



Rapport de recherche

PROGRAMME ACTIONS CONCERTÉES

Mieux comprendre les inégalités et les comportements de jeu : Augmenter nos chances en tenant compte des lieux, des espaces et de l'expérience vécue

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PART A – RESEARCH CONTEXT

1. Background

Gambling disorder is a form of behavioural addiction characterized by persistent and recurrent problem gambling behaviour (e.g., preoccupation with gambling, loss of control, and “chasing” losses) leading to clinically significant impairment or distress (APA, 2013). Gambling-related problems have long been associated with substantial costs for individuals, their families, and society (Holdsworth & Tiyce, 2013; MacDonald et al., 2004; Shaffer & Korn, 2002; Williams et al., 2011). In 2018, 69.1% of Quebecers 15 years and older reported gambling in the past 12 months, and 1.9% of those who gambled were at moderate-to-severe risk of problem gambling (Rotermann & Gilmour, 2022).

Gambling continues to proliferate drastically, exacerbating an openly acknowledged public health concern (John et al., 2020; Korn & Shaffer, 1999; The Lancet Public Health, 2021). One critical yet often overlooked area of gambling research has been the widening social class gradient in gambling participation and problems (e.g., Barnes et al., 2013, Martins et al., 2013; Slutske et al., 2015). Empirical evidence suggests that the distribution of problem gambling is more concentrated in lower socioeconomic groups (Hahmann et al., 2021; Orford et al., 2010). Empirical evidence has demonstrated that lower income individuals consistently contribute a higher proportion of their income to gambling than middle- and high-income groups (Blalock et al., 2007; Korn, 2000; MacDonald et al., 2004; Williams et al., 2011). Indeed, low socioeconomic status (SES) has been found to be correlated with higher rates of problem gambling behaviour (Barnes et al., 2013; Casey, 2021; Martins et al., 2013; Welte et al., 2004). It is through these socioeconomically vulnerable groups that gambling generates its biggest portion of revenue and

where the burden (cost) of gambling-related problems is the highest (Gattis & Cunningham-Williams, 2011; MacDonald et al., 2004; Matheson et al., 2014; Shaffer & Korn, 2002; Sharman et al., 2016; Williams & Wood, 2007).

Rapid Expansion of Online Gambling

Online gambling has contributed to a rapid expansion in commercial gambling in recent years, affording gambling opportunities to a wide range of individuals who may have previously lacked direct access (Gainsbury, 2015; Hodgins et al., 2011; Philander & MacKay, 2014). Historically, when compared to offline gamblers, online gamblers were more likely to be male, younger, more educated, have higher incomes, engage in a greater number of gambling activities, and have higher problem gambling rates (Gainsbury et al., 2015; Griffiths et al., 2009; Kairouz et al., 2012; Papineau et al., 2018; Svensson & Romild, 2011; Wood & Williams, 2009). However, in recent years, online gambling profiles have begun to evolve as opportunities and accessibility continue to increase (Castren et al., 2018; Price, 2022). As opportunities for gambling have multiplied, concerns about the public health impacts associated with this behaviour have increased. One study found that replacing 10% of offline gambling with online gambling increased the risk of problem gambling by 8.8-12.6% (Effertz et al., 2018).

Concerns related to the rapid expansion of online gambling have been amplified since the onset of the COVID-19 pandemic in March 2020, as it drastically changed the gambling landscape and further accelerated the expansion of online gambling (Brodeur et al., 2021; Loto-Quebec, 2021). This is perhaps unsurprising, given the closing of all offline gambling opportunities for certain periods of time as part of the measures implemented by the government to combat COVID-19 (INSPQ, 2022; Loto-Quebec, 2021). Indeed, many people turned to online gambling

during these periods, with 15.6% of Quebecers having gambled online in the past year in 2021 (Kairouz et al., 2023), compared to just 5.2% in 2018 (Biron et al., 2018). Despite the increase in online gambling opportunities, research has yet to specifically explore how rapid expansion of online gambling forms, such as online electronic gambling machines (EGMs), may affect the relationship between gambling and SES.

Electronic Gambling Machines

Research on specific gambling activities has revealed that EGMs are the riskiest form of gambling (Dixon et al. 2019; Dowling et al., 2005; Haw, 2008; Murch & Clark, 2021; Schull, 2012). Multiple studies have demonstrated that provincial EGM density and participation in EGMs are by far two of the greatest predictors of problem gambling (CIUSSSCSIM, 2016; Williams et al., 2021). Studies of offline gambling have also shown that spatial distribution of EGMs is correlated with lower socioeconomic conditions (e.g., Gilliland & Ross, 2005; Papineau et al., 2020; Raisamo et al., 2019; Wardle et al., 2014). Hing et al. (2017) found that compared to non-problem online EGM gamblers, problem online EGM gamblers had significantly lower incomes. Yet, research on online EGM gambling remains limited with studies still focusing predominantly on offline EGM gambling. Given how quickly online gambling is evolving with increased connectivity, there is an urgent need to consider how these changes affect existing knowledge of inequality in gambling participation and problems, especially when it comes to riskier modes (i.e., online) and forms (i.e., EGMs) of gambling (Hing et al., 2017; Marionneau et al., 2023).

2. Objectives

This project has the following main objectives:

Objective 1 (*Phase 1*) – Explore economic inequality in online gambling and online EGM gambling practices and associated problems using a provincial-wide web panel/telephone survey. This objective will make it possible to integrate the reality of current online gambling practices into tangible recommendations for service providers and policy makers.

Objective 2 (*Phase 2*) – Cultivate a deeper understanding of the lived experience of offline and online EGM gamblers through qualitative interviews.

This objective will make it possible to:

- a) Contrast offline and online EGM experiences;
- b) Explore differences in the places and spaces where offline and online EGM gambling occur;
- c) Complement and extend the interpretation of quantitative findings, and;
- d) Integrate the lived experience of participants into tangible recommendations for service providers and policy makers.

PART B – METHODOLOGY

1. Brief description of the analysis, strategy or data analysis framework

This project was conducted in two phases: (1) analysis of quantitative data, and (2) individual qualitative interviews. *Phase 1* used a combination of a web panel survey and a telephone survey and the methods used are described in detail elsewhere (Kairouz et al., 2023).

Data collection for *Phase 1* was conducted between May 3rd and November 2nd, 2021, targeting Quebec residents who speak French or English and have gambled online either since the start of the COVID-19 pandemic (March 2020) or in the 12 months prior to the start of the COVID-19 pandemic. A total of 4684 participants completed the survey. For the purpose of this report, participants were included if they gambled online on any activity between March 2020 and when they completed the questionnaire (N = 4384; 1266 telephone survey participants and 3118 web panelists).

Data were weighted so as to be representative of the population on characteristics including age, sex, level of education, living alone, and census metropolitan area (for more information, see Kairouz et al., 2023). Chi-square analyses were used to examine sociodemographic characteristics, online gambling participation, and gambling problems by group (i.e., Online EGM group, Online non-EGM group). Chi-square analyses were also used to examine associations between gambling problems and household income as well as gambling problems and low income¹. Significant chi-square analyses were followed up with z-tests for

¹Low Income Measure (LIM) thresholds for 2021 in Québec from Statistique Québec (before taxes) were used to determine if households were low income ([Seuils du faible revenu selon la Mesure du faible revenu \(MFR\), selon la taille du ménage, Québec \(quebec.ca\)](#)). Participants were low income if their household income fell below the cutoff specified for their household size.

independent proportions. Welch's t-test was used to examine the number of gambling activities participated in by group.

To complement findings from *Phase 1*, a total of 41 individual semi-structured qualitative interviews were conducted to contrast offline and online EGM gambling experiences in *Phase 2*. The methods of *Phase 2* are described in more detail in Appendix 1. Interviews took place between April 2022 and February 2023 and lasted between 57 and 147 minutes ($\mu = 88$ minutes). Participants for *Phase 2* were recruited from the list of those who participated in *Phase 1* of the project and who agreed to be re-contacted. To participate in *Phase 2*, participants had to have experience gambling on both offline and online EGMs, and had to have gambled on EGMs at least once per month for a period of six months in the last three years. Additionally, to ensure a diverse sample, participants were selected based on the variables "gender," "census metropolitan areas (CMA)²," "household income," and "score on the Problem Gambling Severity Index (PGSI)."

Interviews were audio recorded, anonymized, and transcribed verbatim. Data was thematically coded using *NVivo*. Data analysis entailed an iterative process between data collection and data examination, where preliminary coding of interviews continually fed data collection (i.e., modifications to interview guide, probing questions). Qualitative analysis involved processes of data reduction and thematic content analysis as per Paillé and Mucchielli (2008), a method for systematically identifying, arranging, and offering insight into patterns of meaning (themes) within a dataset (Braun & Clarke, 2012).

²Census metropolitan areas (CMAs) were determined based on Statistics Canada definition of CMAs ([Census Metropolitan Area \(CMA\) and Census Agglomeration \(CA\)](#)). A CMA must have a total population of at least 100,000 people, with at least 50,000 living in the core (i.e., Montreal, Quebec City, Trois-Rivières, Gatineau, Sherbrooke, Saguenay).

2. Explanation of substantial changes to the original proposal

The project proposal was submitted December 2019, and funding was received February 2020, prior to the start of the COVID-19 pandemic. The start of the project was delayed to March 2021 as a result of a maternity leave taken by the principal investigator. Upon her return, significant changes were made to the project's objectives and methods as a result of the COVID-19 pandemic. These changes include combining quantitative data collection with the ENHJEU.com project (Kairouz et al., 2023) led by co-applicant, Sylvia Kairouz, and focusing on provincial instead of national data. After the onset of the COVID-19 pandemic there was a drastic increase in the cost of undertaking a web panel survey, making it no longer feasible to collect our own independent national dataset. By combining our data collection with the ENHJEU.com project, we gained access to a provincial-wide web panel and telephone survey of a larger sample (~4500 instead of the originally proposed 3000 participants) that was representative of the Quebec population. While data collection was combined, the two projects had different, yet complementary objectives. This project concentrated specifically on economic inequality while the ENHJEU.com project focused on COVID-19 pandemic related outcomes (Kairouz et al., 2023). All changes to the objectives and methods of the project were presented and discussed with the FRQSC as well as the concerted action partners at the project's annual *rencontre de suivi* (November 2021 and December 2022).

PART C – RESULTS

1. Phase 1: Quantitative Findings

1.1 Sociodemographic Characteristics of Online EGM & Non-EGM Gamblers

The sociodemographic characteristics of the sample of online gamblers are presented in Table 1 (Appendix 2). When comparing online EGM and non-EGM gamblers across sociodemographic characteristics (Appendix 2: Table 1), no gender differences were found. The online EGM group had a significantly higher proportion of 45-64-year-olds (40.7% vs. 34.1%), single (35.4% vs. 32.0%), and separated, divorced or widowed individuals (9.5% vs. 6.3%). The online non-EGM group had a significantly higher proportion of 18-24-year-olds (16.2% vs. 8.1%) and married or common-law individuals (61.7% vs. 55.0%). Among SES variables, the online EGM group had a higher proportion of individuals with a secondary level education or less (41.8% vs. 34.0%), whereas the online non-EGM group had a significantly higher education level with a higher proportion of individuals with a university level education (27.9% vs. 19.1%). The online EGM group had a significantly higher representation among the two lowest household income brackets, less than \$30,000 (15.6% vs. 11.6%) and \$30,000-\$59,999 (33.5% vs. 22.7%). On the other hand, the online non-EGM group had a significantly higher representation among the two highest household income brackets, \$75,000-\$99,999 (19.1% vs. 15.9%) and \$100,000 or more (34.3% vs. 23.0%). Furthermore, the online EGM group had a significantly higher proportion of individuals below the low-income threshold (33.5% vs. 23.5%), whereas the online non-EGM group had a higher proportion of individuals above the low-income threshold (76.5% vs. 66.5%).

1.2 Online Gambling Participation Among Online EGM & Non-EGM Gamblers

Among online gamblers in Quebec, 27.1% gambled online on EGMs in the past year, which was the most popular form of gambling after the lottery (Appendix 2: Table 2). Those who gambled online on EGMs participated in significantly more gambling activities ($\mu = 3.17$ activities; $SD = 1.61$) compared to online non-EGM gamblers ($\mu = 1.58$ activities; $SD = 0.85$). Lotteries were the most popular gambling activity among both groups, however, participation in lotteries was significantly greater among the online non-EGM group (78.5% vs. 73.6%). Differences were found among the type of lottery gambling, with the online non-EGM group participating significantly more in lottery tickets (72.1% vs. 68.4%), and the online EGM group participating significantly more in scratch tickets or instant lotteries (48.2% vs. 33.6%). The online EGM group participated significantly more in almost all other types of online gambling activities, including poker (18.4% vs. 9.8%), bingo (16.3% vs. 4.3%), e-sports (4.9% vs. 2.7%), other casino games (31.7% vs. 6.0%), and other types of gambling (1.7% vs. 0.5%). The online non-EGM group, though, participated significantly more in day trading (13.5% vs. 9.6%). There was no difference between groups in their participation in sports betting.

1.3 Level of Severity of Gambling Problems Among Online EGM & Non-EGM Gamblers

The proportion of individuals among the low risk (24.4% vs. 15.0%), moderate risk (18.8% vs. 7.9%), and problem gambling (16.3% vs. 4.4%) categories were significantly higher for the online EGM group compared to the online non-EGM group (Appendix 2: Table 3). More specifically, over half of the online EGM group was categorized at some level of risk (59.5%), and the number of online EGM gamblers found among the problem gambling category was over 3 times the number of online non-EGM gamblers. In turn, the online non-EGM group had a

significantly greater proportion of individuals among the non-problem category, with nearly three-quarters of the sample found within this group (72.7%), compared to less than half of the online EGM group (40.5%).

1.4 Level of Severity of Gambling Problems & Household Income Among Online EGM & Non-EGM Gamblers

When breaking down the level of severity of gambling problems by income level, most importantly, among those reporting a household income under \$30,000 for the online non-EGM group (Appendix 2: Figure 1 & Table 4), there was a significantly greater proportion of low risk (20.5% vs. 12.6%), moderate risk (13.2% vs. 5.4%) and problem gamblers (9.6% vs. 2.9%), compared to those reporting a household income of \$100,000 or more. There was also a significantly greater proportion of non-problem gamblers among those reporting a household income of \$100 000 or more (79.2%) among the online non-EGM group, compared to those reporting a household income under \$30 000 (56.7%). For the online EGM group (Appendix 2: Figure 1 & Table 5), most notably, among those reporting a household income under \$30,000 there was a significantly greater proportion of online EGM gamblers categorized in the problem gambling group (24.9%) compared to those reporting a household income of \$100,000 or more (10.6%). There was also a significantly greater proportion of online EGM gamblers categorized as non-problem gamblers among those reporting a household income of \$100,000 or more (48.0%) compared to those reporting a household income under \$30,000 (27.9%).

1.5 Level of Severity of Gambling Problems & Low-Income Among Online EGM & Non-EGM

Gamblers

Similarly, when looking at the level of severity of gambling problems and the low-income measure (LIM), for the online non-EGM group (Appendix 2: Figure 2 & Table 6) there was a significantly greater proportion of low-income online non-EGM gamblers among the low-risk (19.3% vs. 14.3%), moderate risk (15.3% vs. 5.8%), and problem gambling categories (8.3% vs. 3.3%), compared to those who were above the low-income threshold. There was also a significantly greater proportion of online non-EGM gamblers categorized in the non-problem group among those above the low-income threshold (76.7%), compared to those below the low-income threshold (57.1%). For the online EGM group (Appendix 2: Figure 2 & Table 7), there was a significantly greater proportion of online EGM gamblers categorized in the problem gambling group among those below the low-income threshold (22.6%) compared to those above the low-income threshold (13.4%). There was also a significantly greater proportion of online EGM gamblers categorized in the non-problem group among those above the low-income threshold (44.5%) compared to those below the low-income threshold (32.8%).

2. Phase 2: Qualitative Findings

An overview of sample characteristics can be found in Table 8 (Appendix 2). In-depth qualitative interviews covered a variety of topics on EGM gambling experiences both offline and online. In order to cultivate a deeper understanding of and contrast the lived experience of offline and online EGM gamblers, themes related to different environments (i.e., places and spaces, and their defining characteristics) where offline and online EGM gambling occur were explored. Two

themes emerged: atmosphere and machine. Example verbatims of these themes can be found in Appendix 3.

2.1 Theme 1: Atmosphere

The atmosphere was mentioned by several participants as being one of the main points of contrast between gambling on EGMs in offline and online environments. The combination of being surrounded by people, the lights, decorations, and sounds were mentioned as being factors that can make gambling on EGMs offline more attractive. This atmosphere in casinos specifically was described by some as making them feel like a “celebrity” and that it was a “privilege” to be there. In contrast, gambling on EGMs online was seen to have little to no atmosphere, as gamblers were often alone at home gambling on a mobile device, and thus the experience in itself was quite different. One participant even described it as being more “transactional.”

Some also mentioned differences in the sounds from surroundings when gambling on EGMs offline compared to online. Offline, the majority of participants described hearing other people around them (e.g., people winning jackpots, conversations), music in the venue, and hearing sounds from other machines, which were all aspects that were virtually absent in the online experience. The environment and the ambient sounds in gambling venues differed from the online experience, and were mentioned by some participants as something that helped to break social isolation and the feeling of being alone. On the other hand, though, a few participants spoke about disliking this aspect of the offline experience, feeling overstimulated in gambling venues with all the ambient noises and disliking hearing other people complaining and yelling at their machine. For a few, being in the comfort of their own home, alone, in a quiet

environment was something they found more enjoyable and thus they preferred to gamble online.

The visual surroundings when gambling on EGMs offline compared to online brought up different points of contrast, as did comparisons between the types of offline gambling venues. For example, in casinos, participants described venues as being beautifully decorated with captivating lights and themes, and the people in the venue being of high social class (e.g., nicely dressed), which made the experience of gambling on EGMs in a casino visually appealing and interesting. In contrast, when it came to gambling on EGMs in bars, some participants described the experience as being visually less appealing than in casinos, noting that these venues were dark and dingy, with machines often located in a secluded area, and the people were perceived as being more “addicted” to gambling. As for gambling on EGMs online, it was described as taking place alone in the decor of their own home and absent of any enticing visual surroundings. Therefore, casinos were highlighted as having the most interesting environment visually speaking, but for some, gambling on EGMs online was a more appealing option, for instance when access to casinos was limited.

2.1 Theme 2: Machines

Participants also noted differences between the machines themselves offline versus online. Specifically, they talked about the differences in the audiovisual effects of the machines. Divergent opinions on the graphic quality of the machines emerged with some reporting that the graphic quality offline or online was superior, while others noted that their preference was dependent on the machine itself. Many preferred the larger screen sizes on physical machines, mentioning that they found the screen too small on mobile devices, making it hard to see and

overall less dynamic and engaging. However, some participants spoke about projecting the online slot machines onto their big screen smart televisions, which can make the online experience more appealing and enjoyable, as then the screen size was much larger than offline.

As for the audio from the machines, some participants spoke about the EGMs offline being generally louder. This was appreciated by some and was highlighted as being something that can enhance the experience. In contrast, some participants disliked the loud sounds from the machines offline, even lowering the volume on their machine, saying that it can be irritating when combined with all the other ambient sounds in offline gambling venues. On the other hand, one of the participants who disliked the sounds of the machines offline spoke about enjoying the sounds of the machines online when there are no other ambient noises, and finding that it enhances the online EGM experience. Some even spoke about enjoying the ability to hear the sounds of the machine while completing other tasks in the home (e.g., making coffee, food, doing laundry), and thus knowing if they are winning or losing just from the sounds without having to look at the screen. In contrast, some participants mentioned often gambling on mute when gambling on EGMs online, as they preferred relaxing and being in a quiet environment when gambling online.

Beyond the differences in the audiovisuals of the machines, the process of choosing a machine offline and online was perceived as being two distinct experiences. In gambling venues, participants spoke about the ability to walk around and see the different machines, the various audiovisual effects, features, wage amounts and even the ability to see others gambling on the machine to see how it works. This was an experience that many enjoyed about gambling on EGMs offline. However, one of the noted drawbacks was the possibility of someone else sitting at the

machine that they wanted to gamble on and therefore being limited to the machines that were not currently occupied. In contrast, online, participants had the ability to choose any machine available on the website and take as much time as they wanted to select their machine. The vast selection of machines available online was also noted by many, some of which enjoyed the large number of options while others found the wide variety overwhelming, making it difficult to choose. Some participants also described the experience of choosing a machine online as rather difficult, unpleasant and frustrating. For example, participants described staring at a web page with a list of machines, but no preview of the machine, and thus having to click on each of the different machines to see its audiovisual effects and features. Having to leave the original web page to explore the different machines was something that some participants disliked about the selection process online. On the other hand, one of the online advantages many noted was the ability to try different machines on practice mode without real money. This option helped in exploring the function of the machine, its features, and evaluating the potential returns of the machine.

3. Outcomes & Principal Contributions

The results of this study demonstrate that, when it comes to online gambling, there is a significantly higher concentration of gambling problems among low-income individuals and that this is exacerbated among those who gamble on EGMs online. These findings reveal a significant shift in the demographics of online gamblers, from individuals that were traditionally believed to be of higher SES, towards now more socio-economically disadvantaged groups (Griffiths et al., 2009; Wood & Williams, 2009). Results relating to the increased risk of problem gambling when it comes to gambling on EGMs online and the concentration of problems among low SES

individuals mirror findings in the literature relating to gambling on EGMs offline (e.g., Gilliland & Ross, 2005; Papineau et al., 2020; Raisamo et al., 2019; Wardle et al., 2014). Qualitative findings of this study reveal significant differences in the experiences of offline and online EGM gambling, with these two modalities often perceived as two distinct activities. An important reason for this is the notable differences in the places and spaces where offline and online EGM gambling occur. Gambling on EGMs offline occurs in a specific venue, typically in a louder environment, surrounded by other people, with lots of interesting audiovisual effects, an enticing atmosphere and bigger screens. Conversely, gambling on EGMs online usually occurs in the comfort of one's own home, typically in a quieter environment, alone and on a smaller screen. As a result of these differences, individuals engage in offline and online EGM gambling for different reasons and to satisfy different needs. At its base, most participants did recognize that gambling on EGMs both offline and online were driven by a similar desire to win money. Distinctions emerged in perceptions around gambling on EGMs offline and online, with the former fulfilling a social need with more concentrated engagement and the latter being an activity that one uses to unwind from the day in a more passive, disengaged way. These findings provide important knowledge on how these two activities do in fact differ in terms of the context in which the activities occur, which showcases the importance of considering these activities separately.

Qualitative findings also revealed the importance of differentiating between the spaces and places where gambling occurs. For example, participants perceived gambling on EGMs online at home, offline in bars, and in casinos as three separate activities with divergent experiences and motivations driving the selection of each activity. Qualitative accounts demonstrated the rich diversity of opinions among EGM gamblers when it comes to their preferences and experiences

of the different spaces and places where EGM gambling takes place, a population that is often grouped together despite the significant differences in their perceptions and experiences of gambling on EGMs offline and online.

This project had the objective of generating important knowledge of online gambling participation and experiences, which fills an important gap in the literature. This study provides knowledge regarding current online gambling practices in Quebec as they relate to socioeconomic factors, which is critical to identifying which populations are at greater risk of experiencing gambling-related harms. This project raises awareness about the dangers of online gambling and of gambling on EGMs online in particular, as well as specific at-risk groups, namely low-income individuals. This is important in adapting policies to better prevent gambling-related harms amongst those who are most at-risk, especially when these populations are less likely to be able to withstand the social and economic consequences of gambling harms.

As for qualitative data, it generates critical knowledge about the differences in experiences of gambling on EGMs offline and online, a form of gambling found to be associated with greater risk and harm in both modes (Moreira et al., 2023). Limited qualitative research currently exists about the lived experiences of gambling online, especially among EGM gamblers. These accounts help in disentangling differences in motivations behind gambling on EGMs offline and online and the different factors offline (e.g., festive, opulence and luxurious atmosphere, audiovisual effects, social influence) and online (e.g., social isolation, multitasking while gambling) that can contribute to the development of problem gambling.

The results from this project reveal that low-income individuals are particularly vulnerable to at-risk and problem gambling when it comes to online gambling, and that this is exacerbated

among those who gamble on EGMs. These findings provide evidence of the changing demographics of online gamblers and highlight the importance of continuing to monitor the impact of this changing landscape, with never-before-seen accessibility to gambling across all regions in Quebec and continued increases in internet connectivity province-wide. This project is just a first step towards exploring the issue of SES and online gambling. It is important to longitudinally explore how online gambling practices impact inequality in the distribution of both gambling-related problems and harms. The landscape of gambling continues to evolve at a rapid pace, necessitating further timely research to inform evidence-based policies and services for those in need.

PART D – POSSIBLE SOLUTIONS OR ACTIONS SUPPORTED BY RESEARCH FINDINGS

The popularity of online gambling has drastically increased in Quebec, with demographics of online gamblers now evolving from what has been traditionally described in the literature. Online gambling is no longer concentrated amongst young, educated and wealthy men, but is now more spread out across the population. Online gambling is making gambling accessible to everyone, whenever and wherever they are. Despite online gambling being spread out across the population, there is an uneven distribution of gambling-related problems among low socioeconomic classes who seem to be shouldering a disproportionate amount of the burden when it comes to online gambling. This study has found that this is especially true among those who gamble on EGMs online, where there is an even greater concentration of gambling problems compared to those who gamble on other types of gambling activities online. Findings from this study showcase that gambling on EGMs online is particularly risky and low-income populations who gamble on EGMs online are especially vulnerable to problem gambling.

Knowledge produced from this project is intended for a wide range of audiences, including **researchers, policy makers, and service providers**. Findings from this project revealed changing demographics of online gamblers, and specifically highlighted a greater concentration of at-risk and problem gambling among low-income individuals. This is incredibly important for **researchers** given that, historically, online gamblers were seen to be at high risk for problems but of higher SES. This changes how we need to view the online gambling profile and opens up new avenues for future research. Furthermore, the differences found between online EGM and non-EGM gamblers highlight the necessity to acknowledge the heterogeneity of the online gambling

population and the importance to shift away from a purely offline and online mentality in terms of player profile (see details in Part E).

This study provides evidence on the important differences across modalities (i.e., online or offline), and across different types of gambling activities, as it relates to clustering among economically vulnerable groups, motivations and gambling experiences. It is thus critical for **policy makers** to adapt policies and prevention strategies based on the modality and type of gambling activity. The shift to online gambling, with its wide accessibility, and the specific risk associated with certain activities (e.g., EGM), means that it is urgent to now find ways to reach these online gamblers, as it will be much more difficult to pinpoint specific locations in terms of prevention messaging. More specifically, online EGM gamblers seem to be particularly at-risk of experiencing gambling-related problems, and thus prevention strategies targeting these individuals are crucial to diminishing problem gambling. Additionally, low-income individuals, and especially low-income individuals who gamble on EGMs online, are at greater risk of problem gambling. Existing social inequalities are thus amplified through online gambling, which urgently needs to be addressed as it increases cost for society as a whole. These findings can thus help **policy makers** in making important decisions in the allocation of resources for prevention and services specifically targeted towards low-income individuals who gamble on EGMs online for whom gambling-related problems may be more prominent.

These findings are also important for **service providers** as they demonstrate a potential shift in *who* will be seeking services for gambling-related problems as well as a potential increase in clientele that comes with the increased prevalence of online gambling seen post-pandemic. Results from this study highlight the importance of making distinctions between gambling modes

and types. It is critical for **service providers** to acknowledge that online and offline gamblers have different profiles. As shown by the qualitative findings of this study, EGM gamblers perceived gambling on EGMs online and offline as two separate activities with different motivations for why and how they gambled on EGMs. These insights from EGM gamblers can help **service providers** understand the increased risks for specific types of gamblers and may help them to better adapt services to meet the needs of at-risk service users. Results also showcase that at-risk and problem gambling rates are significantly greater among online EGM gamblers compared to other online gamblers. This is an important consideration for **service providers** when tailoring efforts to both target and support individuals with gambling-related problems, including those from low-income backgrounds. It is also important to consider differences in motivations across gambling activities and across different profiles of players that move beyond just financial gain. As shown by qualitative findings, gambling on EGMs was an activity that was interesting for some participants because it provided a sensory experience that generated positive emotions, which helps to further understand why people gamble on EGMs. Finally, it is also crucial for **service providers** to find strategies to reach these higher risk groups who may be harder to reach now that they have shifted to online gambling. Developing flexible online-based interventions (e.g., online chat features, online platforms offering services) are important to ensure timely access to help, especially among those who may be reluctant or unable to access in-person services.

It is important to note that while this study draws on a larger dataset that was previously analyzed for another project (Kairouz et al., 2023), we used a specific subset of the sample with a different analytical focus related to SES and modes of EGM gambling. The study's cross-sectional design, taking place at only one point in time, does not allow for inferences about

causation and the direction of causality. Longitudinal studies are necessary to be able to follow changes and fluctuations in online gambling habits through time.

The goal of conducting qualitative analyses was to complement the quantitative research by offering a nuanced understanding of gambling on EGMs online and offline. The testimonies of the participants of the qualitative phase provide unique insight into the lived experiences of these EGM gamblers. Detailed descriptions of the participants and of the context of study can help the reader in evaluating if findings are transferable to other contexts.

PART E – FUTURE RESEARCH

Results of this study showcase the growing popularity of online gambling across the population and reveal significant social inequalities when it comes to online gambling, with low-income individuals experiencing a disproportionate amount of gambling-related problems. For **researchers**, it is important to continue to follow these trends as the situation evolves, and to monitor the concentration of problems among specific at-risk populations (e.g., low-income, EGM gamblers). Longitudinal studies are critical moving forward to monitor this situation as the landscape of gambling continues to evolve in order to keep pace with this rapidly changing industry. More specifically, it is critical to longitudinally investigate how the evolving online gambling landscape is affecting inequality in the distribution of gambling-related problems and harms in the Canadian population.

Findings from this study also provide evidence that not all gambling activities should be considered equally. It is important for **researchers** to consider certain nuances when it comes to gambling, as gambling is complex in the wide range of activities and the various places and spaces where gambling can occur. Just among EGM gamblers, a population that is often grouped together, results demonstrated important experiential distinctions. It is thus crucial to differentiate various types of gambling activities and different modalities in future research, as the experiences and motivations for gambling vary across different forms and modes. Gambling on EGMs online is a particularly risky form of gambling, as shown by this study where the majority of online EGM gamblers were considered to be at some level of risk for problem gambling. A particular focus on online EGM gambling is important moving forward, as when it comes to online gambling the concentration of problems seems to be unevenly distributed among those who

gamble on EGMs, and this is exacerbated even more among those who find themselves below the low-income threshold. With that being said, it is also important to continue to study SES in other types of online gambling activities, as a higher concentration of problems was also found among low-income individuals participating in other types of online gambling.

Additionally, qualitative research exploring the subjective experiences of online gambling is important moving forward to further contextualize quantitative findings. Qualitative studies, and particularly longitudinal qualitative studies, are integral in exploring online gambling and EGM gambling trajectories, which is crucial to identifying risk and protective factors that can contribute to the development of problem gambling. Currently, limited longitudinal qualitative research exists when it comes to gambling, which is critical moving forward to better understand not only how gambling practices are evolving but also why.

PART F – MAIN REFERENCES

- Barnes, G. M., Welte, J. W., Tidwell, M.-C. O., & Hoffman, J. H. (2013). Effects of neighborhood disadvantage on problem gambling and alcohol abuse. *Journal of Behavioral Addiction, 2*(2) 82–89. <https://doi.org/10.1556/JBA.2.2013.004>
- Effertz, T., Bischof, A., Rumpf, H.-J., Meyer, C., & John, U. (2018). The effect of online gambling on gambling problems and resulting economic health costs in Germany. *The European Journal of Health Economics: HEPAC: Health Economics in Prevention and Care, 19*(7), 967–978. <https://doi.org/10.1007/s10198-017-0945-z>
- Gilliland, J. A., & Ross, N. A. (2005). Opportunities for video lottery terminal gambling in Montréal. *Canadian Journal of Public Health/Revue Canadienne de Santé Publique, 96*(1), 55–59. <https://doi.org/10.1007/BF03404019>
- Griffiths, M., Wardle, H., Orford, J., Sproston, K., & Erens, B. (2009). Sociodemographic correlates of internet gambling: Findings from the 2007 British Gambling Prevalence Survey. *CyberPsychology & Behavior, 12*(2), 199–202. <https://doi.org/10.1089/cpb.2008.0196>
- Hing, N., Russell, A. M., & Browne, M. (2017). Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology, 8*, 779. <https://doi.org/10.3389/fpsyg.2017.00779>
- Kairouz, S., Paradis, C., & Nadeau, L. (2012). Are online gamblers more at risk than offline gamblers? *Cyberpsychology, Behavior and Social Networking, 15*(3), 175–180. <https://doi.org/10.1089/cyber.2011.0260>
- Kairouz, S., Savard, A.-C., Biron, J.-F., Blanchette-Martin, N., Brodeur, M., Dufour, M., Ferland, F., French, M., Monson, E., Morvannou, A., & Van Mourik, V. (2023). *Enquête ENHJEU.com—Portrait des jeux de hasard et d'argent en ligne au Québec: Regards sur une transformation amorcée en temps de pandémie* [Rapport d'étape]. <https://www.concordia.ca/content/dam/artsci/research/lifestyle-addiction/docs/report/Rapport%20projet%20COVID-2023-03-14-FINAL.pdf>
- Loto-Quebec. (2021). *Annual report 2020-2021* [Annual report]. Loto-Quebec. <https://societe.lotoquebec.com/dam/corporatif/centre-de-documentation/rapports-annuels-et-trimestriels/2020-2021/2020-2021-annual-report-loto-quebec.pdf>
- MacDonald, M., McMullan, J. L., & Perrier, D. C. (2004). Gambling households in Canada. *Journal of Gambling Studies, 20*(3), 187–236. <https://doi.org/10.1023/B:JOGS.0000040277.85569.a1>

- Martins, S. S., Storr, C. L., Lee, G. P., & Ialongo, N. S. (2013). Environmental influences associated with gambling in young adulthood. *Journal of Urban Health, 90*(1), 130–140. <https://doi.org/10.1007/s11524-012-9751-1>
- Moreira, D., Azeredo, A., & Dias, P. (2023). Risk factors for gambling disorder: A systematic review. *Journal of Gambling Studies, 39*(2), 483–511. <https://doi.org/10.1007/s10899-023-10195-1>
- Paillé, P., & Mucchielli, A. (2008). *L'analyse qualitative en sciences humaines et sociales* (2nd ed.). Paris, FR: Armand Colin.
- Papineau, E., Robitaille, É., Samba, C. P., Lemétayer, F., Kestens, Y., & Raynault, M.-F. (2020). Spatial distribution of gambling exposure and vulnerability: An ecological tool to support health inequality reduction. *Public Health, 184*, 46–55. <https://doi.org/10.1016/j.puhe.2020.03.023>
- Raisamo, S., Toikka, A., Selin, J., & Heiskanen, M. (2019). The density of electronic gambling machines and area-level socioeconomic status in Finland: A country with a legal monopoly on gambling and a decentralised system of EGMs. *BMC Public Health, 19*(1), 1198. <https://doi.org/10.1186/s12889-019-7535-1>
- Rotermann, M., & Gilmour, H. (2022). *Who gambles and who experiences gambling problems in Canada* (Insights on Canadian Society, pp. 1–20). Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/75-006-x/2022001/article/00006-eng.pdf>
- Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health, 23*(1), 171–212. <https://doi.org/10.1146/annurev.publhealth.23.100901.140532>
- Wardle, H., Keily, R., Astbury, G., & Reith, G. (2014). 'Risky places?': Mapping gambling machine density and socio-economic deprivation. *Journal of Gambling Studies, 30*(1), 201–212. <https://doi.org/10.1007/s10899-012-9349-2>
- Williams, R. J., Leonard, C. A., Belanger, Y. D., Christensen, D. R., El-Guebaly, N., Hodgins, D. C., McGrath, D. S., Nicoll, F., Smith, G. J., & Stevens, R. M. G. (2021). Predictors of gambling and problem gambling in Canada. *Canadian Journal of Public Health/Revue Canadienne de Santé Publique, 112*(3), 521–529. <https://doi.org/10.17269/s41997-020-00443-x>
- Williams, R. J., Rehm, J., & Stevens, R. M. G. (2011). The social and economic impacts of gambling. Retrieved from <http://hdl.handle.net/10133/1286>
- Wood, R. T., & Williams, R. J. (2009). Internet gambling: Prevalence, patterns, problems, and policy options. Guelph, ON: Ontario Problem Gambling Research Centre

APPENDIX 1 – FULL METHODS FOR QUALITATIVE PHASE

1. Participants

Participants for *Phase 2* were recruited from the list of those who participated in *Phase 1* of the project and who agreed to be re-contacted. To participate in *Phase 2*, participants had to be capable of participating in an individual interview in French or English, had to have experience gambling on both online and offline EGMs, and had to have gambled on EGMs at least 1x/month for a period of six months in the last three years. Participants were excluded if they did not gamble on EGMs with real money and if they had not gambled on both online and offline EGMs in the last 10 years. Efforts were made to ensure an adequate representation of both men and women, as well as an adequate distribution across the continuum of household income. Efforts were also made to have an adequate representation of both urban (Montreal and other CMAs) and other regions (non-CMAs), as well as an adequate representation across PGSI categories.

2. Study Procedure

Eligible participants were contacted using the contact information (phone and/or email) provided during *Phase 1*. Recruitment calls were made to verify the person's interest in participating in an individual semi-structured interview, as well as to verify their eligibility. A total of 199 eligible participants from the list of participants from *Phase 1* were selected for recruitment. Potential participants were initially contacted by either e-mail or phone. We were unable to reach 65 potential participants. Of the 134 participants that were contacted, 13 became non-responsive after initial contact and 42 refused to participate in the study as they expressed: not having the time to dedicate to a lengthy interview (N=16), not being interested in participating (N=15), not being interested due to the compensation offered (N=3), or they did not

provide a reason (N=8). Of the 79 people who completed the screening, an additional 23 were deemed ineligible as they had not gambled on EGMs at least 1x/month for a period of six months in the last 3 years (N=17), they had not gambled on EGMs offline in the last 10 years (N=5) or they had not gambled on EGMs online (N=1). In the end, a total of 56 participants were deemed eligible to participate in *Phase 2*, and an interview was booked at a time that was convenient for each person. Of those that booked an interview, 10 participants did not show up, 1 participant refused to participate, and 1 participant could not provide an appropriate context for the interview to take place. A further 3 participants were deemed ineligible after completing their interview, as they revealed during their interview that they did not gamble on EGMs online with real money in their lifetime (N=2) or they had not gambled on EGMs in over 10 years (N=1). The final sample therefore consisted of 41 participants. Interviews took place either online via the platform Zoom (N=28) or by phone (N=13), based on the participants' preferences. Interviews were conducted by the project coordinator and four research assistants who were all trained in qualitative interviewing. Interviews took place between April 2022 and February 2023. Interviews lasted between 57 and 147 minutes (average length=88 minutes), and the vast majority of interviews were conducted in French (N=38). The remaining interviews were conducted in English (N=3). Participants were compensated with a \$25 gift card to recognize their time and dedication to the project.

3. Interview Guide

Interviews were conducted with the help of an interview guide. The interview guide was developed based on existing literature on EGM gambling as well as preliminary results from *Phase 1*. The guide was constructed to explore the subjective experience of EGM gambling offline

and online separately, and to then contrast differences and similarities in experiences between EGM gambling offline and online. The guide also explored lifetime experiences with EGMs, including experiences before and during the COVID-19 pandemic. Interviewer notes were taken following each interview documenting the interviewer's thoughts, impressions, and observations during the interviews. Interviewers also completed a timeline of the participant's lifetime experiences with EGM gambling.

4. Qualitative Analysis

Interviews were audio recorded, anonymized, and transcribed verbatim. Data was thematically coded using *NVivo*. Data analysis entailed an iterative process between data collection and data examination where preliminary coding of interviews continually fed data collection (i.e., modifications to interview guide, probing questions). Qualitative analysis involved processes of data reduction and reference to the thematic content analysis of Paillé and Mucchielli (2008), a method for systematically identifying, arranging, and offering insight into patterns of meaning (themes) within a dataset (Braun & Clarke, 2012). Thematic analysis was carried out with raw data being transposed into themes representative of the analyzed content. In parallel with the analysis, reflective memos were written to document ideas about the patterns and/or relationships observed across themes. The themes identified were tagged alongside the text, and were then grouped, combined, and ordered into central themes. Once data collection was completed and central themes were regrouped, interview transcripts were then thematically coded with the aim of exploring direct contrasts between offline and online EGM gambling experiences. Two rounds of coding of all interviews were then conducted, the first to further extract potential themes and subthemes and complete the thematic tree, and the second to

ensure that interviews were properly coded within the finalized thematic tree. At each stage, 20% of interviews were blindly co-coded between the project coordinator and at least one other research assistant trained in qualitative coding, where divergences were then discussed until a consensus was reached. Data analysis and interpretation was conducted under the supervision of the lead researcher (EM) and the project collaborator (TH) who each have experience with qualitative methods.

APPENDIX 2 – TABLES & FIGURES

Table 1 Sociodemographic Characteristics of Online Gamblers, Online EGM & Online Non-EGM Groups

	Online Gamblers (N = 4384)		Online EGMs (27.1%)		Online Non-EGMs (72.9%)		Statistics
	%	CI (95%)	%	CI (95%)	%	CI (95%)	
Gender							
Man	64.8	63.3-66.2	63.1	60.3-65.8	65.4	63.8-67.0	$\chi^2(1, N = 4379) = 2.03; p = 0.15$
Woman	35.2	33.8-36.6	36.9	34.2-39.7	34.6	33.0-36.2	
Age							
18-24	14.0	13.0-15.1	8.1	6.7-9.8	16.2*	14.9-17.5	$\chi^2(3, N = 4382) = 51.90; p < 0.001$
25-44	41.0	39.5-42.4	42.7	39.9-45.5	40.3	38.7-42.1	
45-64	35.9	34.5-37.3	40.7	37.9-43.5	34.1*	32.5-35.8	
65+	9.1	8.3-10.0	8.5	7.0-10.2	9.4	8.4-10.4	
Highest level of education completed							
Secondary school or less	36.1	34.7-37.5	41.8	39.0-44.6	34.0*	32.3-35.6	$\chi^2(2, N = 4382) = 41.30; p < 0.001$
College or trades diploma	38.4	36.9-39.8	39.1	36.3-41.9	38.1	36.4-39.8	
University	25.6	24.3-26.9	19.1	17.0-21.4	27.9*	26.4-29.5	
Employment status							
Worker	66.9	65.5-68.3	64.6	61.7-67.3	67.8	66.1-69.4	$\chi^2(2, N = 4234) = 3.92; p = 0.14$
Retired	15.0	13.9-16.1	16.1	14.0-18.3	14.6	13.4-15.9	
Other	18.1	17.0-19.3	19.4	17.2-21.8	17.6	16.3-19.0	
Marital status							
Single	33.0	31.5-34.4	35.4	32.6-38.2	32.0*	30.4-33.7	$\chi^2(2, N = 4195) = 21.11; p < 0.001$
Married or common-law partner	59.9	58.4-61.4	55.0	52.1-57.9	61.7*	59.9-63.3	
Separated, divorced, widow	7.2	6.4-8.0	9.5	8.0-11.4	6.3*	5.5-7.2	
Household income							
Less than \$30,000	12.7	11.6-13.7	15.6	13.5-17.9	11.6*	10.5-12.8	$\chi^2(4, N = 3962) = 82.06; p < 0.001$
\$30,000-\$59,999	25.6	24.2-26.9	33.5	30.7-36.4	22.7*	21.1-24.2	
\$60,000-\$74,999	12.3	11.3-13.4	12.1	10.2-14.1	12.4	11.3-13.7	
\$75,000-\$99,999	18.2	17.0-19.4	15.9	13.8-18.2	19.1*	17.6-20.5	
\$100,000 or more	31.3	29.8-32.7	23.0	20.6-25.6	34.3*	32.6-36.0	
LIM 2021							
Non-low income	73.8	72.4-75.1	66.5	63.6-69.3	76.5*	74.9-78.0	$\chi^2(1, N = 3962) = 39.94; p < 0.001$
Low income	26.2	24.9-27.6	33.5	30.7-36.4	23.5*	22.0-25.1	
CMA							
Montréal	55.8	54.3-57.3	55.4	52.5-58.2	56.0	54.2-57.7	$\chi^2(2, N = 4382) = 1.10; p = 0.58$
Other	19.5	18.4-20.7	18.9	16.7-21.2	19.8	18.4-21.2	
Outside	24.7	23.4-26.0	25.7	23.3-28.2	24.3	22.8-25.8	

* $p < 0.05$

Table 2 Online Gambling Participation Among Online Gamblers, Online EGM & Online Non-EGM Groups

	Online Gamblers (N = 4384)		EGMs (27.1%)			Non-EGMs (72.9%)	
	%	CI (95%)	%	CI (95%)		%	CI (95%)
Lottery	77.2	75.9-78.4	73.6	71.0-76.0	**	78.5	77.0-79.9
Lottery tickets	71.1	69.7-72.4	68.4	65.6-70.9	*	72.1	70.5-73.6
Scratch tickets or instant lottery	37.6	36.1-39.0	48.2	45.4-51.0	**	33.6	32.0-35.2
Sports betting	16.2	15.1-17.3	17.5	15.5-19.8		15.7	14.5-17.0
Day trading	12.5	11.5-13.5	9.6	8.0-11.4	**	13.5	12.4-14.7
Poker	12.1	11.2-13.1	18.4	16.2-20.6	**	9.8	8.8-10.8
Bingo	7.5	6.8-8.3	16.3	14.3-18.5	**	4.3	3.6-5.0
E-Sports	3.3	2.8-3.9	4.9	3.8-6.2	**	2.7	2.2-3.3
Other casino games	12.9	11.9-13.9	31.7	29.1-34.4	**	6.0	5.2-6.8
Other games	0.8	0.6-1.2	1.7	1.1-2.5	**	0.5	0.3-0.8
	M (SD)		M (SD)			M (SD)	
Number of online activities	2.01 (SD = 1.31)	1.97-2.05	3.17 (SD = 1.61)	3.07-3.26	**	1.58 (SD = 0.85)	1.55-1.61

* $p < 0.05$; ** $p < 0.001$

Table 3 Level of Severity of Gambling Problems Among Online Gamblers, Online EGM & Online Non-EGM Groups

	Online Gamblers (N = 4384)		EGMs (27.1%)		Non-EGMs (72.9%)		Statistics
	%	CI (95%)	%	CI (95%)	%	CI (95%)	
Problem Gambling Severity Index							
Non-problem	64.0	62.6-65.4	40.5	37.7-43.3	72.7**	71.1-74.3	
Low risk	17.5	16.4-18.7	24.4	22.0-26.9	15.0**	13.8-16.3	$\chi^2 (3, N = 4313) =$ 433.22; $p < 0.001$
Moderate risk	10.8	9.9-11.8	18.8	16.7-21.2	7.9**	7.0-8.8	
Problem	7.7	6.9-8.5	16.3	14.3-18.6	4.4**	3.8-5.2	

** $p < 0.001$

Figure 1 Level of Severity of Gambling Problems & Household Income Among Online EGM & Non-EGM Groups

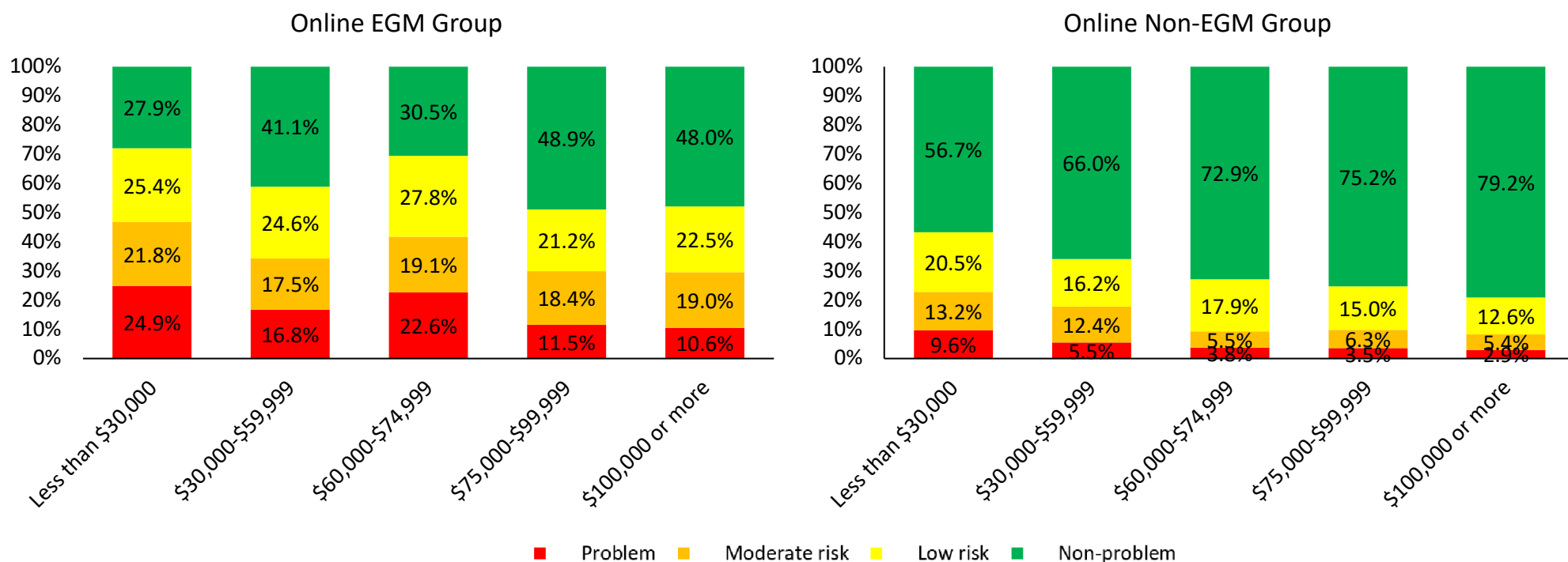


Table 4 Level of Severity of Gambling Problems & Household Income Among Online Non-EGM Group: Statistics

	Less than \$30,00 (A)		\$30,000-\$59,999 (B)		\$60,000-\$74,999 (C)		\$75,000-\$99,999 (D)		\$100,000 or more (E)	
Problem Gambling Severity Index	%	CI (95%)	%	CI (95%)	%	CI (95%)	%	CI (95%)	%	CI (95%)
Non-problem	56.7	51.4-61.9	66.0 _A	62.3-69.5	72.9 _{A,B}	68.0-77.2	75.2 _{A,B}	71.6-78.8	79.2 _{A,B,C}	76.6-81.6
Low risk	20.5 _{D,E}	16.5-25.2	16.2 _E	13.5-19.1	17.9 _E	14.1-22.0	15.0	12.3-18.2	12.6	10.7-14.8
Moderate risk	13.2 _{C,D,E}	9.8-17.1	12.4 _{C,D,E}	10.0-15.1	5.5	3.5-8.3	6.3	4.5-8.6	5.4	4.1-6.9
Problem	9.6 _{B,C,D,E}	6.8-13.0	5.5 _E	3.9-7.4	3.8	2.2-6.3	3.5	2.2-5.2	2.9	2.0-4.1

Note: For each significant pair ($p < 0.05$), the key of the category with the smaller column proportion appears in the category with the larger column proportion.

Table 5 Level of Severity of Gambling Problems & Household Income Among Online EGM Group: Statistics

	Less than \$30,000 (A)		\$30,000-\$59,999 (B)		\$60,000-\$74,999 (C)		\$75,000-\$99,999 (D)		\$100,000 or more (E)	
Problem Gambling Severity Index	%	CI (95%)	%	CI (95%)	%	CI (95%)	%	CI (95%)	%	CI (95%)
Non-problem	27.9	21.7-35.3	41.1 _{A,C}	36.1-46.2	30.5	22.8-38.5	48.9 _{A,C}	41.4-56.3	48.0 _{A,C}	41.8-54.2
Low risk	25.4	19.0-32.1	24.6	20.3-29.2	27.8	20.7-36.1	21.2	15.6-27.8	22.5	17.5-27.9
Moderate risk	21.8	15.8-28.2	17.5	13.9-21.8	19.1	13.3-26.8	18.4	13.0-24.5	19.0	14.6-24.4
Problem	24.9 _{B,D,E}	18.5-31.5	16.8 _E	13.2-20.9	22.6 _{D,E}	15.9-30.2	11.5	7.6-17.2	10.6	7.2-14.9

Note: For each significant pair ($p < 0.05$), the key of the category with the smaller column proportion appears in the category with the larger column proportion.

Figure 2 Level of Severity of Gambling Problems & Low-Income Among Online EGM & Non-EGM Groups

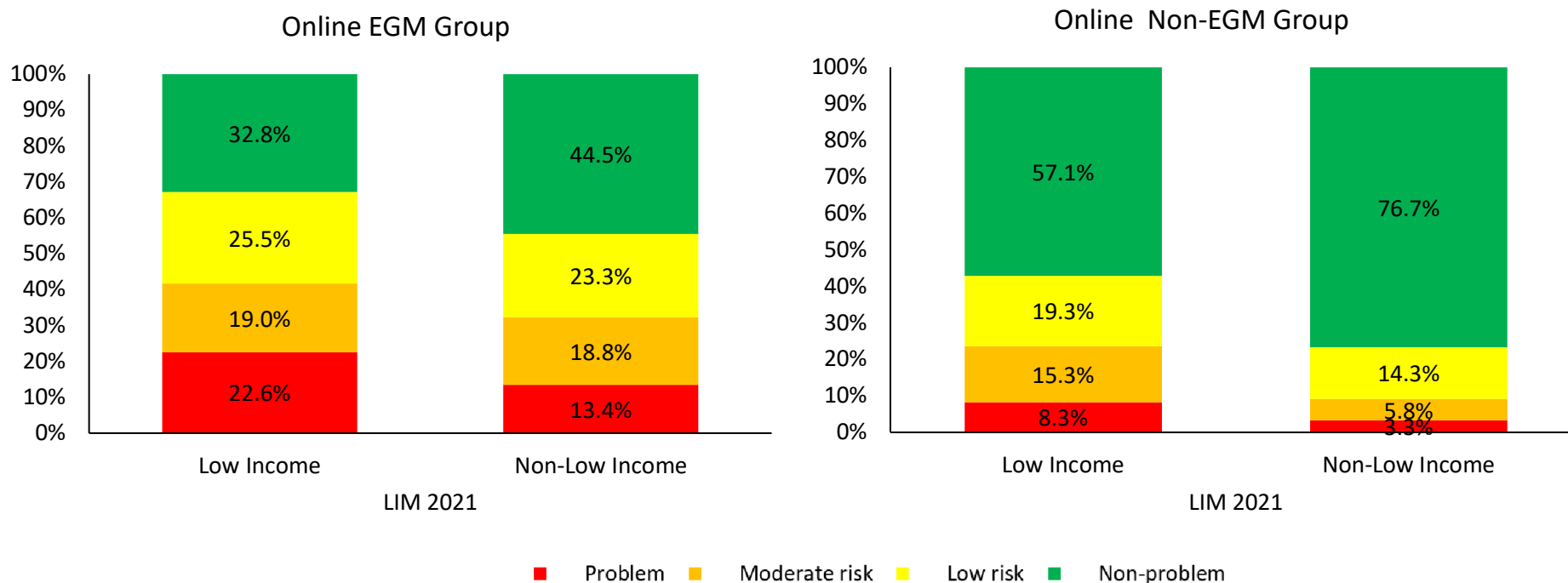


Table 6 Level of Severity of Gambling Problems & 2021 Low-Income Measure Among Online Non-EGM Group: Statistics

Problem Gambling Severity Index	Low Income		Non-Low Income	
	%	CI (95%)	%	CI (95%)
Non-problem	57.1	53.4-60.8	76.7**	74.9-78.4
Low risk	19.3	16.4-22.3	14.3*	12.8-15.8
Moderate risk	15.3	12.9-18.3	5.8**	4.9-6.8
Problem	8.3	6.5-10.6	3.3**	2.6-4.1

* $p < 0.05$, ** $p < 0.001$

Table 7 Level of Severity of Gambling Problems & 2021 Low-Income Measure Among Online EGM Group: Statistics

Problem Gambling Severity Index	Low Income		Non-Low Income	
	%	CI (95%)	%	CI (95%)
Non-problem	32.8	28.2-38.0	44.5**	40.8-48.1
Low risk	25.5	21.1-30.1	23.3	20.4-26.6
Moderate risk	19.0	15.2-23.3	18.8	16.0-21.7
Problem	22.6	18.5-27.2	13.4**	11.0-16.0

** $p < 0.001$

Table 8 Sociodemographic Characteristics of Qualitative Sample of EGM Gamblers

	N
Gender	
Man	21
Woman	20
Age	
18-24	2
25-44	14
45-64	17
65+	8
Highest level of education completed	
Secondary school or less	9
College or trades diploma	15
University	17
Employment status	
Worker	23
Retired	10
Other	8
Marital status	
Single	12
Married or common-law partner	23
Separated, divorced, widow	6
Household income	
Less than \$30,000	8
\$30,000-\$59,999	10
\$60,000-\$74,999	6
\$75,000-\$99,999	7
\$100,000 or more	10
LIM 2021	
Non-low income	27
Low income	14
CMA	
Montréal	16
Other	9
Outside	16
PGSI Score	
Non-problem	11
Low risk	9
Moderate risk	10
Problem	11

APPENDIX 3 – EXAMPLE VERBATIMS

Atmosphere

“Ce n'est pas du tout la même chose. C'est vraiment... parce que dans un casino tu as toute l'ambiance festive autour. Pour ma part, moi, ce n'est pas... je ne vais pas là malheureuse. Quand je suis là, il y a de l'action, c'est le fun, tandis qu'en ligne, c'est comme je te dirais caché.”

- Julie, non-problem

“C'est vraiment l'atmosphère dans laquelle tu te trouves dans, au casino, tu sais, tu es entouré d'opportunités, de sons, de lumière, de divertissement, ça bouge. Alors qu'en ligne, bien c'est vraiment beaucoup moins festif, c'est très transactionnel.”

- Thomas, non-problem

Atmosphere – Sounds from Surroundings

“Bien c'est sûr que dans les bars il y a... l'autre ambiance aussi du bar, là, la musique est plus forte, ça parle fort, tu sais, puis dans le fond... puis en ligne c'est vraiment, tu es seul, tu es seul quasiment avec toi même.”

- Nathan, moderate risk

“Je préfère en casino, comme je disais, j'aime mieux le sentiment de la machine, les bruits ambiants, les lumières, justement, les lumières, la musique, et cetera. Je préfère ça pour l'expérience sensorielle, on va le dire de même. Mais pour ce qui est de tout l'anonymat, et cetera,

je préfère à la maison, c'est sûr et certain. On ne va pas... ça ne comble pas les mêmes côtés, on va le dire de même.”

- Chloe, problem gambling

Atmosphere – Visual Surroundings

“Faut vraiment là, regarde je dirais si tu vas au casino bien c'est une belle ambiance. C'est sûr que c'est différent dans ton salon. Il y a les décors, les jeux de lumière, la musique, les thématiques. C'est sûr que tu vas là-bas vraiment pour une belle sortie. [...] Par contre, à la maison, bien c'est sûr que c'est dans ton décor chez vous. Ça peut être un peu moins le fun.”

- Daniel, non-problem

“Casino, tout le monde, quand on voit les casinos en Europe-là, tout le monde était bien habillé, puis la cravate, puis c'était des endroits de luxe là, mais encore aujourd'hui [...]. C'est peut-être mieux vu dans vrai, casino, qu'en ligne. En ligne, c'est pour les pauvres, puis les vrais casinos c'est pour les riches. [...] Bien le rang peut-être, le rang social ouais, ceux qui vont dans les vrais casinos, où c'est du monde plus aisé que ceux qui jouent en ligne.”

- Alexander, low risk

Machines – Visuals

“C'est les mêmes qu'on va retrouver, sauf c'est la dimension de ton écran. Si je joue sur, si je joue en ligne ou sur ta télévision, puis que tu as une 55 pouces, ce n'est pas pire, mais si tu as un portable c'est une autre affaire ou un cellulaire, c'est une autre affaire.”

- Samuel, problem gambling

“Je lui dirais que l'expérience d'une machine plus grosse, plus volumineuse, va être différente, un peu qu'un simple ordinateur portable, admettons. Où l'écran est plus petit, puis c'est ça, tu sais, tu es plus avec ta souris, à sélectionner des trucs, là, parce que, veux, veux pas, tu ne peux pas aller pointer... tandis qu'une machine, une vraie machine de Loto-Québec, tu vas aller pointer direct sur l'écran, tu vas sélectionner tes chiffres, mais les jeux, tu sais, vous savez comme les '7' ou les 'cloches', bien tu fais juste « enter », c'est pas mal la même chose sur ton clavier d'un ordi, là. Pour moi la différence c'est plus au niveau de l'appareil comme soit, là, tu sais... c'est ça.”

- William, problem gambling

Machines – Sounds

“Les jeux se ressemblent beaucoup, mais sur un écran d'ordinateur dans une maison ou au casino où ce que le son est beaucoup plus fort et les écrans sont plus grosses c'est plus intéressant. En tout cas, c'est plus captivant à Montréal ou dans un casino.”

- Charles, moderate risk

“C'est parce qu'au casino, quand on est physiquement dans un casino, il y a beaucoup de bruit ambiant. Fait que c'est ça qui est... puis si je rajoute la machine sur laquelle je joue, là il y a le monde qui parle, puis on entend toutes les machines fait que ça, ça me tape vraiment sur les nerfs, mais c'est pour ça que je coupe le son quand je suis au casino, et je mets le son vraiment au minimum. Mais quand je suis à la maison, je joue sur mon portable, à ce moment-là je mets le

son en plein milieu, le son en plein milieu de la force du son. Comme ça, j'entends quand... parce que des fois je m'en vais de mon... je m'en vais me préparer un café, puis le jeu continu, puis j'entends les petites cloches. Quand j'entends les petites cloches, je sais que je suis en train de gagner. J'aime le bruit des cloches quand je gagne, je n'aime pas le reste du bruit quand je ne gagne pas [rire].”

- Jessica, low risk

Machines – Selection

“Oui, c’est de se promener puis d’aller voir les machines aussi. D’aller voir qu’est-ce qu’il a de disponible. Puis à un moment donné, c’est sûr que moi, c’est comme je l’ai dit, j’ai ma machine que je préfère, mais j’aime beaucoup aller voir s’il y a d’autres choses qui pourraient être disponibles, des nouvelles machines, des nouveautés que, on n’est pas porté à faire quand on regarde en ligne. Il n’y a rien d’attrayant à se dire « Oh, je vais voir c’est quoi cette machine-là? » Tandis que physiquement c’est de s’asseoir devant la machine puis de regarder les pitons.”

- Jessica, low risk

“I’m laughing because it’s just that online, like I said it was trying to scroll through the games and how they worked and it was really frustrating to try to keep... You couldn’t see, it’s hard to describe, you couldn’t see like say, six games at the same time or something to see if, you know, you had to open each one to see, and it was just frustrating, irritating, so, you know, what kind of fun is that? So it really puts you, well put me off anyways. You say, ‘Oh, I’m not going to do this anymore,’ you know. So it was frustrating and, you know, because it would show that they had

certain games, but you would have to scroll through a list of just the name, not the type of game it is.”

- Gabrielle, non-problem

“Ouais, il y a moins de contraintes en ligne, là, c'est sûr, parce que des fois quand tu vois des places qui sont moyennement achalandées. Moi, je serais allé, admettons au bar que je vais, là, le vendredi soir à 5h, là, il n'y a pas de machine de libre, là. Pas avant 7-8h, ça dépend des fois, là. Fait que, c'est ça, la disponibilité aussi des appareils, ça, c'est un gros, gros, gros désavantage.”

- William, problem gambling

APPENDIX 4 – REFERENCES

- American Psychiatric Association [APA]. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Barnes, G. M., Welte, J. W., Tidwell, M.-C. O., & Hoffman, J. H. (2013). Effects of neighborhood disadvantage on problem gambling and alcohol abuse. *Journal of Behavioral Addiction*, 2(2) 82–89. <https://doi.org/10.1556/JBA.2.2013.004>
- Biron, J.-F., Fournier, M., Lasnier, N., Houle, V., Dufour, C., Nadon, S., & Tuong Nguyen, C. (2018). *Les jeux de hasard et d'argent au Québec et en régions: Statistiques de participation en 2018*. Centre intégré universitaire de santé et de services sociaux du Centre-Sud-de-l'Île-de-Montréal. https://santemontreal.qc.ca/fileadmin/user_upload/Uploads/tx_asssmpublications/pdf/publications/Les_jeux_de_hasard_et_d_argent_au_Quebec_et_en_regions__statistiques_de_participation_en_2018.pdf
- Blalock, G., Just, D. R., & Simon, D. H. (2007). Hitting the jackpot or hitting the skids: Entertainment, poverty, and the demand for state lotteries. *The American Journal of Economics and Sociology*, 66(3), 545–570. <https://doi.org/10.1111/j.1536-7150.2007.00526.x>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2: Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57-71). Washington, DC: American Psychological Association. <https://doi.org/10.1037/13620-004>
- Brodeur, M., Audette-Chapdelaine, S., Savard, A.-C., & Kairouz, S. (2021). Gambling and the COVID-19 pandemic: A scoping review. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 111, 110389. <https://doi.org/10.1016/j.pnpbp.2021.110389>
- Casey, E. (2021). Gambling, deprivation and class: Reflections from a UK case study. *Critical Gambling Studies*. <https://doi.org/10.29173/cgs105>
- Castren, S., Heiskanen, M., & Salonen, A. H. (2018). Trends in gambling participation and gambling severity among Finnish men and women: Cross-sectional population surveys in 2007, 2010 and 2015. *BMJ Open*, 8(8), e022129. <https://doi.org/10.1136/bmjopen-2018-022129>
- Centre intégré universitaire de santé et de services sociaux du Centre-sud-de-l'Île-de-Montréal [CIUSSSCSIM] (2016). *La distribution spatiale du risque associé aux jeux de hasard et d'argent à Montréal*. Retrieved from https://santemontreal.qc.ca/fileadmin/user_upload/Uploads/tx_asssmpublications/pdf/publications/Distribution-Spatiale-Risque_JHA_Mtl_2016.pdf

- Dixon, M. J., Gutierrez, J., Stange, M., Larche, C. J., Graydon, C., Vintan, S., & Kruger, T. B. (2019). Mindfulness problems and depression symptoms in everyday life predict dark flow during slots play: Implications for gambling as a form of escape. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 33(1), 81–90. <https://doi.org/10.1037/adb0000435>
- Dowling, N., Smith, D., & Thomas, T. (2005). Electronic gaming machines: Are they the “crack-cocaine” of gambling? *Addiction (Abingdon, England)*, 100(1), 33–45. <https://doi.org/10.1111/j.1360-0443.2005.00962.x>
- Effertz, T., Bischof, A., Rumpf, H.-J., Meyer, C., & John, U. (2018). The effect of online gambling on gambling problems and resulting economic health costs in Germany. *The European Journal of Health Economics: HEPAC: Health Economics in Prevention and Care*, 19(7), 967–978. <https://doi.org/10.1007/s10198-017-0945-z>
- Gainsbury, S. M. (2015). Online gambling addiction: The relationship between internet gambling and disordered gambling. *Current Addiction Reports*, 2(2), 185–193. <https://doi.org/10.1007/s40429-015-0057-8>
- Gainsbury, S. M., Russell, A., Hing, N., Wood, R., Lubman, D., & Blaszczynski, A. (2015). How the Internet is changing gambling: Findings from an Australian prevalence survey. *Journal of Gambling Studies*, 31, 1–15. <https://doi.org/10.1007/s10899-013-9404-7>
- Gattis, M. N., & Cunningham-Williams, R. M. (2011). Housing stability and problem gambling: Is there a relationship? *Journal of Social Service Research*, 37(5), 490–499. <https://doi.org/10.1080/01488376.2011.598716>
- Gilliland, J. A., & Ross, N. A. (2005). Opportunities for video lottery terminal gambling in Montréal. *Canadian Journal of Public Health/Revue Canadienne de Santé Publique*, 96(1), 55–59. <https://doi.org/10.1007/BF03404019>
- Griffiths, M., Wardle, H., Orford, J., Sproston, K., & Erens, B. (2009). Sociodemographic correlates of internet gambling: Findings from the 2007 British Gambling Prevalence Survey. *CyberPsychology & Behavior*, 12(2), 199–202. <https://doi.org/10.1089/cpb.2008.0196>
- Hahmann, T., Hamilton-Wright, S., Ziegler, C., & Matheson, F. I. (2021). Problem gambling within the context of poverty: A scoping review. *International Gambling Studies*, 21(2), 183–219. <https://doi.org/10.1080/14459795.2020.1819365>
- Haw, J. (2008). The relationship between reinforcement and gaming machine choice. *Journal of Gambling Studies*, 24(1), 55–61. <https://doi.org/10.1007/s10899-007-9073-5>

- Hing, N., Russell, A. M., & Browne, M. (2017). Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology, 8*, 779. <https://doi.org/10.3389/fpsyg.2017.00779>
- Hodgins, D. C., Stea, J. N., & Grant, J. E. (2011). Gambling disorders. *The Lancet, 378*(9806), 1874–1884. [https://doi.org/0.1016/S0140-6736\(10\)62185-X](https://doi.org/0.1016/S0140-6736(10)62185-X).
- Holdsworth, L., & Tiyce, M. (2013). Untangling the complex needs of people experiencing gambling problems and homelessness. *International Journal of Mental Health and Addiction, 11*(2), 186–198. <https://doi.org/10.1007/s11469-012-9409-y>
- Institut national de santé publique du Québec (INSPQ). (2022). *Ligne du temps COVID-19 au Québec*. INSPQ. <https://www.inspq.qc.ca/covid-19/donnees/ligne-du-temps>
- John, B., Holloway, K., Davies, N., May, T., Buhociu, M., Cousins, A. L., Thomas, S., & Roderique-Davies, G. (2020). Gambling harm as a global public health concern: A mixed method investigation of trends in Wales. *Frontiers in Public Health, 8*. <https://doi.org/10.3389/fpubh.2020.00320>
- Kairouz, S., Paradis, C., & Nadeau, L. (2012). Are online gamblers more at risk than offline gamblers? *Cyberpsychology, Behavior and Social Networking, 15*(3), 175–180. <https://doi.org/10.1089/cyber.2011.0260>
- Kairouz, S., Savard, A.-C., Biron, J.-F., Blanchette-Martin, N., Brodeur, M., Dufour, M., Ferland, F., French, M., Monson, E., Morvannou, A., & Van Mourik, V. (2023). *Enquête ENHJEU.com—Portrait des jeux de hasard et d'argent en ligne au Québec: Regards sur une transformation amorcée en temps de pandémie* [Rapport d'étape]. <https://www.concordia.ca/content/dam/artsci/research/lifestyle-addiction/docs/report/Rapport%20projet%20COVID-2023-03-14-FINAL.pdf>
- Korn, D. A. (2000). Expansion of gambling in Canada: Implications for health and social policy. *Canadian Medical Association Journal, 163*(1), 61–64.
- Korn D. A., & Shaffer, H. J. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies, 15*(4), 289–365.
- Loto-Quebec. (2021). *Annual report 2020-2021* [Annual report]. Loto-Quebec. <https://societe.lotoquebec.com/dam/corporatif/centre-de-documentation/rapports-annuels-et-trimestriels/2020-2021/2020-2021-annual-report-loto-quebec.pdf>
- MacDonald, M., McMullan, J. L., & Perrier, D. C. (2004). Gambling households in Canada. *Journal of Gambling Studies, 20*(3), 187–236. <https://doi.org/10.1023/B:JOGS.0000040277.85569.a1>

- Marionneau, V., Ruohio, H., & Karlsson, N. (2023). Gambling harm prevention and harm reduction in online environments: A call for action. *Harm Reduction Journal*, 20(1), 92. <https://doi.org/10.1186/s12954-023-00828-4>
- Martins, S. S., Storr, C. L., Lee, G. P., & Ialongo, N. S. (2013). Environmental influences associated with gambling in young adulthood. *Journal of Urban Health*, 90(1), 130–140. <https://doi.org/10.1007/s11524-012-9751-1>
- Matheson, F. I., Devotta, K., Wendaferew, A., & Pedersen, C. (2014). Prevalence of gambling problems among the clients of a Toronto homeless shelter. *Journal of Gambling Studies*, 30(2), 537–546. <https://doi.org/10.1007/s10899-014-9452-7>
- Moreira, D., Azeredo, A., & Dias, P. (2023). Risk factors for gambling disorder: A systematic review. *Journal of Gambling Studies*, 39(2), 483–511. <https://doi.org/10.1007/s10899-023-10195-1>
- Murch, W. S., & Clark, L. (2021). Understanding the slot machine zone. *Current Addiction Reports*, 8(2), 214–224. <https://doi.org/10.1007/s40429-021-00371-x>
- Orford, J., Wardle, H., Griffiths, M., Sproston, K., & Erens, B. (2010). The role of social factors in gambling: Evidence from the 2007 British Gambling Prevalence Survey. *Community, Work & Family*, 13(3), 257–271. <https://doi.org/10.1080/13668803.2010.488101>
- Paillé, P., & Mucchielli, A. (2008). *L'analyse qualitative en sciences humaines et sociales* (2nd ed.). Paris, FR: Armand Colin.
- Papineau, E., Lacroix, G., Sévigny, S., Biron, J.-F., Corneau-Tremblay, N., & Lemétayer, F. (2018). Assessing the differential impacts of online, mixed, and offline gambling. *International Gambling Studies*, 18(1), 69–91. <https://doi.org/10.1080/14459795.2017.1378362>
- Papineau, E., Robitaille, É., Samba, C. P., Lemétayer, F., Kestens, Y., & Raynault, M.-F. (2020). Spatial distribution of gambling exposure and vulnerability: An ecological tool to support health inequality reduction. *Public Health*, 184, 46–55. <https://doi.org/10.1016/j.puhe.2020.03.023>
- Philander, K. S., & MacKay, T. L. (2014). Online gambling participation and problem gambling severity: Is there a causal relationship? *International Gambling Studies*, 14(2), 214–227. <https://doi.org/10.1080/14459795.2014.893585>
- Price, A. (2022). Health inequities among East and South Asian gamblers during COVID-19: Key risk factors and comorbidities. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-022-00767-4>

- Raisamo, S., Toikka, A., Selin, J., & Heiskanen, M. (2019). The density of electronic gambling machines and area-level socioeconomic status in Finland: A country with a legal monopoly on gambling and a decentralised system of EGMs. *BMC Public Health*, *19*(1), 1198. <https://doi.org/10.1186/s12889-019-7535-1>
- Rotermann, M., & Gilmour, H. (2022). *Who gambles and who experiences gambling problems in Canada* (Insights on Canadian Society, pp. 1–20). Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/75-006-x/2022001/article/00006-eng.pdf>
- Schull, N. D. (2012). *Addiction by design: Machine gambling in Las Vegas*. Princeton University Press. <https://www.jstor.org/stable/j.ctt12f4d0>
- Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health*, *23*(1), 171–212. <https://doi.org/10.1146/annurev.publhealth.23.100901.140532>
- Sharman, S., Dreyer, J., Clark, L., & Bowden-Jones, H. (2016). Down and out in London: Addictive behaviors in homelessness. *Journal of Behavioral Addictions*, *5*(2), 318–324. <https://doi.org/10.1556/2006.5.2016.037>
- Slutske, W. S., Deauch, A. R., Statham, D. B., Martin, N. G. (2015). Local area disadvantage and gambling involvement and disorder: Evidence for gene-environment correlation and interaction. *Journal of Abnormal Psychology*, *124*(3), 606–622. <https://doi.org/10.1037/abn0000071>
- Svensson, J., & Romild, U. (2011). Incidence of Internet gambling in Sweden: Results from the Swedish longitudinal gambling study. *International Gambling Studies*, *11*, 357–375. <https://doi.org/10.1080/14459795.2011.629203>
- The Lancet Public Health. (2021). Gambling: A neglected public health issue. *The Lancet Public Health*, *6*(1), e1. [https://doi.org/10.1016/S2468-2667\(20\)30290-5](https://doi.org/10.1016/S2468-2667(20)30290-5)
- Wardle, H., Keily, R., Astbury, G., & Reith, G. (2014). ‘Risky places?’: Mapping gambling machine density and socio-economic deprivation. *Journal of Gambling Studies*, *30*(1), 201–212. <https://doi.org/10.1007/s10899-012-9349-2>
- Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M.-C., & Parker, J. C. (2004). Risk factors for pathological gambling. *Addictive Behaviors*, *29*, 323–335. <https://doi.org/10.1016/j.addbeh.2003.08.007>
- Williams, R. J., Leonard, C. A., Belanger, Y. D., Christensen, D. R., El-Guebaly, N., Hodgins, D. C., McGrath, D. S., Nicoll, F., Smith, G. J., & Stevens, R. M. G. (2021). Predictors of gambling and problem gambling in Canada. *Canadian Journal of Public Health/Revue Canadienne de Santé Publique*, *112*(3), 521–529. <https://doi.org/10.17269/s41997-020-00443-x>

Williams, R. J., Rehm, J., & Stevens, R. M. G. (2011). The social and economic impacts of gambling. Retrieved from <http://hdl.handle.net/10133/1286>

Williams, R. J., & Wood, R. T. (2007). The proportion of Ontario gambling revenue derived from problem gamblers. *Canadian Public Policy*, 33(3), 367–387. <https://doi.org/10.3138/cpp.33.3.367>

Wood, R. T., & Williams, R. J. (2009). Internet gambling: Prevalence, patterns, problems, and policy options. Guelph, ON: Ontario Problem Gambling Research Centre