	-0.0006*** (0.0001)
<i>II. Sex and Age</i>			
Male	0.3985*** (0.0482)	0.3982*** (0.0461)	0.4276*** (0.0197)
Age	0.0726*** (0.0085)	0.0727*** (0.0086)	0.0907*** (0.0065)
Age ²	-0.0006*** (0.0001)	-0.0006*** (0.0001)	-0.0008*** (0.0000)
<i>III. Marital Status - compared to Married or Common-law</i>			
Widowed	-0.1021** (0.0518)	-0.0939** (0.0455)	-0.0019 (0.0389)
Seperated or divorced	0.0124 (0.0573)	0.0235 (0.0572)	0.0407 (0.0661)
Single, Never Married	-0.2124*** (0.0498)	-0.2153*** (0.0509)	-0.0999** (0.0350)
<i>IV. Educational Attainment - Compared to College Certificate</i>			
Up to Grade 8	0.0415 (0.0869)	0.0342 (0.0921)	-0.0663 (0.0976)
Grade 8-13, no diploma	0.2732*** (0.0468)	0.2712*** (0.0471)	0.2018*** (0.0422)
Obtained High school diploma	0.1110** (0.0411)	0.1114** (0.0389)	0.1440*** (0.0269)
Some Post-secondary, no certificate	-0.0346	-0.0252	0.0282

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Table A2 – continued from previous page

Model

	(1)	(2)	(3)
Completed trade certificate	(0.0499) 0.1014**	(0.0513) 0.1066**	(0.0686) 0.1217***
Completed University Certificate < Bachelor's	(0.0438) 0.0087	(0.0450) 0.0023	(0.0170) -0.1429**
Bachelor's degree	(0.0934) -0.4146***	(0.1029) -0.4270***	(0.0721) -0.3684***
Completed Degree or Certificate > Bachelor's	(0.0262) -1.0094***	(0.0274) -1.0012***	(0.0103) -0.8422***
	(0.0635)	(0.0668)	(0.0355)
<i>V. Work Status in Previous Week - Compared to Didn't Work</i>			
Worked	0.2991*** (0.0606)	0.2998*** (0.0598)	0.2833*** (0.0192)
Permanently unable to work	-0.1355 (0.0981)	-0.1277 (0.0931)	-0.2558*** (0.0184)
<i>VI. Province of Residence - Compared to Ontario</i>			
Newfoundland	0.1632*** (0.0089)	0.1648*** (0.0079)	0.1445 (0.3174)
P.E.I.	-0.0260*** (0.0062)	-0.0225*** (0.0036)	-0.0391 (0.1555)
Nova Scotia	0.1237*** (0.0056)	0.1324*** (0.0054)	0.1152 (0.0785)
New Brunswick	0.1369*** (0.0063)	0.1402*** (0.0035)	0.1032 (0.0646)
Quebec	0.2121*** (0.0067)	0.2194*** (0.0045)	0.1376*** (0.0401)
Manitoba	0.0553*** (0.0043)	0.0536*** (0.0051)	0.1997*** (0.0585)
Saskatchewan	-0.0498*** (0.0048)	-0.0474*** (0.0038)	0.0735 (0.0746)
Alberta	-0.1860*** (0.0058)	-0.1913*** (0.0058)	-0.1917** (0.0696)
British Columbia	0.0830*** (0.0031)	0.0597*** (0.0072)	0.0846** (0.0305)
<i>VII. Survey Year - Compared to 2002</i>			
2005			-0.0401* (0.0228)
2007			-0.2490*** (0.0560)
2008			-0.3831*** (0.0358)
2009			-0.1984*** (0.0415)
2010			-0.1061***

(Continued on next page)

Table A2 – continued from previous page

	Model		
	(1)	(2)	(3)
2013			(0.0321) -0.6030***
2014			(0.0929) -0.8494***
Prov. unemp. rate			(0.0746) 0.0010
Constant	-1.7800*** (0.2066)	-1.7778*** (0.2161)	(0.0343) -2.2894*** (0.2688)
N (Number of observations)			

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. The dependent variable is a indicator variable that takes on a value of one if the gambling activity six or more times in the previous year.

Table A3: Logit Model of Participation in At Least One Gambling Activity
6+ Times in the Previous Year, All Coefficients, Models 4-7

	Model			
	(4)	(5)	(6)	(7)
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>				
From North American country other than Canada	-1.1617*** (0.1923)	-1.0605*** (0.1947)	-1.0577*** (0.1908)	-1.0210*** (0.1927)
Immigrant from South or Central America, or Caribbean	-0.7740** (0.2362)	-0.6491** (0.2432)	-0.6579** (0.2297)	-0.6095** (0.2375)
Europe	-0.7408*** (0.0598)	-0.6463*** (0.0685)	-0.6484*** (0.0596)	-0.6130*** (0.0655)
Africa	-1.2450*** (0.1319)	-1.0994*** (0.1338)	-1.1284*** (0.1223)	-1.0673*** (0.1290)
Asia	-0.7686*** (0.0770)	-0.6342*** (0.0899)	-0.6350*** (0.0718)	-0.5848*** (0.0833)
Oceania	-0.2631 (0.2659)	-0.1856 (0.2713)	-0.1801 (0.2739)	-0.1529 (0.2760)
Years in Canada (YC)	0.0401*** (0.0076)	0.0336*** (0.0081)	0.0342*** (0.0074)	0.0317*** (0.0078)
YC ²	-0.0006*** (0.0001)	-0.0005** (0.0002)	-0.0005*** (0.0001)	-0.0005** (0.0002)
<i>II. Sex and Age</i>				
Male	0.3895*** (0.0230)	0.3757*** (0.0231)	0.3172*** (0.0215)	0.3265*** (0.0227)
Age	0.0820*** (0.0018)	0.0817*** (0.0024)	0.0649*** (0.0019)	0.0689*** (0.0018)
Age ²	-0.0007*** (0.0000)	-0.0007*** (0.0000)	-0.0005*** (0.0000)	-0.0005*** (0.0000)
<i>III. Marital Status - compared to Married or Common-law</i>				
Widowed	-0.1152** (0.0563)	-0.0276 (0.0702)	-0.1399** (0.0598)	-0.0794 (0.0726)
Seperated or divorced	0.0147 (0.0536)	0.1023* (0.0619)	0.0133 (0.0514)	0.0684 (0.0620)
Single, Never Married	-0.0716 (0.0490)	-0.0153 (0.0527)	-0.0444 (0.0476)	-0.0159 (0.0523)
<i>IV. Educational Attainment - Compared to College Certificate</i>				
Up to Grade 8	-0.0614 (0.1183)	0.0192 (0.1123)	0.0156 (0.1227)	0.0468 (0.1164)
Grade 8-13, no diploma	0.2195*** (0.0424)	0.2725*** (0.0436)	0.2813*** (0.0445)	0.2992*** (0.0442)
Obtained High school diploma	0.1153** (0.0460)	0.1336** (0.0483)	0.1505** (0.0472)	0.1532** (0.0485)
Some Post-secondary, no certificate	0.0160 (0.0946)	0.0222 (0.0985)	0.0530 (0.0957)	0.0479 (0.0986)
Completed trade certificate	0.0758**	0.0984**	0.0941**	0.1037**

(Continued on next page)

Table A3 – continued from previous page

	Model			
	(4)	(5)	(6)	(7)
Completed University Certificate < Bachelor's	(0.0316) -0.1812**	(0.0359) -0.2026**	(0.0372) -0.1975**	(0.0383) -0.2069**
Bachelor's degree	(0.0887) -0.3986***	(0.0909) -0.4369***	(0.0871) -0.4457***	(0.0895) -0.4581***
Completed Degree or Certificate > Bachelor's	(0.0307) -0.8956***	(0.0357) -0.9550***	(0.0304) -0.9752***	(0.0337) -0.9929***
	(0.0309)	(0.0284)	(0.0323)	(0.0304)
<i>V. Work Status in Previous Week - Compared to Didn't Work</i>				
Worked	0.2602*** (0.0188)	0.2128*** (0.0202)	0.1835*** (0.0230)	0.1727*** (0.0226)
Permanently unable to work	-0.2847*** (0.0240)	-0.2050*** (0.0233)	-0.2244*** (0.0213)	-0.1897*** (0.0224)
<i>VI. Province of Residence - Compared to Ontario</i>				
Newfoundland	0.0237 (0.3926)	0.0933 (0.3986)	0.0816 (0.3954)	0.1100 (0.3994)
P.E.I.	-0.1541 (0.1920)	-0.0931 (0.1968)	-0.1013 (0.1936)	-0.0767 (0.1969)
Nova Scotia	0.0418 (0.0969)	0.0941 (0.1014)	0.0823 (0.0979)	0.1046 (0.1012)
New Brunswick	0.0786 (0.0811)	0.1435* (0.0871)	0.1304 (0.0821)	0.1578* (0.0866)
Quebec	0.1289** (0.0519)	0.1658** (0.0519)	0.1516** (0.0514)	0.1688** (0.0518)
Manitoba	0.2543*** (0.0706)	0.2752*** (0.0723)	0.2623*** (0.0720)	0.2733*** (0.0726)
Saskatchewan	0.0977 (0.0880)	0.1128 (0.0893)	0.0984 (0.0889)	0.1078 (0.0894)
Alberta	-0.2309** (0.0850)	-0.2215** (0.0852)	-0.2338** (0.0849)	-0.2273** (0.0851)
British Columbia	0.0770** (0.0375)	0.0983** (0.0360)	0.0874** (0.0362)	0.0980** (0.0357)
<i>VII. Survey Year - Compared to 2002</i>				
2005	0.0397* (0.0238)	0.0195 (0.0237)	0.0259 (0.0241)	0.0168 (0.0239)
2007	-0.2238*** (0.0644)	-0.2292*** (0.0639)	-0.2340*** (0.0638)	-0.2348*** (0.0637)
2008	-0.3779*** (0.0432)	-0.3842*** (0.0430)	-0.3875*** (0.0429)	-0.3890*** (0.0429)
2009	-0.1280** (0.0645)	-0.1789** (0.0607)	-0.1639** (0.0635)	-0.1868** (0.0612)
2010	-0.0825* (0.0429)	-0.1207** (0.0438)	-0.1055** (0.0438)	-0.1234** (0.0440)
2013	-0.5354***	-0.5659***	-0.5563***	-0.5701***

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Table A3 – continued from previous page

	Model			
	(4)	(5)	(6)	(7)
2014	(0.1046) -0.8238***	(0.1012) -0.8556***	(0.1021) -0.8447***	(0.1002) -0.8592***
Prov. unemp. rate	(0.1082) 0.0096	(0.1029) 0.0075	(0.1055) 0.0075	(0.1022) 0.0067
Log (real household income)	(0.0422)	(0.0426) 0.1553*** (0.0216)	(0.0425)	(0.0427) 0.0968*** (0.0244)
Log (real personal income)			0.1583*** (0.0067)	0.1192*** (0.0081)
Constant	-2.0911*** (0.3015)	-3.7687*** (0.3600)	-3.2587*** (0.3255)	-4.0147*** (0.3520)
N (Number of observations)				

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. Gambling participation is based on participating in at least one gambling activity six or more times in the previous year.

Table A4: Ordered Logit Model of Gambling Severity

I. Frequency spent money on each of 13 gambling activities (never is the omitted category)
Spend money on...

..instant win tickets	
daily	1.7383*** (0.1938)
2-6 times/week	0.6307*** (0.1326)
about once a week	0.3515*** (0.1032)
2-3 times/ month	0.2322** (0.1140)
about once a month	0.2608** (0.1026)
6-11 times/year	0.1796* (0.1083)
1-5 times/yer	-0.0354 (0.0888)
...lottery tickets	
daily	-0.6495 (0.5443)
2-6 times/week	-0.1778 (0.1206)
about once a week	-0.3972*** (0.1090)
2-3 times/ month	-0.4644*** (0.1242)
about once a month	-0.5715*** (0.1330)
6-11 times/year	-0.3419** (0.1292)
1-5 times/yer	0.0124 (0.1150)
...bingo	
daily	0.7713 (1.2056)
2-6 times/week	1.2938*** (0.2582)
about once a week	1.0060*** (0.1597)
2-3 times/ month	1.3111*** (0.1848)
about once a month	0.9895*** (0.2023)
6-11 times/year	0.7329*** (0.2071)
1-5 times/yer	0.2731** (0.0989)
...cards/board games	
daily	0.1154 (0.4286)
2-6 times/week	0.3121 (0.2616)
about once a week	0.2911* (0.1734)
2-3 times/ month	0.4402** (0.1573)
about once a month	0.3704** (0.1323)
6-11 times/year	-0.0916 (0.1447)

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Table A4 – continued from previous page

1-5 times/yer	0.1492*
	(0.0886)
daily	2.4808*
	(1.2693)
2-6 times/week	3.3932***
	(0.2617)
about once a week	2.1374***
	(0.2623)
2-3 times/ month	2.0521***
	(0.2474)
about once a month	1.6332***
	(0.2170)
6-11 times/year	0.8332***
	(0.1774)
1-5 times/yer	0.5790***
	(0.0976)
daily	-1.6541
	(1.0907)
2-6 times/week	2.3556***
	(0.3623)
about once a week	2.4580***
	(0.2817)
2-3 times/ month	1.7266***
	(0.2072)
about once a month	1.5473***
	(0.1344)
6-11 times/year	1.2191***
	(0.1326)
1-5 times/yer	0.4338***
	(0.0705)
daily	3.4815**
	(1.1098)
2-6 times/week	1.6499***
	(0.4009)
about once a week	1.4047***
	(0.3719)
2-3 times/ month	1.0860***
	(0.2729)
about once a month	0.8208***
	(0.2066)
6-11 times/year	0.9808***
	(0.2288)
1-5 times/yer	0.4393***
	(0.0874)
daily	2.1676***
	(0.3718)
2-6 times/week	0.9771***
	(0.2573)
about once a week	0.8843**
	(0.3346)
2-3 times/ month	0.7150*
	(0.3734)
about once a month	0.8452**
	(0.3349)
6-11 times/year	0.4026
	(0.3209)
1-5 times/yer	0.7908***

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Table A4 – continued from previous page

		(0.1939)
	...live horse racing	
daily		0.4779 (0.9754)
2-6 times/week		2.2034** (0.7551)
about once a week		0.8056 (0.5898)
2-3 times/ month		-0.5127 (1.1691)
about once a month		-0.2884 (0.4658)
6-11 times/year		0.5891* (0.3526)
1-5 times/yer		0.1111 (0.1163)
	...sports lotteries	
daily		1.5279** (0.6201)
2-6 times/week		1.0851*** (0.1986)
about once a week		0.7852*** (0.1910)
2-3 times/ month		0.5436** (0.2193)
about once a month		0.3455* (0.1948)
6-11 times/year		0.3858** (0.1706)
1-5 times/yer		0.1582 (0.1078)
	...speculative investment	
daily		0.6525 (0.4614)
2-6 times/week		1.3403* (0.7833)
about once a week		0.7431** (0.2651)
2-3 times/ month		0.5625** (0.2852)
about once a month		0.2357 (0.2982)
6-11 times/year		0.4317 (0.2971)
1-5 times/yer		0.1377 (0.1549)
	...games of skill	
daily		0.918 (0.8278)
2-6 times/week		0.4733** (0.2198)
about once a week		0.3578* (0.2121)
2-3 times/ month		0.1007 (0.2197)
about once a month		0.2572 (0.1943)
6-11 times/year		0.4466** (0.1508)
1-5 times/yer		0.3981** (0.1210)

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Table A4 – continued from previous page

daily	-0.6892 (1.7799)
2-6 times/week	-0.962 (0.6927)
about once a week	0.1981 (0.2444)
2-3 times/ month	-0.8504** (0.3712)
about once a month	0.0126 (0.2949)
6-11 times/year	-0.2046 (0.2524)
1-5 times/yer	-0.0938 (0.1088)
<i>II. Immigrant Status, Country of Birth, and Years in Canada</i>	
From North American country other than Canada	-0.286 (0.4020)
From South or Central America, or Caribbean	0.0438 (0.3685)
Europe	0.3136 (0.3107)
Africa	0.9028** (0.3526)
Asia	0.5032** (0.2487)
Years in Canada (YC)	0.0213 (0.0208)
YC ²	-0.0006 (0.0004)
<i>III. Sex and Age</i>	
Male	0.1294* (0.0670)
Age	0.0763*** (0.0173)
Age ²	-0.0009*** (0.0002)
<i>IV. Marital Status - compared to Married or Common-law</i>	
Widowed	-0.1394 (0.1618)
Separated or Divorced	0.3922*** (0.1035)
Single, Never Married	0.5003*** (0.0747)
<i>V. Educational Attainment - Compared to College Certificate</i>	
Up to Grade 8	0.3988** (0.1795)
Grade 8-13, no diploma	0.3076** (0.1059)
Obtained High school diploma	0.0822 (0.0883)
Some Post-secondary, no certificate	0.1365 (0.1099)
Completed trade certificate	0.0997 (0.1034)
Completed University Certificate < Bachelor's	-0.0761 (0.1617)
Bachelor's degree	-0.0395 (0.1174)
Completed Degree or Certificate > Bachelor's	-0.172 (0.2029)

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Table A4 – continued from previous page**VI. Work Status in Previous Week - Compared to Didn't Work**

Worked	-0.1633**
	(0.0740)
Permanently unable to work	0.0511
	(0.1871)

VI. Province of Residence - Compared to Ontario

Newfoundland	-0.3846*
	(0.2014)
P.E.I.	0.1121
	(0.2402)
Nova Scotia	-0.4405**
	(0.1851)
New Brunswick	-0.4881**
	(0.1873)
Quebec	-0.1147
	(0.0895)
Manitoba	-0.5174***
	(0.1466)
Saskatchewan	-0.3958***
	(0.1111)
Alberta	-0.1041
	(0.1441)
British Columbia	-0.0531
	(0.1186)

VII. Survey Year - Compared to 2002

2005	-0.3095
	(0.2220)
2007	-0.2008**
	(0.0861)
2008	-0.0766
	(0.0985)
2009	-0.3829**
	(0.1663)
2010	-0.3294*
	(0.1783)
2013	-0.1697
	(0.1136)
2014	-0.1042
	(0.1549)

Cut-offs between CPGI scores

0 & 1	4.2020***
	(0.3643)
1 & 2	4.9755***
	(0.3646)
2 & 3	5.4729***
	(0.3676)
3 & 4	5.9219***
	(0.3678)
4 & 5	6.2560***
	(0.3644)
5 & 6	6.6139***
	(0.3702)
6 & 7	6.9189***
	(0.3731)
7 & 8	7.1578***
	(0.3729)
8 & 9+	7.4553***
	(0.3758)
N	34559

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. The dependent variable is the severity index, which is top-coded at nine and above.

Table A5: Logit Model of Prevalence of Problem Gambling (PGSI 5+),
All Coefficients, Models 1-4

	Model			
	(1)	(2)	(3)	(4)
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>				
Immigrant	-0.355 (0.500)			
From North American country other than Canada		-1.793* (0.949)	-1.193** (0.568)	-1.263** (0.585)
From South or Central America, or Caribbean		-1.309 (0.781)	-0.772* (0.398)	-1.012* (0.507)
Europe		-0.78 (0.655)	-0.393 (0.357)	-0.182 (0.354)
Africa		-1.055 (1.330)	-0.162 (0.389)	-0.305 (0.633)
Asia		0.031 (0.532)	-0.016 (0.262)	0.194 (0.363)
Years in Canada (YC)	0.037 (0.048)	0.037 (0.047)	0.041** (0.021)	0.02 (0.035)
YC ²	-0.0006 (0.0010)	-0.0004 (0.0012)	-0.006 (0.0005)	-0.0002 (0.008)
<i>II. Sex and Age</i>				
Male	0.350* (0.189)	0.344* (0.187)	0.378*** (0.096)	0.353*** (0.115)
Age	0.110*** (0.042)	0.111*** (0.042)	0.111*** (0.019)	0.088*** (0.023)
Age ²	-0.0014*** (0.001)	-0.0014*** (0.001)	-0.0013*** (0.0002)	-0.0010*** (0.0003)
<i>III. Marital Status - compared to Married or Common-law</i>				
Widowed	0.135 (0.634)	0.144 (0.633)	-0.143 (0.447)	-0.203 (0.513)
Seperated or divorced	0.775*** (0.190)	0.813*** (0.190)	0.729*** (0.098)	0.702*** (0.107)
Single, Never Married	0.741*** (0.265)	0.742*** (0.261)	0.733*** (0.139)	0.701*** (0.148)
<i>IV. Educational Attainment - Compared to College Certificate</i>				
Up to Grade 8	0.094 (0.489)	0.08 (0.491)	0.315 (0.226)	0.216 (0.371)
Grade 8-13, no diploma	0.699*** (0.229)	0.696*** (0.229)	0.537*** (0.203)	0.660*** (0.230)
Obtained High school diploma	0.386* (0.216)	0.387* (0.216)	0.292* (0.175)	0.378** (0.169)
Some Post-secondary, no certificate	0.472 (0.350)	0.493 (0.355)	0.422** (0.203)	0.402 (0.275)
Completed trade certificate	0.433	0.454	0.236	0.343

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Table A5 – continued from previous page

	(0.295)	(0.304)	(0.231)	(0.292)
Completed University Certificate < Bachelor's	-0.128	-0.146	-0.228	-0.341
	(0.438)	(0.438)	(0.257)	(0.310)
Bachelor's degree	-0.217	-0.262	-0.174	-0.19
	(0.295)	(0.298)	(0.207)	(0.207)
Completed Degree or Certificate > Bachelor's	-0.616	-0.638	-0.763**	-0.701*
	(0.480)	(0.483)	(0.341)	(0.404)
<i>V. Work Status in Previous Week - Compared to Didn't Work</i>				
Worked	0.029	0.043	-0.122	-0.081
	(0.170)	(0.172)	(0.109)	(0.107)
Permanently unable to work	-0.049	-0.02	0.023	0.24
	(0.329)	(0.321)	(0.194)	(0.194)
<i>VI. Province of Residence - Compared to Ontario</i>				
Newfoundland	-0.106	-0.11	-0.044	-0.168
	(0.192)	(0.195)	(0.197)	(0.225)
P.E.I.	-0.225	-0.225	-0.161	-0.359
	(0.252)	(0.252)	(0.259)	(0.285)
Nova Scotia	0.095	0.1	0.166	-0.097
	(0.167)	(0.169)	(0.187)	(0.219)
New Brunswick	0.036	0.034	-0.05	-0.051
	(0.143)	(0.145)	(0.172)	(0.204)
Quebec	-0.115	-0.104	0.113	-0.005
	(0.150)	(0.153)	(0.081)	(0.092)
Manitoba	0.260**	0.247**	0.305**	0.268**
	(0.107)	(0.108)	(0.110)	(0.109)
Saskatchewan	0.311***	0.307***	0.082	0.005
	(0.109)	(0.108)	(0.100)	(0.111)
Alberta	0.031	0.011	0.14	0.104
	(0.143)	(0.143)	(0.162)	(0.156)
British Columbia	0.184	0.118	0.085	0.095
<i>VII. Survey Year - Compared to 2002</i>				
2005			-0.574***	-0.563**
			(0.194)	(0.242)
2007			-0.460***	-0.434***
			(0.120)	(0.120)
2008			-0.251	-0.232
			(0.163)	(0.203)
2009			-0.398*	-0.244
			(0.231)	(0.233)
2010			-0.623***	-0.935***
			(0.180)	(0.288)
2013			-0.456**	-0.413*
			(0.222)	(0.235)
2014			-0.474**	-0.598**
			(0.182)	(0.233)
Constant	-6.727***	-6.746***	-6.797***	-6.292***

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Table A5 – continued from previous page

	(0.792)	(0.791)	(0.418)	(0.463)
N	26882	26882	121214	80422

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. Prevalence of problem gambling is based on a gambling severity core of five or above.

Table A6: Logit Model of Prevalence of Problem Gambling (PGSI 5+),
All Coefficients, Models 4-7

	(4)	(5)	Model (6)	(7)
<i>I. Immigrant Status, Country of Birth, and Years in Canada</i>				
From North American country other than Canada	-1.263** (0.585)	-1.269** (0.591)	-1.267** (0.589)	-1.270** (0.592)
From South or Central America, or Caribbean	-1.012* (0.507)	-1.019** (0.496)	-1.017* (0.510)	-1.020** (0.499)
Europe	-0.182 (0.354)	-0.187 (0.346)	-0.186 (0.349)	-0.188 (0.344)
Africa	-0.305 (0.633)	-0.313 (0.617)	-0.31 (0.639)	-0.314 (0.621)
Asia	0.194 (0.363)	0.187 (0.354)	0.188 (0.366)	0.185 (0.358)
Years in Canada (YC)	0.02 (0.035)	0.021 (0.034)	0.02 (0.036)	0.021 (0.035)
YC ²	-0.0002 (0.008)	-0.0002 (0.0008)	-0.0002 (0.0008)	-0.0002 (0.0008)
<i>II. Sex and Age</i>				
Male	0.353*** (0.115)	0.354*** (0.116)	0.356*** (0.127)	0.356*** (0.128)
Age	0.088*** (0.023)	0.087*** (0.023)	0.088*** (0.024)	0.088*** (0.024)
Age ²	-0.0010*** (0.0003)	-0.0010*** (0.0003)	-0.0010*** (0.0003)	-0.0010*** (0.0003)
<i>III. Marital Status - compared to Married or Common-law</i>				
Widowed	-0.203 (0.513)	-0.208 (0.519)	-0.202 (0.511)	-0.206 (0.516)
Seperated or divorced	0.702*** (0.107)	0.697*** (0.117)	0.701*** (0.107)	0.698*** (0.123)
Single, Never Married	0.701*** (0.148)	0.697*** (0.145)	0.699*** (0.148)	0.697*** (0.145)
<i>IV. Educational Attainment - Compared to College Certificate</i>				
Up to Grade 8	0.216 (0.371)	0.212 (0.360)	0.213 (0.377)	0.211 (0.366)
Grade 8-13, no diploma	0.660*** (0.230)	0.657*** (0.227)	0.657*** (0.238)	0.656*** (0.234)
Obtained High school diploma	0.378**	0.377**	0.376**	0.376**

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Table A6 – continued from previous page

	(0.169)	(0.168)	(0.169)	(0.169)
Some Post-secondary, no certificate	0.402	0.401	0.4	0.4
	(0.275)	(0.273)	(0.273)	(0.274)
Completed trade certificate	0.343	0.341	0.342	0.341
	(0.292)	(0.289)	(0.293)	(0.290)
Completed University Certificate < Bachelor's	-0.341	-0.34	-0.341	-0.34
	(0.310)	(0.311)	(0.311)	(0.311)
Bachelor's degree	-0.19	-0.188	-0.188	-0.187
	(0.207)	(0.208)	(0.210)	(0.210)
Completed Degree or Certificate > Bachelor's	-0.701*	-0.698*	-0.697*	-0.696*
	(0.404)	(0.405)	(0.397)	(0.399)
<i>V. Work Status in Previous Week - Compared to Didn't Work</i>				
Worked	-0.081	-0.077	-0.076	-0.075
	(0.107)	(0.112)	(0.109)	(0.111)
Permanently unable to work	0.24	0.235	0.237	0.235
	(0.194)	(0.196)	(0.192)	(0.195)
<i>VI. Province of Residence - Compared to Ontario</i>				
Newfoundland	-0.168	0.126	0.128	0.126
	(0.225)	(1.576)	(1.569)	(1.572)
P.E.I.	-0.359	-0.217	-0.216	-0.217
	(0.285)	(0.851)	(0.848)	(0.849)
Nova Scotia	-0.097	-0.027	-0.026	-0.027
	(0.219)	(0.468)	(0.467)	(0.467)
New Brunswick	-0.051	0.015	0.016	0.015
	(0.204)	(0.459)	(0.454)	(0.456)
Quebec	-0.005	0.03	0.031	0.029
	(0.092)	(0.214)	(0.210)	(0.213)
Manitoba	0.268**	0.208	0.209	0.208
	(0.109)	(0.323)	(0.323)	(0.322)
Saskatchewan	0.005	-0.06	-0.059	-0.06
	(0.111)	(0.345)	(0.345)	(0.344)
Alberta	0.104	0.042	0.043	0.043
	(0.156)	(0.321)	(0.320)	(0.319)
British Columbia	0.095	0.122	0.122	0.122
<i>VII. Survey Year - Compared to 2002</i>				
2005	-0.563**	-0.555**	-0.556**	-0.555**
	(0.242)	(0.240)	(0.241)	(0.241)
2007	-0.434***	-0.466**	-0.466**	-0.466**
	(0.120)	(0.211)	(0.210)	(0.210)
2008	-0.232	-0.262	-0.261	-0.261
	(0.203)	(0.221)	(0.220)	(0.219)
2009	-0.244	-0.216	-0.218	-0.216
	(0.233)	(0.275)	(0.275)	(0.276)

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Table A6 – continued from previous page

2010	-0.935*** (0.288)	-0.902*** (0.333)	-0.903*** (0.330)	-0.902*** (0.333)
2013	-0.413* (0.235)	-0.445* (0.269)	-0.446* (0.266)	-0.445* (0.269)
2014	-0.598** (0.233)	-0.635** (0.308)	-0.636** (0.305)	-0.635** (0.308)
Unemp. Rate		-0.032 (0.166)	-0.032 (0.166)	-0.032 (0.166)
Log (real household income)		-0.009 (0.057)		-0.007 (0.072)
Log (real personal income)			-0.008 (0.065)	-0.004 (0.079)
Constant	-6.292*** (0.463)	-5.956*** (1.408)	-6.002*** (1.489)	-5.954*** (1.449)
N	80422	80422	80422	80422

Note: All models use the survey weights. Standard errors are reported in parentheses and are computed clustering on province of residence. Prevalence of problem gambling is based on a gambling severity core of five or above.