



Impacts of Visitor Spending on the Local Economy:

Minuteman Missile National Historic Site, 2009



ON THE COVER

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Impacts of Visitor Spending on the Local Economy: *Minuteman Missile National Historic Site, 2009*

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Executive Summary

Minuteman Missile National Historic Site hosted 36,777 recreation visits in 2009. Adjustments for visitor group size and re-entries resulted in 12,085 visitor group trips to the park in 2009. Based on a 2009 Visitor Services Project survey conducted June 15-23, 38% of these visitor group trips were day trips not including an overnight stay in the park or within 30 miles of the park.¹ Thirty-seven percent of the visitor group trips involved an overnight stay in motels, lodges or cabins outside the park, and 18% of visitor group trips were overnight stays in campgrounds outside the park.

Visitors reported their group's expenditures inside the park and within 30 miles of the park. In 2009, the average visitor group size was 3.0 people and spent an average of \$195 in the park and local region. Average spending per visitor group trip was \$38 for visitors on day trips, \$378 for visitors staying in motels or lodges outside the park, and \$214 for visitors camping outside the park. Overall 99% of spending took place outside the park.

Total visitor spending in 2009 in the local region was \$2.4 million including \$23,000 inside the park. The greatest proportions of expenditures were for lodging (40%), restaurant meals and bar expenses (17%), and gas and oil (17%). Overnight visitors staying in motels or lodges outside the park accounted for 72% of total spending, and campers accounted for 20%.

Only 16% 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 trip purpose yields \$1.4 million 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 (IMPLAN) of the local economy. The local region was defined as a three-county region including Jackson, Pennington, and Haakon counties, South Dakota. This region roughly coincides with the 30-mile radius around the park for which spending was reported.

Including direct and secondary effects, the \$1.4 million in visitor spending attributed to the park generates \$1.7 million in sales in the region, which supports 23 jobs. These jobs pay \$531,000 in labor income, which is part of \$916,000 in value added to the region.²

¹ Results in this study sometimes differ from those reported in the VSP study report (Papadogiannaki et al. 2009) because of the omission of cases considered to be outliers in the current analysis. See Study Limitations and Errors section.

² 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). Impacts on the local economy of spending by NPS employees are not included in these results,

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Introduction

Minuteman Missile National Historic Site (NHS) preserves a Minuteman II Intercontinental Ballistic Missile site and illustrates the history and significance of the Cold War. The park became a national historic site in 1999 and is located in Jackson and Pennington counties, South Dakota. Minuteman Missile NHS received 36,777 recreation visits in 2009 (Table 1).

Table 1. Recreation visits, Minuteman Missile National Historic Site, 2009

| Month | Recreation Visits |
|-----------------|--------------------------|
| January | 93 |
| February | 139 |
| March | 291 |
| April | 651 |
| May | 2,395 |
| June | 8,244 |
| July | 11,116 |
| August | 7,803 |
| September | 4,713 |
| October | 961 |
| November | 236 |
| <u>December</u> | <u>135</u> |
| Total | 36,777 |

Source: NPS Public Use Statistics 2009.

The purpose of this study is to estimate the local economic impacts of visitors to Minuteman Missile NHS in 2009. Economic impacts are measured as the direct and secondary sales, income, and jobs in the local region resulting from spending by park visitors.³ (See Appendix A: Glossary for definitions of terms.) The local economic region defined for this study includes Jackson, Pennington, and Haakon counties, South Dakota.

This three-county region of South Dakota has a population of 101,464 (USCB 2010), gross regional product of \$4.4 billion (MIG, Inc. 2008), median household income of \$46,090, and family poverty rate of 10.3% (USCB 2010). Food services and drinking places and federal, state and local governments are the major employers in the region (MIG, Inc. 2008), and the region experienced a 4.7% unemployment rate in 2009 (BLS 2009).

³ The analysis herein does not include impacts on the local economy of spending by NPS employees.

Methods

The economic impact estimates are produced using the Money Generation Model 2 (MGM2) (Stynes et al. 2007). The three main 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 Minuteman Missile NHS Visitor Services Project (VSP) study data (Papadogiannaki et al. 2009), National Park Service Public Use Statistics (2009), 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 study was conducted at Minuteman Missile NHS from June 15-23, 2009 (Papadogiannaki et al. 2009).⁴ The VSP study measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a systematic, random sample of 340 visitor groups. Visitors returned 249 questionnaires resulting in a response rate of 73.2%.

Spending and economic impact estimates for Minuteman Missile NHS are based on the 2009 VSP survey data. Visitors were asked to report expenditures in the park and within 30 miles of the park. The local region for determining economic impact was defined as a three-county area around the park including Jackson, Pennington, and Haakon counties in southwestern South Dakota, which roughly coincides with the 30-mile radius for which visitor spending was reported.

The MGM2 model divides visitors into segments to help explain differences in spending across distinct user groups. Four segments were established for Minuteman Missile NHS visitors based on reported trip characteristics and lodging expenditures:

Day trip: Visitors from outside the local region not staying overnight within the local region.⁵

Motel-out: Visitors reporting motel expenses outside the park within the local region.

Camp-out: Visitors reporting camping expenses outside the park within the local region.

Other overnight (Other OVN): Visitors staying overnight in the local region but not reporting any lodging expenses. This segment includes visitors staying in private homes, with friends or relatives, or in other unpaid lodging.⁶

The VSP survey data was 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.

⁴ Results in this study sometimes differ from those reported in the VSP study report (Papadogiannaki et al. 2009) because of the omission of cases considered to be outliers in the current analysis. See Study Limitations and Errors section.

⁵ No visitors in the sample identified themselves as being from the local region.

⁶ 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, 40% of park entries were classified as day trip visits by visitors from outside the region, and 60% were classified as overnight visits including an overnight stay in the local region (Table 2). The average visitor group size ranged from 2.8 to 3.2 people across the four segments with an average visitor group of 3.0 people.⁷ The average length of stay in the local region on overnight trips was 1.9 nights.

Table 2. Selected visit/trip characteristics by segment, 2009

| Characteristic | Segment | | | | All visitors |
|---------------------------------------|----------|-----------|----------|-----------|--------------|
| | Day trip | Motel-out | Camp-out | Other OVN | |
| Visitor segment share (park entries) | 40% | 35% | 16% | 9% | 100% |
| Average visitor group size | 3.2 | 2.9 | 2.8 | 3.2 | 3.0 |
| Length of stay (days or nights) | 1.0 | 1.9 | 1.9 | 2.2 | 1.9 |
| Re-entry rate (park entries per trip) | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 |
| Percent primary purpose trips | 25% | 11% | 8% | 11% | 16% |

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

The 36,777 recreation visits in 2009 were allocated to the four segments using the visit segment shares in Table 2. Since spending is reported for the stay in the area, park entries were converted to trips to the area by dividing by the average number of times each visitor entered the park during their stay. Park re-entry rates were estimated based on the number of entries into the park reported by survey respondents.

Recreation visits were converted to 12,085 visitor group trips by dividing recreation visits by the average visitor group size and park entry rate for each segment (Table 3). Person trips for each segment are equal to visitor group trips multiplied by average party size. In 2009, there were 21,795 person trips to the park.

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

Table 3. Recreation visits and visitor group trips by segment, 2009

| Measure | Segment | | | | All visitors |
|---------------------------------|----------|-----------|----------|-----------|--------------|
| | Day trip | Motel-out | Camp-out | Other OVN | |
| Recreation visits | 14,598 | 12,985 | 6,049 | 3,145 | 36,777 |
| Visitor group trips | 4,543 | 4,475 | 2,152 | 915 | 12,085 |
| Percent of visitor group trips* | 38% | 37% | 18% | 8% | 100% |
| Person trips | 14,360 | 12,905 | 5,969 | 2,921 | 21,795 |

*Percentages do not total 100% due to rounding.

Visitor Spending

The visitor survey collected data about expenditures of the visitor group inside the park and within 30 miles of the park. Spending averages were computed on a visitor group trip basis for each segment. The average visitor group in 2009 spent \$195 on the trip inside the park and in the local region (Table 4). On a visitor group trip basis, average spending was \$38 for day trips, \$378 for visitors staying in motels, cabins, lodges or B&B's outside the park, and \$214 for those camping outside the park. Visitor groups spent about 99% of their total spending outside the park.

Table 4. Average spending by segment (\$ per visitor group per trip).

| Expenditures | Segment | | | | All visitors* |
|--|--------------|---------------|---------------|--------------|---------------|
| | Day trip | Motel-out | Camp-out | Other OVN | |
| Inside Park | | | | | |
| <u>Souvenirs & other expenses</u> | <u>2.38</u> | <u>1.75</u> | <u>1.33</u> | <u>2.10</u> | <u>1.94</u> |
| Total Inside Park | 2.38 | 1.75 | 1.33 | 2.10 | 1.94 |
| Outside Park | | | | | |
| Motel, hotel, cabin or B&B | .00 | 181.56 | 2.67 | .00 | 67.70 |
| Camping fees | .00 | 2.11 | 57.15 | .00 | 10.96 |
| Restaurants & bars | 7.51 | 68.00 | 30.77 | 5.64 | 33.91 |
| Groceries & takeout food | 2.83 | 14.21 | 21.12 | 3.33 | 10.34 |
| Gas & oil | 12.61 | 47.71 | 54.05 | 4.23 | 32.35 |
| Local transportation | .43 | 13.79 | 2.67 | .12 | 5.75 |
| Admission & fees | 6.19 | 18.94 | 17.01 | 3.33 | 12.62 |
| <u>Souvenirs & other expenses</u> | <u>6.38</u> | <u>29.66</u> | <u>26.91</u> | <u>11.03</u> | <u>19.01</u> |
| Total Outside Park | 35.95 | 375.99 | 212.35 | 27.68 | 192.64 |
| Total Inside & Outside Park | 38.32 | 377.74 | 213.68 | 29.78 | 194.58 |

*Weighted by percent visitor group trips.

The relative standard error at a 95% confidence level for the overall spending average is 17%. A 95% confidence interval for the overall visitor group spending average is therefore \$195 plus or minus \$32 or between \$163 and \$227.

On a per night basis, visitor groups staying in motels or lodges outside the park spent \$201 in the local region, and campers spent \$110. The average reported per night lodging expense was \$97 for motels outside the park and \$29 for camping fees outside the park (Table 5).

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

| Expenditures | Segment | | |
|--|------------------|-----------------|------------------|
| | Motel-out | Camp-out | Other OVN |
| Motel, hotel, cabin or B&B | 96.83 | 1.37 | 0.00 |
| Camping fees | 1.13 | 29.41 | 0.00 |
| Restaurants & bars | 36.27 | 15.84 | 2.53 |
| Groceries & takeout food | 7.58 | 10.87 | 1.49 |
| Gas & oil | 25.45 | 27.82 | 1.90 |
| Local transportation | 7.35 | 1.37 | 0.05 |
| Admission & fees | 10.10 | 8.76 | 1.49 |
| <u>Souvenirs & other expenses</u> | <u>16.76</u> | <u>14.54</u> | <u>5.89</u> |
| Total per visitor group per night | 201.46 | 109.98 | 13.35 |

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. Minuteman Missile NHS visitors spent a total of \$2.4 million in the local region in 2009 (Table 6). Overnight visitors staying in motels outside the park account for 72% of the total spending. Lodging expenses represent 40% of the total spending, and restaurant & bar expenses and gas & oil each represent 17% (Figure 1).

Table 6. Total visitor spending by segment, 2009 (\$000's).

| Expenditures | Segment | | | | All visitors |
|--|-----------------|------------------|-----------------|------------------|---------------------|
| | Day trip | Motel-out | Camp-out | Other OVN | |
| <u>Inside Park</u> | | | | | |
| <u>Souvenirs & other expenses</u> | <u>11</u> | <u>8</u> | <u>3</u> | <u>2</u> | <u>23</u> |
| Total Inside Park | 11 | 8 | 3 | 2 | 23 |
| <u>Outside Park</u> | | | | | |
| Motel, hotel, cabin or B&B | 0 | 812 | 6 | 0 | 818 |
| Camping fees | 0 | 9 | 123 | 0 | 132 |
| Restaurants & bars | 34 | 304 | 66 | 5 | 410 |
| Groceries & takeout food | 13 | 64 | 45 | 3 | 125 |
| Gas & oil | 57 | 214 | 116 | 4 | 391 |
| Local transportation | 2 | 62 | 6 | 0 | 70 |
| Admission & fees | 28 | 85 | 37 | 3 | 153 |
| <u>Souvenirs & other expenses</u> | <u>29</u> | <u>133</u> | <u>58</u> | <u>10</u> | <u>230</u> |
| Total Outside Park | 163 | 1,682 | 457 | 25 | 2,328 |
| Total Inside & Outside Park | 174 | 1,690 | 460 | 27 | 2,352 |
| Segment Percent of Total | 7% | 72% | 20% | 1% | 100% |

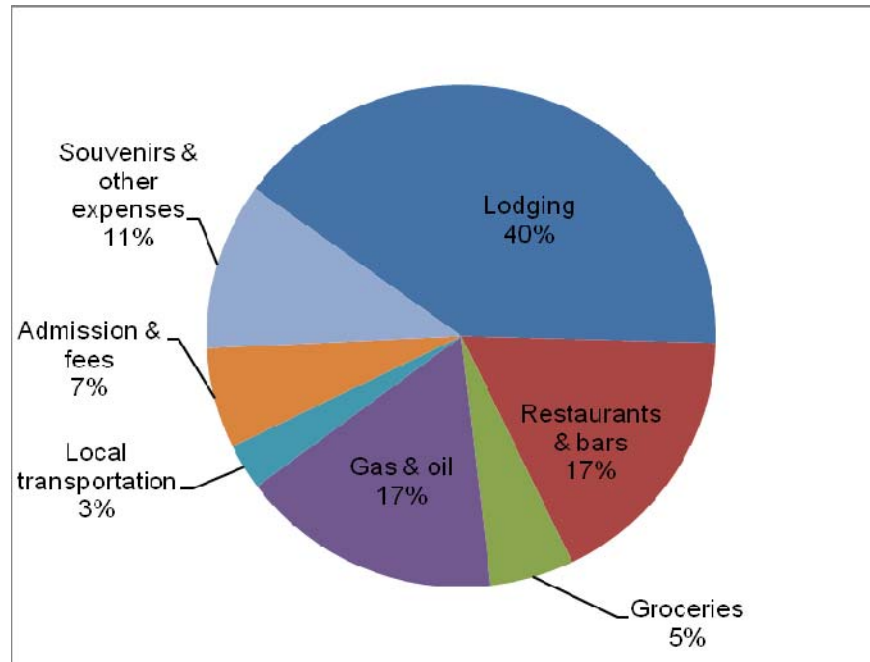


Figure 1. Minuteman Missile National Historic Site visitor spending by category.

Because visitors would come to the region whether or not the park existed, not all visitor spending can be attributed to the park. Eighty-four percent of visitor groups did not make the trip primarily to visit Minuteman Missile NHS. 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 outside the park was counted for day trips. All spending inside the park was treated as park-related spending. With these assumptions, a total of \$1.4 million in visitor spending is attributed to the park visit (Table 7). This represents 58% of the overall visitor spending total.

Table 7. Total spending attributed to park visits, 2009 (\$000's).

| Expenditures | Segment | | | | All visitors |
|--|------------|------------|------------|-----------|--------------|
| | Day trip | Motel-out | Camp-out | Other OVN | |
| Motel, hotel, cabin or B&B | 0 | 476 | 3 | 0 | 479 |
| Camping fees | 0 | 6 | 68 | 0 | 74 |
| Restaurants & bars | 21 | 178 | 37 | 3 | 239 |
| Groceries & takeout food | 8 | 37 | 25 | 2 | 72 |
| Gas & oil | 36 | 125 | 65 | 2 | 227 |
| Local transportation | 1 | 36 | 3 | 0 | 41 |
| Admission & fees | 18 | 50 | 20 | 2 | 89 |
| <u>Souvenirs & other expenses</u> | <u>18</u> | <u>86</u> | <u>35</u> | <u>7</u> | <u>146</u> |
| Total Attributed to Park | 102 | 993 | 257 | 15 | 1,367 |
| Percent of Spending Attributed to the Park | 58% | 59% | 56% | 54% | 58% |
| Percent of Attributed Spending* | 7% | 73% | 19% | 1% | 100% |

*Percentages do not total 100% due to rounding.

Economic Impacts of Visitor Spending

The economic impacts of Minuteman Missile NHS visitor spending on the local economy are estimated by applying visitor spending to a set of economic ratios and multipliers in MGM2 representing the economy of the three county region.⁸ 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.⁹ Employment multipliers were adjusted to take into account price changes from 2008 to 2009 (see Study Limitations and Errors section below).

Not all visitor spending is 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 are applied to visitor spending to account for mark-ups by retailers and wholesalers. The retail margins for the three sectors are 25.3%, 22.3%, and 50.0%, respectively, and the wholesale margins are 12.3%, 8.3%, and 11.4%. In addition, regional purchase coefficients from IMPLAN for all sectors are 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 1.51. Every dollar of direct sales to visitors generates another \$0.51 in secondary sales through indirect and induced effects.¹⁰ (See Appendix A: Glossary for further explanation of terms.)

Impacts are estimated based first on all visitor spending and then based on the visitor spending attributed to the park. Including all visitor spending estimates the overall contribution park visitors make to the local region. Including only visitor spending attributable to the park estimates the impact or contribution the park makes to the economy of the local region.

Using all visitor spending and including direct and secondary effects, the \$2.4 million spent by park visitors generates \$2.9 million in sales, which supports 39 jobs in the local region (Table 8). These jobs pay \$913,000 in labor income, which is part of \$1.6 million in value added to the region.¹¹

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 lodging establishments and restaurants.

⁸ 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.

⁹ See Appendix B: Economic Ratios and Multipliers for the region.

¹⁰ 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.

¹¹ 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, 2009.

| Sector/Expenditure category | Sales (\$000's) | Jobs | Labor Income (\$000's) | Value Added (\$000's) |
|------------------------------------|----------------------------|-------------|-----------------------------------|----------------------------------|
| Direct Effects | | | | |
| Motel, hotel, cabin or B&B | 818 | 12.8 | 265 | 484 |
| Camping fees | 132 | 1.5 | 34 | 69 |
| Restaurants & bars | 410 | 8.3 | 130 | 192 |
| Groceries & takeout food | 32 | 0.6 | 13 | 20 |
| Gas & oil | 87 | 1.2 | 26 | 60 |
| Local transportation | 70 | 1.8 | 28 | 40 |
| Admission & fees | 153 | 1.4 | 29 | 50 |
| Souvenirs & other expenses | 127 | 2.2 | 54 | 81 |
| Wholesale trade | 63 | 0.9 | 19 | 43 |
| <u>Local production of goods</u> | <u>2</u> | <u>0.0</u> | <u>1</u> | <u>1</u> |
| Total Direct Effects | 1,893 | 30.7 | 599 | 1,039 |
| <u>Secondary Effects</u> | <u>962</u> | <u>8.0</u> | <u>314</u> | <u>536</u> |
| Total Effects | 2,855 | 38.6 | 913 | 1,576 |

Note: Impacts of \$2.4 million in visitor spending reported in Table 6.

Using only visitor spending attributable to the park by including only some spending on trips where the primary trip purpose was not to visit Minuteman Missile NHS reduces the overall impacts by about 42% (Table 9; see spending inclusion assumptions in previous section). Including direct and secondary effects, the \$1.4 million spent by park visitors and attributable to the park generates \$1.7 million in sales, supports 23 jobs in the local region. These jobs pay \$531,000 in labor income, which is part of \$916,000 in value added to the region.

Table 9. Economic impacts of visitor spending attributed to the park, 2009.

| Sector/Expenditure category | Sales (\$000's) | Jobs | Labor Income (\$000's) | Value Added (\$000's) |
|------------------------------------|----------------------------|-------------|-----------------------------------|----------------------------------|
| Direct Effects | | | | |
| Motel, hotel, cabin or B&B | 479 | 7.5 | 155 | 283 |
| Camping fees | 74 | 0.8 | 19 | 38 |
| Restaurants & bars | 239 | 4.8 | 76 | 112 |
| Groceries & takeout food | 18 | 0.3 | 8 | 12 |
| Gas & oil | 51 | 0.7 | 15 | 35 |
| Local transportation | 41 | 1.0 | 16 | 23 |
| Admission & fees | 89 | 0.8 | 17 | 29 |
| Souvenirs & other expenses | 73 | 1.3 | 31 | 47 |
| Wholesale trade | 36 | 0.5 | 11 | 25 |
| <u>Local production of goods</u> | <u>1</u> | <u>0.0</u> | <u>0</u> | <u>0</u> |
| Total Direct Effects | 1,101 | 17.9 | 348 | 605 |
| <u>Secondary Effects</u> | <u>560</u> | <u>4.6</u> | <u>183</u> | <u>312</u> |
| Total Effects | 1,661 | 22.5 | 531 | 916 |

Note: Impacts of \$1.4 million in visitor spending attributed to park reported in Table 7.

Study Limitations and Errors

The accuracy of the MGM2 estimates rests on the accuracy of the three inputs: visits, spending averages, and multipliers. Visits are taken from NPS Public Use Statistics (2009). 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 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 times they entered the park.

Spending averages are derived from the 2009 Minuteman Missile NHS VSP visitor survey data (Papadogiannaki et al. 2009). Estimates from the surveys are subject to sampling errors, measurement errors, and potential seasonal/sampling biases. The overall spending averages are subject to sampling errors of 17%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data. In order to estimate spending averages, incomplete spending data was filled with zeros. Visitor groups of more than 8 people (1 case), visiting the local region for more than 7 nights (1 case), or spending greater than \$1,410 (the mean plus two times the standard deviation of the mean for spending, 13 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 one week in June. To extrapolate to annual totals, it was assumed that this sample represented visitors throughout the year.

Multipliers are 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. It was therefore assumed that most multipliers have remained stable through 2009. Employment multipliers were adjusted to take into account price changes. Local job to sales ratios were adjusted from 2008 to 2009 based on the percentage changes in national job to sales ratios between 2008 and 2009 and then adjusted to 2009 based on 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 84% of visitors to Minuteman Missile NHS did not make the trip primarily to visit the park and most spending occurs outside the park, adjustments for non-primary purpose trips have a significant effect on the overall spending and impact estimates.

Literature Cited

- BLS (U.S. Bureau of Labor Statistics). 2009. Local Area Unemployment Statistics. <http://www.bls.gov/lau/>. Data retrieved on January 26, 2011.
- MIG, Inc. 2008. IMPLAN Professional Version 3.0. Minnesota IMPLAN Group: Stillwater, MN.
- National Park Service Public Use Statistics Office. 2009. Visitation Database. <http://www2.nature.nps.gov/stats/>. Data retrieved on August 18, 2010.
- Papadogiannaki, E., N.C. Holmes, D. Eury, and S.J. Hollenhorst. 2009. Minuteman Missile National Historic Site Visitor Study, Summer 2009. Visitor Services Project Report #211 Moscow, ID: National Park Service and University of Idaho, Cooperative Park Studies Unit.
- Stynes, D. J., D.B. Propst, W. Chang, and Y. Sun. 2007. NPS Money Generation Model – Version 2 (MGM2). <http://web4.canr.msu.edu/mgm2/econ/MGM2Y07.xls> (with price indices updated thru 2009).
- USCB (U.S. Census Bureau). 2010. 2005-2009 American Community Survey 5-Year Estimates. <http://www.factfinder.census.gov/>. Data retrieved on January 26, 2011.

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. I.e., $\text{Direct jobs} = \text{direct sales} * \text{jobs to sales ratio}$ $\text{Direct personal income} = \text{direct sales} * \text{personal income to sales ratio}$ $\text{Direct value added} = \text{direct sales} * \text{value added to sales ratio}$ |
| 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 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 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. |

| Term | Definition |
|-------------------|---|
| 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"> • 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. |
| 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 hotel includes wages and salaries paid to employees, their payroll benefits, profits of the hotel, and sales, property, 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. |
| 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: Economic Multipliers and IMPLAN Sectors

Table B1. Economic ratios and multipliers for selected tourism-related sectors, Minuteman Missile NHS region, 2009.

| 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 | 15.66 | 0.32 | 0.59 | 1.29 | 1.53 | 20.36 | 0.49 | 0.88 |
| Camping fees | 11.27 | 0.25 | 0.52 | 1.31 | 1.51 | 15.98 | 0.42 | 0.81 |
| Restaurants & bars | 20.17 | 0.32 | 0.47 | 1.26 | 1.49 | 24.21 | 0.47 | 0.74 |
| Groceries & takeout food | 18.13 | 0.41 | 0.63 | 1.24 | 1.51 | 22.65 | 0.58 | 0.93 |
| Gas & oil | 13.93 | 0.30 | 0.69 | 1.20 | 1.41 | 17.49 | 0.43 | 0.92 |
| Local transportation | 25.11 | 0.40 | 0.57 | 1.15 | 1.41 | 28.87 | 0.54 | 0.81 |
| Admission & fees | 9.01 | 0.19 | 0.33 | 1.38 | 1.56 | 13.75 | 0.36 | 0.64 |
| Souvenirs & other expenses | 19.06 | 0.43 | 0.64 | 1.23 | 1.52 | 23.61 | 0.60 | 0.94 |
| Local production of goods | 6.37 | 0.25 | 0.32 | 1.19 | 1.37 | 9.39 | 0.37 | 0.53 |
| Wholesale trade | 6.65 | 0.37 | 0.64 | 1.22 | 1.48 | 10.98 | 0.53 | 0.92 |

Source: IMPLAN (MIG, Inc. 2008).

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 hotel sector row to illustrate

Direct Effects: Every million dollars in hotel sales creates 15.7 jobs in hotels. Thirty-two percent of hotel sales goes to wages and salaries of hotel employees, and 59% of hotel sales is value added. That means 41% of hotel sales goes to purchase inputs by hotels (e.g., linens, cleaning supplies). The wage and salary income creates the induced effects and the 41% spent on purchases by the hotel starts the rounds of indirect effects.

Multiplier effects: There is an additional 29 cents of indirect sales in the region for every dollar of direct hotel sales (type I sales multiplier = 1.29). Total secondary sales are 53 cents per dollar of direct sales, which means 29 cents in indirect effects and 24 cents in induced effects. An additional 4.7 jobs are created from secondary effects of each million dollars in hotel sales (20.4

total jobs – 15.7 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 hotel sales are 17% (49%-32%), and the secondary effects on value added for each dollar of hotel sales are 29% (88%-59%). Including secondary effects, every million dollar of hotel sales in the region yields \$1.53 million in sales, \$490,000 in income, and \$880,000 in value added.

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

| MGM sector | IMPLAN | | 2007 NAICS |
|----------------------------|---------------|---|---------------------------|
| | No. | Name | |
| Motel, hotel, cabin or B&B | 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 |
| Admission & 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).

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