Impacts of Visitor Spending on the Local Economy: Johnstown Flood National Memorial, 2005

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October 2007

National Park Service

Social Science Program

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Executive Summary

Johnstown Flood National Memorial hosted 111,987 recreation visits in 2005. Based on the 2005 visitor survey 23% of the visitors are local residents, 44% are visitors from outside the local area not staying overnight within an hours drive of the park, and 33% are visitors staying overnight in the local area.

The average visitor party spent $131 in the local area. Visitors reported expenditures of their group inside the park and within a 45 minute drive of the park. On a party trip basis, average spending in 2005 was $53 for local residents, $59 for non-local day trips, $306 for visitors in motels, and $164 for campers.

Total visitor spending in 2005 within a 45 minute drive of the park was $5.1 million excluding park admission fees. Thirty percent of the spending was for lodging, 29% restaurant meals and bar expenses, and 13% gas and oil. Overnight visitors staying in motels, cabins or B&B's accounted for 71% of the spending.

Forty-three percent of the non-local visitors indicated the park visit was not the primary reason for coming to the area, so only a portion of their expenses can be attributed to the park visit. 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 $3.2 million in spending attributed to the park, about 63% of the $5.1 million spent by park visitors on the trip.

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 Bedford, Cambria, Blair, Indiana, Somerset, and Westmoreland counties The tourism sales multiplier for the region is 1.56.

Visitor spending in 2005 directly supported 65 jobs in the area outside the park, generating $1.1 million in wages and salaries and $1.57 million in value added. Value added includes wages and salaries as well as profits and rents to area businesses and sales taxes. An additional 18 jobs are supported through secondary effects. The total impact on the local economy including direct and secondary effects is 83 jobs, $1.6 million in wages and salaries and $2.4 million in value added. Visitor spending supports 21 jobs in hotels and 28 jobs in area restaurants.

The park itself employed 8.4 people in FY 2005 with a total payroll including benefits of $533,357. Including secondary effects, the local impact of the park payroll in 2005 was 12 jobs, $649,000 in labor income and $740,000 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 95 jobs and $3.14 million value added. Park operations account for 13% of the employment effects and 24% of value added.

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Introduction

The purpose of this study is to document the local economic impacts of visitors to Johnstown Flood National Memorial (JOFL) 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 Johnstown Flood NM 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.

Johnstown Flood NM and the Local Region

Johnstown Flood NM is located in southwestern Pennsylvania. The park hosted 111,987 recreation visitors in 2005 (Table 1).

The local region was defined as a six county area including Bedford, Cambria, Blair, Indiana, Somerset, and Westmoreland counties. This region roughly coincides with a 45 minute driving distance for which spending was reported in the visitor survey. The six county region had a population of 866,000 in 2001.

Johnstown Flood National Memorial Visitor Survey, 2005

A park visitor study was conducted at the park from July 30 to August 9, 2005 (Le and Hollenhorst, 2006). The study measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a sample of 310 visitors mostly at

the park visitor center[1]. Visitors returned 232 questionnaires for a 75% response rate. Data generated through the visitor survey were used as the basis to develop the spending profiles, segment shares and trip characteristics for Johnstown Flood NM visitors.

Most visitors spent one to four hours visiting the park (average = 2.5 hours). Seven percent visited the park on more than one day during their stay in the area. About half of the non-local visitors came to the area primarily to visit the Johnstown Flood NM. Twenty-four percent of visitors came to visit other attractions in the area; ten percent were visiting friends or relatives in the area.

Table 1. Recreation Visits to Johnstown Flood National Memorial, 2005

Month	2005	2006
January	1,831	2,066
February	4,776	4,822
March	4,870	5,940
April	10,358	6,602
May	16,588	24,093
June	20,787	13,215
July	10,962	12,470
August	18,053	18,055
September	9,254	9,590
October	8,750	9,074
November	3,370	3,852
December	2,388	2,460
Total	111,987	112,239

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 Johnstown Flood NM visitors:

Local day users: Day visitors who reside within the local region, defined as a 45 minute drive of the park.

Non-local day users: Visitors from outside the region, not staying overnight in the area. This includes day trips as well as pass-through travelers, who may be staying overnight on their trip outside the region.

Motel: Visitors staying in motels, hotels, cabins, or B&B's within a 45 minute drive of the park

Camp: Visitors staying in private or public campgrounds within a 45 minute drive of the park

[1] Roughly two thirds of the surveys were distributed at the visitor center.

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. Twenty-three percent of the visitors are local residents, 44% are visitors from outside the local area not staying overnight within a 45 minute drive of the park, and 33% are visitors staying overnight within a 45 minute drive of the park (Table 2)[2]. The average spending party ranged from 2.7 to 3.1 people across the four visitor segments.

Local residents were assumed to be making the trip primarily to visit the park. Non-local visitors on day trips and campers were more likely to make the trip primarily to visit the park than visitors staying in motels.

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

Characteristic	Local	Day trip	Motel	Camp	Total
Segment share	23%	44%	30%	3%	100%
Average Party size	**3.00**	**3.11**	**2.70**	**2.86**	**2.96**
Percent primary purpose trips	100%	50%	34%	50%	57%

The 111,987 recreation visitors in 2005 were allocated to the four segments using the segment shares in Table 1. These visits are converted to 38,222 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	25,757	49,718	33,306	3,862	111,987
Party visits/trips	8,586	15,963	12,321	1,352	38,222
Person trips	25,757	49,718	33,306	3,862	112,643
Percent of party trips	22%	42%	32%	4%	100%

Visitor spending

Spending averages were computed on a party trip basis for each segment. The survey covered expenditures of the travel party within a 45 minute drive of the park.

The average visitor party spent $131 in the local area[3]. Visitors reported expenditures of their group within a 45 minute drive of the park. On a party trip basis, average spending in 2005 was $53 for local residents, $54 for non-local day trips, $306 for visitors in motels, and $164 for campers (Table 4).

[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 average of $131 is lower than the $238 spending average in the VSP report (Le and Hollenhorst 2005) due to the omission of outliers and treatment of missing spending data. The median spending was $90.

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

Spending Category	Local	Day trip	Motel	Camp	All Visitors
In Park					
Souvenirs	2.37	4.48	6.09	7.86	4.57
Admissions & fees	5.57	5.05	6.38	8.29	5.66
In Community					
Motel, hotel cabin or B&B	0.00	0.00	130.88	0.00	38.25
Camping fees	0.00	0.00	0.00	46.71	1.49
Restaurants & bars	18.73	19.29	83.64	30.00	38.31
Groceries, take-out food/drinks	4.75	4.28	6.67	10.00	5.27
Gas & oil	9.57	12.65	29.34	52.00	18.07
Local transportation	0.00	0.12	8.02	0.00	2.40
Admissions & fees	5.16	4.42	19.45	1.43	8.89
Souvenirs and other expenses	7.27	4.02	15.75	8.14	8.34
Grand Total	**53.41**	**54.32**	**306.22**	**164.43**	**131.24**

The sampling error (95% confidence level) for the overall spending average is 18%. A 95% confidence interval for the spending average is therefore $131 plus or minus $23 or ($108, $154).

Johnstown Flood NM visitors spent a total of $5.3 million in the local area in 2005 (Table 5). Excluding park admission fees[4], the total is $5.1 million. 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 71% of the total spending. Thirty percent of the spending was for lodging, 29% restaurant meals and bar expenses, and 13% 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 reason for the trip. Half of the spending outside the park was counted for day trips if the trip was not made primarily to visit Johnstown Flood NM. The equivalent of one night of spending was attributed to the park visit for overnight trips made to visit other attractions, friends or relatives or on business.[5] All spending inside the park was counted, but all spending by local visitors was excluded.

These attributions yield a total of $3.24 million in visitor spending attributed to the park visit (excluding park admission fees), representing about two-thirds of the

[4] Park admission fees are excluded to avoid double counting. Revenues accruing to the NPS from visitor spending are covered in the estimation of the impacts of the NPS payroll on page 9.

[5] This assumes that these visitors spent an extra night in the area to visit Johnstown Flood NM. Overnight visitors were assumed to spend two nights in the local area.

overall visitor spending total. Visitors in motels account for three-fourths of the spending under these attributions (Table 6).

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

	Local	Day trip	Motel	Camp	All Visitors
In Park					
Souvenirs	20.37	71.59	75.08	10.62	177.66
Admissions & fees	47.81	80.64	78.55	11.20	218.20
In Community					
Motel, hotel cabin or B&B	0.00	0.00	1612.57	0.00	1612.57
Camping fees	0.00	0.00	0.00	63.14	63.14
Restaurants & bars	160.77	307.91	1030.58	40.55	1539.80
Groceries, take-out food/drinks	40.74	68.30	82.21	13.52	204.76
Gas & oil	82.15	201.92	361.56	70.28	715.92
Local transportation	0.00	1.97	98.76	0.00	100.74
Admissions & fees	44.28	70.60	239.69	1.93	356.50
Souvenirs and other expenses	62.46	64.18	194.06	11.01	331.71
Grand Total	**459**	**867**	**3,773**	**222**	**5,321**
Total excluding park admissions	411	786	3,695	211	5,103
Segment Percent of Total	9%	16%	71%	4%	100%

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

Spending Category	Local	Day trip	Motel	Camp	All Visitors
In Park					
Souvenirs		71.59	75.08	10.62	157.29
Admissions & fees		80.64	78.55	11.20	170.39
In Community					
Motel, hotel cabin or B&B		0.00	1,080.42	0.00	1,080.42
Camping fees		0.00	0.00	47.35	47.35
Restaurants & bars		230.93	690.49	30.41	951.83
Groceries, take-out food/drinks		51.22	55.08	10.14	116.44
Gas & oil		151.44	242.24	52.71	446.40
Local transportation		1.48	66.17	0.00	67.65
Admissions & fees		52.95	186.51	4.25	243.71
Souvenirs and other expenses		48.14	79.72	0.29	128.14
Total Attributed to Park	**0**	**688**	**2,554**	**167**	**3,410**
Excluding park admissions	0	608	2,476	156	3,239
Percent of spending attributed to the park	0%	79%	68%	75%	64%

Economic Impacts of Visitor Spending

The economic impacts of Johnstown Flood NM 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 1.56. Every dollar of direct sales to visitors generates another $ .56 in secondary sales through indirect and induced effects[6].

Impacts are estimated based on the visitor spending attributed to the park in Table 6, excluding park admission fees[7]. Including direct and secondary effects, the $3.24 million spent by park visitors[8] supports 83 jobs in the area and generates $4.3 million in sales, $1.6 million in labor income and $2.4 million in value added (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.

The largest direct effects are in lodging establishments and restaurants. Spending associated with park visits supports 21 jobs in hotels and 28 jobs in restaurants. The contribution to the local economy in terms of value added is $765,000 in the hotel sector and $405,000 in the restaurant sector.

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	1,080	21	471	765
Camping fees	47	0	6	14
Restaurants & bars	952	28	359	405
Admissions & fees	244	7	87	145
Local transportation	68	3	32	35
Retail Trade	272	6	121	164
Wholesale Trade	55	0	21	37
Local Production of goods	32	0	2	3
Total Direct Effects	2,750[a]	65	1,098	1,568
Secondary Effects	1,541	18	516	836
Total Effects	$ 4,290	83	$ 1,614	$ 2,404

a. Direct sales are less than total spending as the cost of goods sold at retail are excluded unless they are locally made. Retail and wholesale trade sectors cover the margins on retail purchases.

[6] 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.

[7] The local economic impact of all $5.1 million in visitor spending (Table 5) is reported in Appendix C.

[8] Revenues received by the park (park admissions and donations) are excluded in estimating visitor spending impacts as the impacts resulting from park revenues are covered as part of park operations.

Impacts of the NPS Park Payroll

The park itself employed 8.4 people in FY 2005 with a total payroll including benefits of $533,357. Including secondary effects, the local impact of the park payroll in 2005 was 12 jobs, $649,000 in labor income and $740,000 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 95 jobs and $3.14 million value added. Park operations account for 13% of the employment effects and 24% 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 Johnstown Flood NM Visitor Survey. Estimates from the survey are subject to sampling errors, measurement errors and seasonal/sampling biases. Due to relatively small samples and considerable variation in spending, the overall spending average is subject to sampling errors of 18%.

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 $131 to $151. This change would increase spending totals and impacts by 15%.

The small samples make the spending averages somewhat sensitive to outliers. One case reporting spending of almost $8,000 and another five cases reporting more than $1,000 in spending were dropped in computing the spending averages. Another seven cases involving large parties (more than seven people) were also omitted, yielding a final sample of 219 cases for the spending analysis[9]. The overall spending average was $131 omitting outliers compared to $210 with outliers (See Appendix B for details).

[9] Reports of spending for long stays and large parties are deemed unreliable. Spending reported for large parties may not include everyone in the party. Recall of spending for very long stays may also be unreliable and such stays frequently involve multiple stops and activities, so that much of the spending is unrelated to the park visit. Since spending averages are applied to all visits, the procedures are equivalent to substituting the average of visitors in the corresponding visitor segment for these outliers.

Although sample sizes are small for most segments, the spending averages are consistent with those at other historical sites. As the sample only covers visitors during a single week, we must assume these visitors are 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.

Somewhat more problematic than the errors in visits, spending or multipliers is sorting out how much of the spending to attribute to the park. It is difficult to separate the park from the many historical sites and attractions in the area. As the park was not the primary motivation for 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 two thirds 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 197 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	41	79	69	8	197
Missing spending data	6	23	0	0	29
Zero spending	5	1	0	0	6
Total cases	52	103	69	8	232
Percent zero	10%	1%	0%	0%	3%
Percent missing	12%	22%	0%	0%	13%

Thirteen cases were omitted from the spending analysis. Seven of these were large parties of more than seven people. Six cases, all overnight trips, reported expenses of more than $1,000. The overall spending average is $131 omitting outliers compared to $210 with outliers. 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	55	52	92	53	51	92	48%
Day trip	59	103	92	54	97	86	31%
Motel	545	69	1,134	306	64	201	16%
Camp	286	8	356	164	7	124	56%
Total	210	232	661	131	219	174	18%

Note: Spending averages exclude park admission fees.

a. Pct errors computed at a 95% confidence level

Appendix C. Impacts of all Visitor Spending, 2005

Table C1 gives the impacts of $5.1 million in visitor spending on the local economy. All visitor spending in the region except park admissions 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	1,613	32	703	1,142
Camping fees	63	0	8	19
Restaurants & bars	1,536	45	579	653
Admissions & fees	355	10	127	212
Local transportation	101	4	47	52
Retail trade	464	11	207	282
Wholesale Trade	93	1	35	62
Local Production of goods	53	0	3	5
Total Direct Effects	4,278[a]	102	1,709	2,427
Secondary Effects	2,404	28	805	1,304
Total Effects	6,682	130	2,514	3,731

a. Direct sales are less than total spending as the cost of goods sold at retail are excluded unless they are locally made. Retail and wholesale trade sectors cover the margins on retail purchases