

Impacts of Visitor Spending on the Local Economy: Valley Forge National Historical Park, 2001

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Executive Summary

Valley Forge National Historical Park hosted 1.23 million recreation visits in 2001. Park visitors spent \$33.3 million dollars within an hour's driving distance of the park, generating \$10.4 million in direct personal income (wages and salaries) for local residents and supporting 713 jobs in the area.

Economic impacts were estimated with the updated National Park Service Money Generation Model (Version 2). The MGM2 model uses park visitation data, spending averages from the 2001 Valley Forge NHP Visitor Survey and MGM2 multipliers to estimate spending, income and jobs attributable to the park. In 2001, Valley Forge NHP hosted 1.23 million recreation visits which equated to 0.40 million party trips to the local area (Table E1). The three largest segments in terms of party trips were local day visitors (70%), day visitors from outside the area¹ (15%), and visitors staying overnight in motels outside the park (14%). Park visitors accounted for about 119,000 room nights in area motels and 14,500 camping nights outside the park.

Table E1. Valley Forge NHP visits and spending by segments, 2001

Lodging segment	Party trips (000's)	Party nights (000's)	Average spending (per party night)	Total spending (million's)	Pct of spending
Local day visitor	276	276	\$25	\$6.8	20%
Non-local day visitor	59	59	\$38	\$2.3	7%
Motel-Out visitor	55	119	\$193	\$23.0	69%
<u>Camp-Out visitor</u>	<u>4</u>	<u>15</u>	<u>\$88</u>	<u>\$1.3</u>	<u>4%</u>
Total	394	469	\$71	\$33.3	100%

On average, park visitors spent around \$71 per party per day in the local area with spending varying considerably across four lodging segments — from \$193 per night for visitors staying in area hotels to \$25 for local day visitors. Visitors staying in hotels contributed 69% of the total park visitor spending, followed by local day visitors (20%). The majority of the visitor spending went to the lodging sector (\$12.3 million), followed by restaurants (\$8.1 million) and retail trade (\$4.7 million).

The sales multiplier for the region was 1.46, meaning that an additional \$0.46 in sales is generated through secondary effects for every dollar of direct sales (Table E2). Secondary effects generated an additional 189 jobs, about \$4.9 million dollars in personal income and \$8.4 million in value added as visitor spending circulates through the local economy.

¹ Visitors staying with friends and relatives or an owned seasonal home in the area are treated as non-local day visitors

Table E2. Economic impacts of Valley Forge NHP visitor spending, 2001

Sector/Spending category	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
Direct Effects				
Motel, hotel cabin or B&B	12,280	267	4,005	6,087
Camping fees	321	7	105	159
Restaurants & bars	8,091	231	2,756	3,839
Admissions & fees	2,573	76	890	1,457
Other vehicle expenses	11	0	3	5
Local transportation	1,199	33	679	800
Retail Trade	3,311	91	1,689	2,638
Wholesale Trade	506	6	204	348
<u>Local Production of goods</u>	<u>601</u>	<u>2</u>	<u>49</u>	<u>97</u>
Total Direct Effects	28,894	713	10,381	15,429
<u>Secondary Effects</u>	<u>13,407</u>	<u>189</u>	<u>4,859</u>	<u>8,392</u>
Total Effects	42,301	902	15,240	23,821
Multiplier	1.46	1.27	1.47	1.54

Valley Forge National Historical Park is located within a short distance of Philadelphia or an hour's driving distance to Allentown, Reading and Lancaster. The park attracts a mix of local visitors who make frequent visits, day and overnight trips from outside the local area, and visitors stopping en route to other destinations. Visitors staying overnight in the local area generate the greatest economic impact. The economic impacts of the park are best seen within the broader regional tourism context. Therefore, cooperative research and marketing activity with tourism partners in the region are encouraged.

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Impacts of Visitor Spending on Local Economy: Valley Forge National Historical Park, 2001

Introduction

The purpose of this study is to document the local economic impacts of visitors to Valley Forge National Historical Park (VAFO) in 2001. 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 Valley Forge National Historical Park 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.

Valley Forge National Historical Park

Valley Forge National Historical Park was created in 1976 to commemorate the collective sacrifices and dedication of the Revolutionary War during the winter encampment of 1777-78. The park is located about 20 miles northwest of Philadelphia or an hour driving distance to Allentown, Reading and Lancaster. Interstate Highway 76 bypass Valley Forge NHP where it connects Pennsylvania and New Jersey. Out of state visitors accounted for half of the park summer visitors. They mainly come from New Jersey, New York and Ohio (Simmons and Littlejohn, 2001). The park also draws a high percentage of repeat visitors (70%), many of which live nearby.

There is no lodging or camping facilities offered inside the park. A three-dollar entrance fee is collected from April 1st to November 30th for Washington's Headquarters for adults 17 and older.

Total recreation visit to Valley Forge NHP was 1,230,025 in 2001 (Table 1). The peak time of park visitation is from April to August, averaging 150,000 recreation visits each month. In 2001, thirty-seven percent of total recreation visits were reported during the summer season, from June to August.

Table 1. NPS Public Use Data for Valley Forge NHP, 2001

Month	Recreation visits	Pct of recreation visits
January	38,687	3%
February	53,070	4%
March	89,407	7%
April	121,707	10%
May	154,832	13%
June	149,684	12%
July	175,661	14%
August	126,872	10%
September	96,489	8%
October	97,734	8%
November	77,025	6%
<u>December</u>	<u>48,857</u>	<u>4%</u>
Totals	1,230,025	100%

Source: NPS Public Use Statistics (2002)

The Region

Valley Forge NHP is located at Chester County, southeast Pennsylvania (Figure 1). The population of Chester County in 2000 was 433,501 with an average income per capita of \$46,757. Total personal income was \$20.4 billion, and total full-time and part-time employment was 285,209 jobs (Bureau of Economic Analysis, 2002). The services sector was the primary economic base of Chester County (Table 2). It accounts for 30% of total personal income and 35% of total jobs. The restaurant sector generated \$172 million in personal income in 2000, followed by amusement and recreation service (\$54 million), and the lodging sector (\$32 million).



Figure 1. Valley Forge NHP, PA

Table 2 Economic activity by sectors in Chester County, PA, 2000

	Earnings by place of work (\$ million)	Pct of total earnings	Jobs
Farm	130	1%	6,002
Agriculture, fishing and forestry	111	1%	5,409
Mining	24	0%	320
Construction	759	6%	16,066
Manufacturing	2,585	20%	33,074
Transportation & Communication	657	5%	12,528
Wholesale Trade	983	7%	14,253
Retail Trade	1,107	8%	42,374 ^a
Eating & Drinking Establishment	172	1%	10,074
Finance	1,987	15%	33,921
Services	3,910	30%	100,166
Hotels	32	0%	1,208 ^a
Amusements	54	0%	2,480 ^a
<u>Govt, Education</u>	<u>916</u>	<u>7%</u>	<u>21,096</u>
Total	13,170	100%	285,209

a: The employment number did not include proprietors.

Source: Bureau of Economic Analysis, 2002 and Bureau of Labor Statistics, 2002

Valley Forge National Historical Park Visitor Survey, 2001

A park visitor study was conducted at Valley Forge NHP from August 11th to 19th, 2001. The study measured visitor demographics, trip planning, travel expenditures, and facility importance and quality. Questionnaires were distributed to a sample of 755 visitors at six locations inside the park². Visitors returned 550 questionnaires for a 72.8% response rate. See Simmons and Littlejohn (2001) for survey details. For this economic report, we carried out custom analyses of visitor spending and trip characteristics measured by the survey. Some results here will vary from the original VSP report due to handling of outliers and adjustments for off-season visitors.

MGM2 Visitor Segments

MGM2 divides visitors into segments to help explain differences in spending across distinct user groups. Overnight visitors were distinguished from day visitors based on the lodging type reported in the Valley Forge NHP Visitor Survey questionnaire. Day visitors were divided into two groups depending on the visitor's ZIP code to identify local and non-local visitors. Four lodging segments were established for Valley Forge NHP visitors:

² Questionnaires were distributed proportionally at Betzwood Picnic Area (24%), Visitor Center (22%), Washington's Headquarters (20%), Pawling's Parking Area (11%) and National Memorial Arch (11%).

Local day users: Day visitors who reside within an hour driving distance (within 50 miles of the park).

Non-local day users: Visitors from outside the region, not staying overnight in the area. This includes day trips and pass-through travelers. Visitors staying with friends/relatives or at an owned seasonal home in the area are also included in this category.

Motel-out: Visitor staying in motels, cabins, B&B's etc. outside the park within the region

Camp-out: Visitors staying in private or other public campgrounds outside the park within the region.

A recreation visit is the count of one person entering the park. Spending depends on how long visitors stay in the area rather than how many times they enter the park or how much time they spend inside the park. Recreation visits are therefore converted to party days/nights in the region before applying spending averages. This avoids double counting spending of visitors who may enter the park multiple times on the same day and also takes into account additional days a visitor may spend in the area outside the park.

Recreation visits are converted to party nights³ as follows:

Party entry to the park = recreation visits / party size

Party trip to the park = party entry/ re-entry rate

Party nights in the area = party trip* length of stay in the area

Distinct re-entry rates, party sizes and length of stay factors were estimated for each segment using the 2001 Visitor Survey data (Table 3). The party size ranged from 2.2 to 3.8⁴. Overnight visitors re-entered the park around 1.2 times during their stay. Total party nights and spending are sensitive to the length of stay and re-entry factors. Lengths of stay indicate how many nights of spending will be counted for each visitor. Re-entry factors correct for multiple counting of the same visitors.

Table 3 Valley Forge NHP visit conversion parameters by lodging segments

	Local day visitor	Non-local day visitor	Motel-Out	Camp-Out
Length of stay in the region	1.00	1.00	2.17	3.40
Party size	2.22	2.68	3.07	3.80
Re-entries	1.00	1.00	1.27	1.20
Number of cases	220	64	110	5

Using these conversion parameters, 1.23 million recreation visits were converted to 410,000 vehicle entries or 394,000 party-trips to the area (Table 4). Local residents accounted for 70% of the 394,000 party trips to the park; day trips from outside the region accounted for 15%

³ A party night is a travel group staying one night in the area. The travel group is usually all individuals in the same vehicle or staying in the same room or campsite. For day trips, estimates are in party days.

⁴ Cases with party size larger than 8 persons are excluded.

(Figure 2)⁵. We estimate that park visitors contributed about 119,000 room nights within 50 miles of the park and about 14,500 campsite nights outside the park in 2001.

Table 4. Visit measures for Valley Forge NHP by segment, 2001

Segment	Local day	Non-local day	Motel-Out	Camp- Out	Total
Vehicle entries	275,935	59,129	69,821	5,123	410,008
Party trips	275,935	59,129	54,860	4,269	394,193
Party nights	275,935	59,129	119,124	14,515	468,703
Pct of vehicle entries	67%	14%	17%	1%	100%
Pct of party trips	70%	15%	14%	1%	100%
Pct of party nights	59%	13%	25%	3%	100%

Visitor spending

Spending averages were estimated from the Valley Forge NHP Visitor Survey. Spending averages were computed on a party trip basis for each segment and then converted to a party night basis by dividing by the average length of stay. The survey covered expenditures that occurred within an hour driving distance or around 50-mile distance to the park. Spending averages per party per night by segment are shown in Table 5.

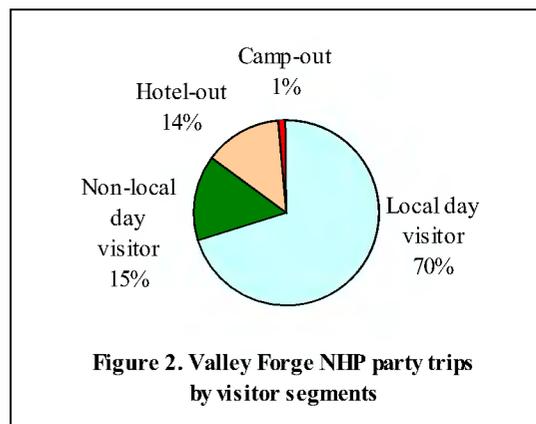


Table 5. Visitor spending by lodging segments in local area (\$ per party day)

Spending Category	Local day	Non-local day	Motel-Out	Camp-Out ^a
Motel, hotel cabin or B&B	0.00	0.00	103.08	0.00
Camping fees	0.00	0.00	0.00	22.13
Restaurants & bars	7.16	10.59	44.58	12.35
Groceries, take-out food/drinks	3.19	2.87	3.75	9.28
Gas & oil	3.34	5.00	9.16	10.61
Local transportation	0.41	1.62	8.28	1.03
Admissions & fees	4.18	4.33	8.10	13.67
Souvenirs and other expenses	6.31	13.94	15.74	19.23
Total	24.58	38.35	192.69	88.30

a: Due to a small sample size in VSP survey, the MGM2 generic medium park spending profile is used.

⁵ Segment shares were adjusted based on the information provided by the park.

Local day visitors spent around \$25 per party per day for the visit to the park while non-local day visitors spent around \$38. Visitors staying at hotel, cabin and B&B spent around \$193 per night per party with a corresponding room rate of \$103. Due to a small number of campers sampled in the survey, the MGM2 generic camper spending profile is used here. We estimate that campers would spend \$88 per party per day in the region.

Total visitor spending is calculated by multiplying the number of party-nights in Table 4 by the spending averages in Table 5. The calculations are carried out segment by segment, summing across the seven segments to obtain the total. Visitors to Valley Forge NHP in 2001 spent \$33.3 million in the local area (Table 6). Visitors spent \$12.3 million on motel/hotel rooms, \$8.1 million on restaurant meals, and \$4.7 million on souvenirs. Groups staying in area motels contributed about 69 percent (\$23 million) of the total spending to the region followed by local day visitors (20%), and non-local day visitors (7%).

Table 6. Total spending of Valley Forge NHP visitors in 2001 (\$000's)

Spending category	Local day visitor	Non-local day visitor	Hotel-out	Camp-out	Total	Percent
Motel, hotel cabin or B&B	0	0	12,280	0	12,280	37%
Camping fees	0	0	0	321	321	1%
Restaurants & bars	1,975	626	5,311	179	8,091	24%
Groceries, take-out food/drinks	880	170	447	135	1,631	5%
Gas & oil	921	296	1,091	154	2,461	7%
Local transportation	113	96	986	15	1,211	4%
Admissions & fees	1,153	256	965	198	2,573	8%
<u>Souvenirs and other expenses</u>	<u>1,740</u>	<u>824</u>	<u>1,875</u>	<u>279</u>	<u>4,718</u>	<u>14%</u>
Total	6,782	2,267	22,954	1,282	33,286	100%
Percent	20%	7%	69%	4%	100%	
Number of cases	220	64	110	5	339	

D.K. Shifflet & Associates estimates the total tourist spending on trips of 50 miles or more for Chester County to be \$508 million in 2000 (D.K. Shifflet & Associates, 2002). If accurate, this would put park visitor spending (omitting locals) at about 5% of all tourist spending in the county. If we omit airfares, which appear to be included in the D.K. Shifflet estimate and also adjust for D.K. Shifflet's somewhat inflated spending averages⁶, the park's percent of tourist spending in the county is more likely near 10%.

⁶ D.K. Shifflet's per person per day spending average for day trips to PA is \$80, which would equate to \$200 per party for an average party size of 2.5. This figure is more than double day trip spending from most other sources. A high percentage of spending in the transportation category suggests that airfares were included in the D.K. Shifflet figures.

Economic Impacts of Visitor Spending

The \$33.3 million spent by Valley Forge NHP visitors had a direct economic impact on the region of \$28.8 million in direct sales, \$10.4 million in personal income (wages and salaries), \$15.4 million in value added, and supported 713 jobs in the region⁷ (Table 7). The lodging sector received the largest amount of direct sales (\$12.3 million), followed by restaurants (\$8.1 million) and the retail trade sector (\$3.3 million).

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding Valley Forge NHP captures 87% of visitor spending. Thirteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors⁸.

The sales multiplier for the region was 1.46, meaning that an additional \$0.46 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generated an additional 189 jobs, about \$4.9 million in personal income and \$8.4 million in value added.

Table 7. Economic impacts of Valley Forge NHP visitor spending, 2001

Sector/Spending category	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
Direct Effects				
Motel, hotel cabin or B&B	12,280	267	4,005	6,087
Camping fees	321	7	105	159
Restaurants & bars	8,091	231	2,756	3,839
Admissions & fees	2,573	76	890	1,457
Gambling	0	0	0	0
Other vehicle expenses	11	0	3	5
Local transportation	1,199	33	679	800
Retail Trade	3,311	91	1,689	2,638
Wholesale Trade	506	6	204	348
Local Production of goods	601	2	49	97
Total Direct Effects	28,894	713	10,381	15,429
Secondary Effects				
	<u>13,407</u>	<u>189</u>	<u>4,859</u>	<u>8,392</u>
Total Effects	42,301	902	15,240	23,821
Multiplier	1.46	1.27	1.47	1.54

⁷ MGM2 "small metro" multipliers were used for the region around the park.

⁸ For example, if a visitor buys \$50 dollars worth of clothing at a local store, the store receives the retail margin (assume \$20 dollars), the wholesaler or shipper (if local) may receive \$5 dollars, and the remaining producer price of the clothing (\$25 dollars) leaks immediately outside the local economy, unless the clothing is manufactured in the local region.

Study Limitations and Error

The accuracy of the MGM2 estimates rests on the three inputs: visits, spending averages, and multipliers. Multipliers are based on input-output models for regions similar to Chester county, PA. The MGM2 generic “small metro” multipliers were selected. Visits and spending averages are derived from the 2001 Valley Forge NHP Visitor Survey, adjusted where possible for seasonality and other expected biases.

The Valley Forge NHP Visitor Survey was conducted during a single 10-day period at selected locations during August, 2001. Several adjustments were made to the VSP survey results to correct for likely sampling biases and to better represent year-round visitation. First, the segment shares for locals and overnight visitors were adjusted based on information provided by Valley Forge NHP personnel. Second, spending averages were adjusted to reflect lower prices, smaller parties and shorter stays during the off-season⁹.

The sampling errors on the average spending per party night were 6% overall and ranged from 6 to 31% for individual segments¹⁰. Our analysis omitted cases with spending more than \$1000 per day and cases with missing values on all spending categories.

Depending on the direction and magnitude of errors in visits, spending, and multipliers, errors may compound or cancel each other. The most important potential errors are in the estimates of visits by segment. As the model is linear, doubling visitors will double spending and impacts. Errors in other parameters, such as re-entry rate, length of stay and party size, would also directly translate into errors in party nights, which is multiplied by the spending averages. Using a 95% confidence interval on the spending averages and 2001 park visitation, the park visitor spending is estimated to be between \$29.3 million and \$37.1 million in 2001.

In addition to these statistical issues, there are also conceptual issues regarding how much and which spending the park may claim. Local visitors are often excluded in estimating economic impacts. Since they are a distinct segment, their contribution to the totals is readily estimated and subtracted from totals, as desired. Locals accounted for about \$6.8 million or 20% of overall visitor spending. If these visitors would have gone outside the region in the absence of the park, the spending would be lost to the region. If instead they would make use of other local parks, the associated spending would not be lost.

Visitors whose primary trip purpose was not to visit the park should also be omitted or the portion of their spending attributed to the park reduced. Our approach was conservative here, counting only one day’s worth of spending for visitors whose primary trip purpose was visiting friends/relatives or staying at seasonal homes. The VSP study measured spending within 100 miles of the park. This is a larger area than we typically use in the eastern U.S. for park impact studies. This radius would capture considerable spending of visitors made outside Chester county and correspondingly treats residents of this larger area as “local visitors”. If the impact region were just Chester county, less spending would be included and multipliers would be smaller, but

⁹ Hotel nightly room fee is reduced by 5%, around \$5 dollars.

¹⁰ The sampling error of spending average depends on the number of cases sampled and the variation in the sample. A small number of samples will typically introduce a larger sampling error.

some visitors currently classified as “local” would then be treated as non-local, with their spending then representing “new dollars” to the Chester county economy.

Summary and Discussion

Visitors to Valley Forge NHP spent \$33 million within a 100-mile radius of the park in 2001. The total economic impact of visitor spending was \$28.9 million in direct sales, \$10.4 million in personal income, \$15.4 million in direct value added and 713 jobs. With multiplier effects, created by the re-circulation of money spent by tourists, visitor spending generated a total of \$42.3 million in local sales, and an associated \$15.2 million in personal income, \$23.8 million in value added and 902 jobs. Sectors receiving the greatest direct benefit from the park visitors were hotels (\$12.3 million in direct sales), restaurants (\$8.1 million), and retail trade (\$3.3 million). We estimate that park visitor spending accounts for about 10% of all tourist spending in the county.

The overall MGM2 economic impact estimates provide a quantitative picture of the role the park plays in the region’s economy. An understanding of the park’s economic significance is helpful in garnering support among local partners to help preserve the park and also to better serve both the visitor and the surrounding communities. The MGM2 model can also be used to evaluate alternative management, development and marketing decisions. For example, the marginal economic impacts of particular visitor segments can be useful for evaluating particular marketing and development policies both within and outside the park. Table 8 shows the changes in sales, jobs, income and valued added associated with an increase or decrease of one thousand additional party-nights by each visitor segment.

To evaluate the regional economic impacts of adding an additional 10 rooms, for example, to an area hotel, first compute the change in party nights – 10 rooms occupied 100 nights yearly yields 1,000 extra party nights. Applying the marginal impacts for the “Motel” segment in Table 8, the expansion generates an additional \$178,100 dollars in direct sales in the region, \$62,600 in personal income, \$92,300 in value added and 4.3 direct jobs. The impact of this alternative could be compared to others such as expanding campsites, a marketing campaign to increase day trips, etc.

Table 8. Direct impacts of an additional 1,000 party nights by lodging segments, Valley Forge NHP, 2001

Segments	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
(Marginal Impacts per 1,000 party-nights)				
Local day user	18.3	0.5	6.9	10.5
Non-local day user	27.7	0.7	11.1	16.6
Motel	178.1	4.3	62.6	92.3
Camper	68.5	1.7	24.8	38.2

The economic impacts presented in this report document the economic significance of 1.23 million recreation visits to Valley Forge NHP in 2001. The impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, and other changes in the park and surrounding communities. The MGM2 model has built-in procedures to price adjust spending averages over time, so updated figures may be obtained fairly easily, if there are not significant changes in visitor use and spending patterns. In the absence of significant structural changes in the local economy, multipliers will be quite stable. So the primary input for updating the estimates are visit estimates, which must take into account any changes in the mix of visitors or their length of stay in the area.

Suggested research to further refine the spending and impact estimates would include (1) surveys of off-season park visitors to round out the profile provided by the VSP study of summer visitors; (2) general surveys of visitors to the region in cooperation with local tourism organizations to understand the role of the park in the regional tourism picture.

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Appendices

Appendix A: Definition of Terms in the MGM2 Model

Terms	Definition
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in their region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions.
Personal income	Wage and salary income, proprietor's income and employee benefits.
Value added	Personal income plus rents and profits and indirect business taxes. As the name implies, it is the value added by the region to the final good or service being produced. It can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production.
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 capture the sum of indirect and induced effects.
Indirect effects	Changes in sales, income and jobs from industries that supply goods and services to the business 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 the income earned 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 business in the area ▪ Indirect effects accrue to a broader set of economic sectors that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of economic sectors.
Marginal impacts	Economic impacts created by per additional visitors or dollars spent.