

Impacts of Visitor Spending on the Local Economy: Fort Union Trading Post National Historical Site, 2007



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Executive Summary

Fort Union Trading Post National Historical Site (NRA) hosted 12,405 recreation visits in 2007. Based on the 2007 visitor survey 12% of the visitors are local residents, 17% are visitors from outside the local area not staying overnight within 100 miles of the park, and 71% are visitors staying overnight in the local area. Fifty-eight percent of overnight visitors are staying in motels and 42% are staying with friends or relatives, in campgrounds, or other unpaid lodging.

The average visitor party (average party size was 2.6) spent \$174 in the local area. Visitors reported expenditures of their group inside the park and within a 100 mile radius of the park. On a party trip basis, average spending in 2007 was \$46 for local residents, \$66 for non-local day trips, \$329 for visitors in motels, and \$146 for other overnight visitors. On a per night basis, visitors staying in motels spent \$171 in the local region compared to \$58 for other overnight visitors. The average per night lodging cost was \$71 per night for visitors staying in motels.

Total visitor spending in 2007 within 100 miles of the park was \$824,000. Overnight visitors staying in motels, cabins or B&B's accounted for 56% of the total spending. Twenty-seven percent of the spending was for lodging, 19% for restaurant meals and bar expenses, 22% for gas and oil, and 11% for souvenirs.

Seventy-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 \$499,000 in spending attributed to the park, about 60% of the total spent by park visitors in the area 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 to encompass McKenzie and Williams counties in North Dakota and Sheridan and Richland counties in Montana. The tourism spending sales multiplier for the region is 1.32.

Visitor spending in 2007 that can be attributed to the park visit supported 10 jobs in the area outside the park, generating \$183,000 in wages and salaries and \$276,000 in

value added. Value added includes wages and salaries as well as profits and rents to area businesses and also sales taxes.

The park itself employed 11 people in FY 2007 with a total payroll including benefits of \$590,000. Including secondary effects, the local impact of the park payroll in 2007 was 15 jobs, \$687,000 in labor income and \$759,000 total value added.

Including both visitor spending and the park payroll, the total impact of the park on the local economy in 2007 was 25 jobs and \$1 million value added. Park operations account for 60% of the employment effects and 73% of value added.

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Introduction

The purpose of this study is to document the local economic impacts of visitors to Fort Union Trading Post National Historical Site (NB) in 2007. 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 Fort Union Trading Post 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.

Fort Union Trading Post NHS and the Local Region

Fort Union Trading Post NHS is located on the Missouri River at the Nebraska-Montana border. The park hosted 12,405 recreation visitors in 2007 (Table 1).

The local region was defined as a four county area covering McKenzie and Williams counties in North Dakota and Sheridan and Richland counties in Montana. This region roughly coincides with the 100 mile radius of the park for which visitor spending was reported in the visitor survey. The region has a population of 38,600 people.

Fort Union Trading Post NHS Visitor Survey, 2007

A park visitor study was conducted at Fort Union Trading Post NHS from June 15- July 13, 2007 (Littlejohn, Holmes, and Hollenhorst, 2008). The study measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a sample of 629 visitors. Visitors returned 475 questionnaires for an 80% response rate.

Forty percent of the returned surveys were visitors sampled during the special Rendezvous event. Compared to general visitors, visitors attending the Rendezvous event were more likely to be local visitors or on day trips (See Appendix D).

The sample of general visitors and those attending the Rendezvous event were combined in estimating spending profiles, segment shares and trip characteristics for Fort Union Trading Post NHS visitors. Visitors during the Rendezvous event were assumed to represent 16% (2,000 visitors) of annual visitors.

Table 1. Recreation Visits to Fort Union Trading Post NHS, 2006-7

Month	2006	2007
January	72	39
February	42	43
March	190	181
April	532	328
May	1,452	1,235
June	4,291	4,403
July	2,479	1,882
August	2,133	2,141
September	1,498	1,416
October	472	466
November	111	154
<u>December</u>	<u>120</u>	<u>117</u>
Total	13,392	12,405

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 Fort Union Trading Post NHS visitors:

- Local day users:** Day visitors who reside within the local region,
- 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 100 miles of the park
- Other OVN:** Other visitors staying overnight in the area with friends or relatives including overnight visitors not reporting any lodging expenses

The 2007 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. Twelve percent of the visitors were local residents, 17% were visitors from outside the

local area not staying overnight within the local area, and 71% are visitors staying overnight within 100 miles of the park. Fifty-eight percent of the overnight visitors are staying in motels, cabins or B&B's, while 42% are staying with friends or relatives, in campgrounds or other unpaid lodging (Table 2). The average spending party size was 2.6 people.

Local residents were assumed to be making the trip primarily to visit the park. Of the non-local visitors, only about one in four visitors stated that visiting Fort Union Trading Post NHS was the primary reason for the trip. Twenty-nine percent of visitors came to visit other attractions in the area; sixteen percent were visiting friends or relatives in the area.

Table 2. Selected Visit/Trip Characteristics by Segment, 2007

Characteristic	Local	Day trip	Motel	Other OVN	Total
Segment share (survey)	12%	17%	30%	41%	100%
Average Party size	2.8	2.4	2.6	2.7	2.6
Length of stay (days/nights)	1.0	1.0	1.9	2.5	1.9
Percent primary purpose trips	100%	34%	24%	26%	36%

Fort Union Trading Post NHS hosted 12,405 recreation visitors in 2007. Recreation visits were allocated to the four segments using the segment shares in Table 2. These visits are converted to 4,729 party trips by dividing by the average party size for each segment (Table 3).

Table 3. Recreation Visits and Party Trips by Segment, 2007

Measure	Local	Day trip	Motel	Other OVN	Total
Recreation visits	1,512	2,141	3,691	5,061	12,405
Party visits/trips	537	889	1,405	1,897	4,729
Person trips	1,512	2,141	3,691	5,061	12,405
Percent of party trips	11%	19%	30%	40%	100%
Party nights	537	889	2,710	4,787	8,923

Visitor spending

Spending averages were computed on a party trip basis for each segment. The survey covered expenditures of the travel party within a 100 mile radius of the park. The average visitor party spent \$174 in the local area. On a party trip basis, average spending in 2007 was \$46 for local residents, \$66 for non-local day trips, \$329 for visitors in motels, and \$146 for other overnight visitors (Table 4).

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

	Local	Day trip	Motel	Other OVN	Total
In Park					
Souvenirs	9.95	9.95	9.28	13.30	11.10
In Community					
Motel, hotel cabin or B&B	0.00	0.00	136.26	0.00	40.50
Camping fees	0.00	0.00	0.63	18.01	7.41
Restaurants & bars	5.11	10.30	69.99	23.81	32.87
Groceries, take-out food/drinks	7.55	7.65	11.73	19.26	13.51
Gas & oil	12.18	18.64	49.54	47.91	38.83
Local transportation	0.11	1.74	2.39	1.13	1.50
Admissions & fees	0.74	4.98	18.41	9.45	10.28
<u>Souvenirs and other expenses</u>	<u>10.84</u>	<u>12.53</u>	<u>31.15</u>	<u>13.61</u>	<u>18.31</u>
Grand Total	46.48	65.79	329.39	146.48	174.31
Total in park	9.95	9.95	9.28	13.30	11.10
Total Outside park	36.53	55.84	320.11	133.18	163.21

On a per night basis, visitors staying in motels spent \$171 in the local region compared to \$58 for other overnight visitors. The average per night lodging cost was \$71 per night for visitors staying in motels.

The sampling error (95% confidence level) for the overall spending average is 12%. A 95% confidence interval for the spending average is therefore \$174 plus or minus \$21 or (\$153, \$195).

Table 5. Average Spending per Night for Visitors on Overnight Trips (\$ per party per night)

	Motel	Other OVN
Motel, hotel cabin or B&B	70.66	0.00
Camping fees	0.33	7.14
Restaurants & bars	36.30	9.44
Groceries, take-out food/drinks	6.08	7.63
Gas & oil	25.69	18.99
Local transportation	1.24	0.45
Admissions & fees	9.55	3.74
<u>Souvenirs and other expenses</u>	<u>20.97</u>	<u>10.67</u>
Grand Total	170.81	58.05

Fort Union Trading Post NHS visitors spent a total of \$824,000 in the local area in 2007 (Table 6). 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 56% of the total spending. Twenty-seven percent of the spending was for lodging, 19% for restaurant meals and bar expenses, 22% for gas and oil, and 11% for souvenirs.

Not all of this spending would be lost to the region in the absence of the park as only 27% of non-local visitors came to the area primarily to visit the park. 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 Fort Union Trading Post NHS. 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.¹ All spending inside the park was counted, but all spending by local visitors outside the park was excluded.

These attributions yield a total of \$499,000 in visitor spending attributed to the park visit, representing 60% of the overall visitor spending total (Table 7).

Table 6. Total Visitor Spending by Segment, 2007 (\$000s)

	Local	Day trip	Motel	Other OVN	Total
In Park					
Souvenirs	5.34	8.85	13.04	25.24	52.47
In Community					
Motel, hotel cabin or B&B	0.00	0.00	191.51	0.00	191.51
Camping fees	0.00	0.00	0.89	34.16	35.05
Restaurants & bars	2.74	9.16	98.37	45.17	155.45
Groceries, take-out food/drinks	4.06	6.80	16.48	36.54	63.88
Gas & oil	6.54	16.57	69.63	90.88	183.63
Local transportation	0.06	1.55	3.36	2.15	7.11
Admissions & fees	0.40	4.43	25.88	17.92	48.63
<u>Souvenirs and other expenses</u>	<u>5.82</u>	<u>11.15</u>	<u>43.78</u>	<u>25.82</u>	<u>86.57</u>
Grand Total	25	59	463	278	824
Segment Percent of Total	3%	7%	56%	34%	100%

¹ This assumes that these visitors spent an extra night in the area to visit Fort Union Trading Post NHS.

Table 7. Total Spending Attributed to Park Visits, 2007 (\$000s)

	Local	Day trip	Motel	Other OVN	Total
In Park					
Souvenirs	5.34	8.85	13.04	25.24	52.47
In Community					
Motel, hotel cabin or B&B		0.00	121.17	0.00	121.17
Camping fees		0.00	0.56	18.93	19.49
Restaurants & bars		6.15	62.24	25.03	93.42
Groceries, take-out food/drinks		4.57	10.43	20.25	35.24
Gas & oil		11.13	44.06	50.36	105.55
Local transportation		1.04	2.12	1.19	4.35
Admissions & fees		2.97	16.37	9.93	29.28
<u>Souvenirs and other expenses</u>		<u>7.49</u>	<u>16.40</u>	<u>13.71</u>	<u>37.60</u>
Total Attributed to Park	5	42	286	165	499
Percent of spending attributed to the park	21%	72%	62%	59%	60%
Percent of attributed spending	1%	8%	57%	33%	100%

Economic Impacts of Visitor Spending

The economic impacts of Fort Union Trading Post NHS visitor spending on the local economy are estimated by applying the spending attributed to the park (Table 7) 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 1.32. Every dollar of direct sales to visitors generates another \$.32 in secondary sales through indirect and induced effects².

Impacts are estimated based on the visitor spending attributed to the park in Table 7. Including direct and secondary effects, the \$499,000 spent by park visitors supports 10 jobs in the area and generates \$504,000 in sales, \$183,000 in labor income and \$276,000 in value added (Table 8).

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.

² 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.

Table 8. Economic Impacts of Visitor Spending Attributed to the Park, 2007.

Sector/Spending category	Sales \$000's	Jobs	Labor Income \$000's	Value Added \$000's
Motel, hotel cabin or B&B	121	2	53	86
Camping fees	19	0	1	3
Restaurants & bars	93	2	34	38
Admissions & fees	29	1	10	16
Local transportation	4	0	2	3
Grocery stores	9	0	3	4
Gas stations	24	0	9	12
Other retail	45	1	20	28
Wholesale Trade	14	0	7	8
<u>Local Production of goods</u>	<u>24</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Direct Effects	383	8	140	199
<u>Secondary Effects</u>	<u>121</u>	<u>2</u>	<u>43</u>	<u>77</u>
Total Effects	504	10	183	276

Impacts of the NPS Park Payroll

The park itself employed 11 people in FY 2007 with a total payroll including benefits of \$590,000. Including secondary effects, the local impact of the park payroll in 2007 was 15 jobs, \$687,000 in labor income and \$759,000 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2007 was 25 jobs and \$1 million value added. Park operations account for 60% of the employment effects and 73% 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 2007 Fort Union Trading Post NHS Visitor Survey. Estimates from the survey are subject to sampling errors, measurement errors and seasonal/sampling biases. The overall spending average is subject to sampling errors of 12%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data and zeros. 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.

Cases reporting some expenses but leaving other categories blank were completed with zeros. The dataset did not distinguish between missing spending data and true zeros. Respondents with no spending reported were assumed to spend no money on the trip. Eighteen percent of the cases (86 cases) reported no spending. Treating these cases as missing would increase spending estimates by 18%.

Twenty-eight cases were omitted from the spending analysis. Eleven of these were other overnight visitors reporting stays of more than seven nights. Fifteen cases reported party sizes greater than seven and two cases reported expenses of more than \$2,000. The spending averages and estimates of overall spending are not influenced significantly by these omissions. (See Appendix B for details).

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. Since sampling included many visitors to the Rendezvous event, these cases were weighted to represent 16% of annual visitors.

Multipliers are derived from an input-output model of the local economy using IMPLAN. The local model was estimated with 2001 IMPLAN county data. Employment estimates were adjusted to 2007 based on changes in sales to employment ratios for each economic sector between 2001 and 2007. 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.

Sorting out the contribution of the park in attracting visitors on multi-purpose or multi-destination trips is inherently difficult. As the park was not the primary reason 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 60% of all visitor spending being attributed to park visits.

REFERENCES

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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. <ul style="list-style-type: none"> ▪ 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 389 cases with valid spending data, and 86 cases reporting zero spending. Zero spenders represented a third of local visitors, 27% of non-local day trips and 16% of other overnight visitors. It was assumed that these cases spent no money related to their park visit in the local area.

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

	Local	Day trip	Motel	Other OVN	Total
Report some spending	67	70	113	139	389
Zero spending ^a	33	26	0	27	86
Total cases	100	96	113	166	475
Percent zero	33%	27%	0%	16%	18%

a. The data file did not distinguish between missing spending data and zeros.

Twenty-eight cases were omitted from the spending analysis. Eleven of these were other overnight visitors reporting stays of more than seven nights. Fifteen cases reported party sizes greater than seven and two cases reported expenses of more than \$2,000. The spending averages and estimates of overall spending are not influenced significantly by these omissions.

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

Segment	With outliers			Without outliers			Pct Error ^a
	Mean	N	Std. Deviation	Mean	N	Std. Deviation	
Local	58	100	105	46	94	102	44%
Day trip	69	96	105	66	92	103	32%
Motel	366	113	383	329	111	265	15%
Other OVN	<u>146</u>	<u>166</u>	<u>174</u>	<u>146</u>	<u>150</u>	<u>176</u>	<u>19%</u>
Total (weighted)	164	475	252	174	447	208	12%

a. Pct errors computed at a 95% confidence level

Appendix C. Impacts of all Visitor Spending, 2007

Table C1 gives the impacts of all \$824,000 in visitor spending on the local economy. All visitor spending in the region except donations is included in this analysis. Impacts including all visitor spending are roughly 70% higher than those reported in Table 8, which counts only spending directly attributable to the park visits.

Table C-1. Impacts of all Visitor Spending on the Local Economy, 2007

Sector/Spending category	Sales \$000's	Jobs	Labor	Value Added \$000's
Direct Effects				
Motel, hotel cabin or B&B	192	4	83	136
Camping fees	35	0	2	6
Restaurants & bars	155	4	56	64
Admissions & fees	49	2	16	27
Local transportation	7	0	4	4
Grocery stores	16	0	6	8
Gas stations	41	0	16	21
Other retail	70	2	31	44
Wholesale Trade	23	1	12	14
<u>Local Production of goods</u>	<u>42</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Direct Effects	629	13	227	322
<u>Secondary Effects</u>	<u>197</u>	<u>3</u>	<u>70</u>	<u>126</u>
Total Effects	826	16	297	448

Appendix D. Comparison of General visitors and those attending the Rendezvous Event

Visitors attending the Rendezvous event were more likely to be local residents or on day trips. Rendezvous visitors arrived in larger parties (3.0 people per party vs 2.6). Rendezvous visitors on day trips from outside the local area spent 50% more than general visitors on day trips. Spending patterns for other segments were not significantly different between general and Rendezvous event visitors. Overall Rendezvous event visitors spent less per trip than general visitors, largely because of the preponderance of local residents and day trips among Rendezvous event visitors.

Table D1. Comparison of Rendezvous and General Visitors by Segment

	Local	Day Trip	Motel	Other OVN	Total
Segment share					
General	5%	15%	34%	45%	100%
Rendezvous	48%	29%	6%	17%	100%
Party size					
General	2.7	2.3	2.6	2.6	2.6
Rendezvous	3.3	2.7	2.8	3.0	3.0
Length of stay					
General	1.0	1.0	2.0	2.5	2.0
Rendezvous	1.0	1.0	1.7	2.8	1.3
Trip Spending (\$ per party per trip)					
General	\$42	\$56	\$330	\$152	\$194
Rendezvous	\$48	\$76	\$321	\$125	\$87
Primary purpose trip					
General		33%	26%	19%	24%
Rendezvous		39%	10%	63%	42%
Number Cases					
General	15	44	100	124	283
Rendezvous	77	47	11	25	160