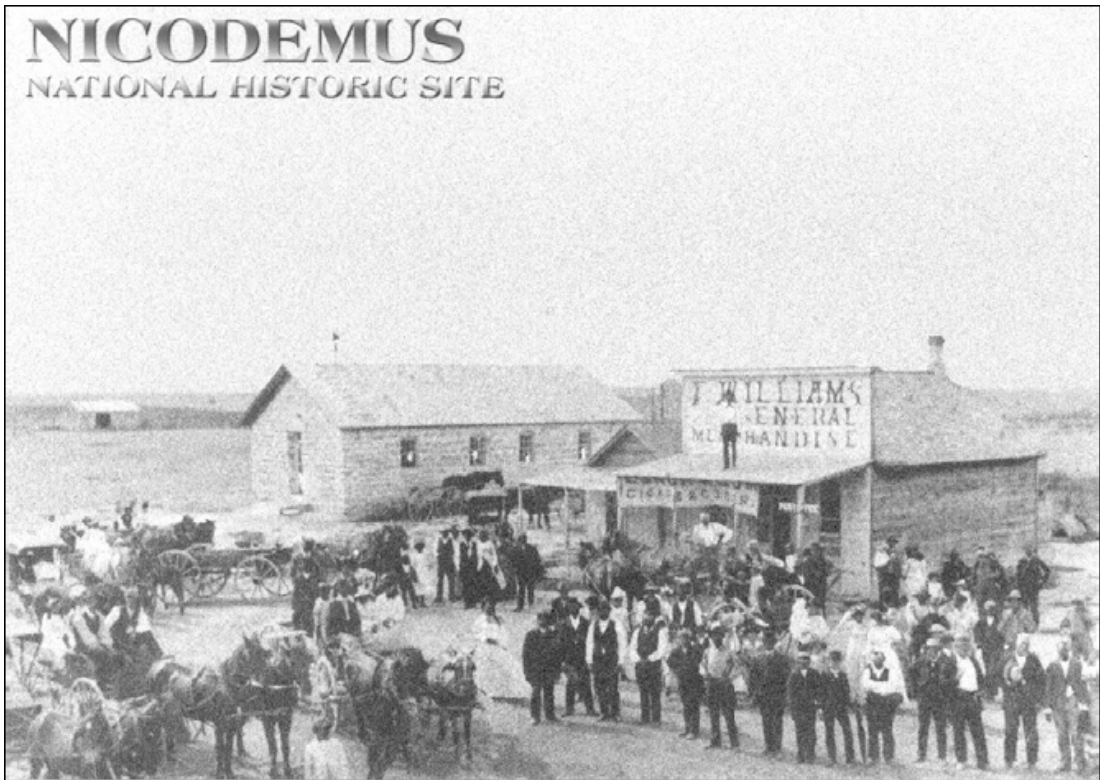
Impacts of Visitor Spending on the Local Economy: Nicodemus National Historic Site, 2005



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Executive Summary

Nicodemus National Historic Site (NICO) hosted 28,065 recreation visits in 2005. Based on the 2005 visitor survey 70% of the visits are classified as day trips, 21% overnight stays in motels, and 4% camping trips.

The average visitor party spent $102 in the local area. Visitors reported expenditures of their group within a 60 minute drive of Nicodemus NHS. On a party trip basis, average spending in 2005 was $39 for local residents, $55 for non-local day trips, $251 for visitors in motels, and $194 for campers.

Total visitor spending in 2005 within a 60 minute drive was $1.24 million. Twenty-two percent of the spending was for souvenirs, 21% for lodging and 19% for gas and oil. Overnight visitors staying in motels, cabins or B&B's accounted for 55% of the spending; day trips accounted for 36%.

Forty-two percent of the sample indicated that Nicodemus NHS was their primary destination on the trip. The park was one of several destinations for another 34% of the sample, and not a planned destination for 24% of the sample. In estimating spending attributed to the park, all trip expenses are counted if NICO was the primary destination, half of the trip spending is counted if NICO was one of several destinations and no spending is counted if NICO was not a planned destination.

Omitting spending by local visitors and reducing spending attributed to the park visit for visitors in the area for other reasons yields a total of $768,000 in spending attributed to the park, about 62% of the $1.24 million spent by park visitors on their trips in 2005.

The economic impact of park visitor spending is estimated by applying this spending to a model of the local economy. The local region was defined as a six county area including Ellis, Graham, Norton, Phillips, Rooks and Trego counties. The tourism sales multiplier for the region is 1.47.

Visitor spending in 2005 directly supported 16 jobs in the area, generating $232,000 in wages and salaries and $327,000 in value added. Value added includes wages and salaries as well as profits and rents to area businesses and sales taxes. An additional 4 jobs are supported through secondary effects. The total impact on the local economy including direct and secondary effects is 20 jobs, $315,000 in wages and salaries and $464,000 in value added.

The park itself employed five people in FY 2005 with a total payroll including benefits of $263,620. Including secondary effects, the local impact of the park payroll in 2005 was 6 jobs, $305,000 in labor income and $336,000 total value added. Including

both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 26 jobs and $800,000 value added. Park operations account for 23% of the employment effects and 42% of value added.

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Introduction

The purpose of this study is to document the local economic impacts of visitors to Nicodemus National Historic Site (NICO) in 2005. Economic impacts are measured as the direct and secondary sales, income and jobs in the local area resulting from spending by park visitors. The economic estimates are produced using the Money Generation Model 2 (MGM2) (Stynes and Propst, 2000). Three major inputs to the model are:

1) Number of visits broken down by lodging-based segments,
2) Spending averages for each segment, and
3) Economic multipliers for the local region

Inputs are estimated from the Nicodemus NHS Visitor Survey, National Park Service Public Use Statistics, and IMPLAN input-output modeling software. The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region.

Nicodemus NHS and the Local Region

Nicodemus NHS is located in the northwest corner of Kansas. Nicodemus is an all Black town settled by former slaves in 1877. The living community holds an annual homecoming celebration the last week of July. The park hosted 28,065 recreation visitors in 2005 (Table 1).

The local region was defined as a six county area in Kansas including Ellis, Graham, Norton, Phillips, Rooks and Trego counties. This region roughly coincides with the one hour driving distance for which spending was reported in the visitor survey. The sparsely populated six county region had a population of 50,615 in 2001.

Nicodemus National Historic Site Visitor Survey, 2005

A park visitor study was conducted at the park from July 23- September 13 (Meldrum, Vander Stoep and Hollenhorst, 2006). The study measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a sample of 302 visitors. Visitors returned 208 questionnaires for a 69% response rate. Data

generated through the visitor survey were used as the basis to develop the spending profiles, segment shares and trip characteristics for Nicodemus NHS visitors.

The majority of day visitors spent about an hour in the town. Thirty-eight percent of the visitors stayed overnight within an hour of the site, most staying just one night. One third of the visitors came to the area to attend homecoming events.

Table 1. Recreation Visits to Nicodemus National Historic Site, 2005

Month	2005	2006
January	2,147	738
February	1,901	1,524
March	2,069	1,173
April	1,314	1,292
May	3,053	1,858
June	3,288	2,922
July	5,312	4,162
August	2,372	2,000
September	2,460	1,729
October	1,849	1,506
November	1,442	1,238
December	858	1,299
Total	28,065	21,441

Source: NPS Public Use Statistics

MGM2 Visitor Segments

MGM2 divides visitors into segments to help explain differences in spending across distinct user groups. Four segments were established for Nicodemus NHS visitors:

Local day users: Day visitors who reside within the local region, defined as a 60 minute drive of the park.

Non-local day users: Visitors from outside the region, not incurring lodging expenses on the trip. This includes day trips, pass-through travelers, who may be staying overnight on their trip outside the region, and visitors staying overnight with friends and relatives or other no cost lodging.

Motel: Visitors staying in motels, hotels, cabins, or B&B's within a 60 minute drive of the park

Camp: Visitors staying in private or public campgrounds within a 60 minute drive of the park

The 2005 visitor survey was used to estimate the percentage of visitors from each segment as well as spending averages, lengths of stay and party sizes for each segment.

Seventy percent of the visits were classified as day trips[1], 21% overnight stays in motels and 4% overnight stays in campgrounds[2] (Table 2). The average spending party consisted of 2.3 people.

Forty-two percent of the sample indicated that Nicodemus NHS was the primary destination on the trip. The park was one of several destinations for another 34% of the sample, and not a planned destination for 24% of the sample.

Table 2. Selected Visit/Trip Characteristics by Segment, 2005

Characteristic	Local	Day trip	Motel	Camp	Total
Segment share[a]	5%	70%	21%	4%	100%
Average Party size	2.00	2.38	2.20	2.63	2.33
Length of stay (days/nights)	1.00	1.00	1.60	1.60	2.00
Was NICO primary destination?					
Primary	75%	38%	49%	38%	42%
One of several	13%	33%	44%	25%	34%
Not a planned destination	13%	29%	7%	38%	24%

The 28,065 recreation visitors in 2005 were allocated to the four segments using the segment shares[3] in Table 1. These visits are converted to 12,055 party trips by dividing by the average party size for each segment (Table 3).

Table 3. Recreation Visits and Party Trips by Segment, 2005

Measure	Local	Day trip	Motel	Camp	Total
Recreation visits	1,394	19,578	5,963	1,131	28,065
Party visits/trips	697	8,223	2,705	431	12,055
Person trips	1,394	19,578	5,963	1,131	28,065
Percent of party trips	6%	68%	22%	4%	100%

[1] Fourteen percent of the trips were overnight trips not involving any lodging expenses. These trips are counted as day trips for the purpose of estimating spending.

[2] The survey did not directly measure length of stay in the area. The motel and campground segments were identified based on reported lodging expenses.

[3] The segment percentages from the sample were adjusted based upon differences between those attending homecoming activities and other visitors. A major portion of the sample was taken during homecoming week. Homecoming visitors spent more than twice as much as other visitors and were more likely to be staying overnight. Based on the July visit counts, it was assumed that 20% of annual visitors were associated with homecoming activities. Visitor characteristics for the year were estimated via a weighted average of visitors who indicated homecoming was a reason for their trip and those that did not. Spending averages were also adjusted for the upward bias due to sampling during homecoming week.

Visitor spending

Spending averages were computed on a party trip basis for each segment. The survey covered expenditures of the travel party within a 60 minute drive of the area. Spending averages from the sample were adjusted to account for higher spending during homecoming week activities.

The average visitor party spent $102 in the local area[4]. Visitors reported expenditures of their group within a 60 minute drive of the park. On a party trip basis, average spending in 2005 was $39 for local residents, $55 for non-local day trips, $251 for visitors in motels, and $194 for campers (Table 4).

Table 4. Average Visitor Spending by Segment ($ per party per trip)

Spending Category	Local	Day trip	Motel	Camp	All Visitors
Motel, hotel cabin or B&B	0.00	0.00	98.38	0.00	21.40
Camping fees	0.00	0.00	0.36	43.11	1.70
Restaurants & bars	11.11	6.87	31.85	31.10	13.59
Groceries, take-out food/drinks	12.78	8.31	12.45	17.34	9.69
Gas & oil	10.00	13.60	36.42	51.24	19.76
Local transportation	0.00	7.89	21.21	0.00	10.26
Admissions & fees	2.22	3.52	3.01	0.00	3.21
Souvenirs and other expenses	2.78	14.75	46.91	51.38	22.57
Grand Total	**38.89**	**54.94**	**250.60**	**194.17**	**102.18**

The sampling error (95% confidence level) for the overall spending average is 22%. A 95% confidence interval for the spending average is therefore $102 plus or minus $22 or ($80, $124).

Nicodemus NHS visitors spent a total of $1.24 million in the local area in 2005 (Table 5). Total spending was estimated by multiplying the number of party trips for each segment by the average spending per trip and summing across segments. Overnight visitors staying in motels, cabins or B&B's accounted for 55% of the total spending. Twenty-two percent of the spending was for souvenirs, 21% for lodging and 19% for gas and oil.

Not all of this spending would be lost to the region in the absence of the park as some visitors are local residents and many non-residents came to the area for other reasons. Spending directly attributed to the park visit was estimated by counting all spending for trips where the park was the primary destination of the trip. Half of the

[4] The unadjusted sample average was $112. This average is lower than the $143 spending average in the VSP report (Meldrum, Vander Stoep and Hollenhorst 2005) due to the omission of outliers and treatment of missing spending data. The median group spending reported by Meldrum et. al. was only $35.

spending is counted if Nicodemus NHS was one of several destinations and no spending is counted if NICO NHS wasn't a planned destination.

These attributions yield a total of $768,000 in visitor spending attributed to the park visit, representing 62% of the overall visitor spending total (Table 6).

Table 5. Total Visitor Spending by Segment, 2005 ($000s)

	Local	Day trip	Motel	Camp	All Visitors
Motel, hotel cabin or B&B	0.00	0.00	266.09	0.00	266.09
Camping fees	0.00	0.00	0.99	18.57	19.55
Restaurants & bars	7.74	56.45	86.14	13.39	163.72
Groceries, take-out food/drinks	8.90	68.37	33.67	7.47	118.40
Gas & oil	6.97	111.80	98.50	22.07	239.35
Local transportation	0.00	64.86	57.37	0.00	122.23
Admissions & fees	1.55	28.94	8.14	0.00	38.63
Souvenirs and other expenses	1.94	121.31	126.88	22.13	272.26
Grand Total	**27**	**452**	**678**	**84**	**1,240**
Segment Percent of Total	2%	36%	55%	7%	100%

Table 6. Total Spending Attributed to Park Visits, 2005 ($000s)

Spending Category	Local	Day trip	Motel	Camp	All Visitors
Motel, hotel cabin or B&B		0.00	188.74	0.00	188.74
Camping fees		0.00	0.70	9.28	9.98
Restaurants & bars		30.67	61.10	6.70	98.46
Groceries, take-out food/drinks		37.14	23.88	3.73	64.76
Gas & oil		60.74	69.87	11.03	141.65
Local transportation		35.24	40.69	0.00	75.93
Admissions & fees		15.72	5.77	0.00	21.50
Souvenirs and other expenses		65.91	90.00	11.07	166.97
Total Attributed to Park	**0**	**245**	**481**	**42**	**768**
Percent of spending attributed to the park	0%	54%	71%	50%	62%

Economic Impacts of Visitor Spending

The economic impacts of Nicodemus NHS visitor spending on the local economy are estimated by applying the spending attributed to the park (Table 6) to a set of economic ratios and multipliers representing the local economy. Multipliers for the region were estimated with the IMPLAN system using 2001 data. The tourism sales multiplier for the region is 1.47. Every dollar of direct sales to visitors generates another $ .47 in secondary sales through indirect and induced effects[5].

Impacts are estimated based on the visitor spending attributed to the park in Table 6[6]. Including direct and secondary effects, the $768,000 spent by park visitors supports 20 jobs in the area and generates $879,000 in sales, $315,000 in labor income and $464,000 in value added. Spending associated with park visits supports 6 jobs in hotels and 3 jobs each in restaurants, retail trade and local transportation (Table 7).

Labor income covers wages and salaries, including payroll benefits. Value added is the preferred measure of the contribution to the local economy as it includes all sources of income to the area -- payroll benefits to workers, profits and rents to businesses, and sales and other indirect business taxes.

Table 7. Economic Impacts of Visitor Spending Attributed to the Park, 2005.

Sector/Spending category	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Motel, hotel cabin or B&B	189	6	82	134
Camping fees	10	0	0	1
Restaurants & bars	98	3	37	42
Admissions & fees	21	0	8	13
Local transportation	76	3	35	39
Retail Trade	131	3	58	80
Wholesale Trade	21	0	8	14
Local Production of goods	51	0	3	4
Total Direct Effects	598[a]	16	232	327
Secondary Effects	281	4	83	137
Total Effects	$ 879	20	$ 315	$ 464

a. Direct sales are less than total spending as the cost of goods sold at retail are excluded if the item is not locally made**.** Retail and wholesales trade sectors capture the margins on retail purchases.

Impacts of the NPS Park Payroll

The park itself employed 5 people in FY 2005 with a total payroll including benefits of $263,620. Including secondary effects, the local impact of the park payroll in

[5] Indirect effects result from tourism businesses buying goods and services from local firms, while induced effects stem from household spending of income earned from visitor spending.
[6] The local economic impact of all $1.24 million in visitor spending (Table 5) is reported in Appendix C.

2005 was 6 jobs, $305,000 in labor income and $336,000 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 26 jobs and $800,000 value added. Park operations account for 23% of the employment effects and 42% of value added.

Study Limitations and Error

The accuracy of the MGM2 estimates rests on the accuracy of the three inputs: visits, spending averages, and multipliers. Recreation visit estimates rely on counting procedures at the park, which may miss some visitors and count others more than once during their visit.

Spending averages are derived from the 2005 Nicodemus NHS Visitor Survey. Estimates from the survey are subject to sampling errors, measurement errors and seasonal/sampling biases. Due to relatively small samples, the overall spending average is subject to sampling errors of 22%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data. To carry out the analysis incomplete spending data had to be completed and decisions had to be made about the handling of missing spending data and zero spending reports. Conservative assumptions were adopted.

First, cases reporting some expenses but leaving other categories blank were completed with zeros. Respondents that did not complete the spending question were assumed to spend no money on the trip. Thirteen percent of the cases had missing spending data. Dropping these cases instead of treating them as zeros would increase the overall spending average from $102 to $117. This change would increase spending totals and impacts by a similar amount.

The small samples make the spending averages somewhat sensitive to outliers. Three cases reported spending more than $1,000 and another thirteen cases involved parties of eight or more people. These cases were dropped in computing spending averages [7]. The overall spending average was $102 omitting outliers compared to $125 with outliers (See Appendix B for details).

Although sample sizes are small for most segments, the spending averages are consistent with those at other historical sites. Since the sample was drawn in part during homecoming activities, sample spending averages and visitor characteristics may not be representative of visitors throughout the year. To correct for this bias, visitors were divided between those who participated in homecoming activities and those who did not. The homecoming sub-sample was then weighted to represent 20% of visitors year-round. The twenty percent figure was based on the percentage of annual visits in July. With this

[7] Spending reported for large parties may not include everyone in the party. Since spending averages are applied to all visits, the procedures are equivalent to substituting the average of visitors in the corresponding visitor segment for any omitted outliers.

adjustment we must assume the weighted sample is otherwise representative of visitors during the rest of the year to extrapolate to annual totals.

Multipliers are derived from an input-output model of the local economy using IMPLAN. Input-output models rest on a number of assumptions, however, errors due to the multipliers will be small compared to potential errors in visit counts and spending estimates. The IMPLAN sales multiplier of 1.47 does appear to be a little high for this rural area.

As Nicodemus NHS was not the primary destination of the trip to the region for all visitors, some of the spending would likely not be lost in the absence of the park. The procedures for attributing spending to the park are somewhat subjective, but reasonable. They result in about 62% of all visitor spending being attributed to park visits.

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Appendix A: Definitions of Economic Terms

Term	Definition
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in the region supported by the visitor spending. Job estimates are not full time equivalents, but include part time positions.
Personal income	Wage and salary income, sole proprietor's income and employee payroll benefits.
Value added	Personal income plus rents and profits and indirect business taxes. As the name implies, it is the net value added to the region's economy. For example, the value added by a hotel includes wages and salaries paid to employees, their payroll benefits, profits of the hotel, and sales and other indirect business taxes. The hotel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the hotel.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects include indirect and induced effects.
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the businesses that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend their incomes on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. ▪ Direct effects accrue largely to tourism-related businesses in the area ▪ Indirect effects accrue to a broader set of businesses that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of local businesses.

Appendix B: Handling of Missing Spending Data and Outliers

To compute spending averages and to sum spending across categories, spending categories with missing spending data had to be filled. If spending was reported in any category, the remaining categories were assumed to be zero. This yielded 174 cases with valid spending data, 6 cases reporting zero spending and 29 cases not completing the spending question. Cases with no spending data were local residents or on day trips. It was assumed that these cases spent no money in the local area.

Table B-1. Cases with Valid, Zero and Missing Spending Data by Segment

	Local	Day trip	Motel	Camp	Total
Report some spending	5	113	47	9	174
Missing spending data	4	24	0	0	28
Zero spending	0	6	0	0	6
Total cases	9	143	47	9	208
Percent zero	0%	4%	0%	0%	3%
Percent missing	44%	17%	0%	0%	13%

Three cases spending more than $1,000 on the trip were omitted from the spending analysis. The overall spending average is $102 omitting outliers compared to $125 with outliers. Another thirteen cases involving large parties (>7 people) were also omitted. The outliers primarily affect the motel and camp spending averages.

Table B-2. Spending Averages by Segment, with and without outliers

	With outliers			Without outliers			
Segment	Mean	N	Std. Deviation	Mean	N	Std. Deviation	Pct Error[a]
Local	39	9	46	39	9	46	78%
Day trip	63	143	125	55	131	125	39%
Motel	299	47	246	251	44	135	16%
Camp	303	9	371	194	8	265	94%
Total	125	208	202	102	192	157	22%

a. Pct errors computed at a 95% confidence level

Tables B-3 and B-4 compare spending patterns between Homecoming visitors and visitors who did not list "attending homecoming events" as a reason for their trip. Visitors attending homecoming events spent more than twice as much as other visitors. In estimating spending averages in Table 4, it was assumed that visitors during the rest of the year may be represented by visitors not attending homecoming events that were sampled between July 23 and September 13, 2005.

Table B-3. Average Visitor Spending: Homecoming Visitors ($ per party per trip)

Spending Category	Day trip	Motel	Camp	All Homecoming Visitors
Motel, hotel cabin or B&B	0.00	127.00	0.00	38.55
Camping fees	0.00	0.18	83.33	4.52
Restaurants & bars	10.17	21.06	50.00	15.61
Groceries, take-out food/drinks	17.92	26.88	55.00	22.63
Gas & oil	17.97	54.18	80.00	32.29
Local transportation	26.64	16.24	0.00	22.05
Admissions & fees	8.61	7.65	0.00	7.86
Souvenirs and other expenses	32.22	50.35	120.00	42.43
Grand Total	**113.53**	**303.53**	**388.33**	**185.93**

Table B-4. Average Visitor Spending: Not Attending Homecoming Events ($ per party per trip)

Spending Category	Local	Day trip	Motel	Camp	All Non-homecoming Visitors
Motel, hotel cabin or B&B	0.00	0.00	86.19	0.00	17.11
Camping fees	0.00	0.00	0.44	24.60	0.99
Restaurants & bars	11.11	6.15	36.44	22.40	13.09
Groceries, take-out food/drinks	12.78	6.24	6.30	0.00	6.46
Gas & oil	10.00	12.65	28.85	38.00	16.63
Local transportation	0.00	3.84	23.33	0.00	7.32
Admissions & fees	2.22	2.42	1.04	0.00	2.04
Souvenirs and other expenses	2.78	10.98	45.44	19.80	17.61
Grand Total	**38.89**	**42.29**	**228.04**	**104.80**	**81.24**

Appendix C. Impacts of all Visitor Spending, 2005

Table C1 gives the impacts of $1.24 million in visitor spending on the local economy. All visitor spending in the region is included in this analysis. Impacts including all visitor spending are roughly 56% higher than those reported in Table 7, which count only spending directly attributable to the park visits.

Table C-1. Impacts of all Visitor Spending on the Local Economy, 2005

Sector/Spending category	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	266	8	116	188
Camping fees	20	0	1	2
Restaurants & bars	164	5	62	70
Admissions & fees	39	1	14	24
Local transportation	122	5	56	62
Retail trade	219	6	97	133
Wholesale Trade	35	0	13	23
Local Production of goods	86	0	5	7
Total Direct Effects	951	25	365	510
Secondary Effects	451	6	133	219
Total Effects	1,402	31	498	729