

Gambling and Problem Gambling in Canada in 2018: Prevalence and Changes Since 2002

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Le Jeu et le Jeu Problématique au Canada en 2018 : Prévalence et Changements Depuis 2002

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Abstract

Objective: The purpose of this study was to provide an updated profile of gambling and problem gambling in Canada and to examine how the rates and pattern of participation compare to 2002.

Method: An assessment of gambling and problem gambling was included in the 2018 Canadian Community Health Survey and administered to 24,982 individuals aged 15 and older. The present analyses selected for adults (18+).

Results: A total of 66.2% of people reported engaging in some type of gambling in 2018, primarily lottery and/or raffle tickets, the only type in which the majority of Canadians participate. There are some significant interprovincial differences, with perhaps the most important one being the higher rate of electronic gambling machine (EGM) participation in Manitoba and Saskatchewan. The overall pattern of gambling in 2018 is very similar to 2002, although participation is generally much lower in 2018, particularly for EGMs and bingo. Only 0.6% of the population were identified as problem gamblers in 2018, with an additional 2.7% being at-risk gamblers. There is no significant interprovincial variation in problem gambling rates. The interprovincial pattern of problem gambling in 2018 is also very similar to what was found in 2002 with the main difference being a 45% decrease in the overall prevalence of problem gambling.

Conclusions: Gambling and problem gambling have both decreased in Canada from 2002 to 2018 although the provincial patterns are quite similar between the 2 time periods. Several mechanisms have likely collectively contributed to these declines. Decreases have also been reported in several other Western countries in recent years and have occurred despite the expansion of legal gambling opportunities, suggesting a degree of inoculation or adaptation in large parts of the population.

Abrégé

Objectif : La présente étude a pour but d'offrir un profil à jour du jeu et du jeu problématique au Canada, et d'examiner comment les taux et le modèle de participation se comparent à ceux de 2002.

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Méthode : Une évaluation du jeu et du jeu problématique était comprise dans l'Enquête sur la santé dans les collectivités canadiennes de 2018 et a été administrée à 24 982 personnes de 15 ans et plus. Les présentes analyses sont choisies pour des adultes (18+).

Résultats : Un total de 66,2% des personnes déclarait s'adonner à un type de jeu en 2018, principalement la loterie et/ou des billets de tirage, le seul type auquel la majorité des Canadiens participe. Il y a certaines différences interprovinciales significatives, sans doute la plus importante étant le taux plus élevé de participation aux machines électroniques de jeu (MEJ) au Manitoba et en Saskatchewan. Le modèle général de jeu en 2018 est très semblable à celui de 2002, bien que la participation soit généralement beaucoup plus faible en 2018, particulièrement pour les MEJ et le bingo. Seulement 0,6% de la population était identifié comme joueurs problématiques en 2018, et 2,7% de plus étaient des joueurs à risque. Il n'y a pas de variation interprovinciale significative des taux de jeu problématique. Le modèle interprovincial de jeu problématique en 2018 est aussi très semblable à ce que nous avons constaté en 2002, la principale différence étant une diminution de 45% de la prévalence générale du jeu problématique.

Conclusions : Le jeu et le jeu problématique ont tous deux diminué au Canada de 2002 à 2018, bien que les modèles provinciaux soient très semblables entre les deux périodes de temps. Plusieurs mécanismes ont probablement contribué collectivement à ces réductions. Plusieurs pays occidentaux ont aussi rapporté des diminutions ces dernières années, qui se sont produites malgré l'expansion des possibilités de jeu légal, ce qui suggère un degré d'inoculation ou d'adaptation de la population.

Keywords

gambling, problem gambling, prevalence, Canada

Introduction

Population prevalence studies of gambling serve several purposes. They establish the current prevalence of gambling, the prevalence of each type of gambling, and the prevalence of problem gambling. This information, in turn, is very useful in understanding the overall recreational value of gambling to society, the negative social impacts of providing legalized gambling, the number of problem gamblers that would benefit from treatment, and the types of gambling most strongly associated with problem gambling.^{a,1,2}

Changes in the prevalence of problem gambling from one time period to the next, and/or differences between the prevalence rates in one jurisdiction relative to another provide important information about the incidence of problem gambling and the potential effectiveness of different policies intended to mitigate gambling's harm.^{1,2}

There have only ever been 2 published national prevalence studies of gambling and problem gambling in Canada, the first in 2000³ and the second in 2002 by Statistics Canada as part of the annual Canadian Community Health Survey (CCHS 1.2).⁴ There has been significant expansion of legal gambling availability in Canada since 2002 as well as the emergence of new forms of gambling (e.g., Esports betting, fantasy sport betting), new forms of payment (e.g., skins, cryptocurrency), and a new modality of access (online). Current rates of overall gambling, specific types of gambling, and problem gambling are unknown, as is whether there continues to be significant interprovincial differences in these rates.⁵ Problem gambling may have either increased since 2002 due to increased availability or decreased due to "adaptation" by consumers and gambling providers'.^{6,7}

Although several provincial prevalence studies of gambling have been conducted since 2002,^{8,9} the rates are not comparable due to different methodologies and time periods. The reliability and validity of these estimates is also questionable due to (a) very poor response rates (<20% in recent surveys), which increases the likelihood of a non-representative sample^{10,11}; (b) insufficient population coverage (not including cell phones and/or administration in only one language); (c) overly inclusive thresholds for asking questions about problem gambling (i.e., any past year gambling), which increases the risk of false positives^{2,12}; (d) small sample sizes; and (e) description of the survey to prospective participants as a "gambling survey," which inflates prevalence estimates due to overrecruitment of regular gamblers and underrecruitment of occasional gamblers and nongamblers.^{2,12}

In contrast, surveys administered by Statistics Canada have (a) response rates of >50%; (b) sample sizes of >20,000; (c) comprehensive and representative population coverage by virtue of administration in multiple modalities (phone + in-person) and in multiple languages; (d) gambling questions embedded within a broad-based survey of health (i.e., the CCHS), which is described to participants as a survey on "well-being and health practices"; (e) more stringent and appropriate filtering to determine who receives questions about problem gambling; and (f) the same methodology for every province, allowing for valid interprovincial comparisons.

In cooperation with Statistics Canada, an assessment of gambling behavior and problem gambling was developed and included in the 2018 administration of the annual

CCHS. This set of questions is known as the “Gambling Module.” The purpose of the present article is to identify and discuss:

- The 2018 prevalence of gambling, individual types of gambling, and online gambling in Canadian adults (18+) as a function of province.
- The frequency and range of gambling involvement for Canadian adults (18+).
- The 2018 gambling categorizations of adults (18+; nongambler, nonproblem gambler, at-risk gambler, problem gambler) as a function of province.
- The change in the prevalence and pattern of Canadian gambling participation and gambler categorizations since 2002.

Method

Sample

The CCHS annually collects information from a target population of 65,000 Canadians aged 12+ who reside in one of Canada’s 10 provinces and 3 territories. The sample excludes people living on reserves and other Aboriginal settlements, full-time members of the Canadian Forces, youth aged 12 to 17 living in foster homes, the institutionalized population, and people living in the Quebec health regions of Nunavik and Terres-Cries-de-la-Baie-James. Altogether, these exclusions represent less than 3% of the target population.¹³

The adult (18+) sample is roughly proportionate to provincial and territorial population size while also ensuring reliable estimates for provincial health regions. Each province is divided into geographic areas consisting of 100 to 600 dwellings (“clusters”). Households are sampled within each cluster, and an individual is randomly selected from each household, with ages 18 to 35 and 65+ being given a higher probability for selection.¹³

Introductory letters explaining the purpose of the survey were first sent to selected households. CCHS interviews were subsequently conducted between January and December 2018 by computer-assisted telephone interviewing (75%) and computer-assisted face-to-face interviews (25%). The interview was available in both English and French with interpretative services available for several other languages.¹³ However, the CCHS containing the Gambling Module was only fielded for a 6-month period (July to December 2018) and only in the provinces (no territories). A total of 45,636 households were eligible. Of these, 30,995 households agreed to participate, and CCHS surveys were ultimately obtained from 26,648 individuals (58.4% overall response rate). Because the Gambling Module was restricted to ages 15 and older and did not permit proxy respondents, a smaller number of individuals were actually eligible (25,639), with 24,982 CCHS Gambling Module surveys ultimately obtained, with 23,952 of these being from adults (18+).¹⁴

Survey

The CCHS is a survey of health determinants, health status, and health care use. Some sections are administered to all participants (27 minutes), some sections are only administered to provinces and territories selecting these additional topics (8 minutes), and some sections, such as the Gambling Module, are designed and paid for by external organizations and administered to the provinces for either 3 or 6 months (2 minutes per module). The total length of the average CCHS survey is 40 to 45 minutes.¹³

Gambling module. The first part of the Gambling Module was an assessment of past year frequency of engagement in 8 different types of gambling using an abbreviated and modified version of the Gambling Participation Instrument.¹⁵ Respondents were asked about their frequency of in-person or online engagement in each of the following: *instant lottery tickets* (scratch tickets, break-open or pull-tabs, instant online games), *lottery or raffle tickets*, *electronic gambling machines* (EGMs; slot machines, video lottery terminals, electronic blackjack, electronic roulette, video poker), *casino table games* (excluding electronic versions; e.g., poker, blackjack, baccarat, roulette), *sports betting* (including horse race betting, sports lottery tickets, fantasy sports, bets between friends), *bingo*, *other forms of gambling*, and *speculative financial market activities* (e.g., day trading, penny stocks, shorting, options, currency futures). Response options were: never, less than once a month, once a month, 2 to 3 times a month, once a week, and several times a week. Individuals who gambled at least once a month on one or more types of gambling were asked whether their engagement was in person, online, or both. Time constraints precluded asking questions about gambling expenditure and time spent in gambling.

Respondents who gambled once a month or more on one or more types of gambling^b were asked the 9 questions from the Problem Gambling Severity Index (PGSI), which produces a composite score ranging from 0 to 27.³ These composite scores were used to group individuals into one of 3 categories using the PGSI scoring recommendations of Williams & Volberg,¹⁶ as these provide the best demarcation of problem gambling in the general population: 0 = nonproblem gambling, 1 to 4 = at-risk gambling, 5+ = problem gambling.^c (Note that Statistics Canada data suppression rules prohibit the reporting of both PGSI 5+ and PGSI 8+ values as it would allow subtraction of the PGSI 8+ rates from the PGSI 5+ rates to identify a group of 5 or fewer people scoring in the PGSI 6 to 7 range in some provinces).

Data Editing

Statistics Canada undertakes data editing prior to data release. This includes replacing inconsistent values with “not stated” and imputing missing household income using the

values of the nearest neighbors. Master survey weights are also created to adjust for age group \times gender \times health region differences from the population census. Bootstrapping was undertaken in the present study to produce 95% confidence intervals for the prevalence estimates in the 2018 data.

Results

2018 Gambling Participation

Table 1 presents the provincial past year prevalence of engagement in eight different types of gambling among adults (18+) in 2018. Altogether, 66.2% of the Canadian adult population reported engaging in 1 or more types of gambling in 2018. As seen, lottery and raffle tickets are the only type of gambling in which the majority of the Canada population participate. Significant interprovincial differences (nonoverlap of 95% confidence intervals) were found for the following:

- Lottery or raffles: NL, PE, NS, NB, QC, SK, AB higher than ON and BC
- Instant lottery tickets: NL, NB, QC, SK higher than PE
- EGMs: SK, MB higher than all other provinces
- Sports betting: AB higher than NL, NB, QC, ON
- Casino table games: AB, BC higher than NL, PE, NS, NB, MB
- Bingo: NL higher than QC, ON, AB, BC
- Other types: NS higher than QC, ON, MB, SK, AB, BC
- Speculative financial: AB higher than NL, NS, NB, QC, MB
- Any gambling: NL higher than NS, ON, MB, AB, BC

2018 Gambling Participation Compared to 2002

Comparisons to 2002 are difficult because gambling participation was assessed with 13 (rather than 8) questions due to multiple questions being asked about the same type of gambling (e.g., sports betting between individuals, sports betting with a bookie, sports lotteries). Another issue is that different types of gambling were sometimes combined in the same question in 2002 (i.e., participation in arcade *or* Internet gambling; participation in instant/scratch tickets *or* daily lottery tickets). To facilitate comparisons between the 2 time periods some of the 2002 categories were combined to match the 2018 categories. These results are presented in Table 2. Some of the question matches between 2002 and 2018 are better than others, with the best matches being with lottery/raffle tickets, EGMs, casino table games, and bingo.

With these caveats in mind, there appear to be two main findings. The first is that the relative popularity of the different types of gambling in 2018 in Canada is very similar to 2002, with $r = 0.98$ between the Canadian prevalence rates for individual types of gambling between the two time

periods ($P < 0.001$, 2-tail; i.e., 53.6% lottery/raffle prevalence in 2018 compared to 67.1% in 2002; 34.1% instant lottery prevalence in 2018 compared to 37.6% in 2002, etc.). This pattern also extends to most of the provincial rates for individual types of gambling in 2018 versus 2002 (all 2-tail tests): EGMs ($r = 0.82$, $P = 0.003$), sports betting ($r = 0.83$, $P = 0.003$), casino table games ($r = 0.83$, $P = 0.003$), bingo ($r = 0.89$, $P = 0.001$), speculative financial ($r = 0.91$, $P < 0.001$), lottery/raffle ($r = 0.28$, $P = 0.43$), instant lottery ($r = -0.18$, $P = 0.61$), other types ($r = 0.27$, $P = 0.45$), any past year gambling ($r = 0.35$, $P = 0.32$).

The second main finding is that overall participation rates have decreased. This is particularly true for EGMs and bingo but is true for almost all types of gambling. Casino table games (which includes poker), is the one exception to this trend.

2018 Frequency of Gambling Participation

Table 3 documents the reported past year frequency for each type of gambling in 2018. As seen, most people are occasional gamblers although there is a subgroup of people who purchase lottery tickets on a regular basis. The majority of gamblers engage in more than one type of gambling with 1.91 (1.04 *SD*) being the average.

2018 Modality of Gambling Participation (In-Person versus Online)

Table 1 also illustrates that 6.4% of adult Canadians reported gambling online in 2018, which is a marked increase from the 1.0% who engaged in 'arcade or Internet gambling' in 2002 (Table 2). A total of 47.0% of all online gamblers indicated they *only* gambled online in the past year, whereas 53.0% indicated gambling both online and in-person.

2018 Gambling Categorizations

Table 4 presents gambling categorizations in 2018 as a function of province. Prevalence rates for at-risk and problem gambling in the Atlantic Provinces were combined due to small sample suppression rules. Significant inter-provincial differences were found for the following:

- Nongamblers: BC higher than NL, PE, NS, NB, QC, SK, and AB
- Nonproblem gamblers: NL higher than ON, MB, AB, and BC
- At-risk Gamblers: MB higher than QC
- Problem gamblers: No significant provincial differences

2018 Gambling Categorizations Compared to 2002

Comparison to 2002 prevalence rates (Table 5) is more direct and valid than comparisons of gambling participation

Table 1. Prevalence of Past Year Gambling among Adults (18+) in 2018 by Province (Weighted).

	Lottery or Raffle Tickets	Instant Lottery Tickets	Electronic Gambling Machines	Sports Betting	Casino Table Games	Bingo	Other Types	Speculative Financial	Any Past Year Gambling	Online Gambling
NL	% 64.8% (59.8 to 69.8)	42.3% (37.2 to 47.5)	8.8% (5.9 to 11.7)	5.6% (3.3 to 7.8)	3.8% (2.1 to 5.5)	11.3% (7.9 to 14.7)	2.7% (1.1 to 4.3)	2.4% (1.3 to 3.5)	76.1% (71.5 to 80.6)	7.9% (5.4 to 10.4)
PE	% 58.2% (53.3 to 63.2)	26.5% (21.9 to 31.0)	9.3% (6.1 to 12.6)	10.4% (7.0 to 13.9)	4.5% (2.2 to 6.9)	7.5% (4.8 to 10.1)	3.0% (1.3 to 4.7)	2.7% (0.9 to 4.4)	69.6% (64.7 to 74.6)	5.0% (2.7 to 7.3)
NS	% 57.3% (53.6 to 61.0)	34.3% (30.2 to 38.4)	9.7% (7.3 to 12.1)	8.3% (6.3 to 10.4)	4.7% (3.1 to 6.3)	6.5% (4.9 to 8.1)	5.9% (1.3 to 4.7)	2.3% (1.1 to 3.5)	68.1% (64.8 to 71.3)	6.6% (4.9 to 8.4)
NB	% 62.7% (57.3 to 68.1)	39.1% (34.5 to 43.6)	11.9% (9.0 to 14.8)	6.2% (3.8 to 8.6)	4.4% (2.5 to 6.3)	8.2% (6.0 to 10.4)	5.2% (3.0 to 7.4)	2.5% (1.1 to 3.5)	74.1% (68.8 to 79.4)	6.3% (3.6 to 9.0)
QC	% 58.7% (56.7 to 60.7)	38.1% (36.1 to 40.2)	10.8% (9.4 to 12.2)	5.6% (4.6 to 6.5)	7.4% (6.2 to 8.6)	4.7% (3.8 to 5.5)	2.0% (1.4 to 3.0)	2.9% (2.1 to 3.7)	74.1% (68.6 to 72.7)	6.3% (5.5 to 7.6)
ON	% 50.3% (48.1 to 52.5)	32.3% (30.1 to 34.5)	12.2% (10.8 to 13.7)	7.6% (6.5 to 8.8)	7.2% (5.9 to 8.6)	3.5% (2.7 to 4.2)	2.5% (1.7 to 3.4)	3.6% (2.7 to 4.5)	63.9% (61.6 to 66.1)	5.4% (4.4 to 6.4)
MB	% 52.6% (48.8 to 56.4)	33.4% (29.8 to 37.1)	22.9% (18.8 to 27.1)	10.0% (7.5 to 12.5)	5.2% (3.4 to 7.1)	6.9% (5.1 to 8.7)	2.3% (0.9 to 3.7)	2.9% (1.6 to 4.3)	65.1% (61.6 to 66.1)	4.5% (2.5 to 6.5)
SK	% 52.6% (48.8 to 56.4)	33.4% (29.8 to 37.1)	22.9% (18.8 to 27.1)	10.0% (7.5 to 12.5)	5.2% (3.4 to 7.1)	6.9% (5.1 to 8.7)	2.3% (0.9 to 3.7)	2.9% (1.6 to 4.3)	73.3% (69.6 to 77.0)	5.9% (3.7 to 8.1)
AB	% 56.0% (53.4 to 58.7)	30.5% (28.1 to 32.9)	15.4% (13.4 to 17.4)	11.7% (9.9 to 13.5)	9.8% (8.1 to 11.5)	2.6% (1.9 to 3.4)	2.2% (1.4 to 3.1)	5.8% (4.4 to 7.2)	66.9% (64.5 to 69.4)	8.3% (6.7 to 10.0)
BC	% 47.5% (44.7 to 50.4)	33.5% (31.2 to 35.8)	13.4% (11.6 to 15.3)	8.4% (6.7 to 10.1)	10.0% (8.3 to 11.7)	2.3% (1.5 to 3.0)	3.1% (2.1 to 4.0)	3.9% (2.8 to 5.0)	60.5% (57.7 to 63.4)	8.1% (6.6 to 9.6)
Canada	% 53.6% (52.5 to 54.7)	34.1% (33.0 to 35.2)	13.0% (12.3 to 13.8)	7.9% (7.3 to 8.5)	7.7% (7.0 to 8.4)	4.0% (3.6 to 4.4)	2.6% (2.2 to 3.0)	3.6% (3.2 to 4.1)	66.2% (65.1 to 67.3)	6.4% (5.9 to 7.0)

Note. Statistics Canada does not permit the reporting of both weighted data (as presented) and unweighted counts. NL = Newfoundland and Labrador; PE = Prince Edward Island; NS = Nova Scotia; NB = New Brunswick; QC = Quebec; ON = Ontario; MB = Manitoba; SK = Saskatchewan; AB = Alberta; BC = British Columbia.

Table 2. Prevalence of Past Year Gambling among Adults (18+) in 2002 by Province (Weighted).

	Lottery or Raffle Tickets (%)	Instant or Daily Lottery (%)	Electronic Gambling Machines (%)	Sports Betting (%)	Casino Table Games (%)	Bingo (%)	Other Types (%)	Speculative Investment (%)	Any Past Year Gambling (%)	Internet or Arcade Gambling (%)
NL	66.2	37.2	15.4	9.7	2.3	13.6	16.9	3.0	76.9	1.0
PE	62.9	43.5	12.3	17.1	4.0	10.3	15.4	2.9	75.9	.6
NS	68.5	41.9	24.6	12.2	4.0	11.4	15.9	4.2	79.4	0.6
NB	67.5	41.6	17.1	10.7	4.0	13.8	16.1	3.5	78.1	1.0
QC	72.8	32.7	20.8	8.5	5.1	9.1	10.4	4.0	80.8	2.1
ON	65.4	39.1	26.0	14.9	7.2	8.3	13.9	6.1	76.4	0.6
MB	64.8	30.7	37.3	15.2	7.2	11.6	17.2	4.1	75.9	0.7
SK	65.7	36.9	30.7	15.7	7.2	8.6	16.7	5.0	77.1	0.7
AB	62.8	32.8	22.8	14.0	7.6	8.1	15.3	7.7	73.0	0.8
BC	65.0	45.7	21.4	13.9	7.9	5.8	15.4	6.1	76.0	0.7
Canada	67.1	37.6	23.9	12.9	6.5	8.6	13.8	5.5	77.2	1.0

Note. Bold headings denote questions having the most similarity to how the question was asked in 2018. NL = Newfoundland and Labrador; PE = Prince Edward Island; NS = Nova Scotia; NB = New Brunswick; QC = Quebec; ON = Ontario; MB = Manitoba; SK = Saskatchewan; AB = Alberta; BC = British Columbia.

Table 3. Frequency of Past Year Gambling Involvement for Individual Types of Gambling among Canadian Adults (18+) in 2018 (Weighted).

	Lottery or Raffle Tickets (%)	Instant Lottery Tickets (%)	Electronic Gambling Machines (%)	Casino Table Games (%)	Sports Betting (%)	Bingo (%)	Other Types (%)	Speculative Financial (%)
Never	46.4	65.9	87.0	92.3	92.1	96.0	97.4	96.4
Less than once a month	25.3	20.4	10.1	6.5	6.0	2.7	1.8	2.0
Once a month	7.7	5.3	1.4	0.7	0.7	0.3	0.3	0.5
2 to 3 times a month	6.4	3.4	0.9	0.2	0.4	0.3	0.1	0.3
Once a week	11.8	3.9	0.4	0.1	0.5	0.6	0.3	0.2
Several times a week	2.5	1.0	0.1	0.1	0.3	0.1	0.1	0.5

as the same set of PGSI questions was utilized in both surveys, but some methodological differences exist. In 2002, the CCHS response rate was 77%; 86% of surveys were administered face-to-face; and the threshold for administering the problem gambling questions was “gambling more than 5 times on some type of gambling in the past 12 months.”

Taking these caveats into account, comparisons between 2018 and 2002 show that both problem gambling and at-risk gambling have decreased since 2002, coincident with the overall decrease in gambling participation. As was found with gambling participation, there is also considerable similarity in the rates of provincial problem gambling between the 2 time periods, with $r = 0.58$ ($P = 0.088$, 1-tail) between provincial problem gambling rates in 2002 and 2018 and $r = 0.93$ ($P < 0.001$, 1-tail) between the combined problem plus at-risk rates between the 2 time periods.

Discussion

The purpose of this article is to provide an updated profile of gambling and problem gambling in 2018 in Canada and to examine how this profile compares to 2002, the last time

gambling and problem gambling had been comprehensively assessed on a national basis.

The majority of Canadian adults reported engaging in gambling in 2018. However, this is largely due to the purchase of lottery and/or raffle tickets, which is the only type of gambling most Canadian adults participate in. Past year involvement in all other types is much less common, including participation in continuous forms of gambling (i.e., EGMs, casino table games), which have the highest risk profile.^{20,21,22,23} Intensity of gambling involvement among gamblers is low, with the large majority only gambling occasionally and engaging in just 1 or 2 different types. The above described pattern is very similar across provinces. However, there is some significant interprovincial variation, with perhaps the most important one being the higher rate of EGM participation in Manitoba and Saskatchewan. The relative popularity of the different types of gambling in Canada in 2018 is very similar to 2002 with the main difference being decreased gambling participation in 2018. This is particularly true for EGMs (46% decrease) and bingo (53% decrease) but is true for almost all types of gambling except casino table games, likely due to the increased popularity of poker. Online gambling participation has also increased, but

Table 4. Gambling Categorizations among Adults (18+) in 2018 by Province (Weighted).

		Nongamblers	Nonproblem Gamblers (PGSI = 0)	At-risk Gamblers (PGSI = 1 to 4)	Problem Gamblers (PGSI = 5+)
NL	N	99,223	302,060		
	%	23.9	72.9		
	95% CI	(19.4 to 28.5)	(68.1 to 77.7)		
PE	N	35,271	78,508		
	%	30.4	67.6		
	95% CI	(25.4 to 35.3)	(62.6 to 72.5)	50,166	10,239
NS	N	236,541	481,369		
	%	31.9	65.0	(1.9 to 3.5)	(0.2 to 0.9)
	95% CI	(28.7 to 35.2)	(61.6 to 68.4)		
NB	N	151,293	410,903		
	%	25.9	70.3		
	95% CI	(20.6 to 31.2)	(65.2 to 75.5)		
QC	N	1,931,176	4,476,902	146,373	45,317
	%	29.3	67.8	2.2	0.7
	95% CI	(27.3 to 31.2)	(65.8 to 69.9)	(1.7 to 2.7)	(0.3 to 1.0)
ON	N	3,996,802	6,751,076	283,237	34,649
	%	36.1	61.0	2.6	0.3
	95% CI	(33.9 to 38.4)	(58.8 to 63.2)	(1.8 to 3.3)	(.04 to 0.6)
MB	N	331,007	560,051	45,827	11,055
	%	34.9	59.1	4.8	1.2
	95% CI	(31.0 to 38.8)	(54.9 to 63.3)	(3.0 to 6.6)	(0.02 to 2.3)
SK	N	221,985	563,544	38,245	7,060
	%	26.7	67.8	4.6	0.8
	95% CI	(23.0 to 30.4)	(64.0 to 71.6)	(2.7 to 6.5)	(0.1 to 1.6)
AB	N	1,076,810	2,061,860	80,782	35,629
	%	33.1	63.3	2.5	1.1
	95% CI	(30.6 to 35.5)	(60.9 to 65.8)	(1.7 to 3.2)	(0.4 to 1.8)
BC	N	1,460,668	2,099,490	128,654	12,427
	%	39.5	56.7	3.5	0.3
	95% CI	(36.6 to 42.3)	(53.8 to 59.6)	(2.4 to 4.6)	(0.1 to 0.6)
Canada	N	9,540,776	17,785,763	773,285	156,376
	%	33.8	62.9	2.7	0.6
	95% CI	(32.7 to 34.9)	(61.8 to 64.1)	(2.4 to 3.1)	(0.4 to 0.7)

Note. NL = Newfoundland and Labrador; PE = Prince Edward Island; NS = Nova Scotia; NB = New Brunswick; QC = Quebec; ON = Ontario; MB = Manitoba; SK = Saskatchewan; AB = Alberta; BC = British Columbia.

it is still uncommon relative to in-person participation. The overall decrease in gambling participation is something that has occurred in most western countries since the early 2000s^{9,24,25} and is thought to be due to the novelty having worn off and more people becoming aware of the potential harms.

With the vast majority of the population reporting limited gambling involvement, it is not surprising that the population prevalence of problem gambling is also low. A total of 0.6% of the Canadian adult population is estimated to be problem gamblers in 2018 (roughly 156,000 people) with an additional 2.7% being at-risk gamblers. There are no significant differences in provincial problem gambling rates. [The demographic and game play predictors of problem

gambling are reported in other research.²⁶] The most important difference between 2002 and 2018 is the decreased rates of problem and at-risk gambling, with problem gambling being 45% lower. The decrease in problem gambling in Canada also follows a worldwide trend beginning in the early 2000s.^{9,24} There are several factors thought to be at work: (a) decreased overall population participation in gambling; (b) increased population awareness of the potential harms of gambling (creating less susceptibility); (c) people being removed from the population pool of problem gamblers due to severe adverse consequences deriving from their gambling; (d) increased industry and/or government efforts to provide gambling more safely, to enact programs to prevent problem gambling, and to provide treatment resources;

Table 5. Gambling Categorizations among Adults (18+) in 2002 by Province (Weighted).

	Nongamblers (%)	Nonproblem Gamblers (%; PGSI = 0)	At-risk Gamblers (%; PGSI = 1 to 4)	Problem Gamblers (%; PGSI = 5+)
NL	22.8	72.4	3.8	1.0
PE	23.7	72.7	2.9	0.7
NS	20.0	75.6	3.1	1.3
NB	21.6	74.5	2.8	1.1
QC	18.7	77.6	2.8	0.8
ON	23.0	72.1	3.9	0.9
MB	23.9	68.8	5.4	1.9
SK	22.5	70.3	5.3	1.9
AB	26.2	68.1	4.4	1.3
BC	23.7	70.9	4.1	1.3
Canada	22.3	72.9	3.8	1.1

Note. For the Atlantic region, the at-risk prevalence = 3.0% and the problem gambling prevalence = 1.1%. NL = Newfoundland and Labrador; PE = Prince Edward Island; NS = Nova Scotia; NB = New Brunswick; QC = Quebec; ON = Ontario; MB = Manitoba; SK = Saskatchewan; AB = Alberta; BC = British Columbia.

and (e) increasing age of the population (as older people have lower rates of problem gambling).^{9,25}

It is notable that the decrease in gambling and problem gambling in Canada have occurred despite an expansion of legal gambling opportunities since 2002. This includes the introduction of legal online gambling to all provinces except Alberta and Saskatchewan and almost a doubling of the number of casinos and racetracks with EGMs (“racinos”) from 78 to 147 (although EGMs per 1,000 people has not changed markedly: 3.2 in fiscal 2001/2002 to 3.4 in fiscal 2017/2018).^d Gambling expansion without any apparent additional increase in problems is something that has been reported in several other jurisdictions in recent years.²⁵ It would suggest that large parts of the population, including in Canada, have developed a degree of inoculation or adaptation.^{6,7,22,25,27} This is a positive development for Canadians as is the fact that the rate of problem gambling in 2018 is now among the lowest that has been reported worldwide.⁹

While clear progress and improvement have occurred, there are still areas of concern. Commercial gambling revenue per adult has not changed significantly from 2002 to 2018 (\$453 in fiscal 2001/2002 to \$503 in fiscal 2017/2018),^d which means that revenue *per gambler* has increased. Gambling revenue is known to be disproportionately derived from problem gamblers,^{28,29} making it possible that expenditure per problem gambler has increased further in 2018. Another issue is that problem gambling has been shown to be a very unstable in the major Canadian longitudinal studies,^{30,31} with a high rate of new cases each year offsetting a high rate of remission. Thus, the *lifetime* prevalence of problem gambling continues to increase steadily. Finally, although the past year prevalence of problem gambling may be low, many more people are harmed by gambling relative to the numbers who are designated as problem gamblers. This is due to many problem gamblers being married and/or having children as well as many additional people reporting significant

gambling-related harms without meeting the formal criteria for problem gambling.^{32,33}

Conclusions

Gambling and problem gambling have both decreased in Canada from 2002 to 2018, with the current level of problem gambling being among the lowest that has been reported worldwide. There is some degree of interprovincial variability although the pattern is very similar to what was found in 2002. Several different mechanisms have likely contributed to the decline in gambling and problem gambling. Similar declines have also been reported in several other Western countries in recent years and have occurred despite the expansion of legal gambling opportunities, suggesting a degree of inoculation or adaptation in large parts of the population. There are still areas of concern regarding the expenditure per problem gambler (which may be increasing); the increasing lifetime prevalence of problem gambling in the population; and the much higher prevalence of people who have been harmed by gambling but do not meet criteria for problem gambling.

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Notes

- a. Problem gambling is defined as “impaired control over gambling that results in significant harm for the gambler or people in his/her immediate social network.” It is a generic term intended to encompass “disordered gambling,” “compulsive gambling,” “addictive gambling,” and so on. All problem gamblers will have experienced harm from gambling but not everyone who experiences harm will meet criteria for problem gambling.
- b. Research shows that a mildly restrictive frequency threshold of gambling once a month or more on any type of gambling appears optimal in excluding some false positives while not excluding people with genuine gambling-related harm.^{2,12,17}
- c. The traditional 8+ PGSI demarcation of problem gambling has good correspondence to clinically assessed problem gamblers in treatment, but poor correspondence to clinically assessed problem gamblers in the general population.^{3,16,18} There are several reasons for this but one of the central ones is because the PGSI was normed on a small group of treatment-seeking problem gamblers who tend to have a more pervasive and severe set of problems compared to problem gamblers in the general population, most of whom have never sought treatment. Lowering the PGSI threshold to 5+ successfully captures most of these non-treatment seeking problem gamblers.¹⁶ Similarly, research has found very little empirical difference between people scoring the traditional Low Risk (PGSI 1-2) category relative to people scoring in the low end of the traditional Moderate Risk (PGSI 3-7) category.¹⁹ Significantly improved PGSI category distinctions are obtained when people scoring below 5 are collapsed into a single 1 to 4 category.¹⁹
- d. These data have been compiled from the annual reports produced by each province and territory for each time period and will be presented in the background section of the forthcoming Final Report for the AGRI National Project.

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