



Impacts of Visitor Spending on the Local Economy

Pinnacles National Park, 2013

Natural Resource Report NPS/NRSS/EQD/NRR—2014/826



ON THE COVER

Visitors at Pinnacles National Park
Photograph by Park Studies Unit staff

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Executive Summary

Pinnacles National Park hosted 231,126 recreation visits in 2013. Adjustments for visitor group size resulted in 71,365 visitor group trips to the park in 2013. Based on a 2013 Visitor Services Project survey conducted April 5–11, 74% of these visitor group trips were made by local residents or non-locals on day trips, not including an overnight stay within 50 miles of the park.¹ Twelve percent of visitor group trips involved an overnight stay in a lodge, hotel, motel, cabin, B&B, etc. in the local area, and 7% were overnight camping stays in the park or local area. Seven percent of visitor group trips were overnight stays in non-paid lodging, such as private homes.

Visitors reported their group's expenditures in the park and within 50 miles of the park. Visitor groups spent an average of \$67 on their trips. Eighty-two percent of visitor spending took place in the area outside the park.

Total visitor spending in 2013 in the park and within 50 miles of the park was \$4.8 million. The greatest proportion of expenditures was for overnight accommodations (32%). Overnight visitors staying in a lodge, hotel, motel, cabin, B&B, etc. in the local area accounted for 47% of total spending.

Eighty-five percent of visitor groups indicated that visiting the park 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 reason for the trip yields \$4.2 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 of the local economy. The local region was defined as a two-county area around the park including San Benito and Monterey counties in California. This region roughly coincides with the 50-mile radius around the park for which expenditures were reported.

Including direct and secondary effects, the \$4.2 million in visitor spending attributed to the park generated \$4.3 million in direct sales in the region, which supported 42 jobs. These jobs paid \$1.6 million in labor income, which was part of \$2.6 million in value added to the region.²

A separate study estimated impacts of the park employee payroll on the local economy³ and the results are reported herein. The park itself employed 48 people in FY 2010 with a total payroll including benefits of \$3.1 million. Including secondary effects, the local impacts of the park payroll in FY 2010 were \$1.2 million in sales, supporting 56 jobs, \$3.5 million in labor income, and \$3.9 million in value added.

Local Economic Impacts of Pinnacles National Park

	<u>Sales</u>	<u>Jobs</u>	<u>Labor Income</u>	<u>Value Added</u>
Park Visitor Spending	\$4.3M	42	\$1.6M	\$2.6M
<u>Park Payroll</u>	<u>+ \$1.2M</u>	<u>+56</u>	<u>+ \$3.5M</u>	<u>+ \$3.9M</u>
Park Visitor Spending + Payroll	\$5.5M	98	\$5.1M	\$6.5M

¹ Results in this study sometimes differ from those reported in the VSP study report (Littlejohn et al. 2014) 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).

³ Stynes (2011).

Introduction

Pinnacles National Park (NP) protects a mountainous area of the Gabilan Range located east of the Salinas Valley in central California. The 26,606-acre park was established as a national monument in 1908 and became a national park in 2013. The park is located in San Benito and Monterey counties of California.

Pinnacles NP received 231,126 recreation visits in 2013, including 14,784 overnight stays. The greatest number of visitors arrive between March and May, when cooler temperatures and blooming wildflowers draw visitors to the park (NPS 2014). A visitor study in April 2013 found hiking/walking, viewing wildflowers, and viewing scenery/sightseeing/scenic drive to be the most common activities of visitors (Littlejohn et al. 2014).

The purpose of this study was to estimate the annual, local economic impacts of visitors to Pinnacles NP in 2013. Economic impacts were measured as direct and secondary sales, income, and jobs in the local region resulting from spending by park visitors. (See Appendix A: Glossary for definitions of terms.) In addition, a separate study estimated the impacts of the NPS park payroll on the local region (Stynes 2011); those results are reported herein. Neither study estimated the economic impacts of park operations or construction spending on the local region.

The local economic region defined for this study included San Benito and Monterey counties in California. This two-county region had a population of 471,666 (USCB 2013), gross regional product of \$19.3 billion (MIG, Inc. 2008), median household income of \$60,740, and family poverty rate of 12.6% (USCB 2013). Support activities for agriculture and forestry were the major employers in the region (MIG, Inc. 2008), and the region experienced a 10.2% unemployment rate in 2013 (BLS 2013).

Methods

The economic impact estimates were produced using the Money Generation Model 2 (MGM2) (Stynes et al. 2007). The three main inputs to the model were:

1. number of visits broken down by lodging-based segment;
2. spending averages for each segment; and
3. economic multipliers for the local region.

Inputs were estimated from the Pinnacles NP Visitor Services Project (VSP) survey data (Littlejohn et al. 2014), visitation estimates provided by Pinnacles NP staff, and Impact Analysis for Planning (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 survey was conducted at Pinnacles NP from April 5–11, 2013.⁴ The VSP survey measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a systematic, random sample of 600 visitor groups. Visitors returned 439 questionnaires resulting in a response rate of 73.2%.

Spending and economic impact estimates for Pinnacles NP are based in part on the 2013 VSP survey data. Visitors were asked to report expenditures inside the park and within 50 miles of the park. The local region for determining economic impact was defined as a two-county area around the park including San Benito and Monterey counties in California. This area roughly coincides with the 50-mile radius around the park for which visitors reported expenditures.

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

Local: Visitors who were residents of the local region, i.e., lived within 50 miles of the park.

Day trip: Visitors from outside the local region who did not stay overnight in the local region.

Motel: Visitors who reported motel expenses in the local region.⁵

Camping: Visitors who reported camping expenses inside the park and in the local region.⁶

⁴ Results in this study sometimes differ from those reported in the VSP study report (Littlejohn et al. 2014) because of the omission of cases considered to be outliers in the current analysis. See Study Limitations and Errors section.

⁵ The questionnaire asked about expenditures for “Lodge, hotel, motel, cabin, B&B, etc.” For convenience, these expenditures are referred to as “motel” in this report.

⁶ Only 11 respondents reported camping expenses outside the park, not enough to create a statistically valid segment. Therefore, these respondents were combined with respondents reporting camping expenses inside the park.

Other overnight (Other OVN): Non-local visitors who stayed overnight in the local region, but did not report any lodging expenses. This segment included visitors who stayed in private homes, with friends or relatives, or in other unpaid lodging.⁷

The VSP survey data were 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.

⁷ 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 VSP survey data, 69% of park entries were classified as day visits either by residents or by visitors from outside the local region, and the remaining 31% were classified as overnight visits including an overnight stay in the local region (Table 1). The average visitor group size ranged from 2.5 to 3.7 people across the five segments with an average visitor group of 2.9 people.⁸ The average length of stay in the local region on overnight trips was 2.1 nights. Eighty-five percent of visitor groups indicated that visiting the park was the primary reason for their trip to the area.

Table 1. Selected visit/trip characteristics by segment, 2013

Characteristic	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Visitor segment share (park entries)	19%	50%	15%	7%	9%	100%
Average visitor group size	2.7	3.1	2.5	2.8	3.7	2.9
Length of stay (days or nights)	1.0	1.0	1.7	2.4	2.2	2.1
Re-entry rate (park entries per trip)	1.0	1.0	1.3	1.2	1.0	1.1
Percent primary purpose trips	100%	83%	84%	89%	48%	85%

The 231,136 recreation visits in 2013 were allocated to the five segments using the visit segment shares in Table 1. Because spending was reported for the stay in the area, recreation visits were converted to visitor group trips to the area by dividing recreation visits by the average number of times each visitor entered the park during their stay and the average visitor group size. The 231,136 recreation visits represented 71,365 visitor group trips (Table 2).

Table 2. Recreation visits and visitor group trips by segment, 2013

Measure	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Recreation visits	43,916	115,568	34,670	16,180	20,802	231,136
Visitor group trips	15,793	37,053	8,293	4,915	5,310	71,365
Percent of visitor group trips	22%	52%	12%	7%	7%	100%

⁸ Visitor group size reported herein is based on the number of people covered by expenditures reported in the VSP survey.

Visitor Spending

The VSP survey collected data about expenditures of visitor groups inside the park and within 50 miles of the park.⁹ Spending averages were computed on a visitor group trip basis for each segment. The average visitor group spent \$67 on the trip, including expenditures inside the park and within 50 miles of the park (Table 3). On a visitor group trip basis, average spending was \$26 for day trips by local residents and \$36 for day trips by non-local visitors. Visitor groups staying in motels spent an average of \$268 on their trips, and those camping spent an average of \$131 on their trips. Visitor groups spent about 82% of their total spending outside the park.

Table 3. Average spending by segment (dollars per visitor group per trip)

Expenditures	Segment					All visitors*
	Local	Day trip	Motel	Camping	Other OVN	
Inside Park						
Camping fees	0.00	0.00	2.28	44.59	0.00	3.34
Groceries & takeout food	0.94	1.14	3.38	9.79	0.81	1.93
Admission & fees	2.49	4.18	1.83	3.95	0.60	3.25
<u>Souvenirs & other expenses</u>	<u>2.96</u>	<u>2.65</u>	<u>5.77</u>	<u>7.93</u>	<u>3.45</u>	<u>3.50</u>
Total Inside Park	6.39	7.96	13.26	66.26	4.86	12.01
Outside Park						
Motels	0.00	0.00	150.88	0.00	0.00	17.53
Camping fees	0.00	0.00	0.24	6.20	0.00	0.46
Restaurants & bars	3.04	7.27	54.25	5.67	4.43	11.47
Groceries & takeout food	4.46	5.08	13.20	17.90	12.21	7.30
Gas & oil	10.83	14.69	31.02	28.67	7.58	16.17
Local transportation	0.44	0.00	2.98	2.19	0.00	0.59
Admission & fees	0.74	0.49	0.18	3.49	0.00	0.68
<u>Souvenirs & other expenses</u>	<u>0.36</u>	<u>0.63</u>	<u>2.27</u>	<u>1.01</u>	<u>0.00</u>	<u>0.74</u>
Total Outside Park	19.87	28.15	255.01	65.14	24.23	54.94
Total Inside & Outside Park	26.26	36.11	268.27	131.40	29.09	66.95

*Weighted by percent visitor group trips.

The relative standard error at a 95% confidence level for the overall spending average was 12%. A 95% confidence interval for the overall visitor group spending average was therefore \$67 plus or minus \$8 or between \$59 and \$75.

On a per night basis, visitor groups staying in motels spent \$163 in the local region, and campers spent \$55 (Table 4). The average reported per-night lodging expense was \$91 for motels and \$21 for camping fees.

⁹ Some expenditure categories in the VSP questionnaire were combined for reporting herein and MGM2 analysis. See Appendix B.

Table 4. Average spending per night for visitor groups on overnight trips
(dollars per visitor group per night)

Expenditures	Segment		
	Motel	Camping	Other OVN
Motels	91.44	0.00	0.00
Camping fees	1.53	21.42	0.00
Restaurants & bars	32.88	2.39	2.05
Groceries & takeout food	10.05	11.68	6.03
Gas & oil	18.80	12.09	3.51
Local transportation	1.80	0.92	0.00
Admission & fees	1.22	3.14	0.28
<u>Souvenirs & other expenses</u>	<u>4.87</u>	<u>3.77</u>	<u>1.60</u>
Total per visitor group per night	162.59	55.42	13.47

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. Pinnacles NP visitors spent a total of \$4.8 million in the local region in 2013 (Table 5). Visitors who stayed in motels accounted for 47% of the total spending. Motel expenses represented 26% of total spending, and gas and oil expenses represented 24% (Figure 1).

Table 5. Total visitor spending by segment, 2013 (thousands of dollars)

Expenditures	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
<u>Inside Park</u>						
Camping fees	0	0	19	219	0	238
Groceries & takeout food	15	42	28	48	4	137
Admission & fees	39	155	15	19	3	232
<u>Souvenirs & other expenses</u>	<u>47</u>	<u>98</u>	<u>48</u>	<u>39</u>	<u>18</u>	<u>250</u>
Total Inside Park	101	295	110	326	26	857
<u>Outside Park</u>						
Motels	0	0	1,251	0	0	1,251
Camping fees	0	0	2	30	0	32
Restaurants & bars	48	269	450	28	24	819
Groceries & takeout food	70	188	109	88	65	521
Gas & oil	171	544	257	141	40	1,154
Local transportation	7	0	25	11	0	42
Admission & fees	12	18	2	17	0	48
<u>Souvenirs & other expenses</u>	<u>6</u>	<u>23</u>	<u>19</u>	<u>5</u>	<u>0</u>	<u>53</u>
Total Outside Park	314	1,043	2,115	320	129	3,921
Total Inside & Outside Park	415	1,338	2,225	646	154	4,778
Segment Percent of Total	9%	28%	47%	14%	3%	100%

Note: Totals may not equal sum of individual categories due to rounding.

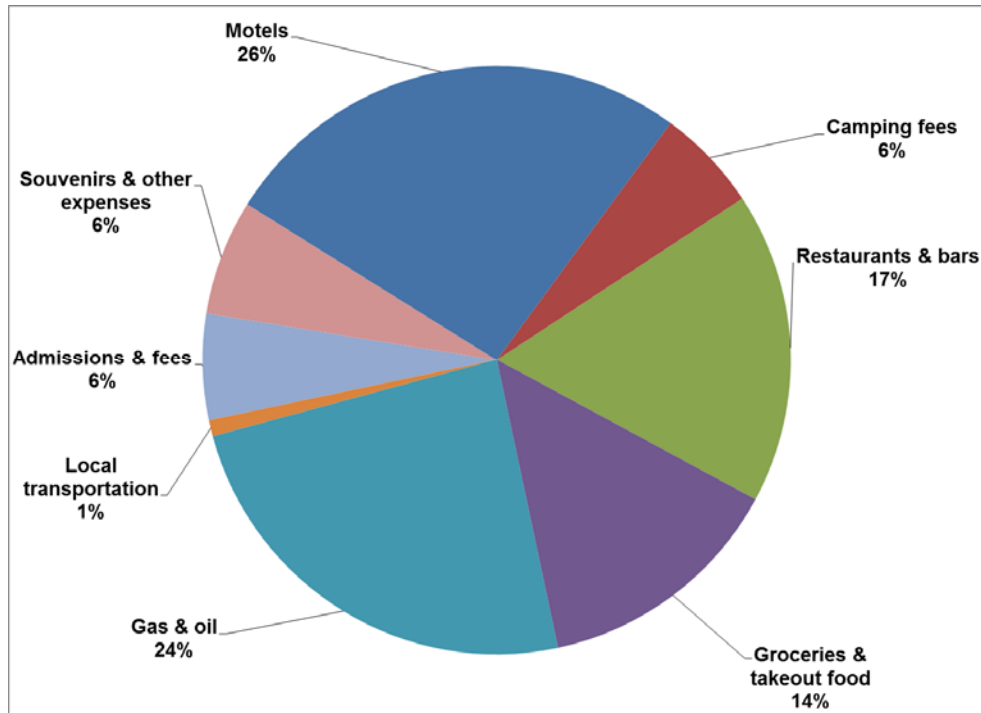


Figure 1. Pinnacles NP visitor spending by category

Because visitors would come to the region whether or not the park existed, not all visitor spending can be attributed to the park. Fifteen percent of visitor groups did not make the trip primarily to visit Pinnacles NP. 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 in the region was counted for day trips. With these assumptions, a total of \$4.2 million in visitor spending was attributed to the park visit (Table 6). This represented 88% of the overall visitor spending total.

Table 6. Total spending attributed to park visits, 2013 (thousands of dollars)

Expenditures	Segment					All visitors
	Local	Day trip	Motel	Camping	Other OVN	
Motels	0	0	1,173	0	0	1,173
Camping fees	0	0	21	248	0	269
Restaurants & bars	0	247	422	26	17	712
Groceries & takeout food	15	215	131	131	51	542
Gas & oil	0	499	241	132	29	901
Local transportation	0	0	23	10	0	33
Admission & fees	39	171	17	35	3	266
Souvenirs & other expenses	47	119	65	44	18	294
Total Attributed to Park	101	1,250	2,093	626	118	4,189
Percent of Spending Attributed to the Park	24%	93%	94%	97%	77%	88%
Percent of Attributed Spending	2%	30%	50%	15%	3%	100%

Economic Impacts of Visitor Spending

The economic impacts of Pinnacles NP visitor spending on the local economy were estimated by applying visitor spending to a set of economic ratios and multipliers in MGM2 representing the economy of the two-county region—San Benito and Monterey counties in California.¹⁰

Economic ratios and multipliers for the region were estimated using IMPAN (version 3, MIG, Inc. 2008) with 2008 data.¹¹ Multipliers were adjusted to 2013 based on structural changes in the national IMPLAN models between 2008 and 2009 and price changes between 2008 and 2013 (see Study Limitations and Errors section below).

Not all visitor spending was 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 were applied to visitor spending to account for mark-ups by retailers and wholesalers. The retail margins for the three sectors were 25.3%, 22.3%, and 50.0%, respectively, and the wholesale margins were 12.3%, 8.3%, and 11.4%. In addition, regional purchase coefficients from IMPLAN for all sectors were 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 1.34. Every dollar of direct sales to visitors generated another \$0.34 in secondary sales through indirect and induced effects.¹² (See Appendix A: Glossary for further explanation of terms.)

The economic impacts to the local region are presented in two ways: (1) based on all visitor spending and (2) based only on visitor spending attributable to the park. The first estimate—including all visitor spending—shows the overall contribution park visitors make to the local region. The second estimate—including only visitor spending attributable to the park—shows the impact or contribution the park makes to the economy of the local region.

Impacts of All Visitor Spending

Using all visitor spending and including direct and secondary effects, the \$4.8 million spent by park visitors generated \$4.8 million in sales, which supported 46 jobs in the local region (Table 7). These jobs paid \$1.7 million in labor income, which was part of \$2.8 million in value added to the region.¹³

¹⁰ 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.

¹¹ See Appendix C: Economic Ratios and Multipliers for the region.

¹² 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.

¹³ 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 7. Impacts of all visitor spending on the local economy, 2013

Sector/Expenditure category	Sales (thousands of dollars)	Jobs	Labor Income (thousands of dollars)	Value Added (thousands of dollars)
Direct Effects				
Motels	1,251	9	400	714
Camping fees	271	3	109	141
Restaurants & bars	819	13	322	458
Groceries & takeout food	280	4	145	221
Gas & oil	42	1	22	27
Local transportation	167	2	90	145
Admission & fees	257	1	137	214
Souvenirs & other expenses	151	3	79	128
Wholesale trade	110	1	43	72
<u>Local production of goods</u>	<u>200</u>	<u>1</u>	<u>31</u>	<u>48</u>
Total Direct Effects	3,548	37	1,375	2,168
<u>Secondary Effects</u>	<u>1,214</u>	<u>9</u>	<u>363</u>	<u>670</u>
Total Effects	4,763	46	1,738	2,838

Note: Impacts of \$4.8 million in visitor spending reported in Table 5. Totals may not equal sum of individual categories due to rounding.

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 the motels sector.

Impacts of Visitor Spending Attributed to the Park

Using only visitor spending attributable to the park by including only some spending on trips where the primary trip purpose was not to visit Pinnacles NP reduced the overall impacts by about 10% (Table 8; see spending inclusion assumptions in previous section). Including direct and secondary effects, the \$4.2 million spent by park visitors and attributable to the park generated \$4.3 million in sales, which supported 42 jobs in the local region. These jobs paid \$1.6 million in labor income, which was part of \$2.6 million in value added to the region.

Table 8. Economic impacts of visitor spending attributed to the park, 2013

Sector/Expenditure category	Sales (thousands of dollars)	Jobs	Labor Income (thousands of dollars)	Value Added (thousands of dollars)
Direct Effects				
Motels	1,173	9	375	670
Camping fees	269	3	108	140
Restaurants & bars	712	11	280	398
Groceries & takeout food	266	4	137	210
Gas & oil	33	1	17	21
Local transportation	137	2	74	120
Admission & fees	201	1	107	167
Souvenirs & other expenses	147	3	76	124
Wholesale trade	91	0	35	60
Local production of goods	<u>165</u>	<u>0</u>	<u>26</u>	<u>39</u>
Total Direct Effects	3,193	34	1,234	1,948
<u>Secondary Effects</u>	<u>1,095</u>	<u>8</u>	<u>328</u>	<u>604</u>
Total Effects	4,288	42	1,562	2,552

Note: Impacts of \$4.2 million in visitor spending attributed to park reported in Table 6. Totals may not equal sum of individual categories due to rounding.

Economic Impacts of the NPS Park Payroll

In addition to visitor spending, spending by park employees also impacts the local region. A separate study (Stynes 2011) estimated the impacts of park payroll in FY 2010 by applying economic multipliers to wage and salary data to capture the induced effects of NPS employee spending on local economies. Pinnacles NP itself employed 48 people in FY 2010 with a total payroll including benefits of \$3.1 million.^{14,15} Including secondary effects, the local impacts of the park payroll in FY 2010 were \$1.2 million in sales, 56 jobs, \$3.5 million in labor income, and \$3.9 million value added (Stynes 2011).

Combined Economic Impacts

The combined impacts to the region of visitor spending attributable to the park and NPS payroll were \$5.5 million in sales, which supported 98 jobs with labor income of \$5.1 million, which was part of a total value added of \$6.5 million.

¹⁴The number of employees was estimated by totaling the number of distinct social security numbers in each pay period and dividing by the number of pay periods. The figure is therefore an annual average. Four seasonal jobs for three months count as one job. No distinction is made between part-time and full-time employees. Jobs, salary, and payroll benefits are assigned to the park where the employee's time was charged, which may differ from their duty station (Stynes 2011).

¹⁵This number of employees at Pinnacle NP includes only NPS employees and not long-term park volunteers or others working in the park not on NPS payroll. The effects of spending by park volunteers and others who live in the region are accounted for as induced effects of visitor spending.

Study Limitations and Errors

The accuracy of the MGM2 estimates rests on the accuracy of three inputs: visits, spending averages, and multipliers. Visits were estimated by Pinnacles NP staff. 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 group 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 the visitor entered the park.

Spending averages were derived from the 2013 Pinnacles NP VSP survey data (Littlejohn et al. 2014). Estimates from the survey are subject to sampling errors, measurement errors, and potential seasonal biases. The overall spending average is subject to a sampling error of 12%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data. In order to estimate spending averages, incomplete spending data were filled with zeros. Visitor groups of more than 12 people (7 cases), visiting the local region for more than 7 nights (3 cases), or spending more than \$528 (the mean plus two times the standard deviation of the mean for spending, 10 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 from April 5–11. To extrapolate to annual totals, it was assumed that this sample represented visitors throughout the year.

Multipliers were 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 dataset available for this analysis was 2008. National IMPLAN multiplier data were available for 2009, so local employment, labor income, and value added multipliers were updated to 2009 using 2008/2009 national ratios. In addition, local employment multipliers were updated to 2013 based on changes in 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 15% of visitors to Pinnacles NP did not make the trip primarily to visit the park and 82% of spending occurred outside the park, adjustments for non-primary purpose trips have an effect on the overall spending and impact estimates.

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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. That is: • Direct jobs = direct sales * jobs to sales ratio • Direct personal income = direct sales * personal income to sales ratio • Direct value added = direct sales * 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 motels.
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.

Term	Definition
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.
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. • 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 motel includes wages and salaries paid to employees, their payroll benefits, profits of the motel, and sales, property, and other indirect business taxes. The motel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the motel.
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: Expenditure Sector Assignments

Table B1 shows expenditure categories visitors were asked to estimate in the Pinnacles NP VSP questionnaire. Some expenditure categories were combined and renamed for MGM2 analysis.

Table B1. Expenditure categories in Pinnacles NP questionnaire and MGM2 sector assignment

Questionnaire expenditure categories	Inside park	Outside park	MGM2 sector
Lodge, hotel, motel, cabin, B&B, etc.		X	Motels
Camping fees and charges	X	X	Camping fees
Guide fees and charges		X	Admissions & fees
Restaurants and bars		X	Restaurants & bars
Groceries and takeout food	X	X	Groceries & takeout food
Gas and oil (auto, RV, etc.)		X	Gas & oil
Other transportation expenses (rental cars, taxis, auto repairs, but NOT airfare)		X	Local transportation
Admission, recreation, entertainment fees	X	X	Admissions & fees
All other purchases (souvenirs, books, postcards, sporting goods, clothing, donations, etc.)	X	X	Souvenirs & other expenses

X = category included in questionnaire.

MGM2 sector names correspond to similar sector names and numbers in IMPLAN (Table B2). IMPLAN sectors also correspond to 2007 North American Industry Classification System (NAICS) sectors.

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

	IMPLAN		
MGM2 sector	No.	Name	2007 NAICS
Motels	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
Admissions & fees	410	Other amusement and recreation industries	71391-3, 71399
Souvenirs & other expenses	329	Retail - General merchandise	452
Local production of goods	69	All other food manufacturing	31199
	88	Men's and boys' cut and sew apparel manufacturing	31522
	115	Petroleum refineries	32411
	311	Sporting and athletic goods manufacturing	33992
	317	All other miscellaneous manufacturing	339993, 339995, 339999
Wholesale trade	319	Wholesale trade	42

Source: IMPLAN (MIG, Inc. 2008).

Appendix C: Economic Ratios and Multipliers

Table C1. Economic ratios and multipliers for selected tourism-related sectors, Pinnacles NP region, 2013

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
Motels	7.53	0.32	0.57	1.16	1.33	9.94	0.42	0.75
Camping fees	11.95	0.40	0.52	1.21	1.37	14.86	0.52	0.73
Restaurants & bars	15.37	0.39	0.56	1.17	1.34	17.75	0.49	0.75
Groceries & takeout food	12.23	0.54	0.87	1.15	1.35	14.66	0.64	1.07
Gas & oil	4.42	0.53	0.83	1.14	1.29	6.42	0.61	1.00
Local transportation	20.97	0.51	0.64	1.08	1.27	22.97	0.59	0.79
Admission & fees	14.22	0.52	0.79	1.24	1.38	17.17	0.63	1.00
Souvenirs & other expenses	19.53	0.52	0.84	1.16	1.36	22.03	0.62	1.05
Local production of goods	2.92	0.16	0.24	1.28	1.40	4.02	0.20	0.33
Wholesale trade	5.06	0.39	0.66	1.14	1.32	7.29	0.49	0.84

Source: IMPLAN (MIG, Inc. 2008), updated to 2013.

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 Motels sector row to illustrate

Direct Effects: Every million dollars in Motels sector sales (i.e., short-term lodging room rentals) creates 7.5 jobs in the Motels sector. Fifty-seven percent of Motels sector sales are value added, including 32% that goes to wages and salaries of motel employees. That means 43% of Motels sector sales goes to purchase inputs by motels (e.g., linens, cleaning supplies). The wage and salary income creates the induced effects, and the 43% of sales spent on purchases by motels starts the rounds of indirect effects.

Multiplier effects: There is an additional 16 cents of indirect sales in the region for every dollar of direct Motels sector sales (type I sales multiplier = 1.16). Total secondary sales are 33 cents per dollar of direct sales, which means 16 cents in indirect effects and 17 cents in induced effects. An additional 2.4 jobs are created from secondary effects of each million dollars in

Motels sector sales (9.9 total jobs – 7.5 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 Motels sector sales are 10% (42%-32%), and the secondary effects on value added for each dollar of Motels sector sales are 18% (75-57%). Including secondary effects, every million dollars of Motels sector sales in the region yields \$1.33 million in sales, \$420,000 in income, and \$750,000 in value added.

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