

# Examining Resident Perceptions of Negative Gambling Impacts with Factual Evidence

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## Abstract

This study attempts to establish a dialogue between perceived negative impacts associated with borrowing money to gamble and the resulting bankruptcies in three ways: matching local resident opinions with evidence they are asked to provide; determining causal effects of evidence on perceptions; and confirming the bankruptcy issues by using historical data. The results of the study are mixed. On one hand, they indicate a close tie between borrowing perceptions and real facts. However, on the other hand, they also report that bankruptcy related perceptions are not based on evidence and suggest that several factors are at play besides the casino gambling revenue. An empirical time series analysis of historical data illustrates and supports this contention. These results have important policy implications for regulators and operators of the casino industry.

**Keywords:** perceptions, local residents, casino gambling impacts, bankruptcy and borrowing habits

## Introduction

Extant work on gaming impacts provides scholars with two contrasting models to explain casino gambling effects on host communities in the United States: the economic boosterism model (Arkand-Fye & Penlin 1992) and the social disruption model (Stubbles 1992). The economic boosterism model postulates that casino gambling generates economic benefits and these returns can be utilized to mute potential externalities, if any. As a matter of fact, this promise of economic benefits in terms of more jobs and tax revenue can be considered the main impetus for the ongoing growth of casino operations (Nichols, Giacomassi & Stitt 2002; Carmichael, Peppard & Bourdeau 1996; Lee, Kim & Kang 2003). Conversely, the social disruption model contends that gambling produces extensive negative outcomes by creating problematic and pathological behavior among citizens and changing the social fabric of the host communities. Consequently, negative impact issues have gained prominence as the policy makers and casino operators explore more benign alternatives to counter externalities to ensure the long term success of the casino gambling industry. A combined approach, on the other hand, posits that while communities interested in casino gambling are drawn by economic enumerations, they are also wary of the potential tangible and intangible negative impacts.

Within the web of mixed issues posed by the economic boosterism model and the social disruption model, goodwill and cooperation of local residents have been deemed as essential elements for consideration for the future expansion of gaming tourism. This view is reflected by the fact that the local resident benefit and well being have often been touted as the foremost priority by the policy makers and the operators of gambling tourism (Nichols et al. 2002). Local well being is often measured by the local resident

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perceptions of gambling impacts to the extent they are favorable and such perceptions inform whether the gaming industry has fulfilled its promise. Indeed then, focus on social costs of casino gambling has often taken the form of resident perceptions. Several perceptual items have been identified to define social costs based on local community interviews and academic insight. These perceptions are then measured on a Likert scale to assess the level of agreement or disagreement on negative or positive issues associated with the casino gambling activity. Higher disagreement on associated items, then, becomes highlighted as a cause for concern and these are often touted by the gambling proponents to combat future expansion.

One area that has drawn considerable attention is the charge that the casinos cause local patrons to borrow money to gamble, thereby precipitating financial crisis and leading to increased bankruptcies among them (Barron, Staten & Wilshussen 2002; Goss & Morse 2005). Hitherto, researchers have made attempts to explore personal bankruptcy issues among host communities and empirically relate them to the existing casinos in the United States. The standard definition for personal bankruptcy has been the “bankruptcy choice triggered by “insolvency events” that reduce wealth, such as the realization of reduced income arising from a layoff, or high expenses arising from divorce or an uninsured illness or accident. These changes can create a financial crisis for which bankruptcy becomes the borrower’s best alternative” (Barron et al. 2002: 441). Several studies have appeared that draw resident opinions on borrowing and bankruptcy behavior through questions such as “do you perceive bankruptcies have been the consequence of the proliferation of casino gambling?” (Kwan & McCartney 2005; Lee et al. 2003).

That said, in an era when sustainable gambling tourism seems to be a major focus, tools developed solely to prod into perceptions associated with the positive/negative impacts of casino gambling within the traditional conceptual frameworks are becoming inadequate and redundant. For example, in assessing the perceptions of residents in new casino jurisdictions, Nichols et al. (2002: 73), stated “while perceptions are important in driving public policy towards casino gambling (for example, whether communities decide to expand or contract gambling), how those perceptions compare to reality would be useful information, helping to answer the question of whether casino gambling is a catalyst for economic development.” In other words, whether benefits or costs get touted or marginalized, perceptions can lay a ground for concern. But, in themselves they do not suffice to convey a complete picture of reality.

This view was also highlighted by the audience and the Legislative Council members of the State of Iowa during a study presentation on perceived casino gambling impacts by the Iowans in November, 2004. The study was commissioned by the Iowa Legislative Council in the wake of the State deliberations on further expansion of casino gambling in Iowa following the lifting of the 1998 moratorium. Two questions that spawned the final presentation meeting of the commissioned study were “how much money is borrowed by the Iowans to participate in casino gambling? What is the actual evidence to support resident perceptions that casino gambling leads to increased bankruptcies?” This study was designed as follow-up study with an objective to explore the actual basis of local resident perceptions of the two major perceived externalities of casino gambling: borrowing money to gamble habits and increase in personal bankruptcy filing rates.

Hence, this research places perceptions in conversation with the actual facts or evidence and seeks to test perceptions against reality. Factual information is drawn from two sources: the residents themselves and the records maintained by the U. S. Census Bureau and the bankruptcy courts. The survey was administered to the local residents in eastern and central Iowa (United States). The secondary data were obtained on the 17

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casino counties and 68 collar counties (situated within a 50-miles radius of the existing casinos) of Iowa. In doing so, the study attempts to evaluate relationships between casino gambling development and borrowing habits and bankruptcy. It further studies bankruptcy patterns over a ten year period within a control group of non-casino counties. It is hoped that the study results will assist gaming tourism professionals and the policy makers to have a deeper understanding of sources leading to residents' negative perceptions. This can help design corrective actions to mitigate negative opinions. In summary, this study endeavors to answer the following research questions:

- 1) Are the local residents concerned that casino gambling will encourage people to borrow money to gamble and will this lead to increased bankruptcies in their region?
- 2) Can the local residents provide evidence to support their perceptions?
- 3) Do the Chapter 13 bankruptcy trends in casino counties differ from those of control counties?
- 4) Is adjusted gambling revenue earned by the gambling industry in Iowa a significant predictor of bankruptcy filing rates?
- 5) Are there other factors that trigger the precipitation of bankruptcy filing rates in the State of Iowa?

### **Borrowing Habits And Bankruptcy Perceptions**

It appears that many of the studies during the casino expansion bubble (early 1990s) did not suggest borrowing habits and bankruptcy to be a cause of concern for the local communities. For instance, Carmichael et al. (1996) conducted surveys over three years to analyze and model changing attitudes of local residents. The authors identified social costs such as crime, traffic congestion, and negative influence on the historic value of the town. Spears & Boger (2002) assessed perceptions and attitudes toward the tribal casino in the State of Kansas and highlighted environmental externalities such as traffic conditions, air, water, and noise pollution and overcrowding. However, borrowing habits and bankruptcy did not factor in their list of negative impact items. Nichols et al. (2002) examined the effects of casino gambling on the day-to-day life of local citizens. They specifically looked at crime and quality of life. Here also, borrowing issues and bankruptcy failed to emerge. Another study conducted by Stitt, Nichols & Giacopassi (2005) highlighted social costs such as serious crimes and publicly visible nuisance crimes, such as drinking in public, vandalism, and prostitution. Similar findings were somewhat echoed by Pizam & Pokela (1985) who, while examining the impact of potential casinos for a community pointed out the main concerns of local residents to be crime, noise, and traffic congestion. Bankruptcy failed to appear on their list. Crime and traffic congestion were also identified as the most contentious issues by Long (1996), Room, Turner & Lalomiteanu (1999), Wisconsin Policy Research Institute Report (WPRI 1996), and Braunlich (1996).

As is evident, the aforementioned studies of the 20<sup>th</sup> century failed to identify "bankruptcy" as a major concern of local residents. However, more recent literature of the early 21<sup>st</sup> century has brought forth these issues for analysis and discussion with full force. Of the studies that have explored local residents' perceptions of the influence of casinos associated with borrowing habits of people and bankruptcies, mixed level of concerns have been reported. For instance, Kwan & McCartney (2005) explored local residents' perceptions of the impact of gambling development in Macao, China. They adapted their impact instrument from a comprehensive list of issues used by Lee et al. (2003) and finalized the scale after minor modifications to accommodate the specificity of Macao situation. Bankruptcy was included in their list of cost related items which received an average rating of 3.49 on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Lee et al. (2003) explored residents' perceptions toward casino development in Korea over two time periods. Their list of items was initially gleaned from a review of tourism literature. These were then screened by tourism scholars and

community leaders. Their modified list included bankruptcy as a direct gambling cost on a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree” with bankruptcy concerns averaging to 3.51 on the scale while traffic, crowding, pollution, and destruction of natural environment average to a much higher value.

The National Opinion Research Center (NORC, 1999) examined ten communities to determine the impact of gambling expansion and reported mixed concerns about crime, but domestic violence and bankruptcy featured prominently in a majority of the sampled communities. Janes & Collison (2005) assessed perceptions of eight community leaders as to how the area was impacted by a major expansion of a tribal casino. Their study indicated that the community leaders associated area embezzlement and divorce cases with casino gambling. Furthermore, each knew at least one person whose quality of life had been significantly impacted by problem gambling associated with bankruptcy.

That said, evidence-based investigations to support the perceived claims of the local residents in the gambling tourism literature are almost non-existent. Few studies, that have endeavored to examine hard evidence while investigating the real facts, have delineated themselves from the tourism perception framework. Instead of limiting the investigation to the influence of casino related factors only, such as simultaneous growth of the adjusted gambling revenue (Thalheimer & Ali 2004; Barron et al. 2002), these hypothesize that several social, economic, and demographic factors contribute to the personal bankruptcy growth such as changes in economic conditions (Eckstein & Sinai, 1986; Domowitz & Eovaldi, 1993; Barron et al. 2002), a decreased social stigma attached to bankruptcy (Sullivan et al. 1988; Barron et al. 2002), changes to bankruptcy laws (Boyes & Faith 1986), higher divorce rates (Shephard 1984; Barron et al. 2002; Volberg 1995; Domovtiz & Sartain 1999; Stavins 2000), rising debt levels and more credit access opportunities (Domowitz & Sartain 1999; Barron et al. 2002).

Much of the hard evidence exploration associated with casino gambling is focused on the localized influence. In other words, the local host populations are the target audience. For instance, the U.S. Treasury Department investigated causal relationships between casino gambling growth and rising bankruptcy rates in the host regions of Mississippi and New Jersey with non-significant results. As a further buildup to this study, De la Vina & Bernstein (2002) looked at the county level bankruptcy rates from 1988 to 1996 and examined the relationship between casino gambling existing within a 50 mile-radius and Chapter 13 filings while controlling for the unemployment rate and county-level fixed effects. Here also, non-significant relationship was noted. Similar results were reported by Thalheimer & Ali (2004). In their study of the riverboat gambling states of Iowa, Illinois, Missouri, and Mississippi from 1990 to 1997, they reported a non-significant influence of casino gambling access on Chapter 13 bankruptcies. However, the authors also suggested a .4 % decline in bankruptcy rates if casino gambling were eliminated. Nichols et al. (2002) compared bankruptcy rates in eight communities with the 1990 casino gambling adoption with a group of control (non-gambling) communities while controlling for economic and demographic characteristics. The authors found higher incidences in casino communities but reported statistical significance in only 5 of the 7 cases. Evans and Topoleski (2002) used a similar methodology in their study of Native American casinos and reported 10% increase in filings in NAC counties as compared to the control counties which reported a 7% increase. However, the authors also pointed out that this increase accounted for only a small percentage of the aggregate increase over the past decade.

As stated before, most of the literature has focused on the host communities and not the residing regions of the visitors. To date, only one study by Garrett & Nichols (2005) has appeared that investigated a non-localized influence of casino gambling. The authors focused on the destination resort casinos which differ from other casinos because they are the primary destination of the tourists and include amenities symbolic of a vacation resort, such as golf courses and spas. According to Garrett & Nichols (2005:3), “by attracting visitors from outside the region, destination resort casinos effectively export gambling services to regions where tourists originate.” The authors further stated that,

in addition to the export of services, costs associated with casino gambling, such as bankruptcy and addiction, are also exported to the residing regions of the tourists. They examined the destination resort casinos in Nevada, New Jersey, and Mississippi and found strong evidence which indicated that the states with the most demand (in other words, housing the majority of the casino gambling market) have a higher incidence of bankruptcy filings.

Most of the studies focusing on hard evidence have been atheoretical with the exception of those conducted by Goss & Morse (2005) and Barron et al. (2002). Barron et al. (2002) examined the empirical relationship between bankruptcy filing rates in casino and collar counties (adjacent to the casino counties) and casino gambling. They based their bankruptcy theory on a simple model for describing the decision of filing for bankruptcy or not. They used the following equations assuming a household has a debt of  $D_t$ , earns income  $y_t$ , has consumption  $c_t$  and “obtains a realization of random expenses  $g_t$ , arising from such sources as divorce, uninsured illness, and gambling losses” (Barron et al., 2002: 445):

$$D_{t+1} = (1+r(R_0))(D_t - y_t + c_t + g_t) \quad 1$$

Where  $R_0$  denotes the inherited creditworthiness reputation of a household that has no record of past bankruptcy declaration and  $r$  portrays the real interest rate on debt. This interest rate is contingent on the creditworthiness stature of a household.

$$D_{t+1}^b = (1+r(R_0))(1 - \delta) (D_t - y_t + c_t + g_t) \quad 2$$

Where the household decides to declare bankruptcy and  $\delta$  describes the released proportion of debt obligations resulting from the filing of bankruptcy. Thus, the above two equations suggest the trade of credit worthiness, income, and other random expenses as possible triggers of bankruptcy. In such a case, it is pertinent to examine the effects of multiple factors and situations before dumping the entire bankruptcy charge in the casino backyard.

Using the OLS (ordinary least squares) linear mixed modeling approach, the authors developed the simple model of bankruptcy filing choice to determine the key factors influencing the likelihood that bankruptcy will be filed in a household. They constructed the following variables to explain possible predictors of bankruptcy filing rates at the county level for over 3000 counties in the U.S. from 1993 to 1999: county-level data on debt, income, household size, population density, and casino gambling measures. Additionally, they used state measures of employment and marital status stability, health insurance coverage, and garnishment (a creditor collection tool to help a debtor to escape from filing bankruptcy) restrictions. Their study results indicated the probable influence of casino gambling on the national filing rates. Their analysis further predicted that the elimination of existing casinos will lead to a 5% decline in bankruptcy in casino counties and 1% decline in the nationwide filing rate.

Goss & Morse (2005:7) used a basic consumption spending theory to “demonstrate how a casino’s propensity to systematically generate over-consumption among a portion of casino patrons increases bankruptcy rates over time and also show how positive income effects from the casino operate to defer such bankruptcy effects.” They explain their theory with the following equations (2005: 8):

$$S = C_a^{nc} + C_a^c \quad 1$$

Where total individual consumption spending is  $S$ ,  $C_a^{nc}$  represents the actual non-casino consumption and  $C_a^c$  is the actual casino consumption.

$$C_a^c = W - (R_a * W) \quad 2$$

Where the individual casino wagering is  $W$  and  $R_a$  represents the actual rate of return on casino wagering

$$C_e^c = W (R_e * W) \quad 3$$

Where  $C_e^c$  is the expected casino consumption and  $R_e$  is the expected rate of return to casino gambling and  $R_e$  reflects the expected rate of return to casino gambling.

$$S_{t=1} C_{a,t}^c - S_{t=1}^T C_{e,t}^c > 0 \quad 4$$

The authors contend that gamblers who overestimate the expected rate of return will reflect a tendency to overspend and they will run the risk of going bankrupt (with over consumption exceeding available resources over time) if they continue to live in that imagined frame of mind. By adjusting their behavior, gamblers might trade off overconsumption costs with non-consumption costs (spending less on non-gambling goods) or increase their income, draw from their savings, or increase borrowing. If no change in income occurs, the equation 5 suggests that “the myopic gambler will become less financially solvent and ultimately bankrupt, with the passage of time, t.” Using this theory, the authors employed simple descriptive statistics and regression analysis to examine the effect of tribal casinos on personal bankruptcy filing rates from 1990 to 2002. The variables used to predict filing rates were population density, per capita income in thousands, employment in thousands, percent unemployment, percent Black, in the early casino years leading to a decline and later rising again. A compound annual growth rate of 2.3% over the non-casino county was reported for the casino county. Unlike Barron et al. (2002), this study did not take the collar counties into consideration.

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As is explained above, to date, none of the studies focusing on relationships between bankruptcy and casino gambling have been multifaceted. In other words, none of them have crossed the threshold between evidence and perceptions. While hard evidence is crucial to investigate issues, perceptions of local communities are also pertinent and need to be investigated and addressed or clarified. Thus, none in literature have attempted to test resident perceptions against hard facts by asking them to provide supporting evidence. Conversely, the evidence based studies have not endeavored to discuss their results within the realm of local resident perception dynamics. The current study contends, that regardless of the hard facts or perceptions, a top sided view can be misleading and several theories need to be tested before conclusions can be drawn. By using a multifaceted mixed approach, this study is one of few that makes an effort to establish a conversation between perceptions and evidence. In doing so, it makes an important contribution to gambling tourism literature.

### **Study Methods**

The purpose of this study was fivefold: (1) identify local resident perception levels associated with bankruptcy and borrowing money to gamble (2) match the evidence provided by local residents to decipher their perceptual claims, (3) compare Chapter 13 bankruptcy trends from 1995 to 2004 between casino counties and control group of counties, (4) determine the significance of the relationship between casino gambling revenue and bankruptcy filings while controlling for other relevant factors, and (5) identify the possible influence of factors other than access to casino gambling. To achieve the study objectives, four sets of data were obtained. First set of data were the primary data and these were collected from the local residents. The other three sets of data were secondary and were obtained from the Iowa Racing and Gaming Commission, administrative office of the US Courts, where Report 5A contains data by county for filings by personal debtors, and the US Census Bureau. This section provides information on data collection and data analyses, and is broadly divided into two parts. First, the four sets of data are discussed. Second, the operationalization of variables used in the multiple regression models and the mixed linear models is presented.

The primary data were collected using a stratified random sampling method. Geographically dispersed public areas frequented by the local residents were selected for local intercepts. Two casino counties (Dubuque and Polk) and two non-casino counties (Linn and Black Hawk) were the basis of analysis in the eastern and midwestern part of Iowa. In an attempt to ameliorate validity and eliminate ambiguous wording, and to ensure parameter coverage, the questionnaire was first reviewed by an expert panel that

included academics and local residents. It was then pilot-tested on a small sample of residents intercepted at one casino county (Dubuque) and one non-casino county (Black Hawk). Approximately 36 residents (11 from Dubuque and 25 from Black Hawk) were intercepted at the pre-testing stage. Prior to administration, modifications were made.

The final surveys were handed out to the head of the households in residence for a minimum period of 5 years. People were intercepted at public areas, such as the public parks, the malls, and the shopping districts. Permissions were taken wherever required from the concerned authorities prior to the survey. The survey questionnaires were personally handed out by the graduate students of the University of Northern Iowa. The respondents were requested to return the survey to the students stationed near appropriate positions or mail them back. A self addressed stamped envelope was given for those who wanted to take time to respond.

The data were collected over a period of two months (June and July of 2006). The total number of responses was 206. A total of 300 people were approached and the response rate was 69%. To test data robustness, the mean value across both the halves was tested for age, participation frequency, and total expenditures. The correlation coefficients were above .81. Respondents had similar socioeconomic characteristics (age, income, and gender) across all locations indicating sample homogeneity. Non-response bias was determined by intercepting additional residents one month later (a total of 15 surveys were collected). Because, a comparison between the post-survey data and the main-survey data yielded similar socio-demographic characteristics of residents, the post-testing data was added to the original. Additionally, the socio-demographic characteristics of the respondents matched those of the respondents interviewed over the telephone for the commissioned study. This also confirmed the robustness of the sample size. Next, additional questions were devised to elicit evidential information from the local residents to match their perceptual claims with evidence. For instance, questions such as “do you know of anyone who had borrowed money to gamble or who had declared bankruptcy” were asked.

The second and third sets of data were the secondary data obtained from the administrative courts and the US Census Bureau to identify Chapter 13 bankruptcy trends and the impact of casino gambling on bankruptcy filing rates (BFRs). The trends described bankruptcy filing rate per thousand of a population in eleven casino counties (Clarke, Clayton, Clinton, Des Moines, Dubuque, Lee, Monona, Polk, Pottawattamie, Scott, Tama, and Woodbury) and an eleven control group of counties. The control counties were selected based on age, average household income, and population characteristics similar to those of the casino counties. These were the following: Black Hawk, Cerro Gordo, Delaware, Hardin, Johnson, Linn, Marshal, Muscatine, Palo Alto, Pocahontas, and Story.

Next, several variables are captured from secondary sources with the underlying assumption that casino gambling is not the one and only cause for the increased BFRs. Forwarding Barron et al.'s (2002) bankruptcy theory of multiple predictors of BFRs, this study hypothesizes that casino gambling related factors are not the sole indicators of personal bankruptcy filings. The following equation is proposed to justify the usage of the explanatory variables, explained below.

$$V(D_{t+1}^b, R_b) > V(D_{t+1}, R_b)$$

As noted previously,  $D^b$  is the household that declares bankruptcy and  $R_b$  is the creditor worthiness,  $V$  is the over a period of time. It is contended that several key factors can trigger a bankruptcy filing. These factors will increase with the relative increase of  $V(D_{t+1}^b, R_b)$  in comparison with  $V(D_{t+1}, R_b)$ . This difference will increase if the existing debt increases due to one of the following factors: income growth, unemployment, higher gambling losses, divorce, an uninsured illness, or a higher stigma cost. Thus, all the aforementioned factors need to be taken into consideration while investigating the influence of gambling losses or adjusted gambling revenue growth on bankruptcy filings. Below is discussed the construction of various variables that are in close approximation

with the aforementioned factors, that either serve as control variables or in themselves present possible explanation for a rise in BFRs (Barron, Staten & Wilshussen, 2002; Goss & Morse, 2005). In other words, the following variables were operationalized for the multiple regression models:

#### *Bankruptcy filing rates*

This is the dependent variable and contains the annual data on county-level Chapter 13 bankruptcy filing rates for approximately 68 counties of Iowa during the period 1995 to 2004. Because, it has been postulated that a higher incidence of pathological gambling behavior exists in areas which lie within a 50 mile radius of the casino locations, one can reasonably assume a likely effect on the financial stability of households within the selected vicinity (NORC, 1999; Chhabra, 2005). A total of 68 counties were listed as either hosting counties or collar counties (adjacent to existing casino locations).

#### *Casino Gambling Measures*

The gambling database used in the current study includes casino facilities in eleven counties. Iowa Racing and Gaming Association was the source from which the annual data on adjusted gross revenue of each casino was obtained. Adjusted gross revenue (AGR) is the gross amount wagered, minus winnings paid to wagers (Barron et al., 2002: 449). The final variable "AGR per Household" was constructed by dividing AGR generated in each casino county by the number of households in the host and collar counties. As suggested by Barron et al., this variable "provides a measure of the net casino revenue per household for households located in counties hosting or close to casinos. In this way, it captures the presence of casinos as well as the growth in net wagering activity overtime" (2002:450).

#### *Prevalence Shock Measures*

County unemployment rate was used as a measure of the likelihood that a household experiences an income shock and expenditure shock was measured by the proportion of adults that are divorced or separated in years 1995-2004, percentage households with no health insurance, and homeownership rates per thousand of each county population.

#### *Stigma Measures*

According to Barron et al. (2002), county level population density to some extent captures variations in stigma costs associated with bankruptcy. In other words, anonymity is possible in more densely populated counties and this can decrease stigma costs. The authors also indicated the likelihood of older borrowers perceiving higher stigma. For the purpose of this study, population density and proportion of late life residents (over the age of 55) are used as a proxy for the stigma variable.

#### *Income and Local Participation Measures*

The U.S. Bureau of Economic Analysis was used to draw the median household income per county. Finally, using the data provided by the Iowa Gaming Association, percentage local residents within a 50 mile radius visiting the casino was computed and this was used for each casino and collar county per casino location. It was assumed that counties with a higher percentage of gamblers would be prone to record higher bankruptcy rates.

#### *Data Analysis*

This study made use of multiple analyses to address the research questions. These were univariate analysis for descriptives and multiple regression models to identify predictors of bankruptcy and borrowing perceptions using the survey data. For the two OLS regression models focusing of perceptions of bankruptcy and borrowing habits of local residents and examining the influence of hard evidence while controlling for



socio-demographic characteristics and gambling behavior (see Table 1 for the variable information), the following equation was used:

$$\text{BankPerception/borrowingPerception} = \beta_0 + \beta_1 \text{KnowBankruptcy} + \beta_2 \text{Knowborrower} + \beta_3 \text{GambLoss} + \beta_4 \text{GamblingParticipation} + \beta_5 \text{Age} + \beta_6 \text{Gender} + \beta_7 \text{Education} + \beta_8 \text{Marital Status} + \beta_9 \text{FamilySize} + \beta_{10} \text{Income1} + \beta_{11} \text{Income2} + \beta_{12} \text{Income3} + \beta_{13} \text{Income4}$$

Next, line graphs were used to demonstrate bankruptcy trends with respect to the gaming revenue trends in the State of Iowa and the casino and control counties respectively. Finally, additional multiple regression models were employed to examine the effect of AGR per household and other social and economic factors on BFRs.

### Findings

Table 1 provides the descriptive statistics. With regard to age, 40% of the respondents were under 36 years of age and a similar percentage was between 36 and 55 years old. Approximately, 20% were above 55 years of age. The results indicate that 53% of the respondents earned less than \$50,000. The proportion of male respondents was almost the same as the female. Average family size was found to be 3.64 and the age of the youngest child was found to be 17.33 years. Most respondents were married (52%) and had accomplished an average of 15.33 years in education. Finally, most were Caucasians (86%) and this finding mirrors the ethnicity breakdown provided by the Census Bureau.

On the question if they borrowed money to gamble in Iowa, the majority of the respondents answered in the affirmative with the exception of two percent. These two percent respondents were asked to provide an estimate of the amount borrowed in 2004, 2005, or at some other point in their life. Three respondents stated that they had borrowed

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at some point in their life. The average amount was calculated to be \$33.33 with a standard deviation of \$57.74 and a maximum of \$100. The next question was: do you know of a person/s who has/have borrowed money to gamble at a casino in Iowa? Approximately, 28% of respondents stated that they knew of someone who borrowed money to gamble in a casino.

The respondents were also asked to provide an approximate amount borrowed by someone else they knew. Actual figures were provided by 42% of the group (28% of the respondents). For the year 2004, the average amount borrowed was calculated to be \$2,208 with a maximum of \$10,000 and a standard deviation of \$2,218. Approximately 14% knew someone who had gambled in 2005. According to the estimation provided, the average amount borrowed was \$2,866, with a maximum of \$25,000 and a standard deviation of \$3,836. Only ten respondents knew of persons who had borrowed at some other point in their life. The average amount was calculated to be \$5,878 with a maximum of \$10,000 and a standard deviation of \$10,000.

**Table 1 Descriptive Statistics**

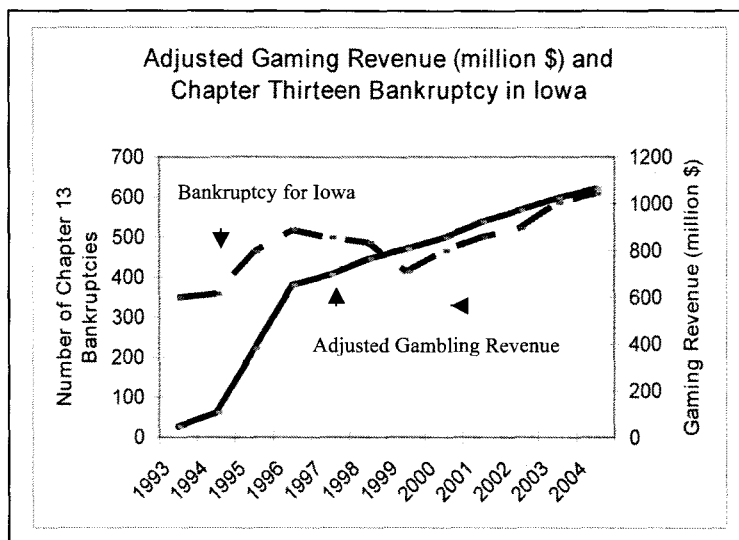
| Variable              | Definition   | Mean                                    | SD    |
|-----------------------|--|---|-------|
| 1                     | Less than 25 years   | .19                                     |       |
| 2.                    | Between 26 and 35 years  | .22                                     |       |
| 3.                    | Between 36 and 45 years  | .21                                     |       |
| 4.                    | Between 46 and 55 years  | .19                                     |       |
| 5.                    | Between 56 and 65 years  | .13                                     |       |
| 6.                    | Above 65 years   | .6                                      |       |
|                       | Age on a Likert Scale from 1 to 6                              | 3.04                                    | 1.50  |
| Income                |  |   |       |
|                       | Less than \$35,000   | Dummy=1 if below \$35,000               | .34   |
|                       | Between \$35,000 & 49,999                                      | Dummy =1 if between \$35,000 & \$50,000 | .21   |
|                       | Between \$50,000 & 99,999                                      | Dummy=1 if between \$50,000 & \$99,999  | .30   |
|                       | Above \$100,000  | Dummy =1 if above \$100,000             | .15   |
| Gender                | Dummy =1 if male   | .47                                     |       |
| Member                | Members in the family  | 3.64                                    | 1.94  |
| Marital Status        | Dummy = 1 if single  | .32                                     |       |
| Education             | Years  | 15.33                                   | 2.77  |
| Children              | Number of children in the family                               | 1.59                                    | 1.61  |
| ChildAge              | Age of the youngest child                                      | 17.33                                   | 12.15 |
| Knowbankruptcy        | Dummy =1 if know someone who had declared bankruptcy           | .10                                     |       |
| Knowborrowing         | Dummy =1 if know someone who was borrowing to gamble           | .28                                     |       |
| Gamblingparticipation | Dummy =1 if gambled at a Iowa casino during the last 12 months | .27                                     |       |
| Borrowing             | Perceptions on five point Likert scale                         | 3.25                                    | .85   |
| Bankruptcy            | Perceptions on five point Likert scale                         | 3.60                                    | .91   |

Next, in response to the question: *do you think casino gambling leads to bankruptcies?* Approximately 66% of the respondents were of the opinion that casino gambling led to bankruptcies. The respondents were further asked to state how many people they knew who had declared bankruptcies because of casino gambling. Only 23 respondents from this group (of 129) answered this question. In other words, 18% of the respondents supported their opinion with actual evidence. Average number of people going bankrupt because of casino gambling was calculated to be 1.12. The amounts on which bankruptcies were declared ranged from \$2000 to \$100,000 at different times of life. In order to study the bankruptcy issue further, this study uses line graphs to examine trends in the historical data on personal bankruptcy for the State of Iowa, the casino counties and the control group of counties.

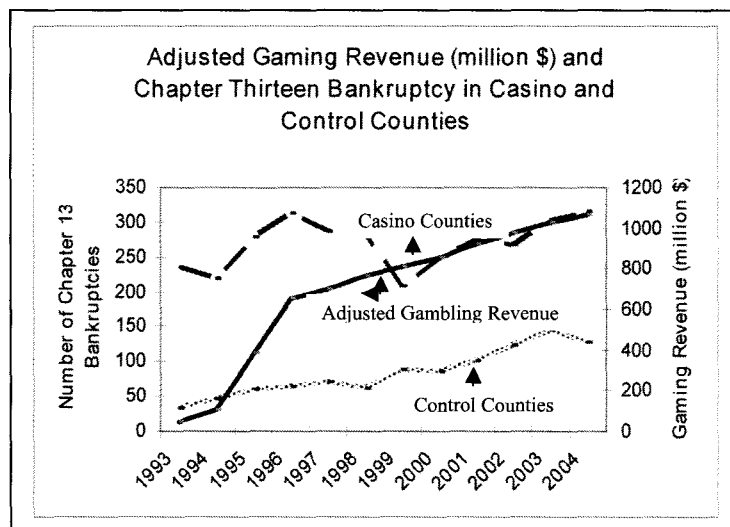
On bankruptcy trends, Figures 1 & 2 profile the estimated Chapter 13 bankruptcies for casino and the control counties. Over the ten year time period, bankruptcies in casino counties grew by approximately 13% percent while the reported growth for the control counties 100% percent. What is also interesting to note is that while the bankruptcies climb slowly in the control counties, they show a more dramatic decline followed by escalation in the casino counties. As a matter of fact, for the time period under analysis, an increase of more 83% is reflected in the annual growth rate for control counties over the counties with casinos. The adjusted gambling revenue shows a consistent upward trend during the listed time period. It is important to note that the bankruptcy disparity between casino counties and the control group of counties existed during the pre-casino

period. This implies a likely influence of location specific factors on the previously existent and continued bankruptcy situation in the casino counties. The overall aggregate growth for the casino and the collar counties was 40%.

**Figure 1: Chapter 13 Bankruptcy Trend for the State of Iowa**



**Figure 2: Chapter 13 Bankruptcy Trend for Casino and Control Counties**



*Determining Predictors of Borrowing and Bankruptcy Perceptions*

Next, using the survey data, perception dynamics on borrowing and bankruptcy were examined. Table 2 examines whether the evidence provided by the respondents affects local resident perceptions on casino generated borrowing habits and bankruptcy. As the results reveal, statistically significant effect of the knowledge of people borrowing money to gamble was noted on the borrowing perceptions while controlling for personal characteristics and participation. Additionally, those who had gambled in the last twelve months were more likely to perceive that casino gambling lures people to borrow than those who had not participated recently. With regard to personal characteristics, no differences across gender and income groups were observed in addition to a non-significant effect of age, education, and family size.

Conversely, it was interesting to note that knowledge of people who had filed personal bankruptcy because of gambling did not have a significant effect on bankruptcy perceptions while controlling for participation, acquaintance with a person who had borrowed money to gamble and socio-demographic characteristics. Yet, the model was statistically significant indicating a positive influence of recent gambling participation, holding all else constant. In other words, the recent gamblers were more likely to perceive that the casinos escalate bankruptcies. However, the socio-demographic characteristics such as annual household income, gender, age, family size, and education did not influence perceptions. These results were not without limitation. This is indicated by the small R squared value, thus suggesting the presence of factors other than the hard evidence on casino gambling based BFRs.

**Table 2: Regression Analysis for Gambling Impact Perceptions**

| Independent Variables | Dependent Variable:<br>Bankruptcy Perceptions |        |      | Dependent Variable:<br>Bankruptcy Perceptions |        |      |
|-----------------------|---|--------|------|---|--------|------|
|                       | B   | t      | Sig. | B   | T      | Sig. |
| KnowBankruptcy        |   |        |      |   |        |      |
| KnowBorrower          | -.480   | -3.411 | .001 | -.248   | -.958  | .340 |
| GamblingParticipation | .363  | 2.627  | .009 | .535  | 3.438  | .001 |
| Age                   | .026  | .546   | .586 | -.006   | -.104  | .917 |
| Gender                | .045  | .352   | .726 | .054  | .374   | .709 |
| Education             | .004  | .186   | .853 | .015  | .560   | .576 |
| Marital Status        | -.054   | -.937  | .350 | -.012   | -.188  | .851 |
| FamilySize            | .036  | 1.138  | .257 | -.043   | -1.212 | .227 |
| Income1               |   |        |      |   |        |      |
| Income2               | -.283   | -1.509 | .133 |   | -.323  | .747 |
| Income3               | -.096   | -.522  | .602 |   | -.529  | .598 |
| Income4               | .045  | .205   | .838 |   | .922   | .358 |
| <i>F Value</i>        | 2.562   | .007   |      | 2.029   |        |      |
| <i>R Squared</i>      | .136  |        |      | .114  |        |      |

### Impact of Adjusted Gambling Revenue on BFRs

Table 3 displays the model estimation for the period 2004. Higher local participation clearly did not facilitate the rise in bankruptcies holding economic, income and expense shock, stigma, and population indicators constant. AGR per household also failed to significantly predict escalation in BFRs while controlling for income and expense shocks and stigma. That is, the gambling revenue, earned by the casino operators after winnings, does not impact the BFRs in areas lying in close proximity to the existing casinos. With regard to other factors, higher BFRs were observed in counties with a relatively higher population density, keeping all else constant. This implied a likelihood of less stigma, that is, residents of counties with a higher population density are more likely to file for personal bankruptcies. However, the second stigma associated variable, proportion of residents above 50 years of age, did not prove to be a significant predictor of BFRs. There was no tendency in counties with a majority of older residents to file for fewer bankruptcies.

With regard to income and expense shocks, surprisingly median household income proved to affect BFRs but with a positive sign, holding all else constant. In other words, counties with a higher median household income were more likely to file for bankruptcy. A bivariate model in the absence of controlled variables also depicted a similar sign. Next, it was found that counties with a higher number of people uninsured on health insurance were more likely to file for bankruptcy. Other proxies for the prevalence of expense shocks, higher unemployment rate and higher divorce rates did not lead to higher BFRs.

**Table 3: Impact of Logged Adjusted Gross Revenue (AGR) on BFR for Year 2004 (Per Thousand)**

| Independent Variables  | Mean (St. Dev)    | Coefficients | T stat.            |
|--|-------------------|--------------|--------------------|
| Population Density   | 59.30 (93.44)     | .006         | 4.836 <sup>a</sup> |
| Unemployment Rate  | 4.22 (1.11)       | .117         | 1.236              |
| Proportion of residents above 55 years of age (per thousand) | 3.73 (.68)        | -.025        | -.087              |
| Median Household Income                                      | 37,314 (4,475)    | .001         | .987 <sup>a</sup>  |
| Homeownership Rate (per thousand)                            | 29.3 (19.70)      | -.002        | -.272              |
| Divorce Rate (per thousand)                                  | 4.92 (13.59)      | -.002        | -.192              |
| Non-health Insurance Rate (per thousand)                     | 9.17 (2.26)       | .111         | 1.730 <sup>b</sup> |
| AGR per Household (Logged)                                   | \$33,827 (37,235) | -.011        | -.113              |
| Percentage Local Gamblers                                    | -.002             | -.467        |                    |
| F Value  | 7.852**           |              |                    |
| R Squared  | .601              |              |                    |
| Adjusted R Squared   | .524              |              |                    |

a:  $p \leq .001$ ; b:  $p \leq .05$

Next, Table 4 presents effect of AGR per household while controlling for other social and economic factors over an extended period of time from 1995 to 2003. Additionally, it illustrates the influence of non-gaming related factors. All the multiple regression models were found to be statistically significant with high R squared values. This indicated that the chosen variables were in a position to explain the variance in BFRs in the casino and collar counties.

While not controlling for other factors, the gambling revenue growth in Iowa depicted a negative influence on BFRs during the selected time frame. This implied that counties with a lower growth in gambling revenue were more likely to witness a higher bankruptcy incidence. However, when other relevant factors were added to the model, the influence became silent and displayed a non-significant effect. The other gambling related factor, percentage of local residents who gambled, was found to be significant only in the early years of casino development and continued till 1998. However, this factor also indicated a negative effect on bankruptcy growth. In other words, counties with a higher percentage of local gamblers were less likely to report higher incidences in bankruptcy. Among the stigma associated factors, population density revealed a positive association with the rising BFRs across the entire time period. This is indicative of the fact that it is easier for residents who live in populated counties to face the bankruptcy filing stigma. The older age stigma was only noted in 1998 and failed to exercise a significant influence across the rest of the time period.

With regard to prevalence shock measures such as unemployment, divorce rates, percentage of respondents with no health insurance, and homeownership rate, only the health insurance variable proved to significantly influence the BFRs in a positive way. In other words, holding all else constant, counties depicting percentage of residents with less health insurance were more likely to show higher BFRs in years 1999, 2000 and 2003. This effect, thus, was not universal across the entire time period. With regard to income measures, it was interesting to note a consistent positive effect of county median household income across the entire time period. Counties in a higher household income category were more likely to report higher incidences of personal bankruptcy.

**Table 4: Time Series Analysis Impact of Logged AGR on BFRs**

| Independent Variables                         | 1995   |        | 1996   |        | 1997   |        | 1998   |         | 1999    |       | 2000  |       | 2001  |       | 2002  |       | 2003  |       |
|---|--------|--------|--------|--------|--------|--------|--------|---------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|   | B      | t      | B      | t      | B      | t      | B      | t       | B       | t     | B     | t     | B     | t     | B     | t     | B     | t     |
| Population Density                            | .013   | 3.74*  | .006   | 4.15*  | .005   | 3.08*  | .005   | 3.63*   | .004    | 3.08* | .006  | 4.58* | .006  | 4.62* | .007  | 5.11* | .006  | 4.55* |
| Unemployment Rate                             | .187   | .68    | .097   | .83    | -.009  | -.054  | -.131  | .70     | -.125   | -.502 | -.007 | -.06  | .043  | .33   | .102  | .94   | .14   | 1.44  |
| Proportion of residents above 55 years of age | -.758  | -1.17  | .364   | 1.04   | -.551  | -.15   | -.959  | -2.89*  | -.178   | -.371 | .111  | .36   | .137  | .41   | .070  | .23   | .43   | 1.39  |
| Median Hhld Income                            | .010   | .91    | .001   | 1.17   | .001   | 3.76   | .002   | 4.22*   | .001    | 3.11* | .001  | 2.99* | .002  | 2.17* | .001  | 2.55* | .002  | 3.14* |
| Homeownership Rate                            | .027   | -1.34  | .012   | .96    | .001   | .02    | -.020  | 1.94*   | -.002   | -.135 | .003  | .33   | .001  | .08   | -.003 | -.35  | .001  | .20   |
| Divorce Rate                                  | .207   | .90    | .001   | .08    | .083   | .54    | .006   | .75     | .002    | .224  | -.001 | -.100 | -.003 | 0.30  | .001  | -.04  | -.010 | -1.24 |
| Non-health Insurance Rate                     | .043   | .40    | .056   | .77    | .172   | 2.14*  | .109   | 1.61    | .136    | 1.73* | .128  | 2.17* | .091  | 1.27  | .096  | 1.55  | .14   | 2.22* |
| AGR per Household (Logged)                    | .220   | .95    | -.167  | -1.59  | -.193  | -1.34  | -.095  | -.82    | -.021   | -.783 | -.043 | -.47  | -.015 | -.12  | .043  | .39   | .070  | .66   |
| Percentage Local                              |        |        |        |        |        |        |        |         |         |       |       |       |       |       |       |       |       |       |
| Gamblers                                      | .014   | .74    | -.014  | -2.93* | -.010  | 2.16*  | -.011  | 2.51*   | -.006   | -1.57 | -.004 | -1.17 | -.006 | 1.57  | -.005 | -1.49 | -.001 | -1.08 |
| F Value                                       | 3.945* | 7.570* | 7.310* | 9.468* | 6.730* | 9.093* | 8.503* | 10.020* | 11.594* |       |       |       |       |       |       |       |       |       |
| R Squared                                     | .732   | .661   | .653   | .715   | .684   | .656   | .662   | .693    | .713    |       |       |       |       |       |       |       |       |       |
| Adjusted R Squared                            | .547   | .573   | .563   | .639   | .582   | .583   | .581   | .624    | .652    |       |       |       |       |       |       |       |       |       |

a:  $p \leq .001$ ; b:  $p \leq .05$

### Conclusion

The first and the second research questions were: “Are the local residents concerned that casino gambling will encourage people to borrow money to gamble and will this lead to increased bankruptcies in their region? Can the local residents provide evidence to support their perceptions?” The results indicate that a substantial portion of local residents (38%) perceive that casino gambling causes people to borrow money and this activity, according to the majority of them (66%) results in increased bankruptcies in the host communities. However, 42% of the group (28% of the respondents), who think that casino gambling causes people to borrow, are able to support their perceptions with evidence. And only 18% of those who state that casino gambling causes bankruptcies are able to say that they actually know someone who had actually declared bankruptcy because of gambling.

As pointed out in the beginning of this paper, most of the earlier literature has failed to report higher ratings of bankruptcy perceptions. This can either be due to error of omission or due to the fact that the local residents did not consider this an important issue. Another reason could be subject to the number of years the focused casinos had been in operation. It has been suggested that the negative aspects of borrowing and bankruptcy emerge in due course of time. Such effects are not evident immediately, but erode the social structure over an extended period of time. For instance, several studies that have reported bankruptcy and borrowing concerns are mostly focused on casinos in existence for a longer period of time.

Today, the gambling industry in the United States has reached a mature stage. This might explain why more recent literature has brought forth these issues with full force because the casino gambling industry has reached a mature stage.

That said, a gap exists between evidence and perceptions even though it is less noted in the borrowing issue. As noted by Domowitz & Sartain (1999), credit card borrowing is a big contributor of bankruptcy. The same logic can be extended to support local

*42% of the group (28% of the respondents), who think that casino gambling causes people to borrow, are able to support their perceptions with evidence.*

resident's view that casino gambling encourages gamblers to borrow and the majority of the borrowing comes from credit cards as reported by (Barron et al. 2002). Credit card transactions are easily notable. However, the filing for bankruptcy is a behind the scenes act. It is highly likely that borrowing perceptions have led to the assumption that casino gambling leads to higher bankruptcy incidences. This concern remains a subjective assumption and opinion, as it failed to garner evidence from the subjects themselves and from the time series based multiple regression models that examined the dynamics of bankruptcy phenomenon using the macro market approach. This, in itself, is a significant eye opener finding for the policy makers, casino operators, and opponents of casino gambling besides the local residents themselves. The findings advise local communities to rethink and analyze some of their views on the negative aspects of casino gambling because it is highly likely that some of their views are channeled by the interest groups and the local media.

The third research question aimed to determine whether Chapter 13 bankruptcy trends in casino counties differ from those of control counties. It is found that although trend data reveal higher bankruptcies in casino counties when compared with the control group of counties, yet the plotting indicates continued disparity from the pre-casino period. Next, the purpose of the fourth research question was to determine if adjusted gambling revenue earned by the gambling industry in Iowa was a significant predictor of bankruptcy filing rates. This last question sought to identify if other factors triggered the bankruptcy filing rates in Iowa. Multivariate technique controlling for the influence of relevant factors illustrates that the incidence and growth of adjusted gambling revenue per household does not predict or explain escalation of bankruptcies during the selected time frame. However interesting results were noted. Although this study did not find the unemployment effect to be significant, it reported a significant positive association between median household income and the rise of BFRs. This means that counties with a higher median household income were more likely to pronounce bankruptcies. Even though this finding is argued by Barron et al. (2002) and Goss & Morse (2005), it is not

unique or abnormal. Sullivan et al. (1989), Gross & Souleles (2002) and Domovitz & Eovaldi (1993) posit that income is not a complete proxy for economic conditions and this variable does not indicate the level of debt in a household. According to Sullivan et al. (2002:169), "many people file bankruptcy after their income goes up." Thus a higher median household income cannot be proxied for less debt or less borrowing. In other words,

*Counties with a higher median household income were more likely to pronounce bankruptcies.*

higher propensity to spend can also lead to higher debts. The negative effect of lack of health insurance on BFRs is supported by Gross & Souleles (2002). Moreover, higher population density association with higher BFRs is indicative of less stigma probability due to anonymity, regardless of the cause for filing. Additionally, this study indicated a negative effect of counties with a higher proportion of older people. Again, traces of stigma are noticeable but cannot be clearly tied with rising AGR.

This aforementioned view is supported by De La Vina & Bernstein (2002), who hold that many reasons are associated with bankruptcy behavior. Likewise, in a synthesis of literature, the U. S. Treasury Department (1999) and NORC (1999) note the influence of a range of social, economic, and financial factors in their study of association between BFRs and AGR. The casino fault for rising BFRs is marginal as these studies imply that the proportion of problem or pathological gamblers is small even though they might display a higher than normal bankruptcy rate. Other benefits for this at risk group can also dampen the BFRs and offset negative effects from a growing population of problem gamblers. "It should be noted that recent bankruptcy reform legislation may well channel more people toward rehabilitative forms of bankruptcy, particularly when debtors have significant continuing income potential" (Spears & Boger 2002:21).

This is the first study to seek evidence from the local residents to explain their position on the perceived negative impacts of casino gambling. In doing so, it attempts to

explain the perception dynamics within the context of hard facts and other influences. This study, empirically, identified predictors of perceptions on the borrowing and bankruptcy items. While respondents in agreement or strong agreement with the borrowing item were able to provide evidence, those highlighting the bankruptcy issues failed to support their perceptions with real facts.

As is indicative by the need for this study to follow up on the questions raised by the policy makers in the State of Iowa, evidence is required to convince the policy makers to take compensatory actions against externalities of casino gambling tourism as perceived by the local residents. Significance of evidence theory in social settings is thus proved. Nonetheless, this study was not without limitations. First limitation, similar to the one reported by Barron et al. (2002) was that the direct influence of AGR on BFRs does not take into account the additional indirect negative and positive effects of casino gambling on household finances. This is attributed to the fact that the income and unemployment factors included in the analysis only partly capture the added benefits associated with personal finances. Second limitation is the likely omission of other relevant variables that can predict local resident perceptions. Future studies can extend the current analyses by examining the influence of variables, such as attendance to meetings sponsored by specific interest groups and exposure to a specific media. Nevertheless, this study has important implications and points to a realistic path to bring forth credible issues associated with casino gambling. In doing so, it highlights the much needed change in research direction associated with social impacts.

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