

Impacts of Visitor Spending on the Local Economy: Dayton Aviation Heritage National Historical Park, 2004



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Executive Summary

Dayton Aviation Heritage NHP (DAAV) hosted 50,569 recreation visits in 2004. Based on the 2004 visitor survey 39% of the visitors are local residents, 27% are visitors from outside the local area not staying overnight within a half hour drive of the park, and 34% are visitors staying overnight in the local area. About half of the overnight visitors (54%) are staying in motels, cabins or B&B's, 8% are camping and 38 % are staying with friends or relatives or other unpaid lodging.

The average visitor party spent \$108 in the local area. Visitors reported expenditures of their group inside the park and within 50 miles of the park. On a party trip basis, average spending in 2004 was \$23 for local residents, \$41 for non-local day trips, \$361 for visitors in motels, \$267 for campers and \$102 for other overnight visitors. On a per night basis, visitors staying in motels spent \$175 in the local region compared to \$89 for campers and \$30 for other overnight visitors. The average per night lodging cost was \$84 per night for motels and \$33 for campgrounds.

Total visitor spending in 2004 within 50 miles of the park was \$2.2 million including \$195,000 spent in the park. Thirty-two percent of the spending was for lodging, 23% restaurant meals and bar expenses, 10% gas and oil and 10% souvenirs including the park gift shop. Overnight visitors staying in motels accounted for 65% of the spending.

Not all of this spending would be lost to the region in the absence of the park. Local residents would likely divert their spending to other activities in the area. The majority of non-local visitors did not come to the area primarily to visit Dayton Aviation Heritage NHP, so only a portion of their expenses can be attributed to the park visit.

Spending directly attributed to the park was estimated by counting all spending for visitors whose primary reason for coming to the area was to visit the park. Half of the spending outside the park was counted for day trips if the trip was not made primarily to visit Dayton Aviation Heritage NHP. The equivalent of one night of spending was attributed to the park visit for overnight trips made primarily to visit other attractions, friends or relatives or on business. All spending inside the park was attributed to the park, while all spending by local residents outside the park was excluded. These procedures yield a total of \$1.22 million in spending attributed to the park, about 55% of the \$2.2 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 the four county area around Dayton, Ohio (Clark, Greene, Miami and Montgomery counties).

Visitor spending in 2004 directly supported 21 jobs in the area outside the park, generating \$369,000 in wages and salaries and \$527,000 in value added. Value added includes wages and salaries as well as profits and rents to area businesses and sales taxes. An additional six jobs are supported through secondary effects. The total impact on the local economy including secondary effects is 27 jobs, \$544,000 in wages and salaries and \$806,000 in value added. Visitor spending supports 8 jobs in hotels and 7 jobs in area restaurants.

Recreation visits declined by about 3% in 2005. This drop was offset by a six percent increase in spending per visitor yielding a nominal increase in total spending of about \$53,000. The park itself employed 27 people in FY 2005 with a total payroll of \$1,023,000. Including secondary effects, the local impact of park operations in 2005 was 39 jobs, \$1.63 million in personal income and \$1.87 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 66 jobs and \$2.68 million value added. Park operations account for 60% of the employment effects and 70% of value added.

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Introduction

The purpose of this study is to document the local economic impacts of visitors to Dayton Aviation Heritage NHP (DAAV) in 2004. 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 Dayton Aviation Heritage NHP 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.

Dayton Aviation Heritage NHP and the Local Region

Dayton Aviation Heritage NHP consists of three units in and around Dayton, Ohio celebrating the aviation accomplishments of the Wright brothers and a fourth unit commemorating African American author Paul Lawrence Dunbar. The park hosted 50,569 recreation visitors in 2004 and 49,100 in 2005 (Table 1).

The local region covers the metropolitan Dayton area, defined to include Clark, Greene, Miami and Montgomery counties in Ohio. This region roughly coincides with the half hour driving distance for which spending was reported in the visitor survey. The four county region had a population of 945,000 in 2004.

Table 1. Recreation Visits to Dayton Aviation Heritage NHP, 2004-2005

| Month | 2004 | 2005 |
|-----------------|---------------|---------------|
| January | 834 | 855 |
| February | 1,058 | 1,667 |
| March | 1,713 | 2,107 |
| April | 4,824 | 4,351 |
| May | 8,771 | 8,836 |
| June | 6,954 | 5,421 |
| July | 7,094 | 6,282 |
| August | 5,652 | 5,170 |
| September | 5,164 | 5,505 |
| October | 5,096 | 5,042 |
| November | 1,603 | 2,100 |
| <u>December</u> | <u>1,806</u> | <u>1,764</u> |
| Total | 50,569 | 49,100 |

Source: NPS Public Use Statistics

Dayton Aviation Heritage NHP Visitor Survey, 2004

A park visitor study was conducted at Dayton Aviation Heritage NHP from July 10-18, 2004 (Manni and Hollenhorst, 2005). The study measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a sample of 373 visitors primarily at three locations¹. Visitors returned 280 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 DAAV visitors.

Most visitors spent less than an hour at the site. Only 24% of non-local visitors came to the area primarily to visit the Dayton Aviation Heritage NHP. Twenty-six percent came to visit friends or relatives in the area, 22% to visit the U.S. Air Force museum, 15% on business and 13% to visit other attractions.

¹ Roughly a third of the surveys were distributed at each of three sites: The Wright Brothers Aviation Center at Carillon Historical Park, Wright Cycle Company Complex, and Huffman Prairie Flying Field Interpretive Center.

MGM2 Visitor Segments

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

Local day users: Day visitors who reside within the local region, defined as a 30 minute drive from the site.

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 30 minute drive of the park

Camp: Visitors staying in private or public campgrounds within a 30 minute drive of the park

Other OVN: Other visitors staying overnight in the area with friends or relatives or not reporting any lodging expenses

The 2004 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. Thirty-nine percent of the visitors are local residents, 27% are visitors from outside the local area not staying overnight within a thirty minute drive of the park, and 34% are visitors staying overnight within a thirty minute drive of the park. About half of the overnight visitors (54%) are staying in motels, cabins or B&B's, 8% are camping and 38% are staying with friends or relatives or other unpaid lodging (Table 2)². The average spending party ranged from 2.5 to 3.1 people across the five visitor segments.

Fifty-two percent of visitors were local residents or indicated that visiting the park was the primary reason for the trip to the area. 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 or with friends and relatives. Only 13% of the motel and 9% of the other OVN segments came to the area primarily to visit the park.

Table 2. Selected Visit/Trip Characteristics by Segment, 2004

| Characteristic | Local | Day trip | Motel | Camp | Other OVN | Total |
|-------------------------------|-------|----------|-------|------|-----------|-------|
| Segment share | 39% | 27% | 19% | 3% | 13% | 100% |
| Average Party size | 2.7 | 2.9 | 2.3 | 2.3 | 2.9 | 2.7 |
| Length of stay (days/nights) | 1.0 | 1.0 | 2.1 | 3.0 | 3.4 | 1.6 |
| Percent primary purpose trips | 100% | 28% | 13% | 33% | 9% | 52% |

Dayton Aviation Heritage NHP hosted 50,569 recreation visitors in 2004. Recreation visits were allocated to the five segments using the segment shares in Table 1.

² These percentages vary slightly from the VSP report (Manni and Hollenhorst. 2005) as some visitors listing motels or campgrounds as lodging types did not report any lodging expenses and are classified here in the other OVN category.

These visits are converted to 18,909 party trips by dividing by the average party size for each segment (Table 3). Total visitor spending is estimated by multiplying the number of party trips of each segment by the average spending estimated in the survey.

Table 3. Recreation Visits and Party Trips by Segment, 2004

| Measure | Local | Day trip | Motel | Camp | Other OVN | Total |
|--------------------|--------|----------|-------|-------|-----------|--------|
| Recreation visits | 19,505 | 13,726 | 9,391 | 1,445 | 6,502 | 50,569 |
| Party visits/trips | 7,229 | 4,808 | 4,000 | 619 | 2,253 | 18,909 |

Visitor spending

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

The average visitor group in 2004 spent \$108 on the trip³. On a party trip basis, average spending was \$23 for local residents, \$41 for non-local day trips, \$361 for visitors in motels, \$267 for campers and \$102 for other overnight visitors (Table 4). On a per night basis, visitors in motels spent \$175 in the local region compared to \$89 for campers and \$30 for other overnight visitors. The average per night lodging cost was \$84 per night for motels and \$33 for campgrounds.

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

| | Local | Day trip | Motel | Camp | Other OVN | All Visitors |
|---------------------------------|--------------|--------------|---------------|---------------|---------------|---------------|
| In Park | | | | | | |
| Admissions | 7.56 | 8.90 | 3.11 | 0.00 | 4.09 | 6.43 |
| Gift shop | 2.26 | 5.64 | 2.72 | 0.00 | 6.91 | 3.80 |
| Donations | 0.35 | 0.36 | 0.04 | 0.00 | 0.57 | 0.31 |
| In Community | | | | | | |
| Motel, hotel cabin or B&B | 0.00 | 0.00 | 174.07 | 0.00 | 0.00 | 32.33 |
| Camping fees | 0.00 | 0.00 | 0.00 | 98.67 | 0.00 | 2.82 |
| Restaurants & bars | 8.08 | 5.68 | 79.80 | 70.00 | 34.86 | 25.96 |
| Groceries, take-out food/drinks | 0.26 | 5.65 | 5.33 | 23.83 | 10.00 | 4.59 |
| Gas & oil | 2.36 | 4.20 | 27.33 | 44.00 | 16.29 | 10.48 |
| Local transportation | 0.00 | 5.64 | 17.61 | 0.00 | 15.00 | 6.73 |
| Admissions & fees | 2.06 | 2.84 | 20.61 | 4.67 | 2.00 | 5.78 |
| Souvenirs and other expenses | 0.39 | 1.70 | 23.46 | 25.83 | 11.91 | 7.24 |
| Donations | 0.14 | 0.30 | 7.22 | 0.00 | 0.29 | 1.51 |
| Grand Total | 23.46 | 40.91 | 361.28 | 267.00 | 101.91 | 107.98 |
| Total in park | 10.17 | 14.90 | 5.87 | 0.00 | 11.57 | 10.54 |
| Total Outside park | 13.29 | 26.01 | 355.41 | 267.00 | 90.34 | 97.44 |

³ The average of \$108 is lower than the \$169 spending average in the VSP report (Manni and Hollenhorst, al. 2005) due to the omission of some outliers and treatment of missing spending data.

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

| | Motel | Camp | Other OVN |
|---------------------------------|---------------|--------------|--------------|
| Spending In Community | | | |
| Motel, hotel cabin or B&B | 84.10 | 0.00 | 0.00 |
| Camping fees | 0.00 | 32.89 | 0.00 |
| Restaurants & bars | 38.56 | 23.33 | 10.18 |
| Groceries, take-out food/drinks | 2.57 | 7.94 | 2.92 |
| Gas & oil | 13.20 | 14.67 | 4.76 |
| Local transportation | 8.51 | 0.00 | 4.38 |
| Admissions & fees | 9.96 | 1.56 | 0.58 |
| Souvenirs and other expenses | 11.33 | 8.61 | 3.48 |
| <u>Donations</u> | <u>3.49</u> | <u>0.00</u> | <u>0.08</u> |
| Grand Total | 174.55 | 89.00 | 29.76 |

The sampling error at a 95% confidence level for the overall spending average is 21%. A 95% confidence interval for the overall spending average is (\$83, \$127). Sampling errors on the averages for individual segments are higher except for the motel segment which has a sampling error of 18%.

Dayton Aviation visitors spent a total of \$2.2 million in the local area in 2004 (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.

Table 6. Total Visitor Spending by Segment, 2004 (\$000s)

| | Local | Day trip | Motel | Camp | Other OVN | All Visitors |
|---------------------------------|--------------|--------------|----------------|--------------|--------------|-----------------|
| In Park | | | | | | |
| Admissions | 54.6 | 42.8 | 12.4 | 0.0 | 9.2 | 119.0 |
| Gift shop | 16.4 | 27.1 | 10.9 | 0.0 | 15.6 | 69.9 |
| Donations | 2.5 | 1.7 | 0.2 | 0.0 | 1.3 | 5.7 |
| In Community | | | | | | |
| Motel, hotel cabin or B&B | 0.0 | 0.0 | 696.3 | 0.0 | 0.0 | 696.3 |
| Camping fees | 0.0 | 0.0 | 0.0 | 61.1 | 0.0 | 61.1 |
| Restaurants & bars | 58.4 | 27.3 | 319.2 | 43.3 | 78.5 | 526.9 |
| Groceries, take-out food/drinks | 1.9 | 27.2 | 21.3 | 14.8 | 22.5 | 87.7 |
| Gas & oil | 17.0 | 20.2 | 109.3 | 27.2 | 36.7 | 210.5 |
| Local transportation | 0.0 | 27.1 | 70.4 | 0.0 | 33.8 | 131.3 |
| Admissions & fees | 14.9 | 13.7 | 82.4 | 2.9 | 4.5 | 118.4 |
| Souvenirs and other expenses | 2.8 | 8.2 | 93.8 | 16.0 | 26.8 | 147.6 |
| <u>Donations</u> | <u>1.0</u> | <u>1.5</u> | <u>28.9</u> | <u>0.0</u> | <u>0.6</u> | <u>32.0</u> |
| Grand Total | 169.6 | 196.7 | 1,445.1 | 165.3 | 229.6 | 2,206.4 |
| Total In park | 73.5 | 71.6 | 23.5 | 0.0 | 26.1 | 194.7 |
| Total Outside park | 96.1 | 125.1 | 1,421.7 | 165.3 | 203.5 | 2,011.7 |
| Segment Percent of Total | 8% | 9% | 65% | 7% | 10% | 100% |

Overnight visitors staying in motels accounted for 65% of the total spending. Over two million was spent outside the park within the local region. Lodging accounted for 32% of the total spending, restaurants and bars 24% and gas and oil 10%.

Not all of this spending would be lost to the region in the absence of the park as many 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 Dayton Aviation Heritage NHP. 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.⁴ All spending inside the park was counted, but all spending by local visitors outside the park was excluded.

These attributions yield a total of \$1.22 million in visitor spending attributed to the park visit, representing about half of the overall visitor spending total. Visitors in motels still account for two thirds of the spending under these attributions (Table 7).

Table 7. Total Spending Attributed to Park Visits, 2004 (\$000s)

| | Local | Day trip | Motel | Camp | Other OVN | All Visitors |
|---|-------------|--------------|--------------|-------------|--------------|-----------------|
| In Park | | | | | | |
| Admissions | 54.6 | 42.8 | 12.4 | 0.0 | 9.2 | 119.0 |
| Gift shop | 16.4 | 27.1 | 10.9 | 0.0 | 15.6 | 69.9 |
| Donations | 2.5 | 1.7 | 0.2 | 0.0 | 1.3 | 5.7 |
| In Community | | | | | | |
| Motel, hotel cabin or B&B | | 0.0 | 383.3 | 0.0 | 0.0 | 383.3 |
| Camping fees | | 0.0 | 0.0 | 33.9 | 0.0 | 33.9 |
| Restaurants & bars | | 35.7 | 175.8 | 24.1 | 27.7 | 263.2 |
| Groceries, take-out food/drinks | | 8.4 | 11.7 | 8.2 | 7.9 | 36.3 |
| Gas & oil | | 13.8 | 60.2 | 15.1 | 12.9 | 102.0 |
| Local transportation | | 7.5 | 38.8 | 0.0 | 11.9 | 58.2 |
| Admissions & fees | | 10.9 | 45.4 | 1.6 | 1.6 | 59.5 |
| Souvenirs and other expenses | | 3.6 | 51.7 | 8.9 | 9.5 | 73.6 |
| Donations | | 0.9 | 15.9 | 0.0 | 0.2 | 17.0 |
| Total Attributed to Park | 73.5 | 152.4 | 806.2 | 91.8 | 97.9 | 1,221.8 |
| Percent of all spending attributed to the park | 43% | 77% | 56% | 56% | 43% | 55% |

⁴ This assumes that these visitors spent an extra night in the area to visit Dayton Aviation Heritage NHP park.

Economic Impacts of Visitor Spending

The economic impacts of Dayton Aviation Heritage NHP 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 1.53. Every dollar of direct sales to visitors generates another \$.53 in secondary sales through indirect and induced effects⁵.

Impacts are estimated based on the visitor spending attributed to the park in Table 7⁶. Including direct and secondary effects, the \$1.22 million spent by park visitors⁷ supports 27 jobs in the area and generates \$1.4 million in sales, \$544,000 in personal income and \$ 806,000 in value added (Table 8). Personal 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..

Table 8. Economic Impacts of Visitor Spending Attributed to the Park, 2004.

| Sector/Spending category | Sales \$000's | Jobs | Personal Income \$000's | Value Added \$000's |
|----------------------------------|------------------|----------|----------------------------|---------------------------|
| Direct Effects | | | | |
| Motel, hotel cabin or B&B | 383 | 8 | 167 | 271 |
| Camping fees | 34 | 0 | 4 | 9 |
| Restaurants & bars | 263 | 7 | 100 | 113 |
| Admissions & fees | 60 | 2 | 22 | 37 |
| Local transportation | 58 | 2 | 28 | 30 |
| Retail Trade | 96 | 2 | 44 | 57 |
| Wholesale Trade | 13 | 0 | 5 | 9 |
| <u>Local Production of goods</u> | <u>5</u> | <u>0</u> | <u>0</u> | <u>0</u> |
| Total Direct Effects | 911 | 21 | 369 | 527 |
| <u>Secondary Effects</u> | <u>486</u> | <u>6</u> | <u>175</u> | <u>279</u> |
| Total Effects | 1,397 | 27 | 544 | 806 |

⁵ Indirect effects result from tourism businesses buying goods and services from local firms, while induced effects stem from household spending of income earned from visitor spending.

⁶ The local economic impact of all \$2.2 million in visitor spending (Table 6) is reported in Appendix C.

⁷ 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.

2005 Update

The spending and impact estimates may be updated to 2005 based on reported recreation visits in 2005. Recreation visits declined slightly in 2005 to 49,100. The visitor segment mix, party sizes and lengths of stay were assumed unchanged from 2004. Spending averages measured in the 2004 visitor survey were price adjusted to 2005 using Bureau of Labor Statistics price indices for each spending category. Spending averages increased by about six percent in 2005 compared to 2004.

In spite of a 3% drop in visits, total visitor spending increased slightly to \$2.26 million in 2005. Spending directly attributed to the park also increased to \$1.29 million (Table 9). Employment and income effects remain roughly the same as in 2004.

Table 9. Update of Spending Estimates to 2005

| | Local | Day trip | Motel | Camp | Other OVN | Total |
|---|-------|----------|-------|------|--------------|-------|
| Average Spending (\$ per party) | | | | | | |
| 2004 | 23 | 41 | 361 | 267 | 102 | 105 |
| 2005 | 25 | 43 | 380 | 284 | 108 | 111 |
| Total Spending (\$000's) | | | | | | |
| 2004 | 170 | 197 | 1,445 | 165 | 230 | 2,206 |
| 2005 | 174 | 201 | 1,476 | 171 | 236 | 2,259 |
| Spending Attributed to the Park (\$000's) | | | | | | |
| 2004 | 74 | 152 | 806 | 92 | 98 | 1,222 |
| 2005 | 78 | 160 | 848 | 98 | 104 | 1,288 |

The park itself employed 27 people in FY 2005 with a total payroll of \$1,023,000. Including secondary effects, the local impact of park operations in 2005 was 39 jobs, \$1.63 million in personal income and \$1.87 total value added. Including both visitor spending and park operations, the total impact of the park on the local economy in 2005 was 66 jobs and \$2.68 million value added. Park operations account for 60% of the employment effects and 70% 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 2004 Dayton Aviation Heritage NHP 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 20%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data (See Appendix B for more detail). Of the 280 respondents to the survey, 26 cases reported zero spending and 52 cases did not complete the spending question at all. Many other cases only filled in some spending categories. 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. About a third of local visitors, day trips and visitors staying with friends or relatives reported zero or no spending.

Dropping the 19% of cases with missing spending data instead of treating them as zeros would increase the overall spending average from \$108 to \$136. This change would increase spending totals and impacts by about 25%.

The small samples make the spending averages sensitive to outliers. Five cases reporting spending of more than \$1,000 were dropped in computing the spending averages. Another 12 cases involving large parties and one case staying more than seven nights were also omitted, yielding a final sample of 262 cases for the spending analysis⁸. The overall spending average was \$108 omitting outliers compared to \$135 with outliers.

Although sample sizes are small for most segments, the spending averages are consistent with those at other historical sites. Estimated nightly room and campsite rates are also reasonable for the area. 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. Visits are taken from NPS public use statistics.

More problematic than the errors in visits, spending or multipliers is sorting out how much of the spending to attribute to the park. As the park was not the primary motivation for the trip to the region for most visitors, much 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 half of all visitor spending being attributed to park visits.

⁸ 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.

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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 202 cases with valid spending data, 27 cases reporting zero spending and 52 cases not completing the spending question. The majority of cases with no spending data were local residents or 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 | Other OVN | Total |
|-----------------------|-----------|----------|----------|----------|-----------|-----------|
| Report some spending | 69 | 53 | 52 | 8 | 20 | 202 |
| Missing spending data | 22 | 16 | 0 | 0 | 14 | 52 |
| <u>Zero spending</u> | <u>17</u> | <u>7</u> | <u>0</u> | <u>0</u> | <u>2</u> | <u>26</u> |
| Total cases | 108 | 76 | 52 | 8 | 36 | 280 |
| Percent zero | 16% | 9% | 0% | 0% | 6% | 9% |
| Percent missing | 20% | 21% | 0% | 0% | 39% | 19% |

Five cases reporting spending more than \$1,000 were dropped when computing spending averages. Another 12 cases involving large parties and one case staying more than seven nights were also omitted, yielding a final sample of 262 cases for the spending analysis. The overall spending average is \$108 omitting outliers compared to \$136 with outliers. The outliers primarily affect the motel and camper spending averages.

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 | 29 | 108 | 53 | 23 | 106 | 48 | 39% |
| Day trip | 40 | 76 | 82 | 41 | 69 | 83 | 48% |
| Motel | 470 | 52 | 452 | 361 | 46 | 230 | 18% |
| Camp | 425 | 8 | 335 | 267 | 6 | 124 | 37% |
| <u>Other OVN</u> | <u>112</u> | <u>36</u> | <u>196</u> | <u>102</u> | <u>35</u> | <u>187</u> | <u>61%</u> |
| Total | 136 | 280 | 280 | 108 | 262 | 180 | 20% |

a. Pct errors computed at a 95% confidence level

Appendix C. Impacts of all Visitor Spending, 2004

Table C1 gives the impacts of \$2.2 million in visitor spending on the local economy. All visitor spending in the region except park admissions and donations is included in this analysis. Impact estimates are roughly double those reported in Table 6.

Table C-1. Impacts of all Visitor Spending on Local Economy, 2004

| Sector/Spending category | Sales \$000's | Jobs | Personal Income \$000's | Value Added \$000's |
|-----------------------------|------------------|-----------|-------------------------------|---------------------------|
| Direct Effects | | | | |
| Motel, hotel cabin or B&B | 696 | 14 | 303 | 493 |
| Camping fees | 61 | 0 | 7 | 17 |
| Restaurants & bars | 527 | 15 | 200 | 225 |
| Admissions & fees | 118 | 3 | 44 | 74 |
| Local transportation | 131 | 5 | 63 | 69 |
| Retail Trade | 178 | 4 | 82 | 107 |
| Wholesale Trade | 25 | 0 | 10 | 17 |
| Local Production of goods | <u>10</u> | <u>0</u> | <u>0</u> | <u>1</u> |
| Total Direct Effects | 1,747 | 41 | 708 | 1,002 |
| Secondary Effects | <u>932</u> | <u>11</u> | <u>335</u> | <u>536</u> |
| Total Effects | 2,679 | 52 | 1,043 | 1,537 |