



Impacts of Visitor Spending on the Local Economy: *Yosemite National Park, 2009*



ON THE COVER

Yosemite Valley

Photograph courtesy of Yosemite National Park

Impacts of Visitor Spending on the Local Economy: *Yosemite National Park, 2009*

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February 2011

U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

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Please cite this publication as:

Cook, P.S. 2011. Impacts of visitor spending on the local economy: Yosemite National Park, 2009. National Park Service, Fort Collins, Colorado.

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Executive Summary

Yosemite National Park hosted 3.7 million recreation visits in 2009. After adjusting for visitor group size and re-entries into the park, there were 896,793 visitor group trips to the park in 2009. Based on 2008 winter and 2009 summer Visitor Services Project surveys, 37% of these visitor group trips were day trips not including an overnight stay within 50 miles of the park.¹ Forty-one percent of the visitor group trips involved an overnight stay in motels, lodges or cabins, 12% inside the park and 29% outside. Eleven percent of visitor group trips were overnight stays in campgrounds, 9% inside the park and 2% outside.

Visitors reported expenditures of their group inside the park and in the surrounding communities within 50 miles of the park. The average visitor group consisted of 3.2 people and spent \$393 in the park and within 50 miles of the park. On a visitor group trip basis, average spending in 2009 was \$71 for visitors from the local region, \$83 for non-local visitors on day trips, \$450 for visitors camping inside the park, \$392 for visitors camping outside the park, \$678 for visitors staying in motels or lodges outside the park, and \$880 for visitors staying in park lodges or cabins. Overall 49% of spending took place inside the park.

Total visitor spending in 2009 within 50 miles of the park was \$352 million including \$166 million spent inside the park. The greatest proportions of expenditures were for lodging (43%) and restaurant meals and bar expenses (17%). Overnight visitors staying in motels or lodges outside the park accounted for 50% of the total spending, visitors staying in park lodges or cabins accounted for 27%, and campers in the park accounted for 10%.

Three out of four visitors indicated the park visit was the primary reason for the trip to the area. Counting only a portion of visitor expenses if the park visit was not the primary trip purpose yields \$328 million in spending attributed directly to the park.

The economic impact of park visitor spending was estimated by applying the spending to an input-output model (IMPLAN) of the local economy. The local region was defined as a four county region including Madera, Mono, Mariposa and Tuolumne counties in California. This region roughly coincides with the 50 mile radius for which spending was reported.

Including direct and secondary effects, the \$328 million in visitor spending attributed directly to the park supports 4,597 jobs in the area and generates \$408 million in output (sales revenues), \$130 million in labor income and \$226 million in value added.²

A separate study estimated impacts of the park employee payroll on the local economy.³ The park itself employed 922 people in FY 2009 with a total payroll including benefits of \$47.0 million. Including secondary effects, the local impact of the park payroll in FY 2009 was 1,031 jobs, \$50.7 million in labor income, and \$58.1 million total value added.

¹ Results in this study sometimes differ from those reported in the VSP survey reports (Le et al. 2008 and Blotkamp et al. 2010) for two reasons. First, the results in this report adjust for seasonal differences in visitor group trip characteristics and then combine data from the two VSP surveys. Second, the current analysis excludes some cases as outliers. See Study Limitations and Error section and Appendix C.

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).

Acknowledgments

The author thanks the following individuals for their contributions to this project:

- Dr. Dan Stynes, Professor Emeritus, Michigan State University, for his assistance with MGM2;
- Dr. Lena Le, Dr. Philip Watson, Dr. Bruce Peacock, and Margaret Littlejohn for their reviews of early drafts of this report; and
- Dr. Alan Hodges, Extension Scientist, University of Florida, for his peer review of a draft of this report.

Introduction

Yosemite National Park (NP), one of the first wilderness parks in the United States, is nearly 1,200 square miles in size, and known for its waterfalls, deep valleys, grand meadows, ancient giant sequoias, and much more. The park spans the eastern portions of Tuolumne, Mariposa and Madera counties in east central California, reaching the western slopes of the Sierra Nevada mountain range. Yosemite NP received 3.7 million recreation visits in 2009 including 1.7 million overnight visits in the park (Table 1). There were 814,521 overnight stays in park lodges and cabins and 693,736 overnight stays in park campgrounds.

Table 1. Recreation visits and overnight stays, Yosemite National Park, 2009

Month	Recreation Visits	Overnight (OVN) Stays				Total OVN Stays
		Lodge/Cabin	Camp	Back-country	Misc	
January	101,984	29,670	2,960	856	0	33,486
February	78,795	26,746	2,504	722	0	29,972
March	132,711	38,023	13,341	1,681	20	53,065
April	230,828	57,236	41,300	2,045	870	101,451
May	399,683	72,539	32,053	9,331	3,300	117,223
June	483,382	116,120	91,856	26,160	3,986	238,122
July	586,591	109,059	171,477	48,712	9,141	338,389
August	643,300	112,348	160,260	43,863	11,514	327,985
September	471,530	104,302	103,290	19,676	4,168	231,436
October	346,826	60,069	54,665	4,291	1,110	120,135
November	151,297	39,323	16,649	371	240	56,583
<u>December</u>	<u>110,545</u>	<u>49,086</u>	<u>3,381</u>	<u>525</u>	<u>30</u>	<u>53,022</u>
Total	3,737,472	814,521	693,736	158,233	34,379	1,700,869
Summer (Apr-Oct)	3,162,140	631,673	654,901	154,078	34,089	1,474,741
Winter (Nov-Mar)	575,332	182,848	38,835	4,155	290	226,128

Source: NPS Public Use Statistics 2009.

The purpose of this study is to estimate the local economic impacts of visitors to Yosemite NP in 2009. Economic impacts are measured as the direct and secondary sales, income, and jobs in the local region resulting from spending by park visitors. (See Appendix A: Glossary for definitions of terms.) The local economic region defined for this study includes Mono County in addition to Tuolumne, Mariposa and Madera counties, California, where the park is located.

This four-county region of California has a population of 207,593 (USCB 2000), gross regional product of \$6.4 billion (MIG, Inc. 2008), median household income of \$38,657, and family poverty rate of 12.6% (USCB 2000). State and local governments are the major employers in the region (MIG, Inc. 2008), and the region experienced a 12.8% unemployment rate in 2009 (BLS 2009).

Methods

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

- 1) Number of visits broken down by lodging-based segments,
- 2) Spending averages for each segment, and
- 3) Economic multipliers for the local region.

Inputs are estimated from Yosemite NP Visitor Services Project (VSP) surveys (Le et al. 2008 and Blotkamp et al. 2010), National Park Service Public Use Statistics (2009), and IMPLAN input-output modeling software (MIG, Inc. 2008). The MGM2 model provides a spreadsheet template for combining park use, spending, and regional multipliers to compute changes in sales, labor income, jobs, and value added in the region.

VSP visitor studies were conducted at Yosemite NP from February 2-10, 2008 (Le et al. 2008) and July 8-14, 2009 (Blotkamp et al. 2010).⁴ These studies measured visitor demographics, activities, and travel expenditures. Questionnaires were distributed to a systematic, random sample of 938 visitor groups in 2008 and 1,223 visitor groups in 2009. Response rates were 60% and 56%, respectively.

Spending and economic impact estimates for Yosemite NP are based on the winter 2008 and summer 2009 VSP surveys. Winter visitor spending averages from 2008 were price adjusted to 2009 using the Consumer Price Index for all Urban Consumers (CPI-U) for each tourism-related spending category (BLS 2010). Winter visitor spending averages were assumed to represent visitors from November through March. Spending averages for summer visitors were estimated using the summer 2009 VSP survey data. Summer spending averages were applied to visitors between April and October.

Visitors were asked to report expenditures within a 50 mile radius of Yosemite NP. The local region for determining economic impact was defined as a four county area around the park including Madera, Mariposa, Mono and Tuolumne counties in central California, which roughly coincides with the 50 mile radius for which visitor spending was reported.

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

Local: Visitors from the local region, not staying overnight inside the park.

Day trip: Visitors from outside the local region, not staying overnight within 50 miles of the park.

Motel-in: Visitors reporting lodging expenses (lodges or cabins) inside the park

Camp-in: Visitors reporting camping expenses inside the park.

⁴ Results in this study sometimes differ from those reported in the VSP survey reports (Le et al. 2008 and Blotkamp et al. 2010) for two reasons. First, the results in this report adjust for seasonal differences in visitor group trip characteristics and then combine data from the two VSP surveys. Second, the current analysis excludes some cases as outliers. See Study Limitations and Error section and Appendix C.

Motel-out: Visitors reporting motel expenses outside the park within 50 miles of the park.

Camp-out: Visitors reporting camping expenses outside the park within 50 miles of the park.

Other overnight (Other OVN): Visitors staying overnight in the area but not reporting any lodging expenses. This segment includes visitors staying in private homes, with friends or relatives, or in other unpaid lodging.⁵

The VSP surveys 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. Segment shares from the VSP surveys were adjusted to be consistent with the park's NPS Public Use Statistics (2009) overnight stay figures.

Results

Visits

Based on the VSP survey and park overnight stay figures, 28% of park entries were classified as day trip visits by either local residents or visitors from outside the area, and 72% were classified as overnight visits including an overnight stay inside the park or in the local region (Table 2).

The average visitor group size ranged from 2.2 to 3.8 people across the seven segments with the average visitor group consisting of 3.2 people.⁶ The average length of stay in the local region on overnight trips was 2.4 nights.

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

Characteristic	Local	Day trip	Motel- in	Camp- in	Motel- out	Camp- out	Other OVN	All visitors
Visitor segment share (park entries)	4.0%	24.0%	11.5%	9.5%	36.5%	4.0%	10.5%	100%
Average visitor group size	2.2	3.0	3.5	3.5	3.1	3.8	2.8	3.2
Length of stay (days or nights)	1.0	1.0	2.4	2.8	2.2	3.1	2.5	2.4
Re-entry rate (park entries per trip)	1.1	1.1	1.1	1.3	1.7	1.9	1.4	1.4
Percent primary purpose trips	100%	64%	90%	98%	79%	58%	61%	77%

Seventy-seven percent of visitors indicated that visiting the park was the primary reason for the trip to the area. Other stated reasons were visiting friends and relatives in the area, business, or visiting other area attractions.

The 3,737,472 recreation visits in 2009 were allocated to the seven segments using the visit segment shares in Table 2. Since spending is reported for the stay in the area, park entries were converted to trips to the area by dividing by the average number of times each visitor entered the

⁵ 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.

⁶ Visitor group size reported herein is based on the number of people covered by expenditures reported in the VSP surveys.

park during their stay. Park re-entry rates were estimated based on the number of entries into the park reported by survey respondents.

Recreation visits were converted to 896,793 visitor group trips by dividing recreation visits by the average visitor group size and park entry rate for each segment (Table 3). Total person trips in 2009 were 2.8 million.

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

Measure	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors
Recreation visits	149,499	896,993	429,809	355,060	1,364,177	149,499	392,435	3,737,472
Visitor group trips	58,240	271,346	108,927	77,677	261,971	21,301	97,331	896,793
Percent of visitor group trips*	6.5%	30.3%	12.1%	8.7%	29.2%	2.4%	10.9%	100.0%
Visitor group nights	58,240	271,346	261,420	213,687	580,820	67,034	245,926	1,698,472
Person trips	130,884	818,177	376,299	274,874	809,863	80,110	272,066	2,762,274

*Percentages do not total to 100% due to rounding.

Visitor Spending

The visitor surveys covered expenditures of the visitor group inside the park and within 50 miles of the park. Spending averages were computed on a visitor group trip basis for each segment. The average visitor group in 2009 spent \$393 on the trip inside the park and in the local region. On a visitor group trip basis, average spending was \$71 for day trips by local residents, \$83 for day trips by non-local visitors, \$880 for visitors staying in park lodges or cabins, and \$450 for park campers (Table 4). Visitors staying in motels, cabins, lodges or B&B's outside the park spent an average of \$678 on their trips and those camping outside the park spent \$392.

Visitor groups spent about 47% of their total spending inside the park and 53% outside the park. As one would expect, visitor groups staying overnight inside the park spent the majority of their money inside the park, while visitor groups staying outside the park spent most of their money in surrounding communities. A higher percentage of camper's spending is on groceries, while visitor groups staying in lodges, cabins and motels spend more on restaurant meals.

The relative standard error at a 95% confidence level for the overall spending average is 10%. A 95% confidence interval for the overall visitor group spending average is therefore \$393 plus or minus \$41 or between \$352 and \$434.

On a per night basis, visitor groups in park lodges or cabins spent \$367 in the local region compared to \$306 per night for visitor groups staying in motels or lodges outside the park. Campers spent slightly more per night if staying inside the park (\$163) than outside the park (\$124). The average reported per night lodging expense was \$215 for park lodges or cabins inside the park, \$145 for motels outside the park, and \$34 for camping fees inside the park and \$28 for camping fees outside the park (Table 5).

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

	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors*
Inside Park								
Motel, hotel, cabin or B&B	0.00	0.00	500.94	4.94	3.48	0.00	0.00	62.29
Camping fees	0.00	0.00	3.70	92.89	2.64	3.32	0.00	9.35
Restaurants & bars	12.53	9.18	132.30	48.90	23.09	20.04	15.44	32.79
Groceries & takeout food	5.58	7.26	29.29	41.50	8.96	7.56	1.94	12.72
Gas & oil	3.27	3.27	14.89	31.92	5.06	3.55	5.07	7.89
Local transportation	0.00	1.50	13.01	0.50	1.89	0.00	2.79	2.93
Admission & fees	11.06	20.31	56.59	102.81	33.44	18.01	13.51	34.30
<u>Souvenirs & other expenses</u>	<u>4.30</u>	<u>12.08</u>	<u>39.73</u>	<u>49.90</u>	<u>27.85</u>	<u>26.69</u>	<u>7.23</u>	<u>22.63</u>
Total Inside Park	36.73	53.59	790.45	373.37	106.41	79.17	45.99	184.91
Outside Park								
Motel, hotel, cabin or B&B	0.00	0.00	14.68	2.01	318.32	0.00	0.00	94.95
Camping fees	0.00	0.00	0.24	0.50	0.21	85.25	0.00	2.16
Restaurants & bars	9.18	7.65	12.47	14.08	84.26	55.97	14.80	33.19
Groceries & takeout food	13.26	3.64	15.04	15.77	28.61	42.64	9.49	15.56
Gas & oil	11.27	10.78	23.06	37.81	44.28	78.87	15.92	26.61
Local transportation	0.00	2.15	8.83	1.54	61.99	12.69	1.03	20.38
Admission & fees	0.47	3.00	3.30	0.78	15.69	22.09	0.89	6.61
<u>Souvenirs & other expenses</u>	<u>0.38</u>	<u>2.16</u>	<u>12.43</u>	<u>3.83</u>	<u>18.25</u>	<u>14.91</u>	<u>1.77</u>	<u>8.40</u>
Total Outside Park	34.56	29.37	90.04	76.32	571.63	312.42	43.90	207.85
Total Inside & Outside Park	71.30	82.96	880.49	449.68	678.03	391.59	89.89	392.75

*Annual spending estimates are weighted averages of summer and winter spending. See Appendix C: Comparison of Winter and Summer Visitors.

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

	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN
Motel, hotel, cabin or B&B	214.85	2.53	145.15	0.00	0.00
Camping fees	1.64	33.95	1.29	28.14	0.00
Restaurants & bars	60.32	22.89	48.42	24.15	11.97
Groceries & takeout food	18.47	20.82	16.95	15.95	4.52
Gas & oil	15.81	25.35	22.25	26.19	8.31
Local transportation	9.10	0.74	28.82	4.03	1.51
Admission & fees	24.95	37.66	22.16	12.74	5.70
<u>Souvenirs & other expenses</u>	<u>21.73</u>	<u>19.53</u>	<u>20.79</u>	<u>13.22</u>	<u>3.56</u>
Total per visitor group per night	366.88	163.46	305.82	124.43	35.58

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. Yosemite NP visitors spent a total of \$352 million in the local region in 2009 (Table 6). Overnight visitors staying in motels outside the park account for 50% of the total spending, visitors staying in lodges and cabins inside the park account for 27%, and campers in the park account for 10%. Lodging expenses represent 43% of the total spending, and restaurant and bar expenses represent 17% (Figure 1).

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

	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors*
Inside Park								
Motel, hotel, cabin or B&B	0	0	54,566	384	911	0	0	55,861
Camping fees	0	0	403	7,216	692	71	0	8,382
Restaurants & bars	730	2,490	14,411	3,799	6,048	427	1,503	29,408
Groceries & takeout food	325	1,969	3,190	3,223	2,347	161	189	11,404
Gas & oil	191	889	1,622	2,479	1,326	76	494	7,076
Local transportation	0	407	1,417	39	496	0	272	2,631
Admission & fees	644	5,511	6,164	7,986	8,760	384	1,315	30,764
<u>Souvenirs & other expenses</u>	<u>250</u>	<u>3,277</u>	<u>4,328</u>	<u>3,876</u>	<u>7,295</u>	<u>568</u>	<u>704</u>	<u>20,298</u>
Total Inside Park	2,139	14,542	86,101	29,002	27,875	1,686	4,476	165,823
Outside Park								
Motel, hotel, cabin or B&B	0	0	1,599	156	83,392	0	0	85,147
Camping fees	0	0	26	39	56	1,816	0	1,936
Restaurants & bars	535	2,076	1,358	1,093	22,072	1,192	1,441	29,768
Groceries & takeout food	772	987	1,638	1,225	7,496	908	924	13,951
Gas & oil	656	2,925	2,511	2,937	11,600	1,680	1,549	23,859
Local transportation	0	582	962	120	16,241	270	100	18,275
Admission & fees	28	814	359	60	4,110	471	87	5,929
<u>Souvenirs & other expenses</u>	<u>22</u>	<u>585</u>	<u>1,353</u>	<u>298</u>	<u>4,782</u>	<u>318</u>	<u>172</u>	<u>7,530</u>
Total Outside Park	2,013	7,970	9,807	5,928	149,750	6,655	4,273	186,396
Total Inside & Outside Park	4,152	22,512	95,909	34,930	177,625	8,341	8,749	352,219
Segment Percent of Total**	1%	6%	27%	10%	50%	2%	2%	100%

* Annual spending figures are weighted averages of summer and winter spending.

** Percentages do not total to 100% due to rounding.

Visitors would still come to the region even if the park did not exist, so not all visitor spending can be attributed to the park. Twenty-three percent of visitors did not make the trip primarily to visit Yosemite NP. Spending directly attributed to park visits was estimated by counting all spending for trips where the park was the primary reason for the trip. If the park was not the primary trip purpose, one night of spending was counted for overnight trips and half of the spending outside the park was counted for day trips. All spending inside the park was treated as park-related spending. With these assumptions, a total of \$328 million in visitor spending is attributed to the park visit (Table 7). This represents 93% of the overall visitor spending total.

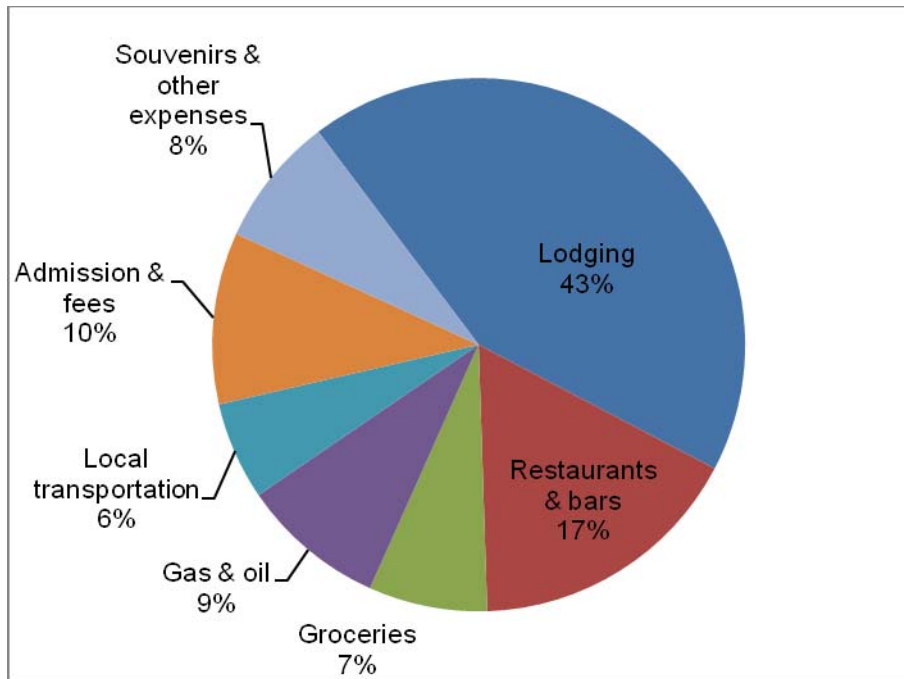


Figure 1. Yosemite National Park visitor spending by category.

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

	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors*
Motel, hotel, cabin or B&B	-	-	56,070	538	74,589	-	-	131,197
Camping fees	-	-	427	7,254	742	1,365	-	9,788
Restaurants & bars	730	4,195	15,689	4,877	25,549	1,277	2,600	54,916
Groceries & takeout food	325	2,779	4,731	4,432	8,970	809	892	22,938
Gas & oil	191	3,290	3,984	5,376	11,575	1,273	1,674	27,363
Local transportation	-	885	2,322	157	14,845	193	348	18,750
Admission & fees	644	6,179	6,502	8,046	12,392	719	1,381	35,863
<u>Souvenirs & other expenses</u>	<u>250</u>	<u>3,757</u>	<u>5,601</u>	<u>4,170</u>	<u>11,520</u>	<u>795</u>	<u>835</u>	<u>26,928</u>
Total Attributed to Park	2,139	21,085	95,327	34,849	160,181	6,431	7,731	327,743
Percent of Spending Attributed to the Park	52%	94%	99%	100%	90%	77%	88%	93%
Percent of Attributed Spending	1%	6%	29%	11%	49%	2%	2%	100%

* Annual spending figures are weighted averages of summer and winter spending.

Economic Impacts of Visitor Spending

The economic impacts of Yosemite National Park visitor spending on the local economy are estimated by applying visitor spending to a set of economic ratios and multipliers in MGM2 representing the economy of the four county region.⁷ Economic ratios and multipliers for the region were estimated using the *Impact Analysis for Planning (IMPLAN) Professional software* (version 3, MIG, Inc. 2008) with 2008 data.⁸

Not all visitor spending is counted as direct sales to the region. The amount a visitor spends for a retail good is made up of the cost of the good from the producer, a markup by a wholesaler, and a markup by a retailer. In MGM2, retail and wholesale margins for grocery & takeout food, gas & oil, and souvenirs & other expenses are applied to visitor spending to account for mark-ups by retailers and wholesalers. The retail margins for the three sectors are 25.3%, 22.3%, and 50.0%, respectively, and the wholesale margins are 12.3%, 8.3%, and 11.4%. In addition, regional purchase coefficients from IMPLAN for all sectors are used to account for the proportion of demand within the region satisfied by imports into the region.

The tourism output sales multiplier for the region is 1.46. Every dollar of direct sales to visitors generates another \$0.46 in secondary sales through indirect and induced effects.⁹ (See Appendix A: Glossary for further explanation of terms.)

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

Using all visitor spending and including direct and secondary effects, the \$352 million spent by park visitors supports 4,927 jobs in the local region and generates \$436 million in sales, \$140 million in labor income and \$242 million in value added (Table 8).¹⁰

Value added is the preferred measure of the contribution of visitors to the local economy as it includes all sources of income to the area -- payroll benefits to workers, profits and rents to businesses, and sales and other indirect business taxes that accrue to government units. Value added impacts are also comparable to Gross Regional Product, the broadest measure of total economic activity in a region. The largest direct effects are in lodging establishments and restaurants.

⁷ 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.

⁸ See Appendix B: Economic Ratios and Multipliers for the region. Job ratios are adjusted to 2009 based on changes in the job to sales ratios in national models.

⁹ 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.

¹⁰ 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.

Using only visitor spending attributable to the park by including only some spending on trips where the primary trip purpose was not to visit Yosemite NP reduces the overall impacts by about 7% (Table 9; see spending inclusion assumptions in previous section). Including direct and secondary effects, the \$328 million spent by park visitors and attributable to the park supports 4,597 jobs in the local region and generates \$408 million in sales, \$130 million in labor income and \$226 million in value added.

Table 8. Impacts of all visitor spending on the local economy, 2009.

Sector/Spending category	Sales (\$000's)	Jobs	Labor Income (\$000's)	Value Added (\$000's)
Direct Effects				
Motel, hotel, cabin or B&B	141,008	1,504	48,051	87,770
Camping fees	10,318	115	3,282	5,363
Restaurants & bars	59,175	989	20,982	31,143
Groceries & takeout food	6,415	79	2,782	4,259
Gas & oil	6,898	26	2,176	4,761
Local transportation	20,906	458	8,797	12,639
Admission & fees	36,693	322	6,969	12,280
Souvenirs & other expenses	13,914	290	5,984	8,889
Wholesale trade	2,775	10	875	1,915
<u>Local production of goods</u>	<u>324</u>	<u>2</u>	<u>91</u>	<u>116</u>
Total Direct Effects	298,426	3,795	99,990	169,135
<u>Secondary Effects</u>	<u>138,061</u>	<u>1,132</u>	<u>39,901</u>	<u>73,169</u>
Total Effects	436,488	4,927	139,891	242,304

Note: Impacts of \$352 million in visitor spending reported in Table 6.

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

Sector/Spending category	Sales (\$000's)	Jobs	Labor Income (\$000's)	Value Added (\$000's)
Direct Effects				
Motel, hotel, cabin or B&B	131,197	1,399	44,708	81,663
Camping fees	9,788	109	3,113	5,088
Restaurants & bars	54,916	917	19,472	28,902
Groceries & takeout food	5,803	71	2,517	3,853
Gas & oil	6,102	23	1,925	4,211
Local transportation	18,750	411	7,890	11,335
Admission & fees	35,863	315	6,811	12,003
Souvenirs & other expenses	13,464	281	5,790	8,601
Wholesale trade	2,556	10	806	1,764
<u>Local production of goods</u>	<u>314</u>	<u>2</u>	<u>88</u>	<u>112</u>
Total Direct Effects	278,754	3,538	93,121	157,532
<u>Secondary Effects</u>	<u>129,153</u>	<u>1,059</u>	<u>37,320</u>	<u>68,458</u>
Total Effects	407,907	4,597	130,441	225,990

Note: Impacts of \$328 million in visitor spending attributed to park reported in Table 7.

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 impact of the park's National Park Service (NPS) payroll by applying economic multipliers to wage and salary data to capture the induced effects of NPS employee spending on the local economy. Yosemite National Park itself employed 922 people in FY 2009 with a total payroll including benefits of \$47.0 million. Including secondary effects, the local impact of the park payroll in FY 2009 was 1,031 jobs, \$50.7 million in labor income and \$58.1 million total value added (Stynes 2011).

Study Limitations and Errors

The accuracy of the MGM2 estimates rests on the accuracy of the three inputs: visits, spending averages, and multipliers. Visits are taken from NPS Public Use Statistics (2009). Recreation visit estimates rely on counting procedures at the park, which may miss some visitors and count others more than once during their visit. Re-entry rates are important to adjust the park visit counts to reflect the number of visitor trips to the region rather than park entries. Re-entry rates were estimated based on visitor responses to a VSP survey question about the number of times they entered the park.

Spending averages are derived from the 2008 and 2009 Yosemite NP VSP visitor surveys (Le et al. 2008 and Blotkamp et al. 2010). Estimates from the surveys are subject to sampling errors, measurement errors, and potential seasonal/sampling biases. The overall spending averages are subject to sampling errors of 10%.

Spending averages are also sensitive to decisions about outliers and treatment of missing data. In order to estimate spending averages, incomplete spending data was filled with zeros. Visitor groups of more than 8 people (96 cases), visiting the local region for more than 7 nights (18 cases), or spending greater than \$5,000 (13 cases) were omitted from the analysis. This is a conservative assumption about outliers and likely results in conservative estimates of economic impacts.

The sample only covers visitors during a single week in July for summer visitors and one week in February for winter visitors. To extrapolate to annual totals, it was assumed that the summer sample represented visitors from April thru October and the winter sample represented visitors from November thru March.

Multipliers are derived from an input-output model of the local economy using IMPLAN (MIG, Inc. 2008). The basic assumptions of input-output models are that sectors have homogeneous, fixed and linear production functions, that prices are constant, and that there are no supply constraints. The IMPLAN system uses national average production functions for each of 440 sectors based on the NAICS system (see Appendix B, Table B2). The most recent local IMPLAN datasets available for this analysis were 2008. It was therefore assumed that most multipliers have remained stable through 2009. Employment multipliers were adjusted to take into account price changes. Local job to sales ratios were adjusted from 2008 to 2009 based on

the percentage changes in national job to sales ratios between 2008 and 2009 and then adjusted to 2009 based on consumer price indices.

Sorting out how much of the spending to attribute to the park when the park is not the primary motivation for the trip is somewhat subjective. However, since most visitors to Yosemite NP made the trip primarily to visit the park and quite a bit of spending occurs inside the park, adjustments for non-primary purpose trips only has a small 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. I.e., $\text{Direct jobs} = \text{direct sales} * \text{jobs to sales ratio}$ $\text{Direct personal income} = \text{direct sales} * \text{personal income to sales ratio}$ $\text{Direct Value added} = \text{direct sales} * \text{value added to sales ratio}$
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the businesses that sell directly to visitors, i.e., businesses in the supply chain. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of visitor spending. For example, motel and linen supply employees live in the region and spend their incomes on housing, groceries, education, clothing and other goods and services. IMPLAN's Social Accounting Matrix (SAM) multipliers also include induced effects resulting from local/state/federal government spending.
Jobs	The number of jobs in the region supported by visitor spending. Job estimates are not full time equivalents, but include both fulltime and part-time positions.
Labor income	Wage and salary income, sole proprietor (business owner) income and employee payroll benefits.
Regional purchase coefficient (RPC)	The proportion of demand within a region supplied by producers within that region.
Retail margin	The markup to the price of a product when a product is sold through a retail trade activity. Retail margin is calculated as sales receipts minus the cost of goods sold.
Sales	Direct sales (retail goods and services) by firms within the region to park visitors.

Term	Definition
Secondary effects	Changes in the economic activity in the region that result from the re-circulation of money spent by visitors. Secondary effects include indirect and induced effects.
Total effects	Sum of direct, indirect and induced effects. <ul style="list-style-type: none"> • Direct effects accrue largely to tourism-related businesses in the area • Indirect effects accrue to a broader set of businesses that serve these tourism firms. • Induced effects are distributed widely across a variety of local businesses.
Value added	Labor income plus property income (rents, dividends, royalties, interest) and indirect business taxes. As the name implies, it is the net value added to the region's economy. For example, the value added by a hotel includes wages and salaries paid to employees, their payroll benefits, profits of the hotel, and sales, property, and other indirect business taxes. The hotel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the hotel.
Visitor group	A group of people traveling together to visit the park. Visitor group is the basic sampling unit for VSP surveys; each visitor group receives only one survey.
Wholesale margin	The markup to the price of a product when a product is sold through wholesale trade. Wholesale margin is calculated as wholesale sales minus the cost of the goods sold.

Appendix B: Economic Multipliers and IMPLAN Sectors

Table B1. Economic ratios and multipliers for selected tourism-related sectors, Yosemite NP region, 2009.

Sector	Direct effects			Total effects multipliers				
	Jobs/\$ MM sales	Income /sales	Value added/ sales	Sales I	Sales SAM	JobII/ MM sales	Income II/ sales	VA II/ sales
Motel, hotel, cabin or B&B	10.67	0.34	0.62	1.24	1.46	14.41	0.47	0.86
Camping fees	11.17	0.32	0.52	1.29	1.51	15.45	0.47	0.80
Restaurants & bars	16.78	0.35	0.53	1.23	1.46	20.38	0.48	0.77
Groceries & takeout food	12.27	0.43	0.66	1.20	1.47	16.05	0.57	0.93
Gas & oil	3.74	0.32	0.69	1.19	1.39	6.85	0.43	0.91
Local transportation	22.21	0.42	0.60	1.12	1.37	25.43	0.54	0.81
Admission & fees	8.89	0.19	0.33	1.36	1.52	13.23	0.34	0.61
Souvenirs & other expenses	19.35	0.43	0.64	1.22	1.48	23.24	0.57	0.91
Local production of goods	5.90	0.28	0.36	1.19	1.37	8.65	0.38	0.55
Wholesale trade	6.32	0.38	0.64	1.19	1.42	9.81	0.51	0.88

Source: IMPLAN (MIG, Inc. 2008).

Brief 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.

VA II/sales = total value added (direct + indirect + induced) per \$ of direct sales.

Using the hotel sector row to illustrate

Direct Effects: Every million dollars in hotel sales creates 11 jobs in hotels. Thirty-four percent of hotel sales goes to wages and salaries of hotel employees and 62% of hotel sales is value added. That means 38% of hotel sales goes to purchase inputs by hotels. The wage and salary income creates the induced effects and the 38% spent on purchases by the hotel starts the rounds of indirect effects.

Multiplier effects: There is an additional 24 cents of indirect sales in the region for every dollar of direct hotel sales (type I sales multiplier = 1.24). Total secondary sales are 46 cents per dollar of direct sales, which means 24 cents in indirect effects and 22 cents in induced effects. An additional 3.7 jobs are created from secondary effects of each million dollars in hotel sales (14.4

total jobs – 10.7 direct jobs per \$million). These jobs are distributed across other sectors of the local economy. Similarly, the secondary effects on income for each dollar of hotel sales are 13% (47%-34%), and the secondary effects on value added for each dollar of hotel sales are 24% (86%-62%). Including secondary effects, every million dollar of hotel sales in the region yields \$1.46 million in sales, \$470,000 in income, and \$860,000 in value added.

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

MGM sector	IMPLAN		2007 NAICS
	No.	Name	
Motel, hotel, cabin or B&B	411	Hotels and motels, including casino hotels	72111-2
Camping fees	412	Other accommodations	72119, 7212-3
Restaurants & bars	413	Food services and drinking places	722
Groceries & takeout food	324	Retail - Food and beverage	445
Gas & oil	326	Retail - Gasoline stations	447
Local transportation	336	Transit and ground passenger transportation	485
Admission & fees	410	Other amusement and recreation industries	71391-3, 71399
Souvenirs & other expenses	329	Retail - General merchandise	452
Local production of goods	317	All other miscellaneous manufacturing	339993, 339995, 339999
Wholesale trade	319	Wholesale trade	42

Source: IMPLAN (MIG, Inc. 2008).

Appendix C: Comparison of Winter and Summer Visitors

There are some differences in spending and trip characteristics between the summer and winter samples. Winter visitors are less likely to be camping and include higher percentages of local residents, day trips and visitors staying in park lodges. Winter visitors have smaller visitor group sizes, shorter lengths of stay in the area, and fewer park re-entries. Differences in spending patterns between summer and winter visitors reflect these differences in trip characteristics. Spending averages for visitors throughout the year were computed by weighting seasonal spending averages by the percentage of visits occurring during each season (summer or winter).

Table C1. Visitor segment mix and conversion factors, summer vs winter.

Characteristic	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors
<u>Winter</u>								
Visitor segment share (park entries)	8.0%	34.5%	15.5%	2.5%	26.5%	1.0%	12.0%	100.0%
Average visitor group size	2.2	2.5	2.8	2.7	2.9	2.5	3.1	2.7
Length of stay (days or nights)	1.0	1.0	2.3	2.5	2.1	3.0	2.2	2.2
Re-entry rate (park entries per trip)	1.1	1.0	1.1	1.0	1.5	1.3	1.2	1.2
Percent primary purpose trips	100%	75%	83%	100%	84%	75%	67%	79%
<u>Summer</u>								
Visitor segment share (park entries)	1.0%	23.0%	11.0%	11.0%	39.5%	4.0%	10.5%	100.0%
Average visitor group size	2.2	3.2	3.7	3.6	3.1	3.8	2.7	3.3
Length of stay (days or nights)	1.0	1.0	2.4	2.8	2.2	3.2	2.6	2.4
Re-entry rate (park entries per trip)	1.2	1.1	1.2	1.3	1.7	1.9	1.5	1.4
Percent primary purpose trips	100%	61%	92%	98%	78%	57%	59%	77%

Table C2. Average visitor spending by segment, \$ per visitor group per trip in 2009 dollars, summer.

	Local	Day trip	Motel-in	Camp-in	Motel- out	Camp- out	Other OVN	All visitors*
<u>Inside Park</u>								
Motel, hotel, cabin or B&B	.00	.00	525.61	5.07	2.70	.00	.00	61.72
Camping fees	.00	.00	4.59	94.23	2.83	3.48	.00	11.53
Restaurants & bars	15.60	8.33	117.32	48.42	21.74	20.97	9.92	30.15
Groceries & takeout food	8.00	8.09	33.82	41.85	9.44	7.85	2.07	14.37
Gas & oil	6.00	3.12	18.31	32.35	5.18	3.71	5.42	8.97
Local Transportation	.00	1.82	14.08	.52	2.05	.00	3.33	3.26
Admission & fees	2.40	19.68	60.51	105.14	33.56	18.59	11.17	36.74
<u>Souvenirs & other expenses</u>	<u>.40</u>	<u>11.61</u>	<u>38.99</u>	<u>51.12</u>	<u>28.48</u>	<u>27.62</u>	<u>6.91</u>	<u>24.22</u>
Total Inside Park	32.40	52.65	813.24	378.70	105.99	82.22	38.83	190.97
<u>Outside Park</u>								
Motel, hotel, cabin or B&B	.00	.00	16.71	2.06	328.94	.00	.00	111.48
Camping fees	.00	.00	.31	.51	.24	85.08	.00	2.27
Restaurants & bars	16.80	7.97	13.48	14.21	83.20	55.18	8.12	35.60
Groceries & takeout food	26.80	3.32	17.09	16.19	29.37	43.31	8.74	16.92
Gas & oil	18.40	9.70	22.35	38.37	45.23	79.12	14.89	28.45
Local Transportation	.00	2.25	8.53	1.58	66.05	13.28	1.07	24.21
Admission & fees	.00	2.94	3.70	.41	16.11	23.11	1.07	7.37
<u>Souvenirs & other expenses</u>	<u>.80</u>	<u>1.99</u>	<u>14.74</u>	<u>3.94</u>	<u>18.34</u>	<u>15.25</u>	<u>.93</u>	<u>9.28</u>
Total Outside Park	62.80	28.15	96.90	77.28	587.47	314.33	34.82	235.56
Total Inside & Outside Park	95.20	80.80	910.13	455.97	693.45	396.55	73.64	426.53

*Weighted by percent visitor group trips.

Table C3. Average visitor spending by segment, \$ per visitor group per trip in 2009 dollars, winter.

	Local	Day trip	Motel-in	Camp-in	Motel-out	Camp-out	Other OVN	All visitors*
<u>Inside Park</u>								
Motel, hotel, cabin or B&B	0.00	0.00	421.38	0.00	10.26	0.00	0.00	69.77
Camping fees	0.00	0.00	0.82	42.41	1.00	0.00	0.00	1.52
Restaurants & bars	9.80	12.43	180.60	67.26	34.86	0.00	43.81	48.00
Groceries & takeout food	3.42	4.06	14.68	27.99	4.77	1.31	1.25	6.20
Gas & oil	0.85	3.87	3.86	15.57	3.99	0.00	3.28	3.82
Local Transportation	0.00	0.26	9.57	0.00	0.51	0.00	0.00	1.74
Admission & fees	18.75	22.74	43.93	14.53	32.41	5.43	25.51	27.41
<u>Souvenirs & other expenses</u>	<u>7.76</u>	<u>13.86</u>	<u>42.13</u>	<u>3.56</u>	<u>22.28</u>	<u>6.52</u>	<u>8.91</u>	<u>18.48</u>
Total Inside Park	40.58	57.23	716.98	171.32	110.07	13.25	82.77	176.95
<u>Outside Park</u>								
Motel, hotel, cabin or B&B	0.00	0.00	8.15	0.00	225.35	0.00	0.00	42.38
Camping fees	0.00	0.00	0.00	0.00	0.00	88.81	0.00	0.81
Restaurants & bars	2.42	6.44	9.20	8.87	93.47	73.12	49.12	27.38
Groceries & takeout food	1.24	4.87	8.44	0.00	22.02	28.00	13.34	9.15
Gas & oil	4.93	14.94	25.34	16.60	35.97	73.61	21.23	20.67
Local Transportation	0.00	1.75	9.82	0.00	26.50	0.00	0.83	7.23
Admission & fees	0.89	3.25	2.00	14.53	12.02	0.00	0.00	4.37
<u>Souvenirs & other expenses</u>	<u>0.00</u>	<u>2.80</u>	<u>4.98</u>	<u>0.00</u>	<u>17.53</u>	<u>7.59</u>	<u>6.07</u>	<u>5.85</u>
Total Outside Park	9.48	34.05	67.92	40.01	432.86	271.13	90.60	117.83
Total Inside & Outside Park	50.06	91.28	784.89	211.33	542.93	284.38	173.36	294.78

*Weighted by percent visitor group trips.

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NPS 104/110075, February 2011

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