



# Impacts of Visitor Spending on the Local Economy

## *Fort Stanwix National Monument, 2011*

Natural Resource Report NPS/NRSS/EQD/NRR—2012/610



**ON THE COVER**

Living history at Fort Stanwix National Monument  
Photograph by Park Studies Unit staff

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# **Impacts of Visitor Spending on the Local Economy**

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## Executive Summary

Fort Stanwix National Monument hosted 102,874 recreation visits in 2011. Adjustments for visitor group size and re-entries resulted in 34,909 visitor group trips to the park in 2011. Based on a 2011 Visitor Services Project survey conducted July 17 – August 6, 41% of these visitor group trips were made by local residents or non-locals on day trips, not including an overnight stay within 60 miles of the park.<sup>1</sup> Twenty-nine percent of visitor group trips involved an overnight stay in lodges, hotels, motels, cabins, B&Bs, etc. in the local area, and 5% were overnight camping stays in the local area.

Visitors reported their group's expenditures in the park and within a 60-mile drive of the park. The average visitor group size was 2.9 people and spent an average of \$145 in the park and local area.

Total visitor spending in 2011 in the park and within 60 miles of the park was \$5,056,000. The greatest proportions of expenditures were for overnight accommodations (45%) and restaurants and bars (20%). Overnight visitors staying in lodges, hotels, motels, cabins, B&Bs, etc. in the local area accounted for 75% of total spending.

Twenty percent of visitor groups indicated the park visit was the primary reason for their trip to the area. Counting only a portion of visitor expenses if the park visit was not the primary reason for the trip yields \$2,667,000 in spending attributed directly to the park.

The economic impact of park visitor spending was estimated by applying the spending to an input-output model of the local economy. The local region was defined as a nine-county region including Oneida, Lewis, Herkimer, Montgomery, Ostego, Madison, Chenango, Onondaga, and Oswego counties, New York. This region roughly coincides with the 60-mile radius around the park for which expenditures were reported.

Including direct and secondary effects, the \$2.7 million in visitor spending attributed to the park generated \$3.6 million in direct sales in the region, which supported 41 jobs. These jobs paid \$1.2 million in labor income, which was part of \$2.0 million in value added to the region.<sup>2</sup>

A separate study estimated impacts of the park employee payroll on the local economy.<sup>3</sup> The park itself employed 19 people in FY 2010 with a total payroll including benefits of \$1.2 million. Including secondary effects, the local impacts of the park payroll in FY 2010 were \$432,000 in sales, supporting 23 jobs, \$1.3 million in labor income, and \$1.5 million in value added.

### **Local Economic Impacts of Fort Stanwix National Monument**

	<u>Sales</u>	<u>Jobs</u>	<u>Labor Income</u>	<u>Value Added</u>
Park Visitor Spending	\$3.6M	41	\$1.2M	\$2.0M
Park Payroll	+\$0.4M	+ 23	+ \$1.3M	+ \$1.5M
Park Visitor Spending + Payroll	\$4.0M	64	\$2.5M	\$3.5M

<sup>1</sup> Results in this study sometimes differ from those reported in the VSP study report (Manni et al. 2012) because of the omission of cases considered to be outliers in the current analysis. See Study Limitations and Errors section.

<sup>2</sup> Jobs include fulltime and part-time jobs. Labor income consists of wages and salaries, payroll benefits and income of sole proprietors. Value added includes labor income as well as property income (dividend, royalties, interest and rents) to area businesses and indirect business taxes (sales, property, and excise taxes).

<sup>3</sup> Stynes (2011).

## **Acknowledgments**

The author thanks Margaret Littlejohn, Visitor Services Project Director, and Marc Manni, Park Studies Unit Research Team Supervisor, for their reviews of an early draft of this report.

## Introduction

Fort Stanwix National Monument (NM) is a reconstructed Revolutionary War-era fort and grounds, originally built in 1758 to guard a portage known as the Oneida Carry during the French and Indian War. The fort is located in the present-day city of Rome, New York. The 16-acre site became a national monument in 1935. The park is located in Oneida County, New York. Fort Stanwix NM received 102,874 recreation visits in 2011 (Table 1).

**Table 1.** Recreation visits, Fort Stanwix NM, 2011

<b>Month</b>	<b>Recreation Visits</b>
January	178
February	290
March	771
April	3,699
May	7,063
June	7,525
July	30,181
August	24,986
September	17,381
October	4,541
November	4,124
<u>December</u>	<u>2,135</u>
<b>Total</b>	<b>102,874</b>

Source: NPS Public Use Statistics 2012.

The purpose of this study is to estimate the annual, local economic impacts of visitors to Fort Stanwix NM in 2011. Economic impacts were measured as the direct and secondary sales, income, and jobs in the local region resulting from spending by park visitors. (See Appendix A: Glossary for definitions of terms.) In addition, a separate study estimated the impacts of the NPS park payroll on the local region (Stynes 2011), and those results are reported herein. Neither study estimated the economic impacts of park operations or construction spending on the local region.

The local economic region defined for this study included Oneida, Lewis, Herkimer, Montgomery, Oswego, Madison, Chenango, Onondaga, and Oswego counties, New York. This nine-county region had a population of 1.1 million (USCB 2012), gross regional product of \$43.2 billion (MIG, Inc. 2008), median household income of \$47,782, and family poverty rate of 9.5% (USCB 2010). State and local governments, including education, were the major employers in the region (MIG, Inc. 2008), and the region experienced an 8.3% unemployment rate in 2011 (BLS 2012).



## Methods

The economic impact estimates were produced using the Money Generation Model 2 (MGM2) (Stynes et al. 2007). The three main inputs to the model were:

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 were estimated from the Fort Stanwix NM Visitor Services Project (VSP) survey data (Manni et al. 2012), National Park Service Public Use Statistics (2012), and IMPLAN input-output modeling software (MIG, Inc. 2008). The MGM2 model provides a spreadsheet template for combining park use, spending, and regional multipliers to compute changes in sales, labor income, jobs, and value added in the region.

The VSP visitor survey was conducted at Fort Stanwix NM from July 17 – August 6, 2011.<sup>4</sup> The VSP survey measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a systematic, random sample of 339 visitor groups. Visitors returned 208 questionnaires resulting in a response rate of 61.4%.

Spending and economic impact estimates for Fort Stanwix NM are based in part on the 2011 VSP survey data. Visitors were asked to report expenditures in the park and within a 60-mile drive of the park. The local region for determining economic impact was defined as a nine-county area around the park including Oneida, Lewis, Herkimer, Montgomery, Ostego, Madison, Chenango, Onondaga, and Oswego counties in upstate New York, which roughly coincided with the 60-mile driving radius for which visitor spending was reported.

Estimates of visitor spending outside the park in the local region are based on the 2011 VSP survey data. However, estimates of visitor spending inside the park based on the VSP survey data were much higher than actual revenue reported by park managers. Therefore, estimates of visitor spending inside the park used herein were based on actual revenue reported by the park. Park managers reported an average of approximately \$50,000 per year in revenue from its retail outlet and approximately \$1,000 annually in donations.

The MGM2 model divides visitors into segments to help explain differences in spending across distinct user groups. Five segments were established for Fort Stanwix NM visitors based on reported trip characteristics and lodging expenditures:

**Local:** Visitors that were residents of the local region, i.e., within 60 miles of the park.

**Day trip:** Visitors from outside the local region, that did not stay overnight in the local region.

**Motel:** Visitors who reported motel expenses in the local region.<sup>5</sup>

**Camping:** Visitors who reported camping expenses in the local region.

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<sup>4</sup> Results in this study sometimes differ from those reported in the VSP study report (Manni et al. 2012) because of the omission of cases considered to be outliers in the current analysis. See Study Limitations and Errors section.

<sup>5</sup> The questionnaire asked about expenditures for “Lodges, hotels, motels, cabins, B&Bs, etc.” For convenience, these expenditures are referred to as “motel” in this report.

**Other overnight (Other OVN):** Non-local visitors who staid overnight in the local region, but did not report any lodging expenses. This segment included visitors who staid in private homes, with friends or relatives, or in other unpaid lodging.<sup>6</sup>

The VSP survey data were used to estimate the percentage of visitors from each segment as well as spending averages, lengths of stay, and visitor group sizes for each segment.

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<sup>6</sup> Visitors reporting multiple lodging types and expenditures were classified based on the greatest reported lodging expense. Some visitors listing motels or campgrounds as lodging types did not report any lodging expenses and were classified in the other overnight (Other OVN) category.

## Results

### Visits

Based on the VSP survey data, 49% of park entries were classified as day visits by either residents or visitors from outside the region, and the remaining 51% were classified as overnight visits including an overnight stay in the local region (Table 2). The average visitor group size ranged from 2.3 to 3.5 people across the five segments with an average visitor group of 2.9 people.<sup>7</sup> The average length of stay in the local region on overnight trips was 2.8 nights.

**Table 2.** Selected visit/trip characteristics by segment, 2011

Characteristic	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Visitor segment share (park entries)	30%	19%	22%	4%	25%	100%
Average visitor group size	3.5	3.4	2.3	2.6	2.9	2.9
Length of stay (days or nights)	1.0	1.0	2.0	4.4	3.3	2.8
Re-entry rate (park entries per trip)	1.0	1.0	1.0	1.0	1.0	1.0
Percent primary purpose trips	100%	33%	16%	17%	14%	20%

Twenty percent of visitor groups indicated that visiting the park was the primary reason for their trip to the area. Other stated reasons included traveling through, visiting other attractions in the area, visiting friends and relatives, and business.

The 102,874 recreation visits in 2011 were allocated to the five segments using the visit segment shares in Table 2. Because spending was reported for the stay in the area, recreation visits were converted to visitor group trips to the area by dividing recreation visits by the average number of times each visitor entered the park during their stay and the average visitor group size. Visitor groups were asked how many days they visited the park on their trip, and assumed to make one park entry per day. The 102,874 recreation visits represented 34,909 visitor group trips (Table 3).

**Table 3.** Recreation visits and visitor group trips by segment, 2011

Measure	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Recreation visits	30,862	19,443	23,147	4,115	25,307	102,874
Visitor group trips	8,819	5,635	9,985	1,600	8,871	34,909
Percent of visitor group trips	25%	16%	29%	5%	25%	100%

<sup>7</sup> Visitor group size reported herein is based on the number of people covered by expenditures reported in the VSP survey.

## Visitor Spending

The VSP survey collected data about expenditures of visitor groups in the park and within a 60-mile drive of the park.<sup>8</sup> Spending averages were computed on a visitor group trip basis for each segment. The average visitor group spent \$145 on the trip in the park and within 60 miles of the park (Table 4). On a visitor group trip basis, average spending was \$18 for day trips by local residents and \$22 for day trips by non-local visitors. Visitor groups staying in motels spent an average of \$381 on their trips, and those camping spent an average of \$323 on their trips. Visitor groups spent about 99% of their total spending outside the park.

**Table 4.** Average spending by segment (dollars per visitor group per trip)

Expenditures	Segment					All visitors*
	Local	Day trip	Motel	Camping	Other OVN	
<b>Inside Park</b>						
<u>Souvenirs &amp; other expenses**</u>	<u>1.95</u>	<u>1.26</u>	<u>1.56</u>	<u>1.41</u>	<u>1.00</u>	<u>1.46</u>
<b>Total Inside Park</b>	<b>1.95</b>	<b>1.26</b>	<b>1.56</b>	<b>1.41</b>	<b>1.00</b>	<b>1.46</b>
<b>Outside Park</b>						
Motels	0.00	0.00	199.98	0.00	0.00	57.20
Camping fees	0.00	0.00	0.00	159.71	0.00	7.32
Restaurants & bars	6.78	7.57	71.93	26.00	16.58	28.91
Groceries & takeout food	0.29	0.60	12.76	53.57	10.84	9.03
Gas & oil	5.54	7.24	43.97	45.00	16.30	21.35
Local transportation	0.48	1.51	5.08	0.00	0.00	1.82
Admission & fees	0.21	0.91	22.69	30.86	2.79	8.81
<u>Souvenirs &amp; other expenses</u>	<u>2.53</u>	<u>2.75</u>	<u>23.47</u>	<u>6.43</u>	<u>3.26</u>	<u>8.92</u>
<b>Total Outside Park</b>	<b>15.83</b>	<b>20.58</b>	<b>379.89</b>	<b>321.57</b>	<b>49.77</b>	<b>143.36</b>
<b>Total Inside &amp; Outside Park</b>	<b>17.78</b>	<b>21.83</b>	<b>381.45</b>	<b>322.98</b>	<b>50.77</b>	<b>144.82</b>

\*Weighted by percent visitor group trips.

\*\*"Souvenir & other expenses" inside the park estimates were based on average annual revenue for park retail outlets (\$50,000) and visitor donations (\$1,000) reported by park managers rather than VSP survey data.

The relative standard error at a 95% confidence level for the overall spending average was 23%. A 95% confidence interval for the overall visitor group spending average was therefore \$145 plus or minus \$28 or between \$117 and \$173.

<sup>8</sup> Some expenditure categories in the VSP questionnaire were combined for reporting herein and MGM2 analysis. See Appendix B.



On a per night basis, visitor groups staying in motels spent \$188 in the local region, and campers spent \$73 (Table 5). The average reported per-night lodging expense was \$99 for motels and \$36 for camping fees.

**Table 5.** Average spending per night for visitor groups on overnight trips (dollars per visitor group per night)

Expenditures	Segment		
	Motel	Camping	Other OVN
Motels	98.54	0.00	0.00
Camping fees	0.00	36.06	0.00
Restaurants & bars	35.44	5.87	5.03
Groceries & takeout food	6.29	12.10	3.29
Gas & oil	21.66	10.16	4.94
Local transportation	2.51	0.00	0.00
Admission & fees	11.18	6.97	0.85
Souvenirs & other expenses	12.33	1.77	1.29
<b>Total per visitor group per night</b>	<b>187.96</b>	<b>72.93</b>	<b>15.40</b>

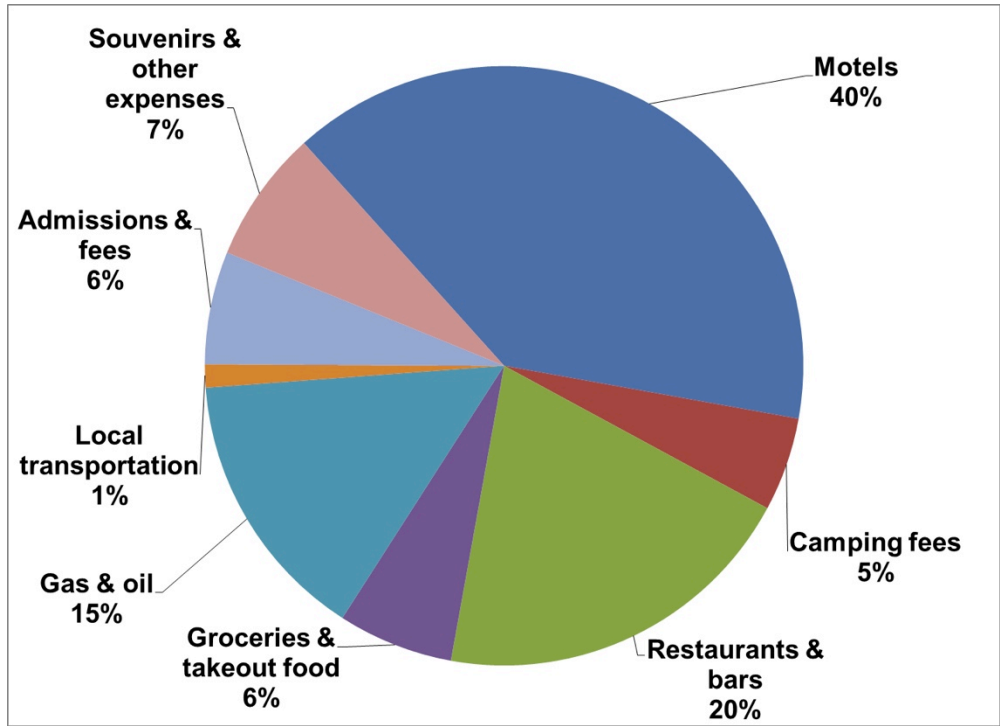
Total spending was estimated by multiplying the number of visitor group trips for each segment by the average spending per trip and summing across segments. Fort Stanwix NM visitors spent a total of \$5.1 million in the local region in 2011 (Table 6). Overnight visitors staying in motels accounted for 75% of the total spending. Motel expenses represented 40% of total spending and restaurant and bar expenses represented 20% (Figure 1).

**Table 6.** Total visitor spending by segment, 2011 (thousands of dollars)

Expenditures	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
<b>Inside Park</b>						
Souvenirs & other expenses*	17	7	16	2	9	51
<b>Total Inside Park</b>	<b>17</b>	<b>7</b>	<b>16</b>	<b>2</b>	<b>9</b>	<b>51</b>
<b>Outside Park</b>						
Motels	0	0	1,997	0	0	1,997
Camping fees	0	0	0	256	0	256
Restaurants & bars	60	43	718	42	147	1,009
Groceries & takeout food	3	3	127	86	96	315
Gas & oil	49	41	439	72	145	745
Local transportation	4	9	51	0	0	63
Admission & fees	2	5	227	49	25	308
Souvenirs & other expenses	22	15	234	10	29	311
<b>Total Outside Park</b>	<b>140</b>	<b>116</b>	<b>3,793</b>	<b>515</b>	<b>441</b>	<b>5,005</b>
<b>Total Inside &amp; Outside Park</b>	<b>157</b>	<b>123</b>	<b>3,809</b>	<b>517</b>	<b>450</b>	<b>5,056</b>
Segment Percent of Total**	3%	2%	75%	10%	9%	100%

\*"Souvenir & other expenses" inside the park estimates are based on average annual revenue for park retail outlets (\$50,000) and visitor donations (\$1,000) reported by park managers rather than VSP survey data.

\*\*Segment percentages do not total 100% due to rounding.



**Figure 1.** Fort Stanwix NM visitor spending by category

Because visitors would come to the region whether or not the park existed, not all visitor spending can be attributed to the park. Eighty percent of visitor groups did not make the trip primarily to visit Fort Stanwix NM. Spending directly attributed to park visits was estimated by counting all spending on trips for which the park was the primary reason for the trip. If the park was not the primary trip purpose, one night of spending was counted for overnight trips and half of the spending in the region was counted for day trips. With these assumptions, a total of \$2.7 million in visitor spending was attributed to the park visit (Table 7). This represented 53% of the overall visitor spending total.

**Table 7.** Total spending attributed to park visits, 2011 (thousands of dollars)

Expenditures	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Motels	0	0	1,148	0	0	1,148
Camping fees	0	0	0	91	0	91
Restaurants & bars	0	28	413	15	58	515
Groceries & takeout food	0	2	73	30	38	144
Gas & oil	0	27	252	26	57	363
Local transportation	0	6	29	0	0	35
Admission & fees	0	3	130	18	10	161
Souvenirs & other expenses	17	17	150	6	20	211
<b>Total Attributed to Park</b>	<b>17</b>	<b>84</b>	<b>2,197</b>	<b>185</b>	<b>184</b>	<b>2,667</b>
Percent of Spending Attributed to the Park	11%	69%	58%	36%	41%	53%
Percent of Attributed Spending	1%	3%	82%	7%	7%	100%

## **Economic Impacts of Visitor Spending**

The economic impacts of Fort Stanwix NM visitor spending on the local economy were estimated by applying visitor spending to a set of economic ratios and multipliers in MGM2 representing the economy of the nine-county region—Oneida, Lewis, Herkimer, Montgomery, Ostego, Madison, Chenango, Onondaga, and Oswego counties, New York.<sup>9</sup> Economic ratios and multipliers for the region were estimated using the *Impact Analysis for Planning (IMPLAN) Professional software* (version 3, MIG, Inc. 2008) with 2008 data.<sup>10</sup> Multipliers were adjusted to 2011 based on structural changes in the national IMPLAN models between 2008 and 2009 and price changes between 2009 and 2011 (see Study Limitations and Errors section below).

Not all visitor spending was counted as direct sales to the region. The amount a visitor spends for a retail good is made up of the cost of the good from the producer, a markup by a wholesaler, and a markup by a retailer. In MGM2, retail and wholesale margins for grocery & takeout food, gas & oil, and souvenirs & other expenses were applied to visitor spending to account for mark-ups by retailers and wholesalers. The retail margins for the three sectors were 25.3%, 22.3%, and 50.0%, respectively, and the wholesale margins were 12.3%, 8.3%, and 11.4%. In addition, regional purchase coefficients from IMPLAN for all sectors were used to account for the proportion of demand within the region satisfied by imports into the region.

The tourism output sales multiplier for the region is 1.59. Every dollar of direct sales to visitors generated another \$0.59 in secondary sales through indirect and induced effects.<sup>11</sup> (See Appendix A: Glossary for further explanation of terms.)

The economic impacts to the local region are presented in two ways: (1) based on all visitor spending and (2) based only on visitor spending attributable to the park. The first estimate—including all visitor spending—shows the overall contribution park visitors make to the local region. The second estimate—including only visitor spending attributable to the park—shows the impact or contribution the park makes to the economy of the local region.

### ***Impacts of All Visitor Spending***

Using all visitor spending and including direct and secondary effects, the \$5.1 million spent by park visitors generated \$6.7 million in sales, which supported 78 jobs in the local region (Table 8). These jobs paid \$2.3 million in labor income, which was part of \$3.8 million in value added to the region.<sup>12</sup>

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<sup>9</sup> Economic ratios convert between various economic measures, e.g., direct spending to the directly associated jobs, labor income, and value added in each sector. Economic multipliers capture the secondary effects of economic measures.

<sup>10</sup> See Appendix C: Economic Ratios and Multipliers for the region.

<sup>11</sup> 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.

<sup>12</sup> Jobs include full and part time jobs. Labor income consists of wages and salaries, payroll benefits and income of sole proprietors. Value added includes labor income as well as profits and rents to area businesses and sales and excise taxes.

**Table 8.** Impacts of all visitor spending on the local economy, 2011

<b>Sector/Expenditure category</b>	<b>Sales</b> (thousands of dollars)	<b>Jobs</b>	<b>Labor Income</b> (thousands of dollars)	<b>Value Added</b> (thousands of dollars)
<b>Direct Effects</b>				
Motels	1,997	21.3	641	1,138
Camping fees	256	3.2	120	128
Restaurants & bars	1,009	18.6	361	510
Groceries & takeout food	80	1.6	40	66
Gas & oil	166	3.1	84	138
Local transportation	63	1.1	34	42
Admission & fees	308	5.6	121	185
Souvenirs & other expenses	181	3.7	93	152
Wholesale trade	104	0.6	39	68
Local production of goods	35	0.2	9	14
<b>Total Direct Effects</b>	<b>4,198</b>	<b>59.1</b>	<b>1,543</b>	<b>2,440</b>
<u>Secondary Effects</u>	<u>2,466</u>	<u>18.5</u>	<u>782</u>	<u>1,355</u>
<b>Total Effects</b>	<b>6,665</b>	<b>77.6</b>	<b>2,325</b>	<b>3,795</b>

Note: Impacts of \$5.1 million in visitor spending reported in Table 6. Totals may not equal sum of individual categories due to rounding.

Value added is the preferred measure of the contribution of visitors 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 that accrue to government units. Value added impacts are also comparable to Gross Regional Product, the broadest measure of total economic activity in a region. The largest direct effects are in restaurants & bars and motels.

### ***Impacts of Visitor Spending Attributed to the Park***

Using only visitor spending attributable to the park by including only some spending on trips where the primary trip purpose was not to visit Fort Stanwix NM reduced the overall impacts by about 47% (Table 9; see spending inclusion assumptions in previous section). Including direct and secondary effects, the \$2.7 million spent by park visitors and attributable to the park generated \$3.6 million in sales, which supported 41 jobs in the local region. These jobs paid \$1.2 million in labor income, which was part of \$2.0 million in value added to the region.

**Table 9.** Economic impacts of visitor spending attributed to the park, 2011

<b>Sector/Expenditure category</b>	<b>Sales</b> (thousands of dollars)	<b>Jobs</b>	<b>Labor Income</b> (thousands of dollars)	<b>Value Added</b> (thousands of dollars)
<b>Direct Effects</b>				
Motels	1,148	12.3	369	654
Camping fees	91	1.1	43	45
Restaurants & bars	515	9.5	184	260
Groceries & takeout food	36	0.7	18	30
Gas & oil	81	1.5	41	67
Local transportation	35	0.6	19	23
Admission & fees	161	3.0	63	97
Souvenirs & other expenses	106	2.2	54	88
Wholesale trade	52	0.3	20	34
Local production of goods	<u>20</u>	<u>0.1</u>	<u>5</u>	<u>8</u>
<b>Total Direct Effects</b>	<b>2,244</b>	<b>31.3</b>	<b>816</b>	<b>1,307</b>
<u>Secondary Effects</u>	<u>1,313</u>	<u>9.8</u>	<u>416</u>	<u>721</u>
<b>Total Effects</b>	<b>3,557</b>	<b>41.1</b>	<b>1,232</b>	<b>2,029</b>

Note: Impacts of \$2.7 million in visitor spending attributed to park reported in Table 7. Totals may not equal sum of individual categories due to rounding.

### **Economic Impacts of the NPS Park Payroll**

In addition to visitor spending, spending by park employees also impacts the local region. A separate study (Stynes 2011) estimated the impacts of park payroll by applying economic multipliers to wage and salary data to capture the induced effects of NPS employee spending on local economies. Fort Stanwix NM itself employed 19 people in FY 2010 with a total payroll including benefits of \$1.2 million. Including secondary effects, the local impacts of the park payroll in FY 2010 were \$432,000 in sales, 23 jobs, \$1.3 million in labor income, and \$1.5 million value added (Stynes 2011).

### **Combined Economic Impacts**

The combined impacts to the region of visitor spending attributable to the park and NPS payroll were \$4.0 million in sales, which supported 64 jobs with labor income of \$2.5 million, which was part of a total value added of \$3.5 million.



## Study Limitations and Errors

The accuracy of the MGM2 estimates rests on the accuracy of three inputs: visits, spending averages, and multipliers. Visits were taken from NPS Public Use Statistics (2012). Recreation visit estimates rely on counting procedures at the park, which may miss some visitors and count others more than once during their visit. Re-entry rates are important to adjust the park visit counts to reflect the number of visitor group trips to the region rather than park entries. Re-entry rates were estimated based on visitor responses to a VSP survey question about the number of days they visited the park. Visitors were assumed to make one park entry per day.

Spending averages outside the park were derived from the 2011 Fort Stanwix NM VSP survey data (Manni et al. 2012). Estimates from the survey are subject to sampling errors, measurement errors, and potential seasonal biases. The overall spending average is subject to sampling error of 23%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data. In order to estimate spending averages, incomplete spending data were filled with zeros. Visitor groups of more than 8 people (4 cases), visiting the local region for more than 7 nights (7 cases), or spending greater than \$1,000 (the mean plus two times the standard deviation of the mean for spending, 10 cases) were omitted from the analysis. These are conservative assumptions about outliers and likely result in conservative estimates of economic impacts.

The sample only covers visitors during the end of July and beginning of August. To extrapolate to annual totals, it was assumed that this sample represented visitors throughout the year.

Multipliers were derived from an input-output model of the local economy using IMPLAN (MIG, Inc. 2008). The basic assumptions of input-output models are that sectors have homogeneous, fixed and linear production functions, that prices are constant, and that there are no supply constraints. The IMPLAN system uses national average production functions for each of 440 sectors based on the NAICS system (see Appendix B, Table B2). The most recent local IMPLAN datasets available for this analysis were 2008. National IMPLAN multiplier data were available for 2009, so local employment, labor income, and value added multipliers were updated to 2009 using 2008/2009 national ratios. In addition, local employment multipliers were updated to 2011 based on changes in consumer price indices.

Sorting out how much spending to attribute to the park when the park is not the primary reason for the trip is somewhat subjective. Because 80% of visitors to Fort Stanwix NM did not make the trip primarily to visit the park and all spending occurs outside the park, adjustments for non-primary purpose trips have a significant effect on the overall spending and impact estimates.





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## Appendix A: Glossary

Term	Definition
Direct effects	Changes in sales, income and jobs in those business or agencies that directly receive visitor spending.
Economic multiplier	Captures the size of secondary effects and are usually expressed as a ratio of total effects to direct effects.
Economic ratio	Converts various economic measures from one to another. For example, direct sales can be used to estimate direct effects on jobs, personal income, and value added by applying economic ratios. That is: <ul style="list-style-type: none"><li>• Direct jobs = direct sales * jobs to sales ratio</li><li>• Direct personal income = direct sales * personal income to sales ratio</li><li>• Direct value added = direct sales * value added to sales ratio.</li></ul>
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the businesses that sell directly to visitors, i.e., businesses in the supply chain. For example, linen suppliers benefit from visitor spending at motels.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of 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. IMPLAN's Social Accounting Matrix (SAM) multipliers also include induced effects resulting from local/state/federal government spending.
Jobs	The number of jobs in the region supported by visitor spending. Job estimates are not full time equivalents, but include both fulltime and part-time positions.
Labor income	Wage and salary income, sole proprietor (business owner) income and employee payroll benefits.
Regional purchase coefficient (RPC)	The proportion of demand within a region supplied by producers within that region.
Retail margin	The markup to the price of a product when a product is sold through a retail trade activity. Retail margin is calculated as sales receipts minus the cost of goods sold.
Sales	Direct sales (retail goods and services) of firms within the region to park visitors.

<b>Term</b>	<b>Definition</b>
Secondary effects	Changes in the economic activity in the region that result from the re-circulation of money spent by visitors. Secondary effects include indirect and induced effects.
Total effects	Sum of direct, indirect and induced effects. <ul style="list-style-type: none"> <li>• Direct effects accrue largely to tourism-related businesses in the area.</li> <li>• Indirect effects accrue to a broader set of businesses that serve these tourism firms.</li> <li>• Induced effects are distributed widely across a variety of local businesses.</li> </ul>
Value added	Labor income plus property income (rents, dividends, royalties, interest) 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 motel includes wages and salaries paid to employees, their payroll benefits, profits of the motel, and sales, property, and other indirect business taxes. The motel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the motel.
Visitor group	A group of people traveling together to visit the park. Visitor group is the basic sampling unit for VSP surveys; each visitor group receives only one questionnaire.
Wholesale margin	The markup to the price of a product when a product is sold through wholesale trade. Wholesale margin is calculated as wholesale sales minus the cost of the goods sold.

## Appendix B: Expenditure Sector Assignments

Table B1 shows expenditure categories visitors were asked to estimate in the Fort Stanwix NM VSP questionnaire. Some expenditure categories were combined and renamed for MGM2 analysis.

**Table B1.** Expenditure categories in Fort Stanwix NM questionnaire and MGM2 sector assignment

<b>Questionnaire expenditure categories</b>	<b>Inside park</b>	<b>Outside park</b>	<b>MGM2 sector</b>
Lodges, hotels, motels, cabins, B&Bs, etc.		X	Motels
Camping fees and charges		X	Camping fees
Guide fees and charges		X	Admissions & fees
Restaurants and bars		X	Restaurants & bars
Groceries and takeout food		X	Groceries & takeout food
Gas and oil (auto, RV, boat, etc.)		X	Gas & oil
Other transportation expenses (rental cars, taxis, auto repairs, but NOT airfare)		X	Local transportation
Admission, recreation, entertainment fees		X	Admissions & fees
All other purchases (souvenirs, film, books, sporting goods, clothing, etc.)	X	X	Souvenirs & other expenses
Donations	X	X	Souvenirs & other expenses

X = category included in questionnaire.

MGM2 sectors names correspond to similar sector names and numbers in IMPLAN (Table B2). IMPLAN sectors also correspond to 2007 North American Industry Classification System (NAICS) sectors.

**Table B2.** MGM2 sector correspondence to IMPLAN and 2007 NAICS sectors

<b>MGM2 sector</b>	<b>IMPLAN</b>		<b>2007 NAICS</b>
	<b>No.</b>	<b>Name</b>	
Motels	411	Hotels and motels, including casino hotels	72111-2
Camping fees	412	Other accommodations	72119, 7212-3
Restaurants & bars	413	Food services and drinking places	722
Groceries & takeout food	324	Retail - Food and beverage	445
Gas & oil	326	Retail - Gasoline stations	447
Local transportation	336	Transit and ground passenger transportation	485
Admissions & fees	410	Other amusement and recreation industries	71391-3, 71399
Souvenirs & other expenses	329	Retail - General merchandise	452
Local production of goods	317	All other miscellaneous manufacturing	339993, 339995, 339999
Wholesale trade	319	Wholesale trade	42

Source: IMPLAN (MIG, Inc. 2008).



## Appendix C: Economic Ratios and Multipliers

**Table C1.** Economic ratios and multipliers for selected tourism-related sectors, Fort Stanwix NM region, 2011

Sector	Direct effects				Total effects multipliers			
	Jobs/ \$MM sales	Income/ sales	Value added/ sales	Sales I	Sales SAM	Job II/ \$MM sales	Income II/ sales	Value added II/ sales
Motel, hotel, cabin or B&B	10.68	0.32	0.57	1.27	1.58	15.08	0.51	0.89
Camping fees	12.44	0.47	0.50	1.35	1.70	17.89	0.70	0.89
Restaurants & bars	18.43	0.36	0.51	1.29	1.58	22.55	0.53	0.82
Groceries & takeout food	20.39	0.51	0.82	1.27	1.60	24.99	0.70	1.17
Gas & oil	18.76	0.50	0.83	1.23	1.48	22.41	0.66	1.11
Local transportation	17.88	0.53	0.66	1.16	1.50	21.79	0.70	0.94
Admission & fees	18.35	0.39	0.60	1.45	1.68	23.29	0.61	0.98
Souvenirs & other expenses	20.42	0.51	0.84	1.26	1.61	25.06	0.71	1.18
Local production of goods	5.42	0.28	0.45	1.22	1.49	8.76	0.43	0.70
Wholesale trade	5.71	0.38	0.65	1.25	1.57	10.11	0.57	0.97

Source: IMPLAN (MIG, Inc. 2008), updated to 2011.

### Explanation of table

**Direct effects** are economic ratios to convert sales in each sector to jobs, income and value added.

Jobs/\$MM sales is jobs per million dollars in sales.

Income/sales is the percentage of sales going to wages, salaries, and employee benefits.

Value added/sales is the percentage of sales that is value added (Value added covers all income, rents and profits and indirect business taxes).

**Total effects** are multipliers that capture the total effect relative to direct sales.

Sales I captures only direct and indirect sales.

Sales SAM is the SAM sales multiplier = (direct + indirect + induced sales) / direct sales.

Job II/\$MM sales = total jobs (direct + indirect + induced) per \$ million in direct sales.

Income II /sales = total income (direct + indirect + induced) per \$ of direct sales.

Value added II/sales = total value added (direct + indirect + induced) per \$ of direct sales.

### Using the motels sector row to illustrate

**Direct Effects:** Every million dollars in motel sector sales (i.e., short-term lodging room rentals) creates 10.7 jobs in the motel sector. Fifty-seven percent of motel sector sales are value added, including 32% that goes to wages and salaries of motel employees. That means 43% of motel sector sales goes to purchase inputs by motels (e.g., linens, cleaning supplies). The wage and salary income creates the induced effects, and the 43% of sales spent on purchases by motels starts the rounds of indirect effects.

**Multiplier effects:** There is an additional 27 cents of indirect sales in the region for every dollar of direct motel sector sales (type I sales multiplier = 1.27). Total secondary sales are 58 cents per dollar of direct sales, which means 27 cents in indirect effects and 31 cents in induced effects.

An additional 4.4 jobs are created from secondary effects of each million dollars in motel sector sales (15.1 total jobs – 10.7 direct jobs per \$million). These jobs are distributed across other sectors of the local economy. Similarly, the secondary effects on income for each dollar of motel sector sales are 19% (51%-32%), and the secondary effects on value added for each dollar of motel sector sales are 32% (89%-57%). Including secondary effects, every million dollars of motel sector sales in the region yields \$1.58 million in sales, \$510,000 in income, and \$890,000 in value added.



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