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Regional impacts of casino availability on gambling problems: Evidence from the Canadian Community Health Survey

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ABSTRACT

Casinos are generally recognized as significant generators of economic impact and tourism, but access is typically controlled in a perceived effort to reduce social harms, particularly those from gambling disorders. Using data from a representative sample of 50,048 Canadians across four provinces, this study empirically tests theory of the regional impacts of casino availability on participation in gambling and the development of gambling related problems. Increased exposure to casinos is found to be related to increases in both participation and problem gambling risk, despite the observation that all four provinces recently experienced casino expansion and population-wide declines in problem gambling prevalence rates. The estimates are robust to broad controls for health and demographic risk factors. The findings suggest that hospitality/tourism planners should consider wider expansion of gambling paired with increased investment in responsible and problem gambling programs, to maximize economic impacts while accelerating social adaptation to gambling related harms.

1. Introduction

Casinos are one of the largest components of the hospitality and tourism sector in terms of economic impact. In the United States, a well-developed market, casinos generate more employment than the airline industry and consumer spending is nearly equal to that of hotel lodging (Economic Impact of the US Gaming Industry, 2018). In more nascent gaming markets, jurisdictions often support casino expansion as a core component of regional or international tourism growth strategies, designed to attract visitors who will spend on both casino games and complementary hospitality/tourism services (Eadington, 2003; Henderson, 2006; Ishihara, 2017). Recognition of benefits is not just a public accounting phenomenon. Residents in local communities typically recognize the positive economic effects that casinos have on their neighborhood, and this recognition often grows over time (Lee & Back, 2006a; Lee, Kang, Long, & Reisinger, 2010).

Despite the economic benefits of casino gambling, expansion is often opposed in local communities. While proponents of casino resorts cite benefits associated with tax revenue, employment, and inbound tourism (Eadington, 1998, 2011; Philander, 2014; Philander, Bernhard, Wimmer, Singh, & Eadington, 2015), detractors cite many different social concerns including crime, money laundering, loss of community values, and environmental impacts as reasons to reject casino expansion (Ishizaka, Nemery, & Lidouh, 2013; Lee & Back, 2003, 2006b; Lee et al., 2010; Wan, 2012; Wu & Chen, 2015). In addition to those objections, perhaps the most significant concern of casino gambling critics is the harm associated with gambling disorders (Anders, 1996; Korn, 1999, 2000; Korn, Gibbins, & Azmier, 2003; Philander, Abarbanel, Bernhard, & Cho, 2017), which are also often described as the originating source of many of those negative events, due in part to empirical associations, but also to historical and contemporary views of persons with gambling disorders as degenerate (Custer, 1984; Hodgins, Stea, & Grant, 2011; Rose, 1988).

The economic impacts and social concerns of casino gambling are both so great that casinos are typically regulated and controlled in a manner different from other industries. This includes locating casinos in geographically isolated resort communities (e.g. Macau SAR, China; Atlantic City, USA; and Jeju Island, South Korea), locating casinos along borders with other jurisdictions (e.g. France casinos along the Switzerland border, Cambodian casinos along the Thailand border, and Oklahoma casinos along the Texas border), and restricting entry by local residents (e.g. Bahamas, Singapore, and Monaco), in an effort to accrue economic benefits while exporting the negative impacts of gambling addiction to other jurisdictions (Eadington, 1999). Additional controls occur at the firm level. These interventions are initiated by both regulators and firms, and include player self-exclusion (Gainsbury, 2014; Parke & Rigbye, 2014), advertising and marketing restrictions (Parke, Harris, Parke, Rigbye, & Blaszczynski, 2014), and education

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programs designed to prevent the development of problems (Wood & Griffiths, 2014; Wood, Wohl, Tabri, & Philander, 2017).

While the concerns over the harms from gambling preoccupy many public debates and industry efforts, there is an absence of well tested theory describing whether the presence of regulated casinos will increase the prevalence of gambling problems in a local community. This debate perpetuates because rates of problem gambling are largely unchanged over multiple decades, despite the broad expansion of regulated casino gambling (Welte, Barnes, Tidwell, Hoffman, & Wieczorek, 2015). To effectively develop casino-related tourism strategies, policies, and programs, a better understanding of marginal impacts of casino properties on regional gambling-related harms is important. Little empirical work has carefully assessed the impact of gambling expansion on regional gambling problems. In this study, a large representative health survey collected by Canada's national statistical agency, Statistics Canada, is connected to geographic information of casino locations, to estimate the impact of casinos on local residents' likelihood of gambling and of developing problems with gambling.

1.1. Exposure and adaptation theories

Gambling disorder is a behavioral addiction, characterized by high involvement in gambling in terms of time and/or money spent on the activity, along with continued play despite substantial negative outcomes personally, socially, and/or financially (Hodgins et al., 2011). As casino gambling expanded throughout the 20th century, many researchers and pundits viewed gaming expansion as monotonic in its impacts on gambling participation and problems – that is, with an increased number of casinos would come an increased amount of societal harms (Abbott et al., 2013; Korn, 2000; Volberg, 2004). This came to be known as the “exposure model”, and related inferences served as a reason for limiting the expansion of casino gaming across jurisdictions.

A more nuanced perspective on the theoretical relationship between casino expansion and gambling disorder was introduced by LaPlante and Shaffer (2007), who describe exposure to gambling as similar to other public health toxins. Individuals are susceptible to infection, with some persons having higher risks than others, but they are also capable of social and behavioral responses that can reduce harmful impacts (McGuire, 1964). Persons exposed to gambling may therefore develop problems if there is exposure and they are adequately vulnerable, but individual and social behaviors may adapt to recover from problems and prevent future harms. Conceptually, adaptation may be observed through reduced frequency of play, more informed decision making, recognition of risks, better treatment access and delivery, and/or more responsible play (LaPlante & Shaffer, 2007; Prentice & Zeng, 2018). Based on the theorized relationship between casino availability and gambling behavior, two null hypotheses emerge:

H1. Participation in gambling is unrelated to the number of gambling venues

H2. Gambling problems are unrelated to the number of gambling venues

To better describe the mechanisms by which individuals may be exposed to gambling, Shaffer, LaBrie, and LaPlante (2004) propose a regional exposure (RE) model, and operationalize component parts of exposure to better frame the impacts of gambling availability on gambling problems. The authors posit gambling disorder's relationship to regional exposure can be functionally described as related to dosage (the number of gambling venues), potency (the types of gambling offered) and duration (the length of time that gambling has been available. While this study focuses only on casino-gaming, potency effects are ignored, but a third null hypothesis is added to account for duration effects:

H3. Gambling problems are unrelated to the length of casino availability

There are few studies that have tested exposure or adaptation effects. In a short review, Tong and Chim (2013) found mixed results in terms of the relationship between proximity and problem gambling risk, which may be a function of methodological limitations in the literature. The most illustrative empirical literature is from Jacques & Ladouceur and colleagues. In two studies, the authors exploited a natural experiment of a Quebec casino opening by comparing respondents from the local municipality to a similar city without expansion (Jacques & Ladouceur, 2006; Jacques, Ladouceur, & Ferland, 2000). They observed that problem gambling rates fell in both cities but fell further in city without a casino. Subsequently, they conducted a repeated measures study of a Canadian region during a period of gambling expansion and found a relationship between casino proximity and gambling participation (Sévigny, Ladouceur, Jacques, & Cantinotti, 2008). They did not find a relationship between proximity and problem gambling, but that study controlled for relatively few confounding variables. One of the few studies using a large and representative data set is Pearce, Mason, Hiscock, and Day (2008), which focused on a national sample of New Zealand residents. The authors found casino proximity-based impacts on problem gambling but could not control for individual-level health risk factors. This is an important omission, as gambling disorder is highly related to other mental health and addiction issues, and is often not an individual's primary diagnosis (Hodgins et al., 2011; Johansson, Grant, Kim, Odlaug, & Götestam, 2009).

2. Methodology

2.1. Model

In this study, the likelihood of gambling and the severity of gambling problems are modeled as a function of RE, along with risk-factors associated with individual health (*IH*) (self-perceived health categories, self-perceived mental health categories, reported mood disorder, reported anxiety disorder, self-perceived stress categories, and alcohol consumption frequency categories) and demographic variables (*DE*) (sex, province of residence, marital status, income group, age group). RE is adapted from the model proposed by Shaffer et al. (2004):

$$RE = \alpha + \beta_1 f(D) + \beta_2 f(P) + \beta_3 f(T) + \beta_4 f(X_4) + ... + \beta_n f(X_n) + \varepsilon$$

Where *RE* is determined by a constant (α), the *dose* or exposure quantity (D), the *potency* or types of gambling (P), the *duration* of exposure or time with gambling (T), additional public health factors (X_i), where $i \in (4, n)$, and the model error term (ε). Participation in gambling is modeled as a function of RE, IH, DE, and an error term, μ_g: $Participation = f(RE, IH, DE, \mu_g)$. Problem gambling risk is modeled as a function of RE, IH, DE, and an error term, μ_{pg}: $Problem\ Gambling\ Risk = f(RE, IH, DE, \mu_{pg})$. Participation is modeled with a binary dependent variable and estimated using a logit function while problem gambling risk is modeled with an ordinal dependent variable and estimated using an ordered logit function.

2.2. Data

Individual response data is taken from the Canadian Community Health Survey (CCHS) microdata file (Canadian Community Health Survey - Annual Component Study Documentation, 2017). The CCHS is a large cross-sectional survey of Canadian residents aged 12 or older, which focuses on health status and health determinants and is designed to provide reliable estimates at the health region level. The individual-level response rate is 87.3%. In the 2013/2014 CCHS release, an optional gambling-related question module was included for four provinces: Quebec (QC), British Columbia (BC), Manitoba (MB), and Saskatchewan (SK). Across the four provinces, 50,048 respondents received this module. The problem gambling prevalence rates for the four provinces are provided in Table 2. While problem gambling prevalence rates are not available by health region in earlier versions of the

Table 1
Prevalence rates of gambling categories from 2002 CCHS and 2013/2014 CCHS.

	Non-problem/ Non-gambler	Low-risk	Moderate-risk	Problem gambler	Count
QC 2002	96.86%	2.22%	0.53%	0.40%	5313
QC 2013/ 2014	97.92%	1.57%	0.25%	0.27%	20,916
BC 2002	94.85%	4.17%	0.59%	0.39%	3885
BC 2013/ 2014	96.64%	2.87%	0.34%	0.16%	13,910
MB 2002	93.40%	4.89%	0.94%	0.76%	2227
MB 2013/ 2014	95.05%	4.06%	0.46%	0.43%	6683
SK 2002	92.26%	5.20%	0.79%	1.08%	2038
SK 2013/ 2014	95.14%	4.03%	0.58%	0.24%	6673

Note: Prevalence rates are limited to respondents aged 15 or older to compare similar age groupings.

Table 2
Summary statistics.

	Count	Mean	Std. Dev.	Min	Max
PGSI group	50,048	0.040	0.244	0	3
Gamble	50,048	0.468	0.499	0	1
Casinos per 100,000	50,048	0.523	0.656	0	2.946
Casinos per 100,000^2	50,048	0.704	1.461	0	8.679
Years w/casino(s)	50,048	9.311	8.492	0	28
Self-perceived health	49,986	2.593	0.997	0	4
Self-perceived mental health	49,963	2.953	0.929	0	4
Mood disorder	49,972	0.076	0.265	0	1
Anxiety disorder	49,966	0.064	0.244	0	1
Self-perceived stress	49,827	2.661	1.012	1	5
Alcohol freq.	49,767	2.856	2.306	0	7
Sex	50,048	1.555	0.497	1	2
Province	50,048	2.281	1.283	1	4
Marital status	50,048	2.401	1.294	1	9
Income group	50,048	3.379	1.431	1	9
Age group	50,048	9.605	4.222	1	16

CCHS, the 2001 study did provide rates by province, which are also shown in Table 2. Across all provinces, the proportion of problem and moderate-risk gamblers dropped by 50.0% over the 12-year period: $z = 7.20,\ p < 0.001$.

Casino location and opening date information is primarily taken from records at the Alberta Gambling Research Institute (2018), but is supplemented with information about BC electronic gaming machine casinos known as community gaming centres (Local Government Share of Provincial Casino and Community Gaming Centre Revenue, 2018) and individual property searches on Google Maps that resulted in the removal of racino locations in Quebec due to closure. In total, there are 56 properties across four provinces by 2014, which are mapped onto the provinces' 53 health regions. The majority of those properties, 34 total, opened after 2002.

Dose is measured using the concentration of casinos in respondents' health regions, operationalized as the number of casinos per 100,000 residents, with linear and quadratic terms to allow for reduced returns to scale. *Duration* is measured as the number of years in which the health region has had a casino. *Potency* is not estimated directly as there are no suitable proxies, but is controlled for by using provincial indicator variables, as other non-casino gambling offerings are regulated provincially and tend to be widely distributed across health regions if offered (e.g. retail lottery, video lottery terminals, online gambling).

As the CCHS microdata file does not report individual game participation, *Gamble* is defined as participation in any form of gambling.

Table 3
Estimated effect of casino availability on participation (Logit model).

	(1)	(2)	(3)
	DV: Gamble	DV: Gamble	DV: Gamble
Casinos per 100,000	1.974***	1.355***	1.333***
	(0.073)	(0.068)	(0.068)
Casinos per 100,000 sq.	0.808***	0.909***	0.917***
	(0.013)	(0.018)	(0.018)
Self-perceived health			0.967**
			(0.011)
Self-perceived mental health			1.013
			(0.012)
Mood disorder			0.977
			(0.039)
Anxiety disorder			1.036
			(0.044)
Self-perceived stress			1.045***
			(0.011)
Alcohol Freq.			1.077***
			(0.005)
Sex	No	Yes	Yes
Province	No	Yes	Yes
Marital status	No	Yes	Yes
Income	No	Yes	Yes
Age	No	Yes	Yes
Observations	50,048	50,048	49,313
Pseudo R^2	.007	.052	.057

Odds ratios reported in main results. Robust standard errors in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

This reflects direct effects of play at casinos, but also reflects potential changes in social norms towards all gambling, as a result of regional exposure. The problem gambling severity index (*PGSI group*), as amended by Currie, Hodgins, and Casey (2013), is used to measure gambling problems and includes four ordinal categories: non-problem/ non-gambler, low-risk, moderate-risk, and problem gambler. Summary statistics for variables used in the analysis are provided in Table 1. All estimates are produced using StataMP 15 (StataCorp LLC, 2017).

3. Results

Results of the logit model estimating casino availability effects on gambling participation (*Gamble*) are provided in Table 3. Presence of demographic control variables is indicated. In all models, casino concentration is positively related to participation in gambling with decreasing returns to scale. This implies a rejection of null hypothesis H1. The estimates in model (3) suggest that the incremental impacts of casinos on participation will not dissipate until 3.334 casinos exist per 100,000 residents and this is higher than any health region in the data set. As shown in the fully specified model (3), self-perceived health, self-perceived stress, and alcohol consumption are all statistically significant and of the correct sign. Self-perceived mental health, mood disorders, and anxiety disorders are unrelated to gambling participation.

Results of the ordered logit model estimating casino availability effects on problem gambling severity (*PGSI group*) are provided in Table 3. In addition to participation, casino concentration is found to be related to gambling related problems, with decreasing returns to scale. This implies a rejection of null hypothesis H2. In model 3, the estimates suggest that the incremental impacts of casinos will not dissipate until 3.460 casinos exist per 100,000 residents, which again is higher than any health region in the data set. The proportional odds ratios suggest that at one casino per 100,000 residents, there is a 47.8% increase in the likelihood of belonging to the moderate-risk or problem gambling categories, versus the non-problem or low-risk categories. Self-

Table 4
Estimated effect of casino availability on problem gambling risk (Ordered logit model).

	(1)	(2)	(3)
	DV: PGSI Group	DV: PGSI Group	DV: PGSI Group
Casino per 100,000	2.841***	1.793***	1.733***
	(0.295)	(0.238)	(0.234)
Casinos per 100,000 sq.	0.721***	0.846**	0.853**
	(0.0349)	(0.0451)	(0.047)
Self-perceived health			0.831***
			(0.025)
Self-perceived mental health			0.853***
			(0.027)
Mood disorder			1.197
			(0.115)
Anxiety disorder			1.040
			(0.110)
Self-perceived stress			1.129***
			(0.033)
Alcohol freq.			1.064***
			(0.013)
Sex	No	Yes	Yes
Province	No	Yes	Yes
Marital status	No	Yes	Yes
Income	No	Yes	Yes
Age	No	Yes	Yes
Observations	50,048	50,048	49,313
Pseudo R^2	.009	.049	.052

Proportional odds ratios reported in main results. Robust standard errors in parentheses.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 5
Estimated effect of casino duration on participation and problem gambling risk.

	(1)	(2)	(3)	(4)
	Logit	Logit	Ordered logit	Ordered logit
	DV: Gamble	DV: Gamble	DV: PGSI Group	DV: PGSI Group
Years with casino	1.007***	1.007***	1.008*	1.008*
	(0.00135)	(0.00136)	(0.004)	(0.004)
Casino per 100,000	1.182**	1.159*	1.551**	1.517**
	(0.0672)	(0.0666)	(0.231)	(0.229)
Casinos per 100,000 sq.	0.950*	0.960	0.886*	0.891
	(0.0204)	(0.0208)	(0.051)	(0.053)
Self-perceived health		0.967**		0.831***
		(0.0105)		(0.025)
Self-perceived m. health		1.013		0.853***
		(0.0121)		(0.027)
Mood disorder		0.977		1.196
		(0.0387)		(0.115)
Anxiety disorder		1.038		1.041
		(0.0436)		(0.111)
Self-perceived stress		1.044***		1.129***
		(0.0107)		(0.033)
Alcohol freq.		1.077***		1.064***
		(0.00481)		(0.013)
Sex	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes
Marital status	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes
Observations	50,048	49,313	50,048	49,313
Pseudo R^2	.053	.057	.039	.052

Odds ratios and proportional odds ratios reported in main logit and ordered logit results, respectively. Robust standard errors in parentheses.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

perceived health, self-perceived mental health, self-perceived stress, and alcohol consumption are all statistically significant and of the expected sign, while mood disorders, and anxiety disorders are unrelated to gambling problems in this model.

Table 5 introduces duration (*Years with casino*) to models (2) and (3) from Tables 3 and 4 The models show a small but significant effect size of duration on participation in gambling and gambling problems. This implies a rejection of null hypothesis H3. The linear casino availability term remains significant in all models, but the quadratic term is not significant in the fully specified models. To assess potential multicollinearity issues, variance inflation factors (VIF) were estimated. In model (4), the VIF is 1.50 for the *Years with casino* variable. The only VIF above 1.5 for a non-demographic control variable was the expected high values for linear (16.42) and squared (11.57) *casino per 100,000* variables. When only the linear variable is used (model results not shown), the VIF falls to 1.86 and mean VIF for all variables is 2.25, well below recommended maximums (Hair, Black, Babin, Anderson, & Tatham, 2010).

4. Discussion

This study demonstrated a relatively robust relationship between casino availability, participation in gambling, and problem gambling risk levels in large representative data set of four Canadian provinces. It also demonstrated a relationship between duration of casino exposure, gambling participation, and problem gambling risk. While this may appear to support policy interventions to restrict casino availability, it should also be considered that overall levels of problem gambling prevalence fell in each province between 2002 and 2013/2014 CCHS studies, despite the number of available casinos more than doubling in that period. These casinos were also not generally located near foreign borders or with local access restrictions, which are tactics thought in other jurisdictions to attenuate local resident demand.

As a whole, the empirical findings provide evidence for exposure and adaptation forces described by LaPlante and Shaffer (2007). While casino concentration is associated with increased participation and risk of gambling problems in the 2013/2014 CCHS data set, the drop in prevalence rates from the 2002 study suggests some population-wide adaptation. LaPlante & Shaffer describe this adapation as potentially including "social learning, waning of novelty effects, increases in harmful consequences, developed interventions, and new interests that preclude engaging in the initially harmful activity."

One practice that appears particularly supportive of adaptation is spending by the provincial governments on firm-centric responsible gambling programs and treatment-centric problem gambling programs. In the 2013/2014 fiscal year, the four provinces distributed between 1.2% and 3.7% of non-lottery gaming revenue to related programs. As several forms of problem gambling treatment have shown evidence of effectiveness (Hodgins et al., 2011), and evidence is beginning to emerge around the effectiveness of previously untested responsible gambling problems (Ladouceur, Shaffer, Blaszczynski, & Shaffer, 2016), the relatively high levels of investment may have influenced the population-wide adaptation. This would at least partially explain the drop in problem gambling prevalence despite the empirical observations in this study that increased casino availability is associated with increased harms.

As tourism planners consider the role of casinos in their economy and community, both the long-run trends in problem gambling prevalence should be weighed, along with the regional aspects of exposure. Based on the observations in this study, a more socially optimal and responsible strategy to casino expansion may not be geographic or local access restrictions, but may instead be wider expansion paired with increased investment in responsible gambling and treatment programs. This will lead to greater economic impacts and will likely lead to faster and greater social adaptation to gambling harms.

4.1. Limitations/future research

This study examined a large sample of individuals, but all came from a single country and may not be widely generalizable in different nations or cultures. Similar work in other jurisdictions, or with other forms of gambling, would be useful contributions. While this study controlled for most individual level risk-factors associated with gambling disorder, the cross-sectional analysis is subject to typical concerns around endogeneity and reverse causality. Future studies that examine longitudinal data sets would provide better evidence around causality. Last, more research is needed for tourism planners to understand what adaptive programs warrant increased investment, as the specific dynamics of adaptation are largely unknown.

Conflicts of interest

No external funding was received for this study.

KP was previously the Director of Social Responsibility at the British Columbia Lottery Corporation. In the past three years, he has received funds from the British Columbia Lottery Corporation, Washington State Gaming Commission, Manitoba Gambling Research Program, Responsible Gambling Council of Canada, UNLV International Centre for Gaming Regulation, U.S.-Japan Business Council, Wynn Resorts, West Virginia Lottery, Indiana Gaming Commission, Board of Regents of the Nevada System of Higher Education, and iDevelopment and Economic Association. He has received reimbursement for travel from the National Council for Problem Gambling, International Association of Gaming Advisors, National Centre for Responsible Gambling, North American State and Provincial Lottery Association, Evergreen Council on Problem Gambling, Global Gaming Expo Asia, and Alberta Gambling Research Institute.

Author contributions

KP completed all aspects of this study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tourman.2018.10.017.

References

Abbott, M., Binde, P., Clark, L., Hodgins, D., Korn, D., Pereira, A., ... Williams, R. J. (2013). Conceptual framework of harmful gambling: An international collaboration. *Gambling Research Exchange Ontario*. https://doi.org/10.1016/S0022-3913(12)00047-9.

Alberta Gambling Research Institute (2018). *Casinos and racinos in Canada.* Retrieved July 15, 2018, from https://abgamblinginstitute.ca/resources/reference-sources/canada-casinos.

Anders, G. (1996). Public policy and the displacement effects of Casinos . *A Case Study of Riverboat Gambling in Missouri, 15*(2), 105–121.

Canadian Community Health Survey - Annual Component Study Documentation (2017). *Ottawa.* Retrieved from http://gsg.uottawa.ca/data/open/csi/cchs-82M0013-E-2013-2014-Annual-component.pdf.

Currie, S. R., Hodgins, D. C., & Casey, D. M. (2013). Validity of the problem gambling severity index interpretive categories. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-012-9300-6.

Custer, R. L. (1984). Profile of the pathological gambler. *Journal of Clinical Psychiatry*.

Eadington, W. R. (1998). Contributions of casino-style gambling to local economies. *The Annals of the American Academy of Political and Social Science, 556*(1), 53–65.

Eadington, W. R. (1999). The economics of casino gambling. *The Journal of Economic Perspectives, 13*(3), 173–192.

Eadington, W. R. (2003). The spread of casinos and their role in tourism development. *Tourism development* (pp. 135–150). Routledge.

Eadington, W. R. (2011). The legalization of casinos: Policy objectives, regulatory alternatives, and cost/benefit considerations. *Journal of Travel Research, 34*(3), 3–8. https://doi.org/10.1177/004728759603400301.

Economic Impact of the US Gaming Industry (2018). *Oxford.* Retrieved from https://www.americangaming.org/sites/default/files/OE-AGA Economic Impact US - 2018 June.pdf.

Gainsbury, S. M. (2014). Review of self-exclusion from gambling venues as an intervention for problem gambling. *Journal of Gambling Studies, 30*(2), 229–251. https://doi.org/10.1007/s10899-013-9362-Contact.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis, Vol. 816*Prentice Hallhttps://doi.org/10.1016/j.ijpharm.2011.02.019.

Henderson, J. (2006). *Betting on casino tourism in Asia: Singapore's Integrated resorts.* Tourism Review Internationalhttps://doi.org/10.3727/154427206779307196.

Hodgins, D. C., Stea, J. N., & Grant, J. E. (2011). Gambling disorders. *The Lancet, 378*(9806), 1874–1884. https://doi.org/10.1016/S0140-6736(10)62185-X.

Ishihara, H. (2017). Japanese casino law. *Gaming Law Review and Economics, 21*(1), 34–35.

Ishizaka, A., Nemery, P., & Lidouh, K. (2013). Location selection for the construction of a casino in the greater London region: A triple multi-criteria approach. *Tourism Management*. https://doi.org/10.1016/j.tourman.2012.05.003.

Jacques, C., & Ladouceur, R. (2006). A prospective study of the impact of opening a casino on gambling behaviours: 2- and 4-year follow-ups. *Canadian Journal of Psychiatry*. https://doi.org/10.1177/070674370605101206.

Jacques, C., Ladouceur, R., & Ferland, F. (2000). Impact of availability on gambling: A longitudinal study. *Canadian Journal of Psychiatry*. https://doi.org/10.1177/070674370004500904.

Johansson, A., Grant, J. E., Kim, S. W., Odlaug, B. L., & Götestam, K. G. (2009). Risk factors for problematic gambling: A critical literature review. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-008-9088-6.

Korn, D. A. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies*. https://doi.org/10.1023/A:1023005115932.

Korn, D. A. (2000). Expansion of gambling in Canada: Implications for health and social policy. *Canadian Medical Association Journal: Canadian Medical Association Journal*.

Korn, D. A., Gibbins, R., & Azmier, J. (2003). Framing public policy towards a public health paradigm for gambling. *Journal of Gambling Studies, 19*, 235–256. https://doi.org/10.1023/A:1023685416816.

Ladouceur, R., Shaffer, H. J., Blaszczynski, A., & Shaffer, P. (2016). Responsible gambling: A synthesis of the empirical evidence. *Addiction Research and Theory, 0*(0), 1–11. https://doi.org/10.1080/16066359.2016.1245294.

LaPlante, D. A., & Shaffer, H. J. (2007). Understanding the influence of gambling opportunities: Expanding exposure models to include adaptation. *American Journal of Orthopsychiatry*. https://doi.org/10.1037/0002-9432.77.4.616.

Lee, C. K., & Back, K. J. (2003). Pre- and post-casino impact of residents' perception. *Annals of Tourism Research*. https://doi.org/10.1016/S0160-7383(03)00060-4.

Lee, C. K., & Back, K. J. (2006a). Examining structural relationships among perceived impact, benefit, and support for casino development based on 4 year longitudinal data. *Tourism Management, 27*(3), 466–480. https://doi.org/10.1016/j.tourman.2004.11.009.

Lee, C. K., & Back, K. J. (2006b). Examining structural relationships among perceived impact, benefit, and support for casino development based on 4 year longitudinal data. *Tourism Management*. https://doi.org/10.1016/j.tourman.2004.11.009.

Lee, C. K., Kang, S. K., Long, P., & Reisinger, Y. (2010). Residents' perceptions of casino impacts: A comparative study. *Tourism Management*. https://doi.org/10.1016/j.tourman.2009.02.011.

Local Government Share of Provincial Casino and Community Gaming Centre Revenue (2018). *Victoria.* https://www2.gov.bc.ca/assets/gov/sports-recreation-arts-and-culture/gambling/gambling-in-bc/reports/fin-rpt-local-gov-revenue.xlsx.

McGuire, W. J. (1964). *Some contemporary approaches. Advances in experimental social Psychology.* https://doi.org/10.1016/S0065-2601(08)60052-0.

Parke, A., Harris, A., Parke, J., Rigbye, J., & Blaszczynski, A. (2014). Responsible marketing and advertising in gambling: A critical review. *The Journal of Gambling Business and Economics, 8*(3), 21–35.

Parke, J., & Rigbye, J. (2014). *Self-exclusion as a gambling harm minimisation measure in great Britain: An overview of the academic evidence and perspectives. London, England.*

Pearce, J., Mason, K., Hiscock, R., & Day, P. (2008). A national study of neighbourhood access to gambling opportunities and individual gambling behaviour. *Journal of Epidemiology & Community Health*. https://doi.org/10.1136/jech.2007.068114.

Philander, K. S. (2014). Specific or ad valorem? A theory of casino taxation. *Tourism Economics*. https://doi.org/10.5367/te.2013.0265.

Philander, K. S., Abarbanel, B. L. L., Bernhard, B. J., & Cho, R. (2017). *Socio-economic Impacts of Japanese integrated resorts: Review & recommendations. Las vegas.* Retrieved from https://www.unlv.edu/sites/default/files/page_files/27/JapanSocialEconomicImpactsReport.pdf.

Philander, K. S., Bernhard, B. J., Wimmer, B. S., Singh, A. K., & Eadington, W. R. (2015). U.S. casino revenue taxes and short-run labor outcomes. *Journal of Policy Modeling, 37*(1)https://doi.org/10.1016/j.jpolmod.2015.01.008.

Prentice, C., & Zeng, Z. (2018). From gambling exposure to adaptation: Implications for casino sustainability. *Journal of Retailing and Consumer Services, 41*(September 2017), 31–36. https://doi.org/10.1016/j.jretconser.2017.11.004.

Rose, I. N. (1988). Compulsive gambling and the law: From sin to vice to disease. *Journal of Gambling Behavior*. https://doi.org/10.1007/BF01018430.

Sévigny, S., Ladouceur, R., Jacques, C., & Cantinotti, M. (2008). Links between casino proximity and gambling participation, expenditure, and pathology. *Psychology of Addictive Behaviors*. https://doi.org/10.1037/0893-164X.22.2.295.

Shaffer, H. J., LaBrie, R. A., & LaPlante, D. (2004). Laying the foundation for quantifying regional exposure to social phenomena: Considering the case of legalized gambling as a public health toxin. *Psychology of Addictive Behaviors*. https://doi.org/10.1037/0893-164X.18.1.40.

StataCorp, L. L. C. (2017). *Stata. College station, TX.* Retrieved from www.stata.com/manuals/erm.pdf.

Tong, H. H. Y., & Chim, D. (2013). The relationship between casino proximity and problem gambling. *Asian Journal of Gambling Issues and Public Health*. https://doi.org/10.1186/2195-3007-3-2.

Volberg, R. (2004). Fifteen years of problem gambling prevalence research: What do we know? Where do we go? *Journal of Gambling Issues*. https://doi.org/10.4309/jgi.2004.10.12.

Wan, Y. K. P. (2012). The social, economic and environmental impacts of casino gaming in Macao: The community leader perspective. *Journal of Sustainable Tourism*. https://doi.org/10.1080/09669582.2011.636818.

Welte, J. W., Barnes, G. M., Tidwell, M. C. O., Hoffman, J. H., & Wieczorek, W. F. (2015). Gambling and problem gambling in the United States: Changes between 1999 and 2013. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-014-9471-4.

Wood, R. T. A., & Griffiths, M. D. (2014). Understanding positive play: An exploration of playing experiences and responsible gambling practices. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-014-9489-7.

Wood, R. T. A., Wohl, M. J. A., Tabri, N., & Philander, K. S. (2017). Measuring responsible gambling amongst players: Development of the positive play scale. *Frontiers in Psychology, 8*. https://doi.org/10.3389/fpsyg.2017.00227 (FEB).

Wu, S. T., & Chen, Y. S. (2015). The social, economic, and environmental impacts of casino gambling on the residents of Macau and Singapore. *Tourism Management*. https://doi.org/10.1016/j.tourman.2014.11.013.

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