Addiction (1999) 94(10), 1449–1466

RESEARCH REPORT

Community effects of the opening of the Niagara casino

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Abstract

Aims. *The impacts on the community of the opening of a casino in Niagara Falls are studied.* **Design.** *The study uses a pre/post design for the community data, with pre/post data from Ontario as a whole as a comparison.* **Setting.** *The study site is the city of Niagara Falls, Ontario, where a casino opened in early December, 1996.* **Participants.** *Using random-digit dialing, telephone interviews were conducted with adult residents of Niagara Falls in 1996 and 1997, and with adult residents of Ontario in 1995 and 1997.* **Measurements.** *Aside from demographic variables, measures included general attitudes to gambling, expectations about (1996) and experiences with (1997) the casino's opening, extent of participation in 11 types of gambling and 18 items on problems with gambling: five key items from a standard gambling problems score (SOGS), five life-area problems items, and items on pressures from others concerning the respondent's gambling and on gambling problems among family and friends.* **Findings.** *Attitudes to gambling remained stable in Niagara Falls, while there was some evidence of decline in approval in Ontario as a whole. While strong majorities of 1996 respondents had expected many positive and negative effects on The Community of the Casino's opening, Significantly fewer respondents in 1997 reported actually experiencing most of these effects. While a small increase in employment was found, it fell far below projections, a result probably reflecting displacement effects. The rate and level of casino gambling increased in Ontario, but increased even more in Niagara Falls, with little displacement of other gambling. Reported gambling problems increased significantly in Niagara Falls for two of 10 gambling problem items and for the short SOGS score, while rates were generally stable or declining in the province. Pressure from others about gambling rose significantly in Niagara Falls (in contrast to the province), and reported rates of family members or friends with gambling problems also rose substantially. There was an increasing trend in Niagara Falls for all 18 problem indicators.* **Conclusions.** *The casino's opening brought more gambling by local residents, and an increase in reported gambling problems; yet support for the casino, already strong, if anything grew. At least in the short term, problems from the increased availability of gambling manifested themselves not in the public arena but rather in the arena of private life.*

Introduction

This is a first report of the impacts on the community of the opening of a casino in the city of Niagara Falls, Ontario, in late 1996. Niagara Falls, located on the Niagara Penisula of South Central Ontario, is a city of more than 75 000

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ISSN 0965-2140 print/ISSN 1360-0443 online/99/101449-18

Carfax Publishing, Taylor & Francis Limited

which is within a 2-hour drive of two large urban centres (Toronto and Buffalo) and has been a well-established tourist destination for more than a century. This report draws primarily on surveys of the adult population of Niagara Falls carried out just before the opening of the casino, and again about a year later. Data from surveys of the adult population of Ontario as a whole, carried out in early 1995 and late 1997, are used for comparison. This paper reports on expectations of community members about the effects of the casino, in comparison with their experience a year later of what had actually happened. In addition, trends in the level of involvement in gambling in general, in-casino gambling and in the rates of gambling-related problems in Niagara Falls are compared to trends in the province as a whole. Taken together, these comparisons are the most comprehensive view yet of the effects of opening a casino, as seen from the perspective of the quantified experiences, positive and negative, of members of the host community.

Background

As the National Council of Welfare (1996) put it, "in less than a generation, gambling has become a multi-billion dollar industry in Canada", as in North America more generally. Before 1970, Ladouceur noted,

> legal gambling in Canada was restricted to occasional charity bingos and raffles, midway games of chance, parimutuel betting on horse races and friendly bets between individuals ... By 1993, legal gambling in Canada had expanded to include slot machines and video gaming devices, casinos, large-scale bingo operations, sports wagering and off-track betting on horse races. Lotteries, bingo and parimutuel wagering are available in every Canadian province; casinos now operate in more than half of the provinces (Ladouceur, 1996).

The increase in the availability of gambling has been fuelled to a large extent by the search by various levels of government for new sources of revenue. Gambling has indeed become a major source of governmental revenue, with the result that often "there is no impartial representative of the public's welfare among the various groups that influence the formation of public policy on commercial gambling—not even government" (McGurrin & Abt, 1992).

In the wake of the increase in the availability and diversity of types of gambling has come a growing awareness that there are problems as well as benefits from gambling. With varying degrees of alacrity or reluctance, Canadian provinces have moved to provide resources to deal with gambling problems (Kinross, 1995; Addiction Research Foundation, 1996), but relatively little attention has been paid in Canada to preventing gambling problems. There has also been little explicit recognition that the pathological gambler is not the only possible negative outcome of gambling—that there may be problems also at community and other aggregate levels.

In the continuing expansion of gambling availability, Ontario has been somewhere in the middle of the pack among Canadian provinces. In recent years, a number of new forms of gambling have become available in Ontario, including hospital lotteries, charity casinos and pull-tab tickets. Full-scale casinos came to Ontario in 1994 (Windsor), with three more (Windsor boat; Rama; Niagara) opened in the following years. In early 1998, the government phased out floating "charity casinos", which moved around between locations, operating for two or three nights at a time, with the intention of replacing them with 44 "neighborhood gaming clubs", with some revenues earmarked for charities, scattered throughout the province. In comparison to the rest of Canada, Ontario is also somewhere in the middle in making provision for referral and treatment of those with gambling problems—well behind the prairie provinces in allocations and timing, but ahead of the maritime provinces and British Columbia.

In the wake of the increase in gambling availability has come increasing public unease about the problems it is perceived as causing. To a considerable extent, this public unease has focused on video lottery terminals (VLTs). Facing rising resistance to the introduction of VLTs, the Ontario government decided instead in spring, 1998 to introduce slot machines in the province. Community resistance to the introduction of small-scale casinos—the "neighborhood gaming clubs"—also proved strong, so the number was reduced to only four new permanent casinos and installation of slot machines at 18 racetracks around the province.

These major social developments—the expansion of gambling availability, and increasing public resistance to further expansion—have happened largely in the dark, in terms of the availability of a cumulative tradition of knowledge and experience. Communities have found themselves with a lack of coherent and balanced information for making decisions about whether and how to introduce new forms of gambling, and how to deal with and minimize the new or increased problems the new gambling may bring. Economic models are available for estimating the benefits to the community from the new gambling—for instance, the Ernst & Young (1994b) model which was applied to estimate the "impact" of opening the casino in Windsor. Such models have been substantially criticized on grounds of basic principles in economics, since they assume that none of the share of the local economy attributable to the casino would otherwise have been devoted to other purposes (Persky, 1995). The Ernst & Young model also does not factor in the extra expenditures which may have to be made in the community because of the casino. In the case of Windsor, for instance, the Ernst & Young report mentions that 25 new police were hired in Windsor and 41 additional customs officers assigned to Windsor border traffic duty in preparing for the casino (Ernst & Young, 1994a, pp. 2–4, 2–5), but these extra costs for the taxpayer do not figure in the economic impact model.

Furthermore, such models are not balanced with any equivalent accounting of the problems for the community from gambling. Citing a US report, the British Columbia Gaming Policy Review noted that "there is little reliable data about the costs of some impacts such as problem gambling, crime and infrastructure expenditures, and effects on other businesses. Most of the analysis done respecting specific ventures is done by the industry itself and tends to ignore or understate costs" (British Columbia, 1994, p. 14). The Ernst & Young study, for instance, apparently does not consider problems such as crime, employee absenteeism or pathological gambling to have an economic dimension at all, since they are discussed under the heading "Other Non-Economic Impacts" (p. 5–1). Estimates of the costs of these problems would normally be included, for example, in economic cost studies in the cost-of-illness tradition (Single *et al.*, 1996).

A balanced analysis at the community level also needs to consider impacts of gambling, negative as well as positive, at the collective level. These are often intangible, but may nevertheless be experienced as substantial (Thompson *et al.*, 1993).

Studies of the full range of impacts of gambling at a community level have been few and far between. A series of studies in three Minnesota communities (Aasved & Schaefer, 1992; Aasved & Laudergan, 1993; Aasved *et al.*, 1995) examined the situation in the community after an expansion in gambling, but had no data from before the expansion. Evidence on adverse social impacts was confined to opinions, rumours and clinical anecdotes.

A longitudinal study of a state-wide youth sample examined the change in gambling behaviour of 15–18-year-olds with the introduction of a state lottery. The 18-month follow-up study did find an increase in frequency of legal gambling, but this increase was nearly offset by a decline in the frequency of informal, extralegal gambling (Winters, Shinchfield & Kim, 1995). Given the weaknesses in the study design (a non-probability sample, no control group and with the "before" measurement shortly after the state lottery first functioned), the study's results must be regarded with caution. Another study compared adult gambling frequencies among local residents before and a year after the opening of the first Ontario casino, in Windsor; a preliminary report found no net change (Govoni & Frisch, 1996). A 4 March 1999 press release from Frisch and coworkers reports no significant change in problem or pathological gambling in a new survey after 4 years (http://www.uwindsor.ca/pgrg/fyear.htm). However, if a one-tailed test is used, the reported rise in pathological gambling score from 0.8% to 1.4% is significant at the 0.05 level. Other studies have compared the perceptions of community residents before and after the opening of new casinos in small communities. In general, these studies have found that residents' attitudes were positive before the casino opened, but were less enthusiastic a couple of years later (Caneday & Zeiger, 1991; Perdue *et al.*, 1995; Stokowski, 1996).

Methods

Using random-digit dialing techniques, a probability sample of the adult population of the Niagara region was interviewed before or around the

time of the opening of the Niagara casino in late 1996. A new sample of adult residents of Niagara Falls were interviewed 1 year later, while at the same time the 1996 respondents were reinterviewed. The present analysis compares responses of residents of Niagara Falls in 1996 with responses of residents in 1997.

In addition, two province-wide surveys were used to compare trends in the province as a whole to those found in the city. These province-wide surveys were repeated cross-sectional samples. The analysis thus uses answers from a total of five datasets.

Samples

(1) A probability sample of 1002 adults (18 years and older) residing in the Niagara region were interviewed by telephone: 70% in the city of Niagara Falls, 30% in the surrounding region. The interviews were conducted in English, and averaged about 24 minutes in length. The survey was conducted for the Addiction Research Foundation by the Institute for Social Research at York University between 18 November and 19 December 1996. While 93% of the respondents were interviewed prior to the casino's opening, the last 7% of the sample was interviewed in the 10 days following the opening date. The survey asked questions about approval of the casino, expectations regarding the impact of the casino on the community, attitudes toward gambling, gambling behavior in the past 12 months and demographic and background information. Answers from the 677 residents of Niagara Falls in this sample are used in the present analyses. The response rate was 60% of estimated eligible households.

(2) In November and December 1997, about a year after the casino opened, 662 of the respondents from the whole Niagara region sample were reinterviewed. This represented a reinterview completion rate of 66% of first-wave respondents. The interview schedule repeated most of the questions asked in the first interview, and included some questions specifically about experiences with casino gambling, employment in the casino, questions regarding economic diversion of expenditures and some questions on gambling strategies and knowledge of the odds of winning. The 1997 answers from the 468 respondents resident in Niagara Falls are combined with (3) below as the "after" dataset on Niagara Falls. Longitudinal analysis of the Niagara data will be reported in a later paper. It should be noted that the two 1997 Niagara samples were similar in terms of the effects reported here.

(3) A new probability sample of 608 adults resident in the city of Niagara Falls was also interviewed in November/December, 1997. The questionnaire was primarily composed of items asked in component (2) above. The response rate was 60% of estimated eligible households.

(4) A province-wide probability sample of 1030 adults, interviewed about gambling behavior and problems and attitudes towards gambling and gambling policies in January–February 1995 (Ferris, Stirpe & Ialomiteanu, 1996) is used as a comparison control for the baseline community sample. Funding exigencies precluded the best choice for a "before" control sample, which would have been a new sample collected in late 1996. However, the 1995 sample is an adequate substitute, particularly to the extent that province-wide patterns are stable in the 1995/1997 comparisons. The response rate was 65% of estimated eligible households.

(5) A new province-wide probability survey of 1005 adults was interviewed in November and December 1997. The questionnaire was composed primarily of items about gambling and gambling-related problems as well as some questions about experiences with casino gambling, gambling strategies and knowledge of the odds of winning. The primary purpose of the data from the new province-wide sample was as an "after" control for the Niagara comparisons. Trends in the provincial data from 1995 to 1997 will thus be used as a control, in comparison with trends from 1996 to 1997 in the Niagara samples, to estimate the specific effects of the casino opening in the intervention community. The response rate was 62% of estimated eligible households.

Niagara Falls is, of course, a part of Ontario, and thus the intervention site is included within the control site in this study. Comparisons of the two will thus tend to underestimate very slightly divergences in status and in trend. However, since the Niagara Falls population is about 0.7% of the population of the province as a whole, the effect of this on the study results is negligible.

All samples were defined in terms of a randomized choice of one adult per household. To attain representative samples of the adult population, each respondent was weighted by the

number of adults in the household and by the reciprocal of the number of telephones, and the resulting weights were proportionately reduced so that the weighted dataset matched the unweighted sample size. All analyses in this report are based on these weighted datasets.

Measures

Expectations and perceptions of the casino's effects. Niagara region respondents were asked 28 items in 1996 concerning their expectations about the effects of the casino's opening on the community. Factor analyses (Turner, Ialomiteanu & Room, 1999) found that responses on most of these items clustered on three factors: expectations about social problems and disruption, about environmental problems and about economic and amenity benefits. In 1997 25 of the items were repeated, but now asked in terms of the respondent's perception of what had actually happened in the community as a result of the casino's opening.

Gambling behaviors. There was some variation between samples in the lists of types of gambling asked about, reflecting the advent of additional types of gambling in the province between 1995 and 1997 and greater or lesser subdivision of types. For the purposes of this analysis, 11 types of gambling were used: instant lottery tickets, sports lottery tickets, 6–49 lottery tickets, hospital lottery, bingo, betting on horse races, charity casino, casino (non-charity), betting on card-playing, video lottery and betting on sports events. The first three varieties of lottery are run by a provincial corporation, while hospital lotteries are run intermittently for the benefit of a particular hospital. For each type of gambling, respondents were asked if they had engaged in that type in the previous 12 months and, if so, how often they did so, and what their average monthly expenditure was for that type of gambling. Outliers were a problem with the expenditure data; but because the outliers are in fact the gamblers that we are most interested in, deleting or modifying the outliers would distort the data. In order to assess the statistical significance of differences but minimize the effect of the outliers, the data were analyzed using the natural log of each person's expenditure.

Frequency of gambling was recorded on a seven-point scale ranging from *once a day* to *never*. To compute an aggregate frequency across different types of gambling, these categories were first converted to the interval midpoints (e.g. 2–3 times a month = 30 days a year), aggregated and then normalized using a log transformation.

Respondents were classified as having gambled in a non-charity casino if they had done so one or more times in the past year. Respondents were counted as having participated in gambling activities if they had engaged in one or more of the 11 types of gambling asked about on at least one occasion in the past year.

Gambling problems. Several different measures were used to gather converging evidence on rates of problem gambling in the community.

Short SOGS. The South Oaks Gambling Screen (SOGS) has been used widely in gambling problems research (Lesieur & Blume, 1993), but is lengthy for use in a general-population telephone survey. The version of SOGS used in this study limits the questions to events in the past 12 months. From an item analysis of the full list of SOGS items in the 1995 provincial survey, five items were selected for use in the Niagara study: in the past 12 months,

> Was there ever a time when you gambled more than you intended to?
> Have people criticized your gambling?
> Have money arguments centred on your gambling?
> Have you felt guilty about the way you gamble or what happens when you gamble?
> Have you claimed to be winning money gambling when you were not?

A score based on these items was correlated 0.87 with a respondent's full SOGS score in the 1995 provincial survey and also maximized correlations with life area problems, gambling participation, gambling expenditures and DSM-IV gambling symptoms. All respondents that scored in the pathological range (5 + on full SOGS) scored 2 and above on the Short SOGS and nearly all the people that scored 2 and above on the Short SOGS were in the problem area (3 +) on the full SOGS. Thus, a score of 2 on the Short SOGS is taken here as indicating a problem or pathological gambler; however, no distinction can be made in this study between problem and pathological gamblers.

Gambling life-area problems. Respondents were asked whether they felt that their gambling had harmed each of five areas of their life in the past 12 months: friendships and social life, physical health, home life, work and studies and financial position. These items, adapted from questions long used to measure alcohol problems (Cahalan, 1970), were first used concerning gambling in a 1994 Ontario population survey (Paglia, 1995; Smart & Ferris, 1996). Positive responses to two or more of these problems have commonly been taken as a indication of fairly serious problems.

Others' responses. Respondents were asked whether a family member and whether a friend or acquaintance had said anything about the respondent's gambling in their life-time and in the past 12 months. Positive responses were taken as an indirect indication of problematic gambling by the respondent. Current and life-time scores for pressures from others were created by assigning one point for each "yes" response.

Others' problems. Respondents were asked whether a family member or relative and whether a friend had had a problem with gambling in their life-time and in the past 12 months. Responses on these items were taken as indicatory of the level of gambling-related problems in the community. Current and life-time scores for others' gambling problems were created by assigning one point for each "yes" response.

Demographics. A full range of demographic variables were assessed. In the present analysis gender, summary age category, marital status, education and income category are used.

Results

Levels of gambling involvement prior to casino: Niagara Falls vs. Ontario

About 86% of adults in both the 1996 Niagara and the 1995 Ontario samples reported having gambled during the last year. The percentage was slightly higher for males (87%) than for females (83%), although the difference was small. The percentage of people gambling was fairly stable across ages except for the oldest group (71%), which gambled less than the others (87%). Gambling was also somewhat lower in the lowest income group (80%) compared to the rest of the sample (87%). Overall, the demographic distribution of gambling was very similar in Niagara Falls and in the province.

The percentages of people participating in most of the 11 types of gambling were very similar for the Niagara Falls and Ontario samples. The amounts of money spent on each of the 11 types of gambling were also similar. On average, the residents of Niagara spend somewhat less ($36) than the residents of Ontario as a whole ($47) [$t(1,1705) = -1.22$, NS]. However, the Niagara Falls residents reported spending more than the provincial average on sports-lottery tickets [$t(1,1705) = 2.09$, $p < 0.05$] and horse-race betting, [$t(1,1705) = 2.29$, $p < 0.05$]

Most respondents who gamble at all report spending an amount which could be considered within reasonable limits, with 93% reporting spending less than $100 per month, and 94% reporting spending less than 5% of their income on gambling. However, expenditures range from zero to more than $1000 in the past 30 days. A minority of respondents are spending a great deal on gambling.

Changes in reported gambling behaviour

Changes in the percentage of people particpating in non-charity casino gambling are portrayed in Fig. 1. The prevalence of engaging in other forms of gambling besides the casino hardly changed at all between 1996 and 1997; but the proportion of the population which has gambled in a non-charity casino increased significantly [$\chi^2(1, n = 1753) = 191.7$, $p < 0.01$].

The provincial comparison between 1995 and 1997 shows results similar to those for Niagara Falls, but the change in non-charity casino gambling is considerably smaller [$\chi^2(1, n = 2035) = 38.7$, $p < 0.01$].

Figure 2 shows the amount of money that respondents reported spending on non-charity casino gambling and total gambling in the past 30 days for the four samples. When the different types of gambling were entered as predictors in a logistic regression with study year as the criterion, only non-charity casino gambling [$b = 0.44$, Wald = 47.8, $p < 0.01$] and horse racing [$b = -0.19$, Wald = 5.3, $p < 0.05$] significantly differentiated between the pre- and post-casino opening samples.

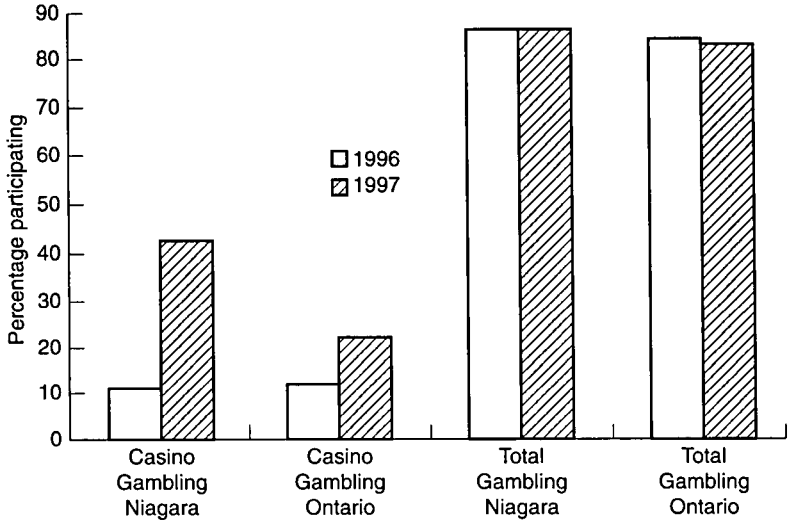

Figure 1. *Percentage participating in casino gambling and gambling in general: Niagara vs. Ontario and 1996 vs. 1997.*

The average amount spent on gambling by Niagara Falls residents rose by $9 per month (25%) between 1996 and 1997. Almost all this rise was accounted for by the increase in expenditure on casino gambling, which increased from $2.30 to 11.10 in Niagara (rounded to the nearest 10 cents). Non-charity gambling also increased in the province from 5.90 to 14.50. In 1997, casino gambling accounted for one-quarter of all gambling expenditures reported by Niagara Falls residents.

The trends in reported spending in Niagara Falls are matched mainly by those in the province as a whole. Reported expenditures on bingo and non-charity casinos went up. Expenditures on most other forms of gambling stayed about the same, except for an increase in horse-racing expenditures in the province, which reflect responses by a few outliers.

Figure 2 gives the average dollar values for spending on total gambling and casino gambling. These data are skewed, with many people spend-

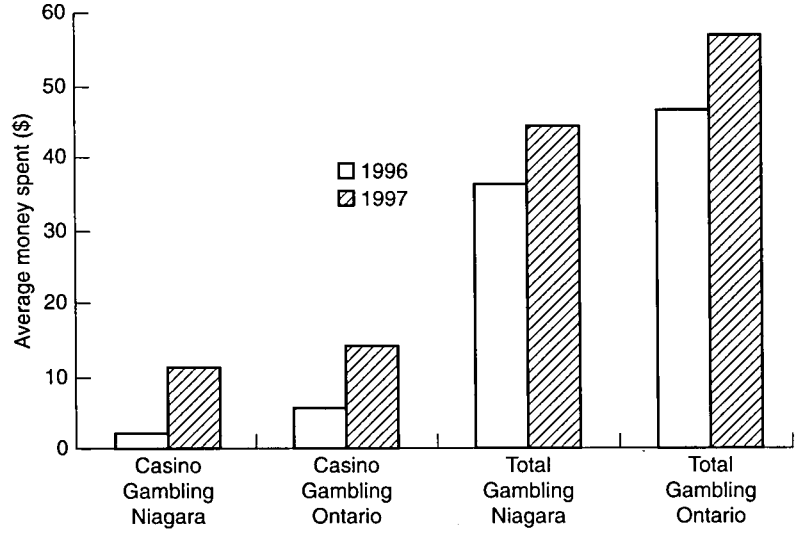

Figure 2. *Average money spent on casino gambling and gambling in general: Niagara vs. Ontario and 1996 vs. 1997.*

ing very little and a small number spending a large amount. To counteract the skewness and outlier problems, the statistical tests conducted on the expenditure data were first subjected to a natural log transformation [xln = ln(x + 1)]. Overall, compared to Ontario residents, Niagara residents reported spending less money on casinos, cards and gambling in general, and more money on instant lottery and sports lotteries. In addition, gambling expenditure decreased over the study period on instant lotteries, lotteries and sports betting, but increased on casino gambling. Since the primary purpose of this paper is to examine differences in trends between the Province and Niagara Falls, we will only report the interactions. The analyses of variance showed significant interactions for three types of gambling. Reported spending on 6-49 lottery tickets was down in the province between 1995 and 1997 ($10.34 vs. $7.88) but not in Niagara Falls between 1996 and 1997 ($9.45 vs. $9.50) [$F(1,3783) = 5.3$, $p < 0.05$]; reported spending on horse race betting fell in Niagara Falls ($4.78 vs. $1.03) but rose in the province ($1.89 vs. $10.15) [$F(1,3783) = 14.59$, $p < 0.01$]; and reported spending in non-charity casinos rose proportionally more in Niagara Falls ($2.26 vs. $11.12) than in the province ($6.00 vs. $14.45) [$F(1,3783) = 38.76$, $p < 0.01$]. It should be noted that although the main effects and interaction are significant with analyses of either log means and raw means, the interaction for non-charity casinos is more clearly visible with the log means: the mean natural logs were 0.13 (SD 0.69) for Niagara 1996, 0.53 (1.35) for Niagara 1997, 0.11 (0.74) for Ontario 1995 and 0.34 (1.22) for Ontario 1997.

A similar pattern of results was found for the frequency of gambling. Instant lotteries, cards playing, VLTs outside of casinos and sports gambling decreased from 1995/6 to 1997 and non-charity casino gambling increased [$F(1,3783) = 249.3$, $p < 0.01$]. Three types of gambling showed significant interaction effects. The frequency of sports betting fell more in the province than in the Niagara Falls [$F(1,3783) = 27.3$, $p < 0.01$], horse-track betting fell in Niagara Falls, but rose in the province [$F(1,3783) = 4.0$, $p < 0.01$] and spending at non-charity casinos rose more in Niagara Falls than in the province [$F(1,3783) = 72.3$, $p < 0.01$]. Overall, Niagara Falls residents gamble more frequently than respondents in the province as a whole [$F(1,3783) = 12.6$, $p < 0.01$]; however, this is due largely to their more frequent lottery purchases.

There was also a dramatic increase in the number of people going to casinos on a regular basis [χ^2 (18, $N = 3790$) = 402.34, $p < 0.01$]. In Niagara Falls, 3.6% of the population reported going to a casino two or more times a month, whereas less than 1% of the population in the other three samples reported attending casinos two or more times a month. Although there was an increase in the number of people attending non-charity casinos in the province from 1995 to 1997, the entire increase was found for the *once a month* (0.7% in 1995 vs. 2.3% in 1997) or *less than once a month* (10.1% vs. 18.6%) categories.

An examination of the demographics for gambling in general indicated that there was very little change in either Ontario or Niagara in the percent participating in gambling. However, as indicated in Table 1, there was a large change in the percentage participating in casino gambling. In the province as a whole, the proportion of adults gambling in non-charity casinos almost doubled. the increase is widely spread across all demographic categories, with relatively little variation by demographics. The increase has been even more dramatic in Niagara Falls: the proportion of the population gambling in a casino in 1997 (43%) is almost four times what it was in 1996 (11%). The increase is particularly strong among the young, the non-married and the middle and lower income groups. For example, in 1997 the number of low-income people participating in casino gambling increase 4.6 times (from 6% to 34%), whereas the number of high-income people participating in casino gambling increased only 2.5 times (from 20% to 49%). Prior to the opening of the local casino, casino gambling was more or less limited to the relatively well-off in Niagara Falls, but losing money at the table has become more of an equal-opportunity proposition.

Changes in general attitudes to gambling

We turn now to the question of change or stability in attitudes in the wake of the coming of the Niagara casino. Table 2 shows that general attitudes to gambling stayed stable in Niagara Falls between 1996 and 1997. The casino's advent seems to have had no effect in this time period on the general disposition of the community towards gambling. In both years, a majority of

Table 1. *Percentage participating in non-charity casino gambling during the past 12 months, by demographic characteristics, adults (18+), Niagara Falls, 1996–97 and Ontario, 1995–97*

	Niagara Falls 1996 ($n = 677$)	Niagara Falls 1997 ($n = 1076$)	Ontario 1995 ($n = 1030$)	Ontario 1997 ($n = 1005$)
Total sample (± %)[a]	11 (± 2.4)	43 (± 3.0)	12 (± 2.0)	22 (± 2.6)
Gender				
Male	13	42	12	25
Female	9	43	11	19
Age				
18–29	10	52	12	23
30–39	14	46	9	24
40–49	12	46	16	21
50–64	10	37	11	23
65+	9	21	7	14
Marital status				
Never married	10	51	12	20
Married	13	42	11	22
Previously married	8	37	13	23
Education				
Less than high school	9	35	11	17
Completed high school	8	40	9	21
Some college/university	17	49	12	25
University degree	10	45	14	20
Income				
< 30 000	6	34	5	12
$30 000–49 000	8	42	12	21
$50 000–79 000	13	54	13	25
$80 000+	20	49	15	27
Not stated	19	33	11	20

[a] 95% confidence interval.

respondents clearly recognized positive aspects of gambling, but two-thirds also saw a downside: that it is "usually addictive". A stable one-quarter of the population rejected gambling more thoroughly, seeing it as immoral.

In contrast to the Niagara Falls results, there is some evidence in Table 2 that in Ontario as a whole attitudes turned somewhat less approving of gambling. A somewhat smaller proportion of respondents in 1997 than in 1995 gave positive responses to the three items concerning good things about gambling. Positive responses increased for one of the negative items ("is usually addictive"). The end result in 1997 was that provincial attitudes, which had been more favorable to gambling than attitudes in Niagara Falls, came closer to matching the attitudes in Niagara Falls.

The right-hand side of Table 2 shows the results of tests of the significance of differences, using a 2×2 factorial analysis of variance on the full distribution of each item. Ontario residents were more likely to feel that gambling provides an opportunity for friendly socializing [$F(1,3736) = 58.1$, $p < 0.01$], and that gambling is a good way for a person to take a little risk [$F(1,3736) = 35.8$, $p < 0.01$]. From 1995/96 to 1997 scores significantly decreased on *Friendly socializing* [$F(1,3736) = 15.1$, $p < 0.01$], *a little risk* [$F(1,3736) = 7.98$, $p < 0.01$] and *gambling is immoral* [$F(1,3736) = 3.9$, $p < 0.05$]. In 1997 more people endorsed *gambling is usually addictive* in both Niagara and Ontario samples [$F(1,3736) = 3.0$, $p < 0.05$]. For all three positive items—*socializing* [$F(1,3736) = 4.7$, $p < 0.05$], *exciting* [$F(1,3736) = 3.9$, $p < 0.01$] and *little risk* [$F(1,3736) = 3.8$, $p = 0.05$]—there were significant interactions, reflecting that agreement had dropped more in the Ontario samples than in the Niagara Falls samples. However, despite the trend, the provincial means for *socializing* [$t(2049) = 4.1$, $p < 0.01$] and *little risk* [$t(2027) = 2.9$, $p < 0.01$] are still significantly higher in 1997 than the Niagara Falls means. In

Table 2. *Attitudes toward gambling in general, Niagara Falls 1996–97, and Ontario 1995–97, adults (18+): percentage agreeing[1] with statement (%)*

	Niagara Falls 1996 ($N = 677$)	Niagara Falls 1997 ($N = 1076$)	Ontario 1995 ($N = 1030$)	Ontario 1997 ($N = 1005$)	Significant effects ($p < 0.05$)		
					Ontario vs. Niagara	1997 vs. earlier	Interaction
Gambling provides an opportunity for friendly socializing (agree)	57	54	70	63	↑	↓	✓
Gambling is immoral (agree)	28	26	29	26		↓	
Gambling is a good way for a person to take a little risk now and then (agree)	66	65	76	70	↑	↓	
Gambling is usually addictive (agree)	66	68	63	71		↑	
Gambling is exciting (agree)	82	83	86	80			✓

↑ and ↓ indicate a significant difference at $p < 0.05$ in the direction indicated. Thus, in the first cell under "tests of significance", the Ontario samples taken together are significantly higher than the Niagara Falls sample (i.e. more in agreement with the item, "provides an opportunity for friendly socializing"), while in the second cell in that row, the 1997 samples taken together are significantly lower than the earlier samples. ✓ indicates an interaction significant at $p < 0.05$, reflecting a significantly different time-trend between the sites; in the case of the cell at the far right of the top row, agreement with this item fell more in Ontario than in Niagara Falls. Tests are with a 2×2 factorial analysis of variance on the full distribution of each attitude item. [1]Percentage responding "somewhat agree" or "strongly agree" as opposed to "somewhat disagree" or "strongly disagree".

contrast, the average for *excitement* was higher in the province in 1995/96 [$t(1256) = 2.1$, $p < 0.05$], but was higher in Niagara in 1997 [$t(1985) = -1.9$, $p < 0.05$].

Approval of the casino

As is indicated in Table 3, two questions asked Niagara Falls respondents if they approved of the casino. On both, more than 70% of the respondents approved of the casino. The 1997 data indicate a non-significant increase in approval. It should be noted, however, that although more people approved of the casino overall, the number of people that strongly approved of the casino dropped. For example, on the first approval question, "strongly approve" dropped from 34.9% in 1996 to 29.9% in 1997, while "strongly disapprove" decreased from 16.8% to 13.0%. In comparing 1996 and 1997 data, the increase for "somewhat approve" compared to "strongly approve" was significant [Wald(1) = 8.9, $p < 0.01$].

In the provincial surveys, one question asked if the respondents were in favor of having a casino in their community. In contrast to the Niagara Falls data, only slightly more than half the respondents agreed or strongly agreed with this statement, and this figure decreased from 53.1% in 1995 to 50.3% in 1997 [$t(1592) = -9.0$, $p < 0.01$].

Expectations and experiences on the effects of the Niagara casino

The remainder of Table 3 focuses on what Niagara Falls residents see as the effects of the casino on the community. Looking first at the data for 1997, we see that there is a wide perception (90%) of an increase in gambling addiction in the community (item 8). On the other hand, relatively small percentages see some potential problems as having occurred—only 16% think people have moved away because of the casino (item 3), and only 18% perceive an increase in the proportion on welfare or other public assistance (item 5; this result may also reflect general provincial reductions in the welfare rolls in this period).

There is wide agreement (88%) on a perception that the number of jobs in the community has increased as a result of the casino (item 13); about half the sample perceives that the average personal income of residents has increased (item 14); but almost two-thirds of the sample perceive that most of the profit from the casino will go to outsiders, rather than stay in the community (item 20). Only a third of the respondents see there having been an increase in the variety of entertainment in the community (item 10).

Traffic congestion is the most pervasive environmental problem perceived by Niagara Falls residents (item 15); in concert with this almost everyone perceives the number of American visitors to have risen (item 27).

Comparing expectations in 1996 with these perceptions of what actually happened, the general picture is that reality turned out to be less dramatic, both for good and for bad, than expected. The majority of the differences between rates for 1996 expectations and for 1997 experiences are statistically significant. While 77% had expected the number of serious crimes to increase, now only 44% perceive this as having happened (item 4). The reality also turned out to be less frightening than the expectations for young people getting into trouble with the law, for family break-ups, and for people moving away (items 7,6,3). Except for traffic congestion, expectations of environmental problems turned out to have been overblown: litter on the streets was much less often a problem in the event than had been expected (item 16), and fewer had experienced higher noise levels and drunken disturbances in their neighborhoods than had expected to do so (items 18, 19).

On the other hand, the reality was also often less dramatic than expected on the positive side. Compared to what they expected, fewer people thought that shopping, entertainment opportunities, property values or business income had increased (items 9–12).

Only two items showed a significant increase from 1996 to 1997. More people believe that most of the profits are going to outsiders [$t(1487) = 2.97$, $p < 0.01$], and more people believe that the number of people addicted to gambling has increased [$t(1548) = 1.95$, $p = 0.05$)].

Change in reported employment among Niagara Falls respondents

Respondents were also asked about their employment status. The survey data indicate a small increase in the proportion of adults in

Table 3. *Opinions about the effect of the opening of the casion, Niagara Falls 1996 (expectations) and 1997 (experiences)*

Questions	Niagara Falls 1996 (%) ($N = 677$)	Niagara Falls 1997 (%) ($N = 1076$)
Approval of the casino		
1. The casino to be opened soon in Niagara Falls (approve)[a]	73	76
2. A casino is a good idea for the Niagara region (agree)[b]	75	77
Community impacts: expected/perceived social problems and disruption		
3. People who live in Niagara Falls will move away because of the casino (agree)	28	16*
4. The number of serious crimes (increase)[d]	77	44*
5. The number of people on welfare or other social assistence (increase)	24	18
6. The number of marriages and families breaking up (increase)	50	42*
7. The number of young people who will be in trouble with the law (increase)	63	35*
8. The number of people who become addicted to gambling (increase)	87	90*
Community impacts: expected/perceived economic and amenity benefits		
9. The variety of stores and services (increase)	85	64*
10. The variety of entertainment (increase)	87	39*
11. Property values (increase)	66	46*
12. The amount of money going to stores and local businesses (increase)	84	65*
13. The number of jobs (increase)	93	88*
14. The average personal income of residents (increase)	56	49*
Community impacts: expected/perceived environmental problems		
15. The level of traffic congestion (increase)	98	88*
16. The amount of litter on the streets and lawns (increase)	59	17*
17. The size of crowds in public places (increase)	90	64*
18. The noise levels (increase)	71	32*
19. Disturbances caused by people who have been drinking (increase)	72	31*
Community impacts: other expectations/experiences		
20. Most of the profits of the casino will go to outsiders (agree)	50	62*
21. The more opportunities people have to gamble, the more they will gamble (agree)	71	73
22. Because of the casino, the kinds of tourists visiting the Niagara region will change (yes)[c]	65	58*
23. A job in the gambling industry is as good as any other job	78	79
24. The cost of goods and services (increase)	63	30*
25. The availability of parking (decrease)[e]	48	38
26. The amount of time people spend volunteering in the community (decrease)	19	22
27. The number of Americans who visit (increase)	98	97
28. Household income will change because of the opening of the casino (increase)	18	11*

Missing data (i.e. "don't know" responses and refusals) were excluded from analyses. *difference significant by t-test on means of full distributions, $p < 0.01$. [a]Percentage responding "somewhat approve" or "strongly approve" as opposed to "somewhat disapprove" or "strongly disapprove". [b]Percentage responding "somewhat agree" or "strongly agree" as opposed to "somewhat disagree" or "strongly disagree". [c]Percentage responding "yes" versus "no". [d]Percentage responding "a large increase" or "a small increase" as opposed to "no change", "a small decrease" or "a large decrease". [e]Percentage responding "a large decrease" or "a small decrease" as opposed to "no change", "a small increase" or "a large increase".

Niagara Falls working full-time (47.6% in 1996 vs. 49.7% in 1997) and a reduction in the proportion of people working part-time (13.7% vs. 13.3%) or unemployed (7.5% vs. 6.2%). In contrast, in the provincial sample there was very little change in the rates of full-time (53.6% in 1995 vs. 52.7% in 1997), part-time (11.0% vs. 9.7%) or unemployed people (4.3% vs. 4.2%).

The difference in trends between the province and Niagara Falls failed to reached significance [Wald(1) = 0.54, NS], nor was there any overall trend according to year; however, the data suggested that the unemployment rate was higher in the Niagara area than in the province as a whole [Wald(1) = 9.97, $p < 0.01$].

Although non-significant, the trend in Niagara Falls was, as expected, an increase in the number of people working full-time. There are approximately 60 000 adults residing in Niagara Falls. A 2.1% increase in the proportion of adults employed (49.7–47.6%) would thus translate into approximately 1260 new jobs.

In 1997 respondents were also asked if they had worked at the casino in the past year. Altogether 39 (3.6% of the sample) responded that they had. Among 60 000 adults, that would translate into 2160 people. The actual employment at the casino is 3500 people, but this would include employees residing outside Niagara Falls. To the extent that the responses to the survey give a reliable estimate, they suggest that only 62% of the casino employees reside in Niagara Falls. The increase in employment reported by the respondents in the Niagara Falls surveys is thus less than the reported direct employment in the casino. However, those employed in the 1996 survey would include some who were already employed by the casino prior to its opening.

In the survey data, the increase in numbers of jobs in the city (1260) is lower than might be expected, given that the casino has also been credited with creating "more than 6,000 jobs" in the Niagara region beyond the direct jobs in the casino (Government of Ontario, 1998). The sample sizes of the present study have a power greater than 0.99 to detect the impact of the projected 9500 additional jobs (direct + indirect) on the proportion of respondents that are employed. Assuming that only 61% of those jobs are taken by Niagara Falls residents and the remainder filled by commuters, the sample still has a power of 0.98 to detect an increase. Even taking into account only 61% of the 6000 projected indirect jobs, the sample still has a power of 0.81 to detect an increase. Thus the power of the study is sufficient to suggest with a high degree of confidence that a net increase in jobs did not occur at the levels which had been projected.

Data from Statistics Canada (Statistics Canada, 1998) also do not indicate any increase in employment in the Niagara–St Catherines region. According to Statistics Canada data, the seasonally adjusted unemployment rate in the region in November 1996 was 9.0%, and in November 1997 was 9.5%. For the 6 months prior to the Casino opening, the unemployment rate in the Niagara region had been very similar to the provincial average; however, for the first 6 months after the casino opened the unemployment rate rose, reaching its highest level since 1994 in May, 1997. After May, the rate fell, returning to the falling trend in the province as a whole (Statistics Canada, 1998).

On the 1997 Niagara Falls survey, respondents were asked to estimate how much of the money spent at Casino Niagara they would have spent on entertainment, another form of gambling or necessities. A total of 432 Niagara residents provided answers to these questions. Responses that added up to more than 100% were excluded. Altogether, 299 respondents provided usable displacement data. On average, these respondents reported that 80% of the money spent at Casino Niagara was diverted from some other type of expenditure: 62% from entertainment, 11% from other forms of gambling and 8% from necessities of life (food, rent, etc.). Another 88 respondents from the province also provided information for this question and their displacement figures were very similar to those in the Niagara Falls sample.

Changes in reported rates of problems from gambling

As noted earlier, we used several sets of variables as indicators of rates of gambling problems in the community, both in terms of respondents' own gambling and concerning the gambling of those around them. Comparison of 1997 Niagara data with 1996 data and with the Province were conducted using a priori *t*-tests.

Short SOGS. Results for the five items of the Short SOGS measure are shown in Table 4. In the Niagara Falls samples, the proportion of positive responses increased on all five of these items between 1996 and 1997. The proportion of the sample with a score of 2 or more on these items rose from 2.5% to 4.4%, and those with a score of 3 or more on these items rose from 0.7% to 2.3%. The rate of those reporting two or more problems thus increased by about three-

Table 4. *Mean and standard deviations for gambling problem indicators for the past 12 months: Niagara Falls, 1996–97 and Ontario, 1997*

	Niagara Falls 1996 ($N = 677$)	Niagara Falls 1997 ($N = 1076$)	Ontario 1997 ($N = 1005$)
Average Short SOGS. Score out of 5 (SD)	0.131* (0.461)	0.198 (0.640)	0.140* (0.469)
Average number of life area problems. Score out of 5 (SD)	0.060 (0.347)	0.079 (0.484)	0.078 (0.365)
Number reporting being criticized about gambling from family or friend. Score out of 2 (SD)	0.022* (0.177)	0.044 (0.256)	0.023* (0.176)
Number reporting a friend or family member with a gambling problem. Score out of 2 (SD)	0.191* (0.451)	0.278 (0.515)	0.173* (0.413)

* Significantly lower than Niagara Falls 1997, $p < 0.05$ (t-test)

quarters. The average number of positive responses was 0.131 in 1996, and 0.198 in 1997—a significant increase of about one-half [t (1719) = 2.54, $p < 0.05$]. As can be seen in Fig. 3, the increase in problematic gambling behaviors is spread across the entire distribution. This indicates that the differences found were not the net result of a small number of outliers, but reflect a broadly-based upward shift in the distribution.

The average number of problems in the province as a whole in 1997 was 0.139, which is very similar to the 1996 Niagara data and significantly smaller than the 1997 Niagara data [$t(2104) = -2.47$, $p < 0.05$]. This suggests that the increase found in the city of Niagara was isolated to that city and not found across the rest of the province.

Unfortunately, data for problems in the past year for the reduced SOGS were not available from the 1995 provincial survey. However, life-time data for these questions were available from the 1995 data. There was no significant difference between the life-time rates in the Province in 1995 and in 1997 [$t(2033) = 0.38$, NS]. These results from the life-time data strongly suggest that problem gambling measured by the Short SOGS did not increase in the province as a whole, while it increased significantly in Niagara Falls.

Life-area problems items. Reported rates of problems in five life-areas due to gambling also increased uniformly in Niagara Falls between 1996 and 1997; however, these changes were small and non-significant [$t(1705) = 1.0$, NS; see Table 4]. The provincial data show a non-significant decrease in the average number of life area problems reported [$t(2033) = 0.41$, NS]. The interaction was also non-significant.

Pressure from others on gambling. Table 4 also shows the mean scores (range 0–2) for respondents reporting that a friend or family member had said something to them about their gambling in the past 12 months. There was a significant increase from 1996 to 1997 in respondents' reports of having family members or friends talk to them about their gambling [$t(1734) = -2.19$, $p < 0.05$]. The mean for Niagara Falls in 1997 was also significantly higher than for Ontario, [$F(1962) = 2.13$, $p < 0.05$]. A comparison of data for the province in 1995 and 1997 did not indicate any trend towards an increase in the province as a whole [$t(2033) = 0.67$, NS].

The life-time data for this variable also show the same pattern of results. Interestingly, the entire increase in these indicators in Niagara Falls on a life-time basis can be attributed to change in the past year. While both life-time and past year measures increased, the difference between the two—the rate of past gambling problems (life-time but not current)—stayed stable.

Gambling problems in the family and among friends. The study also included information on the respondent's experience with others' gambling problems (see row 4 on Table 4). The proportions reporting this in the past 12 months in Niagara rose from 5.0% to 7.5% for family

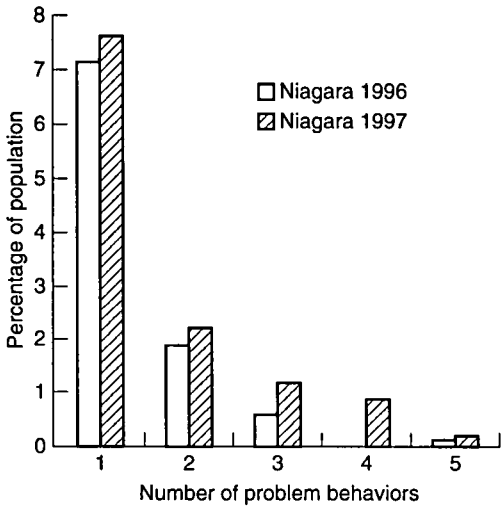

Figure 3. *Problem gambling behavior: Niagara 1997 compared to Niagara 1996.*

members, and from 14.0% to 20.5% for friends. The means for the family or friends problems score (range 0–2) given in Table 4 follow a very similar pattern to the data on pressure from others, although at considerably higher rates. The number of people in Niagara Falls that report having family members or friends with a gambling problem increased significantly from 1996 to 1997 [$t(1750) = -3.99$, $p < 0.01$]. The mean for Niagara Falls in 1997 was also significantly higher than the mean for Ontario in the same year [$t(2079) = -4.94$, $p < 0.01$]. Only life-time data were available in the 1995 provincial sample; a comparison of this with life-time data from 1997 did not indicate any trend towards an increase in the province as a whole.

It should be noted that responses to these questions cannot be used to estimate prevalence rates of gambling problems in the community, since there may be many family members or friends aware of and concerned about a single pathological gambler. However, changes in rates of respondents with family or friendship links to those with gambling problems are a useful indicator of how the prevalence of gambling problems is changing in the community.

Problem indicators: summary

In summary, there were several findings which provided converging evidence for an increase in gambling-related problems in the Niagara region. In all, there are 18 separate items behind the data given in Table 4 measuring the prevalence of a gambling-related problem. There was a statistically significant increase in the Niagara Falls rates for five of these items. However, for all 18 of them the rate in the 1997 Niagara Falls sample is higher than in the 1996 Niagara Falls sample. If these were fully independent observations, the chances that 18 comparisons would all fall the same way on a random basis are one in 262 144. Since the same respondents are answering each of the 18 questions, this calculation overestimates the unlikelihood of this result, but it underlines the finding that there is strong evidence in the data from this study that the rates of gambling-related problems rose in Niagara Falls in the year after the opening of the casino, and that this rise appears to be greater than any rise in problem rates in the province as a whole.

Discussion

The Niagara Falls casino was built on the border with the United States, with the explicit goal of attracting gamblers from the United States. In the jargon of the gaming industry, it is a "destination" casino, designed to attract customers from elsewhere, and not simply dependent on local trade. The observations of respondents in our study support data from other sources in concluding that the Niagara casino has been successful in this goal: 97% of the sample considered that "the number of Americans who visit" Niagara Falls had increased because of the casino.

In evaluating costs and benefits, the balance sheet for a community which hosts a "destination casino" will be different from that for a community with a casino serving primarily local customers. For a community with a destination casino, there is the hope of attracting increased commerce, revenue and employment, offset only by the minor inconvenience and environmental troubles related to crowding, traffic congestion and parking problems. This would be the situation if all the gamblers in the casino were from elsewhere. As events in North America are showing, this policy of making money by attracting tourists to a casino tends to work only in the short term. Neighboring cities tend to build counter-attractions to win the commerce,

revenue and employment back to their side of the river. As an example, the casinos in Windsor, Ontario have precipitated plans to build three casinos across the river in Detroit.

Apart from that, the data from the present study show clearly that the casino's customers are not limited to those from out of town. The proportion of Niagara Falls residents who had engaged in casino gambling during 1996 was 11%; 1 year later the proportion was 43%. The average amount of money that the Niagara Falls sample reported spending in non-charity casinos in that year quadrupled, from $2.30 in a month to $11.10, and 3.6% of the people in Niagara report going to the casino 2 or more times a month. Some of this extra spending came at the expense of other forms of gambling, notably horse racing. However, most of it appears to have come as a diversion from other expenditures, such as on entertainment, that would have been made in the community.

In terms of reported employment in the community, data from our Niagara Falls respondents do show a non-significant gain. There are jobs in the community directly attributable to building and operating the casino; but our data suggest that gains in employment and commerce are primarily at this direct level. There is little evidence on a net basis of the secondary, pass-along gains that are projected in conventional models of the economic impact of opening a casino. A large number of factors affect the employment rate. Perhaps, as the mayor of Niagara has suggested, the unemployment rate would have been much higher if the casino had not been opened (Gray, 1997). Another possible explanation for the missing indirect jobs is that direct and indirect employment due to the casino is, to a considerable extent, diverted from other economic activities, rather than simply added onto the local economy. Any new business or industry that is brought into a community contributes to the local economy, but some of the new business represents displacement (Persky, 1995) from other economic activities: a person that might have spent $100 on a restaurant dinner may instead spend that $100 gambling. This displacement hypothesis is supported by the data. According to the respondents, most of the money they spent at the casino was diverted from some other form of entertainment. Gambling losses at the casino by local residents quietly subtract from other parts of the local economy, in terms of other expenditures forgone, and this effect more or less cancels out the added employment and commerce from visitors' meals, stays at motels, etc.

When questioned just before the casino's opening, Niagara Falls respondents had vivid expectations about its effects. Strong majorities expected not only increases in the number of jobs, but also improvements in the variety of entertainment, stores and services in the community. On the other side of the balance sheet, strong majorities expected an increase in serious crimes, in public disturbances and in noise levels and crowding in the community, as well as an increase in the level of traffic congestion. After a year of actual experience, the picture is more in shades of gray. The expectations of more jobs and more traffic congestion were borne out, according to the residents' perceptions, but much smaller proportions reported each of the other effects, good or bad.

The effects mentioned so far are all fairly publicly visible. A casino also has potential effects more in the area of private life, in the family or in individual pleasure or despair. A strong majority of respondents had expected an increase in the number of people who become addicted to gambling in the wake of the casino. A year later even more respondents (90%) saw this as a reality. Respondents' attitudes to gambling in general showed no net change, but they were very clearly aware of this downside to the casino.

Our data on changes in actual gambling behavior and the experience of problems in general bear out the respondents' perceptions. The amount Niagara Falls respondents reported spending on gambling did increase, with most of the increase from spending in the type of gambling (non-charity casinos) which includes the Niagara casino. There were increases in rates on each of the items used to measure problem gambling. Given the restricted sample sizes, only some of these results are significant at the 5% level, but the cumulative effect is highly significant. We can state with considerable confidence that rates of self-reported gambling-related problems rose among Niagara Falls residents in the wake of the opening of the casino.

These results are also supported by data on the proportion of respondents reporting that they have family members or friends with problems with gambling in the last 12 months. This rise in the proportions reporting gambling problems in

the family or among friends was highly significant.

The casino has thus clearly brought problems to the Niagara Falls community; it has particularly brought problems into the arena of private life, behind curtains rather than out on the street. Despite this, Niagara Falls residents remain firm in their support for the casino. In fact, the proportions supporting the casino rose a little. After a year of experience, three-quarters of the residents approved of the Niagara casino being there.

There is, of course, no substitute for actual experience in evaluating the effects of an initiative such as the opening of the Niagara casino, but the results we have reported still represent a relatively early stage in the community's response to the Niagara casino. It is possible that there will be some differences in the effects in the longer term. There will certainly be some remissions among those with gambling problems. On the other hand, a pathological gambling trajectory often takes several years to build up in an individual's life, so that the coming years may bring a further rise in rates of gambling-related problems. Competing casinos across the border and elsewhere in Ontario are likely to cut into the tourist trade of the Niagara casino, which is the source of the most unambiguous gains to the community. On the other hand, the casino is now a social reality in the community, and it will garner some support from those who tend to support the *status quo*. It would be worthwhile to observe how trends in community benefits, problems and perceptions unfold in the longer term.

There are limitations to the findings of this study. The reliability of the findings—and particularly the findings on employment and on amounts spent—is limited by the restricted sample sizes, and by the sample attrition reflected in the response rates. The measures of gambling problems used here rely on the reports of respondents, and are not equivalent to a full clinical assessment of pathological gambling. A 1-year follow-up study cannot determine whether the increase in problem gambling behavior will be sustained, increase or disappear in subsequent years.

Perhaps the most important implication of these data is the indication that more needs to be done to prevent the development of gambling problems. While the majority of people that gamble do so without experiencing gambling problems, the increased availability of casino gambling does appear to result in an increase in problems. Our recent studies have found that gambling problems are related to not keeping to a spending limit, the use of systems, playing until closing time, not quitting when tired and to the belief that random events are self-correcting. There is thus some potential to limit the increase in gambling problems by public education on gambling (see also Turner, 1999) and by environmental modifications of gambling venues.

Acknowledgements

This study was supported by the Donner Canadian Foundation and by the Ontario Ministry of Health. The views expressed are those of the authors and do not necessarily reflect those of organizations with which they are affiliated or of the funding agencies. The study was carried out while the first author was at the Addiction Research Foundation. We acknowledge the contributions of Josh Paul, Jürgen Rehm, Phil Lange, Susan Bondy, Ed Adlaf and Ron Roizen to the study, and helpful comments from Carolyn Nutter.

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