

AN ANALYSIS OF THE VISITOR INDUSTRY IN SOUTH DAKOTA

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INTRODUCTION

This paper analyzes the impact of visitor spending on the state of South Dakota. Data on visitor spending on lodging, food and beverage attractions, and miscellaneous expenditures are analyzed over time. The sensitivity of visitor spending to changes in income, gasoline prices, and state and association travel promotion expenditures is analyzed utilizing an econometric model. Data on employment in the leisure and hospitality industry, gaming revenue, and the visitor tax revenue are analyzed to determine any changes in seasonal travel patterns. Finally, the direct and total impact of visitor is examined by travel region utilizing the IMPLAN input-output model.

VISITOR SPENDING AND EMPLOYMENT

Visitor Spending

Visitor expenditure data is based on data prepared by Dr. Michael Madden.¹ Dr. Madden prepared historical data on visitor spending from 1984 to 2003. This data is

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¹ See Michael Madden, **Economic and Fiscal Impacts Associated With the Vacation Travel Industry in South Dakota – 1984-1988**, Commissioned by the South Dakota Department of Tourism, January 1989, **Economic and Fiscal Impacts Associated With the Vacation Travel Industry in South Dakota – September 1992 Through August 1993**, Commissioned by the South Dakota Department of Tourism, January 1984, **Economic and Fiscal Impacts Associated With the Vacation Travel Industry in South Dakota – November 1998 Through October 1999**, Commissioned by the South Dakota Department of Tourism, January 2000, **Economic and Fiscal Impacts Associated With the Vacation Travel Industry in South Dakota – November 2002 Through October 2003**, Commissioned by the South Dakota Office of Tourism, January 2004.

based on the taxable sales data published by the South Dakota Department of Revenue and Regulation. Madden compiled data for taxable sales by establishments in the food and drinking industries (S.I.C. codes 5812 and 5813) and motels, hotels, rooming houses, camps and lodging places industries (S.I.C. codes 7011, 7121, 7032, 7033, and 7041). Since the taxable sales data was published on a bi-monthly basis until 1996 and monthly thereafter, seasonal information was used to estimate visitor expenditures in these industries. The January-February bi-monthly period was assumed to be a period of virtually no seasonal visitor and recreation travel volume.² The difference between sales in the other five bi-monthly periods and the January-February bi-monthly period is assumed to be due to seasonal visitor activity. Madden provides a discussion of the problems associated with this estimation process and concludes the following:

There does not appear to be any substantial methodological bias in the measurement of true visitor and recreation travel impacts that is inherent in the above described estimation procedures.

Examining the results from a number of different viewpoints suggests that the spending estimates using this technique are reasonable and quite accurate.³

This analyst agrees that while this approach is not perfect, it is reasonable and given the data available, it represents the only viable approach to estimating visitor expenditures in South Dakota.⁴ Another data matter relates to the visitor travel year. From 1984 to 1998, Madden defines the visitor year as September to August and thereafter as November to October. He made this change because of the availability of monthly revenue tax data. When econometric models were utilized in this study to

² P. 13, Madden (1989).

³ P. 14, Madden (1989).

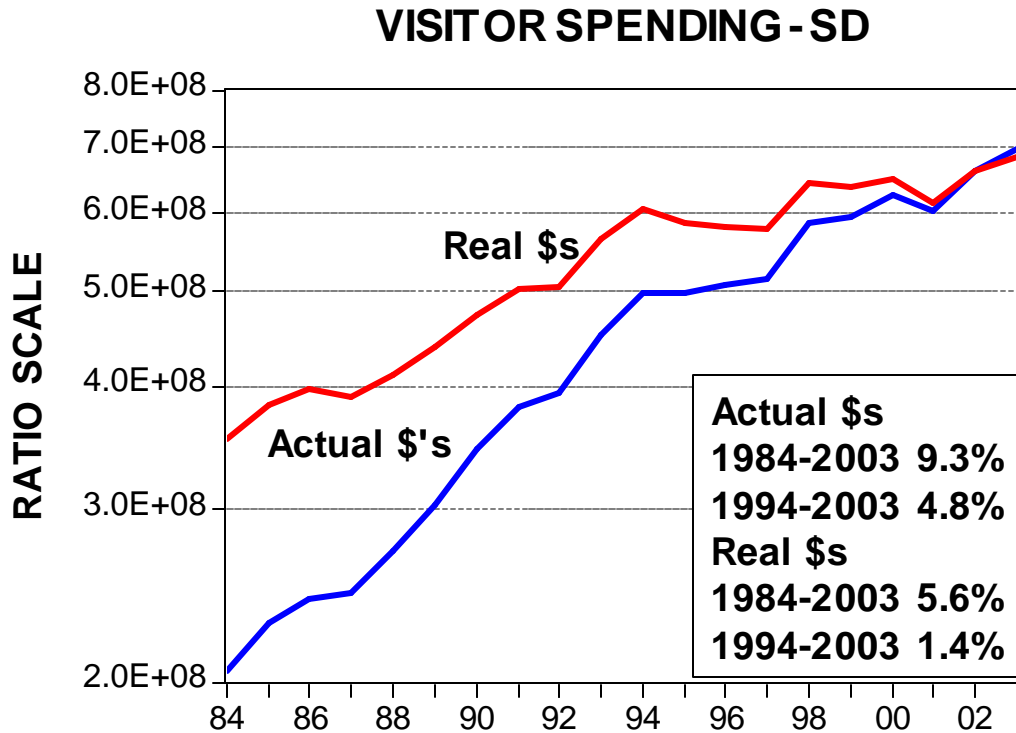
⁴ Another possible approach is to find a county where it can be assumed that there is virtually no visitor activity and use its seasonal behavior as a basis for determining seasonal activity statewide. In reality this does not appear to be a superior approach.

determine the effectiveness of visitor promotion spending the September to August travel year was used so as to maintain year-to-year consistency over the 1984-2003 period.⁵

Data on visitor is presented in Figure 1 and Table 1. The data in Figure 1 is plotted in ratio form which allows comparison of growth rates by examining the slope of the line. The data is plotted in both actual and real (inflation-adjusted) dollars. From 1984 to 1994, actual dollar visitor spending increased from \$205.5 million in 1984 to \$498.3 million in 1994. This is an increase of 9.3 percent per year. Real visitor spending grew at a rate of 5.8 percent over this same period. Note that the growth rate slowed significantly in 1994. From 1994 to 2003, visitor spending increased from \$498.3 to \$698.3. The 1994-2003 annual growth rates were 3.8 percent per year in actual dollars and 1.4 percent in real dollars.

⁵ Actually, this made little difference in the year estimates. The September-August year was approximately 99.5 percent of the November-October year.

FIGURE 1: VISITOR SPENDING



For the purposes of this study, the state was divided into four regions. The regions are defined by the boundaries of the state's four regional tourism associations are used:

Region 1: Southeast,

Region 2: Glacial Lakes and Prairies, northeast,

Region3: Great Lakes, central,

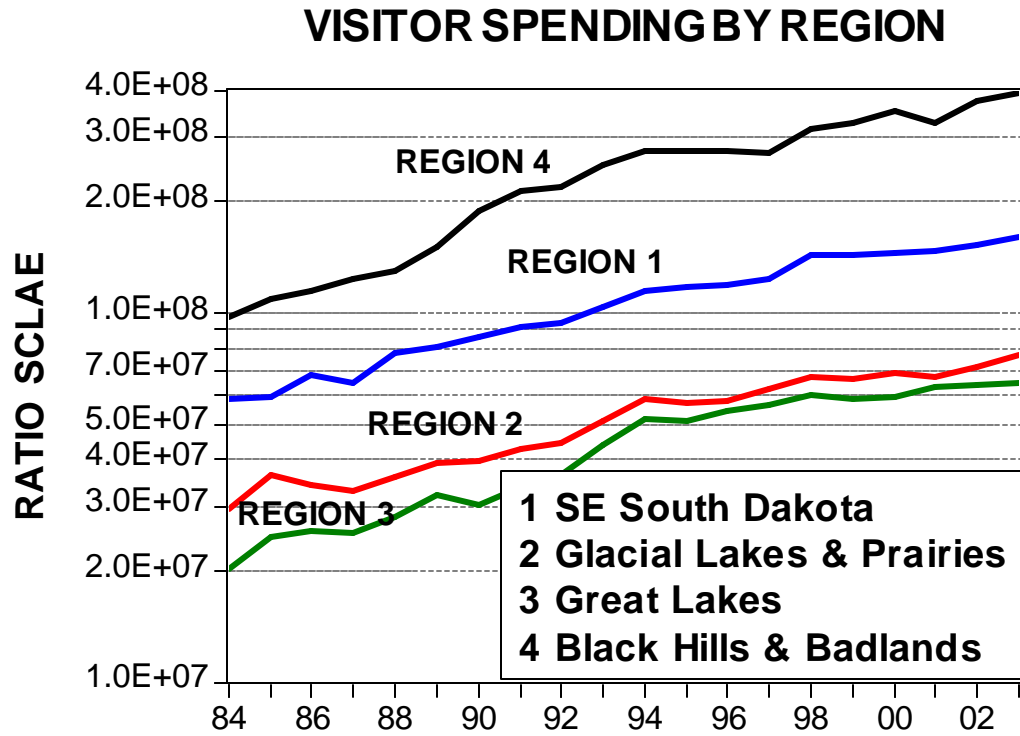
Region 4: Black Hills, Badlands and Lakes, western.

TABLE 1: VISITOR SPENDING BY REGION AND STATE

Year	Region 1	Region 2	Region 3	Region 4	State
1982					
1983					
1984	\$58,563,286	\$29,562,460	\$20,322,167	\$97,040,987	\$205,488,900
1985	\$59,335,257	\$36,587,464	\$24,700,272	\$109,227,815	\$229,850,808
1986	\$67,676,612	\$34,071,246	\$25,594,982	\$115,328,104	\$242,670,944
1987	\$64,401,553	\$32,809,976	\$25,307,531	\$123,482,504	\$246,001,564
1988	\$77,798,023	\$35,837,525	\$27,949,271	\$130,116,191	\$271,701,010
1989	\$81,279,577	\$38,980,696	\$32,183,825	\$150,701,526	\$303,145,624
1990	\$86,331,246	\$39,509,188	\$30,038,247	\$189,162,550	\$345,041,231
1991	\$91,748,260	\$42,819,125	\$33,600,635	\$213,432,829	\$381,600,849
1992	\$93,879,726	\$44,676,333	\$36,508,025	\$217,942,502	\$393,006,586
1993	\$104,241,625	\$51,177,750	\$43,637,767	\$252,799,050	\$451,856,192
1994	\$114,204,434	\$58,821,500	\$51,809,101	\$273,450,193	\$498,285,228
1995	\$117,609,484	\$56,874,720	\$50,783,385	\$273,228,613	\$498,496,202
1996	\$118,724,877	\$57,420,176	\$53,982,322	\$276,049,440	\$506,176,815
1997	\$123,396,020	\$62,246,972	\$56,141,007	\$272,335,858	\$514,119,857
1998	\$143,973,813	\$67,363,923	\$59,879,495	\$314,894,014	\$586,111,245
1999	\$143,179,987	\$66,490,557	\$58,693,644	\$326,066,194	\$594,430,382
2000	\$145,501,444	\$68,678,899	\$59,500,204	\$351,672,278	\$625,352,825
2001	\$146,292,209	\$67,340,985	\$63,103,112	\$325,186,938	\$601,923,244
2002	\$153,462,408	\$71,058,601	\$63,622,959	\$375,181,034	\$663,325,002
2003	\$161,410,606	\$76,912,946	\$64,525,743	\$395,406,638	\$698,255,933

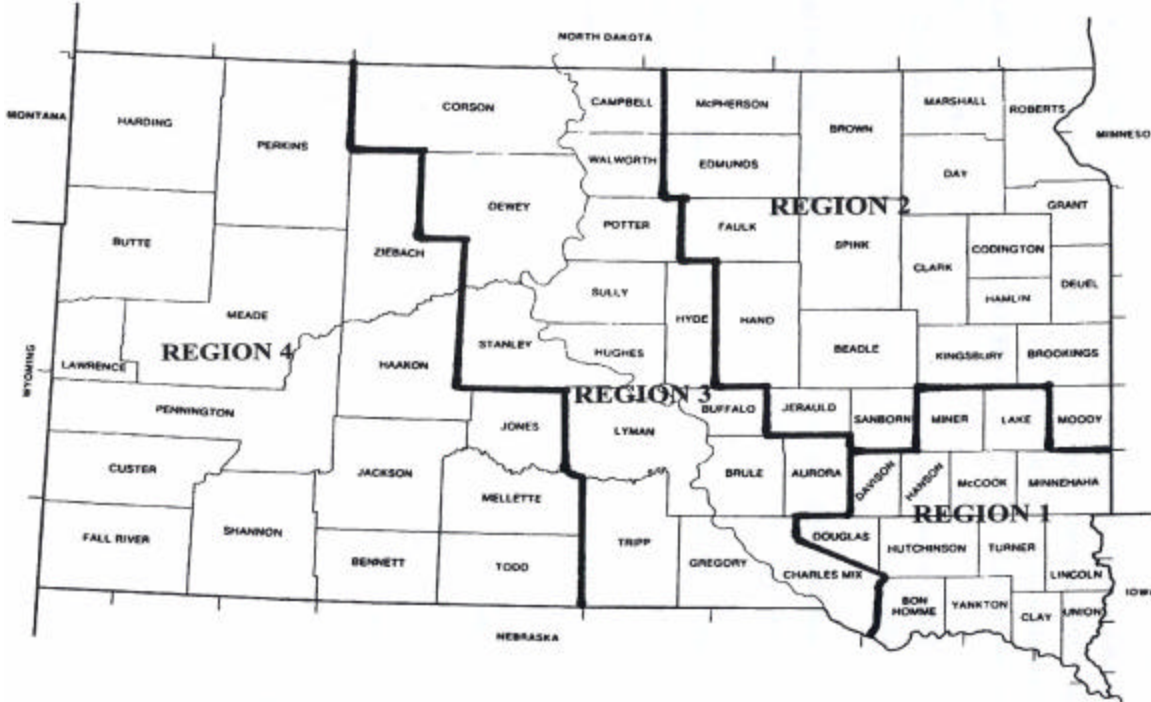
Visitor spending in actual dollars by travel region is presented in Figure 2. A map depicting the travel regions by counties is presented in Figure 3. As can be seen in Figure 2, Region 4 (Black Hills & Badlands) is by far the largest recipient of visitor spending. In 2003, Region 4 accounted for 57 percent of total visitor spending. Region 1 (Southeast) has the next largest share of spending at 23 percent.

FIGURE 2: VISITOR SPENDING BY REGION



Source: Dr. Michael Madden data

FIGURE 3: SOUTH DAKOTA TRAVEL REGIONS



See Table 2 for regional shares of visitor spending. As shown in Table 2, Region 1's (Southeast) share declined from the high twenties in the 1980s to the low twenties in the 1990s. Region 2 (Glacial Lakes and Prairies) also had slight share declines in the 1990s and Region 3 (Great Lakes) was fairly stable around 10 percent. Region 4 (Black Hills, Badlands, and Lakes) showed the greatest growth from the high forties in the 1980s to the mid to high fifties in the 1990s.

TABLE 2: REGIONAL VISITOR SPENDING SHARES

Year	REGION 1	REGION 2	REGION 3	REGION 4	STATE
1984	28%	14%	10%	47%	100%
1985	26%	16%	11%	48%	100%
1986	28%	14%	11%	48%	100%
1987	26%	13%	10%	50%	100%
1988	29%	13%	10%	48%	100%
1989	27%	13%	11%	50%	100%
1990	25%	11%	9%	55%	100%
1991	24%	11%	9%	56%	100%
1992	24%	11%	9%	55%	100%

1993	23%	11%	10%	56%	100%
1994	23%	12%	10%	55%	100%
1995	24%	11%	10%	55%	100%
1996	23%	11%	11%	55%	100%
1997	24%	12%	11%	53%	100%
1998	25%	11%	10%	54%	100%
1999	24%	11%	10%	55%	100%
2000	23%	11%	10%	56%	100%
2001	24%	11%	10%	54%	100%
2002	23%	11%	10%	57%	100%
2003	23%	11%	9%	57%	100%

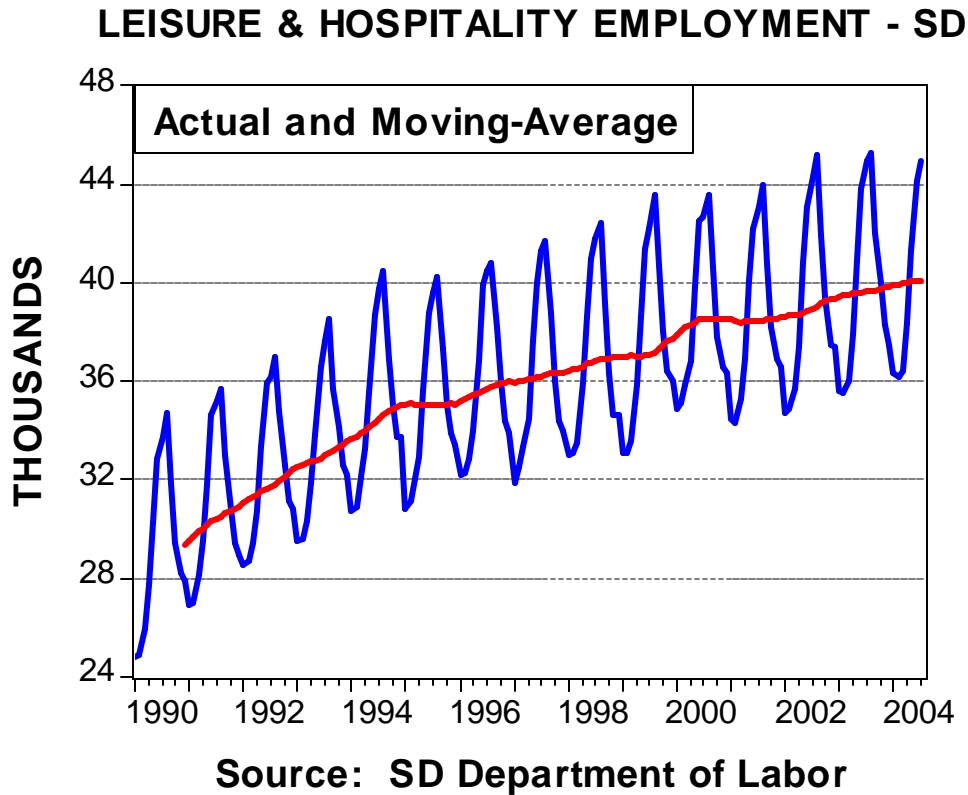
Employment Patterns: Visitor Employment

Employment in the visitor sector can be tracked by examining employment in the leisure and hospitality industry. In 2002, the U.S. government adopted a new industrial classification system to replace the Standard Industrial Classification (SIC) system. This system is the North America Industry Classification System (NAICS) which provides an updated and improved system for the classification of industry that reflects our changing economy. Monthly employment data at the state level has been developed for the 1990 to present time period. Under the NAICS system the sector that most clearly reflects visitor activity is the Leisure and Hospitality sector. This includes:

- Sector 71 arts, entertainment, and recreation,
- Sector 72 accommodation and food services.

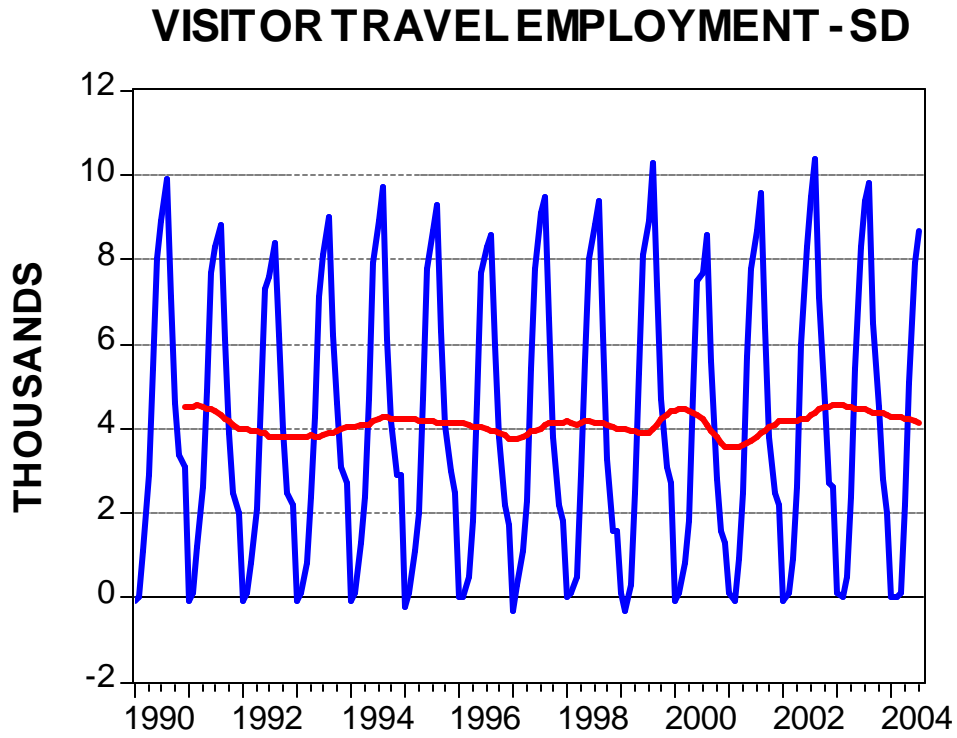
Monthly leisure and hospitality employment data for South Dakota is presented in Figure 3. Figure 3 indicates that leisure and hospitality employment is highly seasonal and has shown growth in the 1990s. Employment has grown from approximately 30,000 to 40,000 persons in the leisure and hospitality sector.

FIGURE 3: LEISURE AND HOSPITALITY EMPLOYMENT - SD



We also calculated estimates of the visitor related employment using a variant of the Dr. Madden methodology. Since monthly data was available, the lowest month of the year was assumed to be the month of no visitor spending. That is, typically January or February were used as months of no tourism activity and visitor industry employment by month were computed as the difference between the relevant month and the lowest employment month. This data is presented in Figure 4. Close examination of Figure 4 indicates that there was no upward trend in employment during this time period. The peak months are always June, July, and August with 9,000 to 10,000 workers in the visitor industry sector. The average monthly employment for the year is about 4,300 workers.

FIGURE 4: VISITOR INDUSTRY EMPLOYMENT - SD



Source: SD Department of Labor

TOURISM PROMOTION EXPENDITURES

The state of South Dakota and regional tourism groups have long supported visitor travel in South Dakota. The major support for visitor travel in the state is the South Dakota Office of Tourism. Primary revenue sources for tourism promotion at the state level are from the Tourism Tax and a share of the Deadwood Gaming Tax. Other sources of support for the South Dakota Office of Tourism include partner fees as part of the cooperative advertising programs. Finally, independent regional tourist associations support tourism promotion in South Dakota. In fiscal year 2002, approximately \$6.8 million were spent on tourism promotion by the Office of Tourism. Over the 1985 to 2002 time period, the state's tourism promotion rose by 7.7 percent per year.

Is Tourism Promotion Spending Effective?

Does visitor travel promotion spending actually promote visitor spending? Perhaps visitor can be explained primarily by income trends and the price of gas rather than visitor travel promotion. That hypothesis is tested in this section of the report. An econometric equation was estimated that included income, price of gasoline, and the tourism promotion variable as explanatory variables. After controlling for movements in these variables, does tourism promotion spending still exert a significant independent impact on visitor spending? That is the question we attempt to answer in this section using econometric analysis.

An econometric model was estimated with visitor spending as a function of income, the price of gasoline, and visitor promotion investment. It is expected that visitor spending is positively related to income and visitor promotion investment and negatively related to the price of gasoline. The equation was estimated for the state for

the 1985 to 2002 time period. All variables are expressed in real (inflation-adjusted) and natural logarithms (LN).⁶

The econometric equation is:

$$\begin{aligned} \text{LN}(V_t/\text{CPI}_t) = & \beta_0 + \beta_1 \text{LN}(\text{Income}_t/\text{CPI}_t) + \beta_2 \text{LN}(\text{PGAS}_t/\text{CPI}_t) \\ & + \beta_3 \text{LN}(\text{TourP}_t/\text{CPI}_t) + e_t \end{aligned}$$

where:

V_t = Visitor spending using Madden estimation method,

CPI_t = Consumer Price Index, all items, 2002=100,

INCOME_t = Personal income,

PGAS_t = Consumer Price Index, gasoline prices, all grades, 2002=100,

TOURP_t = Tourism promotion expenditures.

e_t = random error term

$t = 1985, 1986, \dots, 2002.$

The results of this regression are presented in Table 3. The regression coefficients are shown in **bold-face** for each variable. For instance, the coefficient on the real income variable, INCOME/CPI , is 0.98. Because of the double-log specification this coefficient can be interpreted as an elasticity coefficient. What this means is that a 10 percent increase in income will cause a 9.8 percent increase in visitor spending. The coefficient on the real price of gasoline, PGAS/CPI , is -0.34 which means a 10 percent change in the price of gasoline will cause a 3.4 percent decrease in visitor spending. The coefficient on

⁶ A variety of specifications involving combinations of linear and logarithmic transformations were tried and it was concluded that the best fit was provided by the double-log specification. The linear specification provided results that were similar to the double-log specification and simulations using both specifications are presented in the next section the report.

the variable of interest, tourism *promotion*, was 0.22 which means a 10 percent increases in tourism promotion investment will cause as 2.2 percent increase in the visitor spending. All of the coefficients had the expected signs. Also, all of the variables were statistically different from zero at the 10 percent level or better. The adjusted R-squared, the explanatory power of the equation, was 0.89 which indicates the equation was able to explain 89 percent in the variation in visitor spending.⁷

TABLE 3: VISITOR TRAVEL PROMOTION SPENDING EQUATION

SD	Total
Variable	
Constant	0.60
(t-value)	0.23
LN(INCOMEI/CPI)	0.98
(t-value)	(4.10)*
LN(PGAS/CPI)	-0.34
(t-value)	(-2.15)**
LN(TOURP/CPI)	0.22
(t-value)	(1.68)***
Adj R-Squared	0.894
S.E. of regression	0.063
DW	0.80

Simulations With the Econometric Model

Econometric models estimated using the logarithmic⁸ and linear specifications were used to simulate the impact of a \$100,000 increase in tourism promotion. The results of this simulation are presented in Table 4. The two different specification provided similar results with a \$100,000 increase in tourism promotion investment

⁷ The DW was a bit low indicating some serial correlation of the residuals, This is due to either pure serial correlation or omission of some relevant explanatory variable or variables that have a trend that is picked up in the residuals. However, this does not bias the coefficients but could bias the t values upward. Re-estimating the equation with a first-order autoregressive adjustment did take care of the serial correlation but did not alter the coefficient or t-value. The coefficient was 0.21 and the t-value was 1.76.

⁸ The equations using the logarithmic specification have been presented in the preceding section. The separate equations for the linear specification are not presented in this report but are available on request.

generating over \$2 million dollars in tourism travel. It is interesting to note that the ratio of visitor spending to visitor tourism promotion is quite high, more than 20 to 1.

Table 4: IMPACT OF \$100,000 INCREASE IN TRAVEL BUDGET

Region	Log Spec.	% of Total	Linear Spec.	% of Total
Total	\$2,631,834	100%	\$2,130,665	100%

SEASONAL PATTERNS: PEAK, SHOULDER, AND WINTER SEASONS

Seasonality of Leisure and Hospitality Employment

Tourism experts define three visitor travel seasons in South Dakota. The *peak* visitor season is defined as the months of March, April, May, June, July, and August. The *shoulder* season is defined as September, October, and November. The *winter* season is defined as December, January, and February. The visitor industry in South Dakota is particularly interested in building up the shoulder and winter season because they have excess capacity during these seasons. In many cases, the peak season is characterized by full or very high utilization rates so more visitors in this season could not always be accommodated.

In this section, the seasonal patterns of visitation are examined to determine if the seasonal patterns have changed over time. A variety of data sources are examined. These include leisure and hospitality employment, visitor tax revenue, gaming revenue, visitor sales for South Dakota. First, we examine the leisure and hospitality employment data and see if there have been any trends in the proportion of visitor travel by season. The data for South Dakota for the years 1990-2003 by monthly share of annual employment is presented in Table 5. Examination of Table 5 indicates that there has been little change in the monthly employment shares over time. The peak months

accounted for the largest share of leisure and hospitality employment at around 52 percent. This percentage changed very little over the 14-year time period. The shoulder season was the next largest at about 25 percent followed by the winter season at 22 percent. Again, the shares were very stable showing no trend over the time period.

**TABLE 5: LEISURE AND HOSPITALITY
EMPLOYMENT SHARES, 1990-2003**

LESIURE & HOSPITALITY EMPLOYMENT														
Month	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
January	7.0%	7.3%	7.3%	7.3%	7.3%	7.3%	7.5%	7.3%	7.4%	7.3%	7.5%	7.5%	7.3%	7.5%
February	7.1%	7.3%	7.4%	7.4%	7.3%	7.4%	7.5%	7.5%	7.5%	7.3%	7.6%	7.4%	7.4%	7.4%
March	7.4%	7.6%	7.6%	7.5%	7.6%	7.6%	7.6%	7.6%	7.5%	7.4%	7.7%	7.6%	7.6%	7.5%
April	7.9%	8.0%	7.9%	7.9%	7.9%	7.8%	7.9%	7.9%	8.1%	7.9%	8.0%	8.0%	7.9%	7.9%
May	8.6%	8.6%	8.6%	8.4%	8.4%	8.5%	8.5%	8.6%	8.7%	8.5%	8.6%	8.7%	8.6%	8.6%
June	9.3%	9.3%	9.2%	9.1%	9.2%	9.2%	9.2%	9.2%	9.2%	9.1%	9.2%	9.1%	9.1%	9.2%
July	9.6%	9.5%	9.3%	9.3%	9.4%	9.4%	9.4%	9.5%	9.4%	9.3%	9.2%	9.3%	9.4%	9.4%
August	9.9%	9.6%	9.5%	9.6%	9.6%	9.6%	9.4%	9.6%	9.5%	9.6%	9.4%	9.5%	9.6%	9.5%
September	9.1%	8.9%	8.9%	8.9%	8.8%	8.9%	8.8%	8.9%	8.8%	9.0%	8.8%	8.8%	8.9%	8.8%
October	8.3%	8.3%	8.4%	8.5%	8.3%	8.3%	8.3%	8.3%	8.2%	8.4%	8.2%	8.3%	8.3%	8.4%
November	8.0%	7.9%	8.0%	8.1%	8.0%	8.1%	8.0%	7.9%	7.8%	8.0%	7.9%	8.0%	7.9%	8.0%
December	7.9%	7.8%	7.9%	8.0%	8.0%	7.9%	7.9%	7.8%	7.8%	8.0%	7.8%	7.9%	7.9%	7.9%
Peak*	52.5%	52.5%	52.1%	51.9%	52.2%	52.1%	52.1%	52.4%	52.5%	52.0%	52.2%	52.2%	52.2%	52.1%
Winter**	-	22.5%	22.5%	22.6%	22.6%	22.7%	22.9%	22.6%	22.7%	22.4%	23.1%	22.7%	22.6%	22.8%
Shoulder***	25.4%	25.1%	25.3%	25.4%	25.1%	25.2%	25.2%	25.0%	24.8%	25.4%	24.9%	25.0%	25.2%	25.2%
*March, April, May, June, July, and August.														
**December, January, and February.														
***September, October, and November														

Source: SD Department of Labor

The leisure and hospitality employment data were also *adjusted* to derive the visitor industry employment shares are presented in Table 6. The data presented in this table represent employment data adjusted using the Madden approach to determine employment due to visitor activity as opposed to normal eating, drinking and lodging activity. Table 6 presents this data. This data show much more variation than the unadjusted data in the visitor travel shares with about 70 percent of the visitor industry

employment in the peak season and about 25 percent of the shoulder season. For instance, peak travel employment shares ranged from a low of 65.7 percent in 1993 to a high of 73.6 percent in 1998 with a slight upward trend over time.⁹ Likewise, shoulder seasonal employment shares were volatile ranging from a low 23.1 percent in 1998 to high of 28.8 percent in 1993 with a slight downward trend.¹⁰ Basically peak and shoulder employment shares were a mirror of each other.

TABLE 6: VISITOR INDUSTRY MONTHLY SHARES, 1990-2003

Visitor Industry Employment														
Month	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
January	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
February	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
March	2%	2%	2%	2%	3%	2%	1%	2%	1%	0%	2%	2%	2%	1%
April	5%	5%	5%	5%	5%	4%	4%	5%	6%	5%	4%	4%	5%	5%
May	10%	10%	10%	9%	9%	9%	10%	11%	12%	10%	11%	11%	11%	10%
June	15%	16%	16%	15%	15%	16%	17%	16%	17%	15%	18%	18%	15%	16%
July	16%	17%	17%	17%	17%	18%	18%	18%	18%	17%	18%	18%	17%	18%
August	18%	18%	18%	19%	19%	19%	19%	19%	20%	19%	20%	20%	19%	19%
September	13%	13%	14%	13%	12%	13%	13%	13%	13%	14%	13%	13%	13%	13%
October	8%	8%	9%	10%	8%	8%	8%	8%	7%	9%	7%	7%	8%	9%
November	6%	5%	5%	6%	6%	6%	5%	4%	3%	6%	4%	4%	5%	5%
December	6%	4%	5%	6%	6%	5%	4%	4%	3%	5%	3%	3%	5%	4%
Peak*	66.6%	69.9%	67.5%	65.7%	68.4%	67.9%	69.9%	71.0%	73.6%	66.7%	73.4%	73.4%	68.9%	69.5%
Winter**	-	5.7%	4.1%	4.8%	5.5%	5.7%	5.0%	3.7%	3.6%	2.9%	5.0%	3.1%	3.1%	4.8%
Shoulder***	27.7%	26.0%	27.7%	28.8%	25.9%	27.1%	26.5%	25.4%	23.1%	28.6%	23.5%	23.5%	26.3%	26.7%
*March, April, May, June, July, and August.														
**December, January, and February.														
***September, October, and November														

⁹ A regression showed an annual growth rate in the share percentage of 0.5 percent per year.

¹⁰ A regression showed an annual growth rate in the share percentage of -0.7 percent per year.

Gaming Revenue

Gaming revenue is an 8 percent tax on the adjusted gross proceeds of gaming.

The proceeds of these funds are distributed as follows:

1. 40 percent to the visitor promotion fund,
2. 10 percent to Lawrence County,
3. expenses of the South Dakota Gaming Commission for administration and operation including litigations and enforcement,
4. repayment of funds and interest advanced for the start up of the commission,
5. all remaining funds less \$100,000 to be transferred the City of Deadwood for deposit in the historic restoration and preservation fund.

The monthly shares of gaming revenue are presented in Table 7. Statistical analysis indicates that there is no trend in the seasonal gaming revenue shares.¹¹

TABLE 7: GAMING REVENUE MONTHLY SHARES, 1995-2002
Percentage of Gaming Revenue by Monthly Activity

Gaming Revenue								
Month	1996	1997	1998	1999	2000	2001	2002	2003
January	4.3%	3.4%	4.4%	3.6%	3.5%	3.8%	3.4%	3.4%
February	4.3%	3.5%	3.4%	3.5%	3.9%	4.0%	3.5%	3.5%
March	4.8%	3.7%	4.0%	4.3%	3.8%	4.1%	3.9%	4.0%
April	4.3%	3.6%	3.7%	4.1%	3.8%	4.1%	3.8%	3.6%
May	5.8%	6.1%	6.3%	5.7%	6.0%	6.1%	6.3%	6.1%
June	12.6%	13.5%	13.4%	13.8%	13.3%	12.8%	13.4%	12.9%
July	19.5%	17.4%	17.2%	16.7%	17.5%	17.3%	17.1%	16.9%
August	17.8%	22.2%	21.0%	21.4%	21.8%	19.9%	21.2%	22.6%
September	8.6%	9.7%	10.5%	10.2%	9.7%	10.5%	9.9%	9.4%
October	7.7%	7.6%	7.2%	7.0%	7.0%	7.6%	7.0%	6.9%
November	5.5%	4.9%	4.5%	4.6%	4.5%	4.5%	5.1%	5.5%
December	4.9%	4.4%	4.3%	5.1%	5.3%	5.2%	5.4%	5.2%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

¹¹ The statistical analysis employed was a regression of the following form: $LN(EMP\ SHARE) = \beta_0 + \beta_1 (TREND)$. The β_1 is the growth rate in the employment share.

Peak*	64.7%	66.4%	65.6%	66.0%	66.2%	64.4%	65.7%	66.1%
Winter**	-	11.9%	12.2%	11.5%	12.4%	13.1%	12.1%	12.4%
Shoulder***	21.8%	22.2%	22.3%	21.8%	21.2%	22.6%	22.0%	21.8%
*March, April, May, June, July, and August								
**December, January, and February								
***September, October, and November								

Tourism Tax

The tourism tax was first levied in 1995. It is an additional 1 percent tax on certain lodging and amusement services. The tax is applied year round for hotel and lodging, campgrounds, motor vehicle rentals, recreational equipment rentals, recreational services, spectator events, and visitor attractions. The tax is applied during the months of June, July, August, and September for visitor-intensive businesses. Visitor-intensive businesses are certain businesses¹² that derive 50 percent or more of their total annual receipts from the months of June, July, and August. It does not apply on the Standing Rock, Rosebud, Cheyenne River, and Oglala Sioux Indian Reservations. The data for the tourism tax monthly shares is presented in Table 8. The peak season accounted for about two-thirds of the travel share. The winter season accounted for about 12 percent and the shoulder season accounted for about 22 percent of the travel season share. A statistical analysis of the seasonal shares indicates no change in the shares over time.

TABLE 8: TOURISM TAX MONTHLY SHARES, 1995-2003

Tourism Tax Month	1996	1997	1998	1999	2000	2001	2002	2003
January	4.30%	3.40%	4.40%	3.60%	3.50%	3.80%	3.40%	3.40%
February	4.30%	3.50%	3.40%	3.50%	3.90%	4.00%	3.50%	3.50%
March	4.80%	3.70%	4.00%	4.30%	3.80%	4.10%	3.90%	4.00%
April	4.30%	3.60%	3.70%	4.10%	3.80%	4.10%	3.80%	3.60%
May	5.80%	6.10%	6.30%	5.70%	6.00%	6.10%	6.30%	6.10%
June	12.60%	13.50%	13.40%	13.80%	13.30%	12.80%	13.40%	12.90%

¹² These include antique stores, candy, stores, gift shops, lapidary shops, marina, pottery shops, and tee-shirt shops.

July	19.50%	17.40%	17.20%	16.70%	17.50%	17.30%	17.10%	16.90%
August	17.80%	22.20%	21.00%	21.40%	21.80%	19.90%	21.20%	22.60%
September	8.60%	9.70%	10.50%	10.20%	9.70%	10.50%	9.90%	9.40%
October	7.70%	7.60%	7.20%	7.00%	7.00%	7.60%	7.00%	6.90%
November	5.50%	4.90%	4.50%	4.60%	4.50%	4.50%	5.10%	5.50%
December	4.90%	4.40%	4.30%	5.10%	5.30%	5.20%	5.40%	5.20%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Peak*	64.70%	66.40%	65.60%	66.00%	66.20%	64.40%	65.70%	66.10%
Winter**	13.50%	11.40%	12.10%	12.20%	12.60%	13.00%	12.30%	12.10%
Shoulder***	21.80%	22.20%	22.30%	21.80%	21.20%	22.60%	22.00%	21.80%
*March, April, May, June, July, and August								
**December, January, and February								
***September, October, and November								

Visitor Sales

Visitor sales for state of South Dakota are presented in Table 9. Visitor sales were estimated using a variant of the Madden method where the expenditure category in low month of the year was used as the no-visitor month and that was subtracted from other months to obtain an estimate of visitor sales. In some years and by expenditure category the low month was January in other cases February and in some cases December. A statistical analysis of the year-by-shares indicated no trend.

TABLE 9: VISITOR SALES SHARES– SOUTH DAKOTA

Visitor Sales							
Month	1997	1998	1999	2000	2001	2002	2003
January	0%	1%	0%	0%	1%	2%	1%
February	2%	0%	1%	1%	0%	1%	1%
March	4%	3%	3%	4%	5%	4%	4%
April	4%	3%	3%	3%	3%	3%	3%
May	8%	8%	7%	7%	7%	8%	8%
June	14%	16%	16%	16%	15%	15%	14%
July	19%	21%	20%	20%	19%	19%	19%
August	22%	24%	23%	26%	23%	23%	25%
September	9%	10%	10%	10%	10%	9%	9%
October	8%	9%	9%	8%	8%	7%	9%
November	4%	2%	3%	2%	4%	4%	3%
December	5%	4%	4%	4%	6%	5%	5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Peak*	71.3%	74.2%	73.1%	75.9%	71.7%	72.3%	73.0%
Winter**	-	7.7%	4.8%	5.3%	5.4%	8.3%	6.3%
Shoulder***	21.5%	20.6%	21.6%	19.3%	21.3%	20.0%	20.9%
*March, April, May, June, July, and August.							
**December, January, and February.							
***September, October, and November							

In this section we analyzed the seasonal pattern of leisure and hospitality employment, tourism tax revenue, gaming revenue, visitor sales for South Dakota employment. We found little evidence of changes in seasonal patterns. The only minor exception was in the area of visitor industry employment. We found that there was a slight upward trend in peak season employment and a slight downward trend in shoulder season employment. However, it appears that seasonal travel patterns are very stable with the bulk of the activity during the peak season and winter having the lowest share.

THE DIRECT AND INDIRECT IMPACT OF THE VISITOR INDUSTRY ON SOUTH DAKOTA

To estimate the impact of the visitor industry on South Dakota the IMPLAN¹³ economic impact modeling system was used. The IMPLAN model is an input-output model that allows the researcher to analyze the impact of sectoral expenditures on the total regional activity. The model can be applied at the county level or higher. In this case, the model is applied to the groups of counties that constitute the four travel regions in South Dakota. Multipliers are generated that allow us to determine how direct spending, in this case spending on visitor in South Dakota, creates additional spending in the form of indirect and induced spending. *Direct spending* is the first-round spending in the visitor industry by the visitor. *Indirect spending* are changes in spending in backward-linked industries caused by changes in the input needs of the direct spending. *Induced spending* are changes in household spending caused by changes in household income due to the direct and indirect effects. Multipliers are the change in indirect, induced, and total spending generated by the initial direct spending. In this case, multipliers were generated for each region for SIC codes 5800 and 7000. Total spending generated by the direct visitor spending is the product of the multiplier and the direct spending. The direct expenditures by region and SIC code for 2003 are shown in Table 10.

¹³ The IMPLAN Input-Output System, 1725 Tower Drive West, Suite 140, Stillwater, MN 55082.

TABLE 10: DIRECT EXPENDITURES BY SIC CODE AND REGION

DIRECT EXPENDITURES 2003			
Region	SIC 5800	SIC 7000	Total
Region 1	\$129,128,485	\$32,282,121	\$161,410,606
Region 2	\$62,299,486	\$14,613,460	\$76,912,946
Region 3	\$40,651,218	\$23,874,525	\$64,525,743
Region 4	<u>\$229,335,850</u>	<u>\$166,070,788</u>	<u>\$395,406,638</u>
State	\$461,415,039	\$236,840,894	\$698,255,933

The multipliers generated by the IMPLAN program are presented in Table 11. As shown in Table 11, the multipliers are divided into direct, indirect, induced, total multipliers. The multiplier of 1.0 for direct spending shows the initial impact of visitor spending in the SIC 5800 and SIC 7000 establishments. The indirect multiplier shows the impact of \$1 direct spending in the backward-linked or supply industries that supply the inputs necessary to produce the direct spending. The induced multiplier represents the changes in household spending due to the change in household income due to the direct and indirect spending. The total multiplier is the sum of the direct, indirect, and induced multipliers. It is known as the output multiplier.

TABLE 11: MULTIPLIERS BY REGION AND SIC CODE

MULTIPLIERS SIC 5800 & 7000				
SIC 5800	Direct	Indirect	Induced	Total
Region 1	1.00	0.35	0.35	1.70
Region 2	1.00	0.35	0.26	1.62
Region 3	1.00	0.23	0.20	1.43
Region 4	1.00	0.28	0.27	1.56
SIC 7000	Direct	Indirect	Induced	Total
Region 1	1.00	0.17	0.33	1.50
Region 2	1.00	0.15	0.27	1.42
Region 3	1.00	0.11	0.23	1.34
Region 4	1.00	0.14	0.30	1.44

Table 12 presents the expenditures by SIC code and region. Table 12.1 shows expenditures for SIC 5800 by region. The total expenditures are categorized by direct, indirect, and induced expenditures. These expenditures are calculated by multiplying the direct expenditures in Table 10 by the multipliers in Table 11. Table 12.2 presented the same expenditures for SIC code 7000. Table 12.3 shows the total of both SIC 5800 and SIC 7000 expenditures. In other words, the direct visitor spending of \$698.3 million generates a total expenditure of \$1.1 million. This represents an overall multiplier of 1.54.

TABLE 12: DIRECT, INDIRECT, AND INDUCED EXPENDITURES, 2003

1. EXPENDITURES - SIC 5800				
Region	Direct	Indirect	Induced	Total
Region 1	\$129,128,485	\$45,763,006	\$44,822,047	\$219,713,537
Region 2	\$62,299,486	\$21,961,566	\$16,431,988	\$100,693,040
Region 3	\$40,651,218	\$9,464,335	\$8,098,739	\$58,214,292
Region 4	<u>\$229,335,850</u>	<u>\$65,066,479</u>	<u>\$62,229,824</u>	<u>\$356,632,154</u>
Total	\$461,415,039	\$142,255,386	\$131,582,598	\$735,253,023
2. EXPENDITURES - SIC 7000				
Region	Direct	Indirect	Induced	Total
Region 1	\$32,282,121	\$5,408,417	\$10,671,598	\$48,362,136
Region 2	\$14,613,460	\$2,198,259	\$4,002,597	\$20,814,316
Region 3	\$23,874,525	\$2,658,954	\$5,427,706	\$31,961,185
Region 4	<u>\$166,070,788</u>	<u>\$24,041,902</u>	<u>\$49,788,022</u>	<u>\$239,900,712</u>
Total	\$236,840,894	\$34,307,532	\$69,889,923	\$341,038,349
3. TOTAL EXPENDITURES - SIC 5800 + SIC 7000				
Region	Direct	Indirect	Induced	Total
Region 1	\$161,410,606	\$51,171,423	\$55,493,644	\$268,075,674
Region 2	\$76,912,946	\$24,159,825	\$20,434,585	\$121,507,356
Region 3	\$64,525,743	\$12,123,289	\$13,526,445	\$90,175,477
Region 4	<u>\$395,406,638</u>	<u>\$89,108,381</u>	<u>\$112,017,846</u>	<u>\$596,532,866</u>
Total	\$698,255,933	\$176,562,918	\$201,472,521	\$1,076,291,372

Table 13 presents the valued-added by the visitor expenditures. Value-added is the difference between total sales and the purchases from other firms. Another way of

expressing value-added as the incomes created in the process of production. This includes employee compensation, proprietary income, other property income, and indirect business taxes. This is an important measure of economic activity because it nets out inter-firm spending, the results are the income going to the factors of production.

TABLE 13: VALUED-ADDED BY SIC CODE AND REGION, 2003

VALUE ADDED - SIC 5800				
Region	Direct	Indirect	Induced	Total
Region 1	\$62,099,040	\$22,066,353	\$25,127,972	\$109,293,365
Region 2	\$26,545,534	\$9,453,805	\$8,847,971	\$44,847,310
Region 3	\$16,256,008	\$4,252,320	\$4,351,667	\$24,859,994
Region 4	\$95,458,071	\$27,852,878	\$33,850,181	\$157,161,130
Total	\$200,358,652	\$63,625,356	\$72,177,791	\$336,161,799
VALUE ADDED - SIC 7000				
Region	Direct	Indirect	Induced	Total
Region 1	\$22,861,940	\$554,985	\$1,977,799	\$25,394,724
Region 2	\$10,349,135	\$190,501	\$590,347	\$11,129,983
Region 3	\$16,907,748	\$156,139	\$663,070	\$17,726,957
Region 4	\$117,610,003	\$1,826,656	\$8,119,729	\$127,556,388
Total	\$167,728,826	\$2,728,281	\$11,350,946	\$181,808,053
TOTAL VALUE ADDED - SIC 5800 + SIC 7000				
Region	Direct	Indirect	Induced	Total
Region 1	\$84,960,980	\$22,621,338	\$27,105,771	\$134,688,089
Region 2	\$36,894,669	\$9,644,306	\$9,438,318	\$55,977,293
Region 3	\$33,163,755	\$4,408,459	\$5,014,737	\$42,586,951
Region 4	\$213,068,074	\$29,679,534	\$41,969,911	\$284,717,519
Total	\$368,087,478	\$66,353,636	\$83,528,737	\$517,969,852

Several caveats are in order at this point. First, the estimates provided herein assume that all of visitor travel spending is made by out-of-state visitors. If some of the visitors are from South Dakota, which is undoubtedly the case, these multipliers are overstated for measuring the impact the total visitor spending in South Dakota. The visitor spending by South Dakota residents might displace some other spending that could have taken place in South Dakota, such as home remodeling or any other form of

local spending which would have its own multiplier effects that could be larger or smaller than the visitor spending effects. The way that we would adjust for South Dakotans traveling in South Dakota as visitors is to reduce the induced multiplier. Referring the reader to Table 12, the induced multiplier averages about 0.28. If we deducted that from the overall multiplier of 1.54 we have a multiplier of 1.26. This is, of course, too small because it assumes that all of the travel is South Dakota residents. If we assume 50 percent of the visitors are South Dakotans then we would deduct 0.14 from 1.54 giving us a multiplier of 1.40. **The most accurate statement about the multipliers is that they represent the impact of \$1 million of new spending by out-of-state visitors. Our study shows that \$1 million in new visitor spending by non-residents would generate \$1.54 million in total output.**

SUMMARY AND CONCLUSIONS

This paper analyzed the impact of visitor spending on the state of South Dakota. Data on visitor spending on lodging, food and beverage attractions, and miscellaneous expenditures were analyzed and the sensitivity of visitor spending by travel regions to changes in income, gasoline prices, and state tourism promotion expenditures was examined utilizing an econometric model. Seasonal patterns of employment in the leisure and hospitality industry, gaming revenue, and the tourism tax revenue were analyzed to determine any changes in seasonal patterns. Finally, the direct and total impact of visitors was examined by travel region utilizing the IMPLAN input-output model.

Visitor spending in South Dakota increased rapidly from 1984 to 1994 at an annual rate of 9.3 percent per year. From 1994 to 2003, visitor spending increased at a slower rate of 5.6 percent per year. Regional visitor spending also increased the fastest growth rate was in Region 4 (Black Hills and Badlands) at 10.9 percent for the 1984 to 1994 and 4.2 percent for the 1994 to 2003 period. In 1983, Region 4 accounted for 47 percent of the total visitor travel in South Dakota and by 2003 it accounted for 57 percent of visitor travel. All other travel regions showed small declines in visitor travel shares.

Tourism promotions by state or regional associations included the South Dakota Office of Tourism budget and the cooperative advertising partners' fees. In 2003, tourism promotion amounted to \$6.8 million. From 1985 to 2002, it increased at an annual rate of 7.7 percent per year.

This report addressed the issue of whether tourism promotion actually increased visitor spending. An econometric model was used to analyze visitor spending in relation

to income, gasoline prices, and visitor promotion. The conclusion was that tourism promotion spending did, in fact, stimulate visitor spending. Overall, a \$1 change in tourism promotion spending generates approximately \$20 in visitor spending.

Finally, the total impact of the visitor spending is estimated using the IMPLAN economic impact modeling system. This model allowed the determination of the total impact of visitor spending by each of four regions. The total impact represents the direct, indirect, and induced impact of visitor spending. Using this model, one can conclude that \$1 million of new visitor spending by out-of-state visitors would increase total spending by \$1.54 million.