

**Journal of Hospitality, Tourism and Leisure Science  
December 2001**

The Effects of Casino Developments on Local Restaurant Businesses

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**Abstract**

This study investigates whether land-based casino developments impact local restaurant operations. Because New Jersey, Colorado and South Dakota were the first states (other than Nevada) where land-based casinos were developed, the study utilized these three states as proxies for the effect of land-based casino development on the restaurant or food and beverage (F & B) industry. The number of food and beverage units, the number of employees in the food and beverage industry, and total food and beverage payroll amounts were regressed against county per capita income, or PCI, and casino development dummy variables. Ordinary Least Square and General Least Square methods were used. Our results suggest a negative relationship between casino development and local restaurant industries in New Jersey with regard to total payroll amounts but did not observe any relationship between the presence of casinos and the number of restaurants or the number of employees. In contrast, a positive effect on the number of employees was observed in Colorado and on all variables tested in South Dakota. However, as time passes this study's approach should be repeated with longer time-series and for additional casino destinations.

Key words: casinos; restaurants; time-series; impacts

**Introduction**

Dramatic changes have occurred in the casino gambling world in the United States since 1989. With the opening of casinos in South Dakota, and a mega-resort in Las Vegas called “The Mirage,” a nationwide spread of the casino industry occurred (Thompson, Pinney & Schibrowsky, 1996). Over the last decade, the casino industry became the fastest growing industry in the U.S. Most communities have embraced the gaming industry because of the economic activity, taxes and employment it generates. For example, dying mining towns in South Dakota and Colorado that permitted casinos found that more tourism and economic activity was generated than these communities could easily accommodate. Also, for numerous Native American tribes, casinos proved to be the strongest economic development tool they had ever encountered (Eadington, 1996).

However, in order to understand clearly whether the gaming industry will be beneficial in a particular place, it is imperative to weigh all the costs encountered in each community (Pablo, 1996). In addition to moral considerations, anti-casino gaming efforts challenge casino gaming on what is considered its strongest point—its economic benefits (Reifer, 1995). The most challenging argument stated in this respect is that gaming is a “cannibal” that attracts to itself existing economic activities and devours existing wealth in the community in which it operates (Goodman, 1994). For example, Goodman refers to empirical evidence claiming that casino development caused most of the restaurants in Atlantic City to go out of business (75% in 1978).

Reifer’s (1995) rebuttal to this argument is that the after-gaming experience of Atlantic City could not be generalized and applied to other locations because the city had made an “exceptional utter mess” out of its casino era opportunities. Most communities view casino development as a feasible and sustainable economic development strategy (Gabe, Kinsey, & Loveridge, 1996). For example, it has been suggested that casinos enhance the qualitative and structural competitiveness of a destination (Walkowiak, 1996; Lee & Kwon, 1997). Casino developments extend the recreational supply for a region’s residents and attract tourism (Thompson, et al., 1996). However, the food and beverage industry often claims that it is difficult to operate alongside casino developments. Interviews conducted with local Las Vegas restaurant owners and managers (Transcripts, 1999) revealed several major arguments: The industry claims that local restaurant owners cannot compete with the food and beverage complimentary offers that are customary in casinos. Furthermore, local restaurants have difficulty attracting qualified staff in the labor markets of casinos, which is considered a major competitive disadvantage. In addition, academic research suggests that gaming losses incurred by local residents reduce their recreational budgets and therefore decrease spending for other recreational activities such as visits to local restaurants (Smeral, 1998).

In this context, some academic studies question whether casino development is a realistic strategy for long-term economic development and whether casinos develop too quickly for local businesses to adjust to them (Ravitz, 1988). Furthermore, it was questioned whether the positive economic impact casino developments have on most businesses extends to the restaurant industry (Pizam & Polenka, 1985). Stokowski (1993) investigated the effects of gaming developments in a Colorado case study and concluded that negative effects on local businesses could be observed. Undesirable effects included the closing of restaurants, hotels and gas stations during the initial stages of gambling-based developments. However, the Stokowski study was conducted only one year after the introduction of gaming to Central City and Black Hawk in Colorado, and therefore

could not measure long-term economic effects on these communities. On the other hand, Fenich (1998) conducted a study that revealed positive effects of land-based casino developments on local restaurant businesses, adding to the controversy about the subject.

The dramatic effects of casino development, mostly based on the Atlantic City situation, are addressed numerous times in the restaurant business trade literature as well. Much of the cannibalization argument is based on the assumption that local customers will defect from local F&B businesses to casino-based F&B operations. However, the following points should be considered. First, casino developments attract tourists, which utilize local businesses including local F&B operations. Second, restaurants by their nature are high-risk ventures, as the industry has a 95% failure rate during the first year of operation (Gu & Gao, 2000). Further, economic theory needs to be considered. Consumer demand theory suggests that as the number of consumers (local or tourists) and/or their incomes increase, the demand for goods or services increases as well.

Such an increase in demand is expected to translate into an increase in income to sectors providing services used by casino visitors. An increase in the demand for one industry's goods will lead to an increase in the demand for other goods that are complementary to the first, and may lead to a decrease in the demand for substitutes. It remains to be investigated whether local F&B operations are substitutes or complements to casinos and their F&B operations. If, in fact, local F&B operations serve as complements to casino operations, current efforts of the F&B industry to oppose casino developments could be misguided and harmful to an area's economic development.

Finally, a point often overlooked in these studies is the difference between the success of an individual business and the success of an industry. Overall industry growth in employment or revenue, for example, can be accompanied by the failure of individual firms within that industry. Furthermore, an area's economic environment may change dramatically following the development of casinos. These changed conditions may impact existing firms in a negative manner or attract new entrants able to out-compete some existing firms. These arguments suggest that the definition of success used to describe business conditions pre- and post-casino development may color one's assessment of casino development's impacts.

This study attempts to evaluate how land-based casino developments impact the aggregate health of local restaurant businesses. It will not examine the experiences of individual firms but will instead measure "success" through the aggregate experiences of the industry. It concentrates on land-based casino developments. Operations such as riverboat casinos, dockside gaming and Native American casinos are not considered because they have impacts on local economies that are not comparable to land-based casino developments.

## **Model**

This study attempts to investigate the aggregate health of local food and beverage operations in the presence of casino developments in New Jersey, Colorado and South Dakota. In order to measure the state of the local restaurant industry, several variables could be considered, such as profits, revenues, the number of employees working in local restaurants, the amount of restaurant payroll, as well as the number of existing restaurant establishments. Restaurant revenues and profits were considered as variables to measure the health of the restaurant industry; however, since most of the food and beverage

establishments in the counties tested were not publicly traded, profit and revenue amounts were unobtainable. Furthermore, it was decided that revenues are a questionable indicator of the health of a restaurant business, since revenues earned do not necessarily equal profits made. In addition, profits are an arbitrary measure, as profits depend on several variables, such as depreciation methods used and amounts of interest paid. Therefore, the relationship between the conditions of local restaurant industries and casino developments were examined by using the number of restaurant businesses, the number of employees, and total industry payroll amounts. Three models were used to regress these industry variables separately against the county's per capita income and a casino development dummy variable. According to Studenmund (1992) dummy variables take on the values one or zero depending whether a certain condition does or does not exist. Therefore, we used 1 to identify years when casinos were present and 0 to identify years when no casino developments were present.

We considered the following basic model:

$$Y1 = b0 + b1X1 + b2X2$$

Where:

Y1 = Total yearly number of food & beverage units (1),

Y2= Total yearly amount of food & beverage payroll (2),

Y3= Total number of employees in the food & beverage industry (3),

X1 = Dummy variable for casino development existing, and

X2 = Per capita income for Lawrence County, South Dakota, Teller County, Colorado and Atlantic County, New Jersey.

If casino developments have an adverse effect on the local restaurant industry and serve as a substitute for local restaurant businesses, the expected signs for the relationship between the food and beverage industry variables and casino development should be negative. On the other hand, if the presence of casino development coincides with increased business activities for local food and beverage operators, they can be viewed as complementary products, and this kind of relationship was predicted to show a positive sign.

Furthermore, the authors recognize that many factors, such as annual tourism arrivals, the growth of non-tourism industries, and residential growth in a destination area, influence economic activities and that the aggregate health of the local food and beverage industry is also a function of general economic conditions in the counties tested. In order to reflect these economic activities, the model includes the area's per capita income. One might expect that a community would experience increased economic activity generated by increased tourism, which is produced by casino development. Consequently, the relationship between the county's per capita income and the number of units of food and beverage businesses, the number of employees, and the total payroll amounts was expected to be a positive one.

## **The Data**

The model employs yearly time-series data. Time-series data are measurements over time where the measurement of one period is influenced by its previous period, often resulting

in estimates that are not efficient. F-statistics, evaluating an equation's overall significance as well as t-statistics, which measure each coefficient's significance, could portray inflated values as the result of underestimated variances (Gurajati, 1999). In order to achieve efficient estimates, procedures need to be applied that take into account this condition that is defined as autocorrelation. In order to detect autocorrelation problems, we applied the most popular test, the Durbin-Watson statistic in an Ordinary Least Square (OLS) estimate, at the 5% significance level (Gurajati, 1999). If the Durbin-Watson statistic indicated autocorrelation problems with values  $> 2.4$  or  $< 1.8$ , a General Least Square (GLS) method called Cochrane-Ocutt, which transforms the independent and dependent variables, was applied (Maddala, 1983) (See Table 2). Furthermore, the independent variables should not be highly interrelated (Gurajati, 1999). Collinearity statistics with a tolerance larger than .3 and a Variance Inflation Factor (VIF) smaller than 5, were applied as criteria, and no multicollinearity problems were detected. The study used data collected from Cripple Creek, in Teller County, CO; Deadwood, Lawrence County, SD; and Atlantic County, NJ. These three counties were chosen because they had the first land-based casino developments in the United States. Las Vegas, Clark County, in Nevada, and Reno, Washoe County, in Nevada, were excluded because no data are available covering time-periods before gaming was developed.

The first New Jersey casino opened in 1978, and therefore a time-series was tested from January 1970 to December 1996. Since Colorado and South Dakota only began to develop casinos in 1990 and 1989 respectively, a time-series from January 1977 to December 1996 was used for both of these destinations. At the time this analysis was conducted many of the variables were unavailable past 1996. The data were collected from various sources. First, data for the dependent variables (number of food and beverage operations, total food and beverage payroll and number of food and beverage employees) were collected from the County Business Patterns series (U. S. Census Bureau, 1977-1996). The data refer only to local food and beverage operations not part of a casino operation. However, independent operators located in casinos are included in the data. Second, data for the independent dummy variable "Casino Development" (1 indicated the existence of a casino development and 0 the absence) were found in the Casino Executive Fact Book, 1998 edition. Third, data for the second independent variable, per capita income were obtained from "National Accounts Data" published by the Bureau of Economic Analysis (U. S. Dept. of Commerce, 1999).

### **Graphical Analysis**

Three graphs were prepared in order to inspect changes in the data over time. The effects of inflation were removed from the restaurant payroll data through the use of the Consumer Price Index. This turned payroll into constant 1982-1984 dollars. All three dependent variables, payroll, number of employees, and number of units, were then indexed with the first year of the series equal to 1.0. Growth at a value higher than the first year of the series results in an index value greater than 1.0. A decline to a value less than that observed in the first year of the series results in an index value less than 1.0. An index of 2.0, for example, means that the value for that year is twice that of the first year of the series. Similarly, an index value of 0.7 means that year's value is only 70 percent of the value that began the series.

Turning to the three dependent variables that describe restaurants in Atlantic County, NJ (Figure 1), the years prior to opening of the first Atlantic City casino in 1978 show

variability in payroll and number of employees and growth in the number of units. Starting from a low in 1978, payroll increased until the late 1980s, declining during the recession of the early 1990's, then beginning to grow again after 1991. Similarly, beginning in 1978, the number of employees grew annually until 1987, then declined and recovered in a manner similar to payroll. However, the number of units displays a different pattern. The number of units hit a low in 1984 and then displayed recovery and growth through the rest of the study period.

Figure 1

For these three variables for Lawrence County, SD (Figure 2), patterns different from those seen in Atlantic County are displayed. Payroll was growing before the opening of casinos in 1989. After legalization, it grew to a higher level, and then reached a plateau. The number of employees displayed a similar pattern, with growth during the pre-legalization period reaching a plateau after legalization. Comparing the number of units pre-and post-legalization, in the years prior to legalization, expansions and contractions increased the number of units. The total number of units has remained relatively constant since legalization in 1989.

Figure 2

In Figure 3 for Teller County, CO, payroll shows stable levels of growth prior to 1990, and a growth spike in 1992, followed by a decline in 1993. However, the decline left payroll at a level considerably higher than observed during pre-casino opening. The number of employees, on the other hand, shows a pattern of growth throughout the study period, without any dramatic changes in slope in the years after the opening of casinos. The trend in the number of units is similar in displaying constant growth, in both time periods before and after the opening of the casinos. While trends in both the number of units and the number of employees show constant growth, the number of units grew at a slower rate over the study period.

Figure 3.

Regression Analysis

Table 1 displays the descriptive statistics for the variables. Size of the F&B industry as measured by the number of units, number of employees, and total payroll varied across the three counties, as did per capita income.

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Table 1. Summary statistic for the F&B Industry in Atlantic, Lawrence and Teller Counties

Variables by County Mean Standard Deviation Teller County (1977-1996)

Number of F&B units	30.80	7.92
Number of F&B employees	237.45	102.13
Total F&B payroll	1512.10	1088.35
Casino development	.35	.49
Per Capita Income	12582.00	932.87
Lawrence County, (1977-1996)		

Number of F&B units 54.25 6.79  
 Number of F&B employees 657.90 145.28  
 Total F&B payroll 4153.00 1864.26  
 Casino development .40 .50  
 Per Capita Income 10912.00 595.46  
 Atlantic County, (1969-1995)  
 Number of F&B units 448.59 74.25  
 Number of F&B employees 5349.00 1207.16  
 Total F&B payroll 8373.00 1532.53  
 Casino development .70 .48  
 Per Capita Income 14780.00 2893.5

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F&B units: total numbers of F&B establishments.

Number of F&B employees: total number of people employed in food and beverage establishments not owned by casinos.

Total F&B payroll: total amount of payroll (stated in thousands) paid by food and beverage establishments not owned by casinos.

Casino developments: Casinos existing in a county.

Per capita income: Annual income per person.

An important step in the analysis entailed identifying which approach, ordinary least squares (OLS) regression or generalized least squares (GLS) regression, was appropriate for each set of time-series data. If autocorrelation appeared to seriously violate the assumptions of OLS regression, then a GLS model would be used. Table 2 illustrates the Durbin-Watson test results for the nine data series—three different dependent variables by three counties. In seven of the nine time-series, high levels of autocorrelation suggest the use of GLS rather than OLS regression approaches.

Table 2. Decision Criteria Ordinary Least Square vs. General Least Square variable

statistic Emp.

NJ Units

NJ Payr.

NJ Emp.

SD Units

SD Payr.

SD Emp.

CO Units

CO Payr.

CO

Durbin-Watson 1.498 .667 1.576 1.396 1.410 1.428 1.044 2.1 1.961

Autocorrelation .251 .666 .212 .302 .295 .286 .478 -.050 .019

OLS vs. GLS GLS GLS GLS GLS GLS GLS GLS OLS OLS

Results for Teller County, CO

The number of F&B units and F&B payroll was modeled using OLS regression (Table 3). The model with the number of F&B units as the dependent is significant ( $p < .01$ )

with an adjusted R square of 81%. The model does not display any serial correlation with a Durbin-Watson value of 2.09. The coefficient for casino development is not statistically significant. For this set of data there was no relationship between the presence of casinos and the number of F&B units. The per capita income variable has a positive value and is significant ( $p < .01$ ), portraying a positive impact on the number of restaurant units when the economy improves.

Turning to F&B payroll as the dependent variable, the coefficient for the casino development estimates that total payroll increases when casino development occurs ( $p < .05$ ). The per capita income coefficient displays that payroll amounts increase as the county's income increases ( $p < .01$ ). The entire equation is significant ( $p < .01$ ) and has an adjusted R square of 71%. The estimate has a Durbin-Watson of 1.96, indicating no serial correlation problems.

The estimate for the local food and beverage labor market, resulting from a GLS regression, has a positive coefficient for the casino development indicator variable, indicating the creation of food and beverage job opportunities as casinos are developed. The coefficient is significant ( $p < .05$ ). The per capita income coefficient also displays a positive impact on labor units per unit of per capita income increase, with a significance level of  $p < .01$ . The overall equation is significant at  $p < .01$  and displays an adjusted R square of 82%.

Table 3. Ordinary Least Square Results for Teller County, CO and General Least Square Results for Teller County, CO, Employees model  
variable Units Payroll Employees

### Model

Variable Units Payroll Employees

Intercept -79.129\*\*\* (-5.515) -3760.79\*\* (-2.584) -655,292\*\*\* (-2.846)

Casino Dev. -3.254 (-1.445) 517.31\*\* (2/265) 71,4142\*\* (2.103)

PCI .00883\*\*\* (7.472) .3809\*\*\* (3.179) .689411E-01\*\*\* (3.672)

Adjusted R 2 .81 .71 .82

F-Value 42.5757 32.5478 45.54557

N 27 27 27

Notes: Value of t-statistic in parentheses

\*  $p < .10$  \*\*  $p < .05$  \*\*\*  $p < .01$

Lawrence County, SD

All the regression equations for Lawrence County data were estimated using GLS methods. When the number of F&B units in Lawrence County, SD (Table 4) is the dependent variable the model as a whole is significant ( $p < .10$ ), with an adjusted R square of 33%. The casino development variable shows that the number of F&B units increases with the presence of casino development ( $p < .10$ ). The per capita income variable is not statistically significant. No serial correlation exists (Durbin-Watson 2.28).

Turning to number of employees as the dependent variable the overall equation is significant ( $p < .01$ ) with an adjusted R square of 81%. The Durbin-Watson measures 2.3 suggesting that serial correlation is not a problem. When casino developments exist, the number of employees increases. This coefficient is significant ( $p < .01$ ). The per capita income variable is not significant.

The regression model for the dependent variable measuring total payroll is statistically significant ( $p < .01$ ) and shows an adjusted R square of 86%. The Durbin-Watson statistic displays a value of 1.89, indicating that serial correlation is not a problem. The casino development coefficient displays an increase in payroll due to the presence of casinos. This result is significant ( $p < .01$ ). The per capita income variable shows an increase in payroll per unit increase in the county's per capita income ( $p < .01$ ).

Table 4. General Least Square Estimates for Atlantic County and Lawrence County model

**Model**

Variable Employees

Atlantic County Units

Atlantic County Payroll

Atlantic County Employees

Lawrence County Units

Lawrence County Payroll

Lawrence County

Intercept -963.078\*

(-1.931) 141.429

(1.39) -757.067

(-.981) -130.60

(-.268) 58.8826

(1.39) -2836.69

(-1.328)

Casino Dev. -348.117

(-1.376) -11.0292

(.317) -1867.76\*\*\*

(-4.726) 166.758\*\*\*

(3.037) 9.100 \*

(1.9) 728.318\*\*\*

(3.027)

PCI .444378\*\*\*

(6.953) .21802E-01\*\*\*

(3.310) .707648\*\*\*

(10.925) .0657126

(1.438) -.769664E-03

(-.192) .555684\*\*\*

(2.758)

Adjust. R2 .94 .64 .91 .81 .33 .86

F – Value 185.50 23.97 115.106 12.965 441.103 92.875

N 27 27 27 20 20 20

Notes: Value of t-statistic in parentheses

\* p <.10 \*\* p <.05 \*\*\* p <.01

### Atlantic County, NJ

All three models for Atlantic County were estimated using GLS methods. When industry success is defined as the number of F&B units the model is statistically significant (p < .01) with an adjusted R Square of 64% (Table 4). The model does not display any serial correlation, with a Durbin-Watson value of 2.3. The coefficient for casino developments is not statistically significant. The per capita income variable is statistically significant (p < .01), indicating a positive relationship between the local restaurant industry and the macro-economy.

When total payroll is the dependent variable the equation as a whole is significant (p < .01) and shows an adjusted R square of 91%. The Durbin-Watson value is 2.26, and no serial correlation exists. The casino development coefficient displays a decrease in payroll due to casino presence. This result is significant (p < .01). The per capita income variable shows an increase in payroll when there is an increase in the county's per capita income (p < .01).

Finally, when the number of employees is the dependent variable the overall equation is statistically significant (p < .01) with an adjusted R square value of 94%. The Durbin-Watson measure is 2.13, and no serial correlation exists. The coefficient for the variable measuring the presence of casinos is not statistically significant. The per capita income variable indicates a positive relationship between income and employment (p < .01). Table 5 summarizes the results for the relationship between the presence of casinos and the various measures of F&B industry success. In five of the nine models the presence of casinos is positively associated with F&B industry success. In three cases there was no relationship between the presence of casinos and F&B industry success. Finally, in one case, F&B payroll in Atlantic County, NJ, there was a negative relationship between F&B industry success and the presence of casinos.

Table 5. Summary of Impact of Casino Development on Local Restaurant Businesses

NJ	NJ	NJ	SD	SD	SD	CO	CO	CO
EMP	UNITS	PAYR	EMP	UNITS	PAYR	EMP	UNITS	PAYR
Impact	0	0	-	+	+	+	+	0

Note: 0 indicates no impact.  
- indicates a negative impact.  
+ indicates a positive impact.

### Discussion

This research shows that it is difficult to generalize about the relationship between casino development and F&B industry success. The relationship varies by geography with, for example, data representing Lawrence County, SD displaying a positive relationship between casinos and F&B industry success while data from Atlantic County, NJ shows either the absence of a relationship or a negative relationship. Similarly, how F&B industry success is defined (units, employees, or payroll) also seems to affect the

relationship between the presence of casinos and F&B industry success. This study also shows that changes in per capita income strongly affect the aggregate health of the local restaurant industry. All counties tested basically displayed a positive relationship between restaurant payroll and number of employees with per capita income

In conclusion, the broad claims that legalized casinos have a negative impact on the food and beverage segment should be rejected. In some communities, local food and beverage operations seem to serve as complements to casino developments. In one case in this study, and when defining F & B industry success one certain way, there appeared to be a negative impact.

These findings suggest that local business conditions may have more to do with the success or failure of any particular restaurant than does the mere presence or absence of casinos.

Given this finding, restaurant owners and managers should investigate carefully the general economic environment of an area for proposed restaurant projects and conduct a professional feasibility study before making major investments. Furthermore, restaurant management should engage in effective employee management and should employ methods such as internal marketing to ensure a loyal labor pool for their restaurants. Finally, restaurateurs should engage in market research and establish restaurants that are uniquely different from restaurants in casino developments in order to establish a loyal customer base.

The economic climate of a particular area should be examined carefully before bringing into force anti-gaming efforts, which could be misguided and harmful to a community's economic development. However, this study is limited by its sample size and can only serve to lay the foundation for further investigation. For future research, we suggest studies in other counties with land-based developments. A future study could also consider the number of casinos existing in the counties tested. Finally, other variables measuring the aggregate health of local restaurant industries, as well as other economic indicators could be included.

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