Informing the Public Debate: Problem Gambling

Exposure, Adaptation, and Gaming Revenues

Prepared by:

Bo J. Bernhard, Ph.D.
Kahlil S. Philander, Ph.D.

UNLV International Gaming Institute

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Executive Summary

This report focuses on two problem gambling-related issues that have emerged in the Greater Toronto Area's gaming policy deliberations: the influence of gambling opportunities on problem gambling, and the potential share of casino revenue that might be derived from problem gamblers.

In the most recent and comprehensive reviews of the gambling opportunities and problem gambling literature, researchers label the early belief that gambling opportunities lead to linear increases in the PG rate the "exposure" model, and make a compelling argument that we now know this perspective to be flawed – or at the very least, incomplete. These researchers suggest that evidence for "adaptation" can be observed, as populations adjust after an initial exposure. This adaptation curve can be observed with many diseases, whereby more vulnerable groups develop problems first, but then the disease's spread begins to diminish as the general population learns more about the disease, and better understand risks and preventative measures. This "adaptation" perspective also appears to have support in the empirical literature.

In considering the unique case of potential GTA gaming expansion, we note that it is important to explore distinctions *between* various forms of gaming offerings. Today, what we call the "gaming industry" is in fact far from singular or monolithic, and the type of gambling offering proposed in the GTA is quite different from that which has often existed elsewhere (and hence, quite different from that which has often been studied elsewhere).

We also suggest caution in over-generalizing results from prior studies on the share of gaming revenue that is derived from problem gamblers. Based on our review of available literature, the sole study that is somewhat relevant to the GTA would be Williams and Wood's (2007) examination of the Ontario market (which suggests a percentage of 36%). However, we find that even this study significantly overestimates what would likely be the share of revenue from problem gamblers in Ontario if a new casino were to be introduced in the GTA today. If the rates from Williams and Wood are adjusted for more recent estimates levels of problem gambling prevalence, and are adjusted to include all gaming revenues (including those from visitors), we conservatively estimate the share of total gaming revenue from Ontario problem gamblers to be much closer to 5.7%.

1 Introduction

This document is the third in a series intended to inform policy debates on the potential development of a casino resort in the Greater Toronto Area (GTA). The series focuses on common debates that tend to occur during the expansion of gaming in a given jurisdiction. Our intent is to outline the relevant academic research pertaining to these issues, and then to provide reasoned applications to the unique economic and social environment in the Greater Toronto Area. This latter step is particularly important in policy considerations, since potential gaming jurisdictions can vary significantly in terms of market structure, amenities, population demographics, economic characteristics, and public health support systems.

In this third report, our focus is on two problem gambling-related issues that have emerged in the GTA's policy deliberations: the influence of gambling opportunities on problem gambling, and the potential share of casino revenue that might be derived from problem gamblers. The sections that follow include a broad overview of literature related to these topics, followed by assessments of this literature's relevance to this particular market.

2 Background

In early 2012, the Ontario Lottery and Gaming Corporation (OLG) announced formal plans to develop a new casino in Greater Toronto. The plan, which is expected to elicit bids from large commercial gaming corporations, is projected to include an "integrated resort" property, combining hotel, restaurant, entertainment, retail, and convention facilities along with gaming amenities.

Our focus is on two problem gambling-related issues that have emerged in the GTA's policy deliberations: the influence of gambling opportunities on problem gambling, and the potential share of casino revenue that might be derived from problem gamblers.

Presently, there are several forms of gaming available in the GTA, although there is no resort-style casino gaming within an hour's drive of the downtown core. The nearest commercial resort-style casinos are Niagara Fallsview and Casino Rama, located well outside of the city limits, and there are OLG slot machines at more nearby racetrack casinos, such as Woodbine, Georgia Downs, and Ajax Downs.[1] Lotteries, pari-mutuel horse racing, bingo, and multi-game sports wagering are all accessible, and OLG has expressed its intention to roll out various forms of Internet gaming, beginning in 2013.

Historically, policymakers worried that welcoming gambling meant welcoming organized crime to a community, or that allowing legalized gambling would constitute an embrace of an immoral vice and community decline. Today, those concerns are no longer as

[1] There is also a temporary casino at the CNE during a portion of the summer.

potent as they once were, but a third concern – that some of gambling's customers have harmful interactions with the gambling product – has emerged as the major public health consideration for policymakers contemplating expanded gambling opportunities.

The related field of study – the problem gambling field – has grown in remarkable fashion over the past 25 years, with academic institutions, the gaming industry, governments, and other funding agencies providing support for major research initiatives all over the world. A summary of this now sizable field would require multiple book-length treatises. In this report, we will limit our literature analyses to two key problem gambling questions that have commonly emerged in legalization debates: 1) What do we know about the relationship between gambling opportunities and problem gambling? 2) What do we know about the gaming revenues associated with problem gamblers?

3 Issues

3.1 Gambling opportunities and problem gambling

Initially and understandably, problem gambling (PG) researchers speculated that as gambling exposure increased, gambling problems among those nearby would also increase – probably dramatically – and that these gambling problems would continue to increase over time. These early perspectives were especially understandable given the American Psychiatric Association's characterization of the disorder as a linear, "chronic and progressive" one (see, e.g., American Psychiatric Association 1980, 1994). For example, Kindt (1994) provided an extreme version of this perspective, speculating that in new gaming jurisdictions PG prevalence would increase by up to 550%. Other, less extreme perspectives emerged as well, including the National Gambling Impact Study Commission (NGISC) report, which suggested a near-doubling of problem gambling rates in areas within 50 miles of casinos in the U.S. (Gerstein, et al., 1999).

Soon, however, researchers came to identify limitations in this early literature, noting that at best, it provided blunt and arbitrary measures of exposure (and often, of problem gambling itself). Researchers also noted that causal conclusions (i.e., the notion that proximity caused pathology) were nearly impossible. Recently, however, the research community has come to develop more sophisticated models, and it has also been able to take advantage of larger-scale empirical databases to inform our understanding. Based upon this new understanding, a subtler perspective has emerged. This perspective began to crystallize in a 2004 essay that noted that there was actually empirical support for several PG trends post-exposure. In fact, the literature revealed evidence of increasing, stabilizing, *and* decreasing PG rates after the introduction of casinos, depending on the site studied (Volberg, 2004).

In the most recent and comprehensive reviews of this literature, LaPlante and Shaffer (2007) and Shaffer and Martin (2011) began to synthesize this information into a new model, assisted by newly-developed, finer-grained public health tools to examine gambling exposure

(Shaffer, LaBrie, & LaPlante, 2004). These researchers label the earlier belief (that gambling opportunities lead to linear increases in the PG rate) the "exposure" model, and make a compelling argument that this perspective is flawed, or at the very least, incomplete.

Specifically, LaPlante and Shaffer (2007) observe that "an evaluation of available research studies provides some support for the exposure effect, but also raises questions about the durability of that phenomenon across settings and time points." In synthesizing the studies that have explored these relationships, Shaffer and Martin (2011) explain:

> *"…recent empirical research indicates that individuals adapt relatively quickly after exposure to gambling opportunities, and the prevalence of PG only increases during the short term – as a novelty effect – after the introduction of new gambling opportunities."*

At the very least, this literature suggests that the impacts of gambling expansion on problem gambling rates are in fact more complex than originally assumed, and the notion that problem gambling rates simply rise as exposure increases has been debunked.

These authors suggest that evidence for "adaptation" can hence be observed, as populations adjust and respond after an initial exposure. This adaptation curve can be observed with many diseases, whereby more vulnerable groups develop problems first, but then the disease's spread begins to diminish as the general population learns more about the disease, and then begin to better understand risks and preventative measures (LaPlante and Shaffer, 2007; Shaffer and Martin, 2011).

Though a comprehensive summary is beyond the scope of this paper, this "adaptation" perspective does appear to have support in the empirical literature. In Switzerland, for instance, gambling addiction prevalence rates have remained stable despite the introduction of several casinos over the past 10 years (Bondolfi et al., 2008). In the United States, problem gambling prevalence rates have remained relatively stable over the past 35 years, despite the introduction of numerous new gambling opportunities during this period (see, e.g., Kallick et al., 1979, which found a national lifetime rate of 0.7%, and recent comparable figures of 0.4% to 0.6% found in Kessler et al, 2008, Petry et al., 2005).

At the very least, this literature suggests that the impacts of gambling expansion on problem gambling rates are in fact more complex than originally assumed, and the notion that problem gambling rates simply rise as exposure increases has been debunked. In the next section, we turn our attention to applications of this literature to the potential GTA market.

3.1.1 Implications for the Proposed GTA Market

In considering the unique case of potential GTA gaming expansion, we would first note that it is important when considering this literature to explore distinctions *between* various forms of gaming. Today, what we call "the industry" is in fact far from singular or monolithic, and the type of gambling offering proposed in the GTA is quite different from that which has often existed elsewhere (and hence, quite different from that which has often been studied elsewhere).

The U.S. National Gambling Impact Study Commission's Final Report alludes to the importance of considering this perspective when it says "…what society terms 'the gambling industry' actually involves segments that are quite different from one another" (1999). In fact, even this report was released before many significant (and hence unstudied) evolutions of the modern casino resort, and before a substantial body of research emerged which called into question previous understandings.

Once again, this early limitation was understandable for reasons of both history and scope – after all, the U.S. government was tasked with conducting a comprehensive study that by its nature also examined lotteries, horse racing, and many other forms of gambling. But the structure of the casino resort proposed in the GTA has been largely re-invented since the time that the NGISC was conducting its assessments.

The modern casino resort era – ushered in with Las Vegas' Mirage resort in 1989, and expanded upon with nearly every major new development since then – changed the types of offerings that casinos provided. This in turn shaped the benefits and costs. For instance, on the benefits side, major Las Vegas casino resorts now derive upwards of 60% of revenues from non-gaming amenities (e.g. MGM Resorts International, 2012; Wynn Resorts, 2012), a development that was unheard of even during the early, Mirage days. These new models are not reflected well in research conducted on earlier gambling environments.

Another important historical point is that many studies in the literature examine periods prior to what we might call the "modern responsible gaming era." In this era, responsible gaming is a significant policy consideration that is actively engaged from the moment gambling expansion is suggested. Though this has certainly not always been the case, today, in a manner that is historically unprecedented, problem gambling tends to be discussed throughout the legalization process, and then again during ongoing regulatory and legislative reviews. And although no one would argue that this process is streamlined, complete, or fantastically efficient, one thing is clear: pathological gambling researchers, clinicians, prevention specialists, government officials, and even casino operators are increasingly informed by a growing body of scientific research. In sum, by any reasonable measure, this is a field that is getting better (at least to the degree it relies on the scientific literature).

Finally, in observing the GTA environment, we note that this is hardly an entirely "new" jurisdiction when it comes to gambling opportunities. Residents in the GTA have had exposure to gambling for some time. Though the research literature in this area is limited in its ability to predict these types of specific dynamics, "exposure" has already happened in this region – and as such, it remains to be seen whether additional levels of exposure will have any additional impacts on PG.

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In sum, problem gambling is a highly important policy consideration, and problem gamblers' suffering merits very serious consideration. If we take a conservative approach, policymakers in the GTA should prepare to address what might be a small but real uptick in problem gambling rates should the proposed casino resort be built. As Shaffer and LaPlante (2007) note, however, the complexities of these effects need to be taken into consideration when contemplating public health policy, as "(f)ocusing too heavily on the adaptation effect could cause policymakers to underestimate the influence and importance of early increases in gambling-related problems" and "(a)lternatively, focusing only on exposure could cause a public policy overreaction to the availability of new opportunities."

3.2 Problem Gamblers and Gaming Revenue

Another oft-discussed consideration associated with problem gambling and casino expansion is how much of the tax burden (in the economic sense) falls to problem gamblers. We caution that while there is tremendous interest in this figure, academic voices are not clear on how this figure should be interpreted for policy purposes. These points aside, there appears to be substantial public policy interest in these values, and hence we seek to provide guidance on the studies that have examined this topic, and the extent to which we can generalize these results to the GTA market.

3.2.1 The Proportion of Gambling Revenue Derived from Problem Gamblers

The most geographically relevant study on the proportion of revenue from problem gamblers is by Williams and Wood (2007). This study used a combination of telephone surveys and gambling diaries from Ontario gamblers in 2004 to construct its estimates. While this paper is an important and effortful contribution to a very limited area of research – and one that improves vastly upon previous measurement methods – we find the original values that were produced in this study are substantially dated, methodologically incomplete, and largely inapplicable to the current GTA policy decisions.

First, a key concern is that the estimates of problem gambling prevalence used in the study are larger than the actual prevalence rate of problem gamblers. This is because they include *moderate risk gamblers* along with *problem gamblers*. These two sub-types, which are based on the Canadian Problem Gambling Index (CPGI), have substantially different characteristics. This is the reason why they are classified separately in both the current best-practices for using the CPGI (Currie, Casey, and Hodgins, 2010), and in the original design of the CPGI (Ferris and Wynne, 2001).

The *moderate risk* group, which is re-labeled as *moderate problem gamblers* in the Williams and Wood (2007) study, is not referred to as *moderate problem gamblers* anywhere in the Ferris and Wynne (2001) CPGI report (that was referenced by Williams and Wood), or the Currie, Casey, and Hodgins (2010) CPGI report. We feel that such labeling, though likely well intentioned and not uncommon among some researchers, may be misleading to many policymakers. According to the more detailed prevalence figures available in the Williams and Wood study, the true problem gambling prevalence rate (CPGI 8+) should be 1.00%. This is far below the 4.8% reported value that includes the *moderate risk* group.

Second, the most recent estimates of problem gambling in Ontario (from 2011) are much lower than the values used in the earlier Williams and Wood (2007) study. Even if we conservatively include both *problem gamblers* and *moderate risk gamblers*,[2] the CPGI prevalence rate was still only 1.04% in 2011 (Williams, Volberg, and Stevens, 2012). This is less than a quarter of the prior estimate (which relied upon data from 2004).[3] If the average gambling expenditure of *moderate risk* and *problem gamblers* has remained consistent relative to non-problem gamblers, the change in Ontario PG prevalence suggests that Williams and Wood's estimates of the share of revenue from these groups could be substantially revised downwards, from 36% to 7.8%.

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Third, there is an important "denominator issue" here. Specifically, the denominator in this 36% calculation includes gambling expenditures by Ontario residents *only*, omitting the substantial gaming revenue that is derived from gamblers visiting from outside of Ontario (often from the US). If we instead look at the *total* Ontario gaming revenue figures (including visitors and residents), the figure differs from the authors' estimated revenue figures by roughly $1.53 billion. If the revised estimate from above is revised to account for this, the share of total

[2] The data presented in the study does not allow us to separate problem and moderate risk gamblers.
[3] There were slight differences in the CPGI cut-off criterion to define a *moderate risk gambler* as Williams and Wood (2007) used score of 3+ based on Ferris and Wynne (2001), and Williams, Volberg, and Stevens (2012) used a score of 5+, likely based on Currie, Casey, and Hodgins (2010). In any case, the 5+ criterion is now considered to be the recommended cutoff level for moderate-risk gamblers and problem gamblers.

Ontario gaming revenue from Ontario problem gamblers (including moderate risk gamblers) would be estimated at 5.7%.[4]

Although the points above represent the key revisions that should be made to Williams and Wood (2007) for the GTA's policy purposes, there are other methodological issues that need to be highlighted here. For one, like a lot of studies, this article makes arbitrary assumptions in how the data are summarized. For example, in calculating these figures, two different data filtering procedures are used – each of which could bias results. For instance, in one procedure, the top 1% and bottom 1% of gamblers are excluded from the calculations, which could substantially change the casino results when you consider how much revenue that a small percentage of high rollers can generate (assuming that the limited sample size captures this group in the first place). Alas, the study notes that these modified estimates of revenue are 36% *lower* than actual revenue.

The second (alternative) data filtering procedure used examines only the expenditures by gamblers who lost money, and not those who won money. These modified values are also noted to be quite different from actual revenue – in this case, the modified values are 37% *higher* than actual revenue. Considering that the gambling diaries used to gather these figures covered fairly short time periods (from one week to a maximum of four weeks), it seems likely that many players may have won money – and hence, excluding these players would create substantial bias. This is appropriately acknowledged in the study's limitations section:

> *"Regular gamblers occasionally have very large wins and losses. These statistical outliers have a major influence on the averages, making it very difficult with small sample sizes to establish what the 'true' average expenditures are, so as to compare them with actual revenues. Realistically, there would have to be thousands of people completing prospective diaries from each of the four categories of gamblers to offset the impact of these outliers."*

In addition, the authors made other decisions/assumptions that may have changed the percentage of revenue attributed to problem gamblers. While we wish to emphasize that such choices are always made in research designs of this complexity, these decisions do have an effect on the findings and the margins of error. In any case, we bring up these points not to point out methodological limitations (as limitations plague all research projects), but to properly understand the findings of a research article that has been widely cited in public and policy settings (often as "the percentage of gaming revenues which come from problem gamblers," which is not exactly what the original study aims to reveal). In sum, we hope to provide context for the understandable but mistaken assumption that a new GTA casino would derive 36% of its revenues from nearby problem gamblers.

[4] Note that were we able to separate out the problem gambling rate (and not use the combined moderate risk and problem gambling rates), this figure might be lower.

3.2.2 Other Studies on the Share of Revenue from Problem Gamblers

In our review, we also examined other studies that have attempted to analyze this same issue, including Dickerson et al. (1996), Grinols and Omorov (1996), Lesieur (1998), Volberg et al. (1998), Volberg et al. (2001), Williams and Wood (2004), and Orford, Wardle, and Griffiths (2012). In general, we found that these studies were not particularly relevant or useful to current policymakers in the GTA. For one thing, many of these studies rely excessively on unrealistic assumptions and/or self-reported gambling expenditures. The latter have been shown to be quite unreliable for all forms of gaming except lotteries (Blaszczynski, Dumlao, and Lange, 1997; Williams and Wood, 2007). For example, in Williams and Wood (2004), values are based on previously completed Canadian prevalence studies, but the authors appropriately note that self-report data can be quite biased:

… many of these studies rely excessively on unrealistic assumptions and/or self-reported gambling expenditures. The latter have been shown to be quite unreliable for all forms of gaming except lotteries.

> *"…even among educated medical students, only 32% to 64% interpret 'how much do you spend gambling?' to mean net expenditure (Blaszczynski, Dumlao, & Lange, 1997). Many interpret it as initial outlay or total outlay (initial outlay + reinvestment of winnings), as we speculate is the case for the Canadian studies analyzed earlier in this article. Blaszczynski et al. (1997) also found that some people include travel and meal costs when calculating gambling expenditures."*

In addition, these other studies were produced in periods and/or jurisdictions that cannot be reasonably generalized to the current GTA market, as the calculations are highly dependent on local market conditions, and PG prevalence rates. Orford, Wardle, and Griffiths (2012) described a similar problem when considering the generalizability of analysis from the Australia Government Productivity Commission (2010):

> *"…the Australian figures have a number of limitations. The first, which is particularly a limitation for those in other countries such as Britain, is the concentration of the Australian analysis on play on electronic gaming machines (EGMs) of the 'poker machine' type which are widespread in most Australian states and territories and which have caused great concern in Australia. Gambling opportunities in Britain are very diverse and it must be presumed that answers to the question posed here will vary considerably from one form of gambling to another."*

Despite these limitations, there are some important and broad contributions from this literature that should be noted here. It seems, overall, that casino gaming is neither the form of gaming that derives the most revenue from problem gamblers (typically this is VLT-type slots or pari-mutuel wagering), nor is it the form of gaming that derives the least amount of revenue from problem gamblers (typically this is lottery gaming).

3.2.3 Implications for the Proposed Toronto Market

Based on our review of available literature, the sole study that is somewhat relevant to the GTA based on geography, period of study, and gambling offerings would be Williams and Wood's (2007) examination of the Ontario market. However, we find that this study significantly overestimates what would likely to be the share of revenue from problem gamblers in Ontario if a new casino were to be introduced in the GTA. If the rates from Williams and Wood are adjusted for more recent estimates of PG prevalence (using a conservative group that includes both *problem gamblers* and *moderate risk gamblers*), and are adjusted to include revenue from out of province visitors, we expect the share of total gaming revenue from Ontario problem gamblers to be much closer to 5.7% than the reported value of 36%.

In addition to the methodological issues we identified above, there are some other factors that make the proposed Toronto casino-resort a much different environment than has been studied in the past. In particular, the development of an integrated resort will likely draw substantial business from outside of the area, unlike other forms of gambling examined in the problem gambling revenue studies conducted in the past (these typically looked at a diverse range of offerings, including lotteries, bingo, and horse tracks). In economic terms, tourists from outside of the area provide incremental gambling revenue without any of the domestic problem gambling issues, and the proposed design of the Toronto casino-resort appears to be designed to maximize its attractiveness to tourists, as it includes amenities like hotels and convention facilities. Of course, these non-gaming amenities will also yield substantial direct revenues and economic benefits, without the concerns of whether these revenues and benefits are derived from problem gamblers.

4 Conclusion

This study sought to provide guidance to GTA casino policy makers and stakeholders on two different questions related to problem gambling:

1) What do we know about the relationship between gambling opportunities and problem gambling?
2) What do we know about the gaming revenues associated with problem gamblers?

Our analysis of the first question revealed that the impacts of gambling expansion on problem gambling rates are in fact more complex than originally assumed by early researchers (and indeed by much of the public). The notion that problem gambling rates simply rise as exposure increases has been shown to be false. An adaptation curve, where the disease's spread begins to diminish as the general population adjusts and responds, appears as though it may explain problem gambling prevalence well. Modern responsible gambling programs, which are underrepresented in prior studies of availabilities and problems, are also likely to further abate future harm caused by casino expansion – and the GTA possesses some of the world's most modern and advanced programs in this area.

Regarding the second question, our review of literature produced several different studies related to the proportion of revenue from problem gamblers, but most of these studies were not generalizable to the GTA market. Based on our review, the sole study that is somewhat relevant to the GTA would be Williams and Wood's (2007) examination of the Ontario market. However, we found that this study significantly overestimates what would likely be the share of revenue from problem gamblers in Ontario if a new casino were to be introduced in the GTA. If the rates from Williams and Wood are adjusted for more recent estimates of PG prevalence and are adjusted to include revenue from out of province visitors, we expect the share of total gaming revenue from Ontario problem gamblers to be much closer to 5.7% than the reported value of 36%. We also note that the development of an integrated resort will likely draw substantial business from outside of the area, unlike other forms of gambling used in the problem gambling revenue studies conducted in the past, further reducing the share of revenue from Ontario problem gamblers.

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Contact Information

Kahlil S. Philander, Ph.D.
International Gaming Institute
4505 Maryland Parkway, Box 456037
Las Vegas, NV 89154-6037
Phone: (702) 895-2008
Fax: (702) 895-1135

Bo J. Bernhard, Ph.D.
International Gaming Institute
4505 Maryland Parkway, Box 456037
Las Vegas, NV 89154-6037
Phone: (702) 895-2935
Fax: (702) 895-1135