

# Impacts of Visitor Spending on Local Economy: Crater Lake National Park, 2001

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## Executive Summary

Crater Lake National Park hosted 457,000 recreation visits in 2001. Park visitors spent \$30.7 million dollars in the local area (within 100 miles of the park) generating \$8.6 million in direct personal income (wages and salaries) for local residents and supporting 733 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 Crater Lake National Park Visitor Survey and MGM2 rural area multipliers to estimate spending, income and jobs attributable to the park. In 2001, Crater Lake National Park hosted 457,000 recreation visits which equates to 170,000 party trips to the area (Table E1). The three largest segments in terms of party trips were day trips from outside the local area<sup>1</sup> (36%), visitors staying overnight in motels outside the park (33%) and local day visitors (12%). Park visitors accounted for about 10,700 room nights at park hotels and 99,700 room nights outside the park. Campers accounted for 16,000 camping nights inside the park and 54,300 camping nights outside the park.

**Table E1. Crater Lake NP 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 user	20	20	\$50	\$1.0	3%
Non-local day user	61	61	\$51	\$3.1	10%
Hotel-In	5	11	\$236	\$2.5	8%
Camp-In	9	16	\$62	\$1.0	3%
Back-country	1	1	\$38	\$0.0	0%
Hotel-Out	55	100	\$196	\$19.6	64%
<u>Camp- Out</u>	<u>19</u>	<u>54</u>	<u>\$64</u>	<u>\$3.5</u>	<u>11%</u>
<b>Total</b>	<b>170</b>	<b>262</b>	<b>\$117</b>	<b>\$30.7</b>	<b>100%</b>

On average, park visitors spent \$117 per party per day in the local area with spending varying considerably across the seven lodging segments - from \$236 per night for visitors staying in park hotels to \$38 dollar for backcountry campers. Visitors staying in hotels outside the park contributed 64% total park visitor spending, followed by visitors camping outside the park (11%). The majority of the visitor spending went to the lodging sector (\$10.8 million), restaurants (\$6.6 million) and the retail trade sector (\$4.0 million).

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

The sales multiplier for the region was 1.33, meaning that an additional \$0.33 in sales is generated through secondary effects for every dollar of direct sales (Table E2). Secondary effects generated an additional 130 jobs, about \$2.9 million in personal income and \$5.3 million in value added as visitor spending circulates through the local economy.

**Table E2. Economic impacts of Crater Lake NP visitor spending, 2001**

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
<b>Direct Effects</b>				
Motel, hotel cabin or B&B	10,786	276	3,130	4,757
Camping fees	1,010	26	293	446
Restaurants & bars	6,595	206	2,077	2,893
Admissions & fees	3,313	98	1,139	1,864
Gambling	0	0	0	0
Other vehicle expenses	0	0	0	0
Local transportation	385	13	203	239
Retail Trade	3,079	109	1,571	2,453
Wholesale Trade	430	5	173	294
<u>Local Production of goods</u>	<u>153</u>	<u>0</u>	<u>7</u>	<u>14</u>
<b>Total Direct Effects</b>	<b>25,751</b>	<b>733</b>	<b>8,593</b>	<b>12,959</b>
<u>Secondary Effects</u>	<u>8,539</u>	<u>130</u>	<u>2,871</u>	<u>5,299</u>
<b>Total Effects</b>	<b>34,290</b>	<b>863</b>	<b>11,463</b>	<b>18,259</b>
<u>Multiplier</u>	<u>1.33</u>	<u>1.18</u>	<u>1.33</u>	<u>1.41</u>

As the primary reason for coming to the area for most (75% of summer visitors) park visitors was to visit Crater Lake NP, the majority of spending and impacts can be directly attributed to the park. Nevertheless, The economic impacts of the park are best seen within the broader regional tourism context. Cooperative research and marketing activity with tourism partners in the region can help to improve information about park visitors and better serve these visitors, while at the same time contributing to regional economic development.

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## Impacts of Visitor Spending on Local Economy: Crater Lake National Park, 2001

### Introduction

The purpose of this study is to document the local economic impacts of visitors to Crater Lake National Park (CRLA) 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 into lodging-based segments,
- 2) Spending averages for each segment, and
- 3) Economic multipliers for the local region

Inputs are estimated from the Crater Lake National Park Visitor Survey, the National Park 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.

### Crater Lake National Park

Crater Lake National Park was created in 1902 to protect the volcanic lake, created by the eruption and collapse of Mt. Mazama around 7,000 years ago in south central Oregon. The park offers year-round recreation activities. Around two thirds of its summer visitors come from other states, mainly California and Washington (Visitor Service Project, 2001). Three gateway communities, Roseburg, Klamath and Medford, are about an hour driving distance away. The park is also about an hour driving distance to Interstate Highway 5 where it connects to Washington and California.



Figure 1. Crater Lake National Park and the region

There are two lodging facilities inside the park - the 71-room historic Crater Lake Lodge and the 40-room Mazama Village Motor Inn with room rates ranging from \$98 to \$227 in 2001. The park also maintains two drive-in campgrounds at Lost Creek and Mazama with a total of 216 campsites. The overnight fees for

camping were \$10 for Lost Creek and \$15.75 for Mazama in 2001. The park is open year round with a \$10 dollar entrance fee. All lodging facilities inside the park are only open from mid-May to October due to an eight-month long winter.

Total recreation visits to Crater Lake NP in year 2001 was 457,373 (Table 1). Total person night stays at lodges, campgrounds and backcountry sites inside the park were 31,762, 43,975 and 2,009 respectively. Fifty-seven percent of recreation visits, 74 percent of lodging nights, 83 percent of camping nights and 59 percent of backcountry nights were reported during the summer season, June through August, 2001.

**Table 1. NPS Public Use Data for Crater Lake NP, 2001**

Month	Recreation visits	Lodging	Camping	Backcountry nights
January	7,627	0	0	73
February	5,940	0	0	57
March	11,496	0	0	152
April	11,070	0	0	64
May	40,875	1,695	617	35
June	60,955	6,555	5,348	151
July	102,047	8,518	14,649	403
August	98,751	8,474	16,514	637
September	64,343	6,520	6,754	190
October	31,289	0	93	132
November	8,224	0	0	22
<u>December</u>	<u>14,756</u>	<u>0</u>	<u>0</u>	<u>93</u>
<b>Totals</b>	<b>457,373</b>	<b>31,762</b>	<b>43,975</b>	<b>2,009</b>

Source: NPS Public Use Statistics (2002)

## The Region

Crater Lake National Park is located within the boundaries of Douglas, Jackson and Klamath County, Oregon. The population of the three county area in 2000 was 346,289 with an average income per capita of \$23,338. Total personal income was \$8 billion, and total full-time and part-time employment was 190,409 jobs (Bureau of Economic Analysis, 2002). Services and manufacturing are two major sectors in the economy, accounting for more than 40% of total earnings in this region (Table 2). The restaurant sector supported 10,000 jobs in 2000, followed by amusement and recreation services (2,861 jobs), and the lodging sector (2,043 jobs). In 2000, the total lodging tax receipts in East Douglas, Jackson and Klamath County was \$4.2 million. Sixty percent of the lodging tax was collected at Jackson County (Dean Runyan Associates, 2002). With an average 7% lodging tax rate, \$4.2 million in lodging taxes equates to \$60 million in lodging sales in the three count area in 2000.

**Table 2 Economic activity by sectors in Douglas, Jackson and Klamath County, Oregon 2000**

	Earnings by place of work (million's)	Pct of total earnings	Jobs
Farm	17	0%	7,150
Agriculture, fishing and forestry	97	2%	3,689
Mining	11	0%	412
Construction	386	8%	11,339
Manufacturing	881	18%	23,255
Transportation & Communication	318	6%	8,233
Wholesale Trade	179	4%	5,818
Retail Trade	669	13%	36,942
Eating & Drinking Establishment	137	3%	10,006 <sup>a</sup>
Finance	254	5%	12,692
Services	1,239	25%	55,723
Hotels	37	1%	2,043 <sup>a</sup>
Amusements	61	1%	2,861 <sup>a</sup>
<u>Govt. Education</u>	<u>959</u>	<u>19%</u>	<u>24,327</u>
<b>Total</b>	<b>5,009</b>	<b>100%</b>	<b>189,580</b>

a: Does not include sole proprietors.

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

## Crater Lake National Park Visitor Survey, 2001

A park visitor study was conducted at Crater Lake National Park from August 3<sup>rd</sup> to 9<sup>th</sup>, 2001. The study measured visitor demographics, trip planning, travel expenditures, and facility importance and quality. Questionnaires were distributed to a sample of 600 visitors at two park entrances<sup>2</sup>. Visitors returned 484 questionnaires for an 80.7% response rate. See Littlejohn (2001) for survey details. For this 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 Crater Lake National Park Visitor Survey questionnaire. Day visitors were divided into two groups depending on the visitor's ZIP code to separate local and non-local visitors. Seven lodging segments were established for Crater Lake NP visitors:

<sup>2</sup> Questionnaires were distributed proportionally at Annie Springs Entrance (52%) and North Entrance (48%).

- Local day users:** Day visitors who live within a 100-mile distance to 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-in:** Visitor staying in motels, cabins, B&B's etc. inside the park
- Camp-In:** Visitors staying in campgrounds inside the park
- Backcountry campers:** Visitors staying overnight in backcountry sites
- 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 nights<sup>3</sup> as follows:

- Vehicle entries to the park = recreation visits / party size
- Party trip to the park = Vehicle entries/ 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 4). The average party size ranged from 2.0 for backcountry campers to 3.2 persons for local day trips. Overnight visitors stayed between 1.5 and 3.0 nights in the local region<sup>4</sup>. Most visitors enter the park only once during a stay in the area. 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 Crater Lake NP visitors' travel patterns by lodging segments**

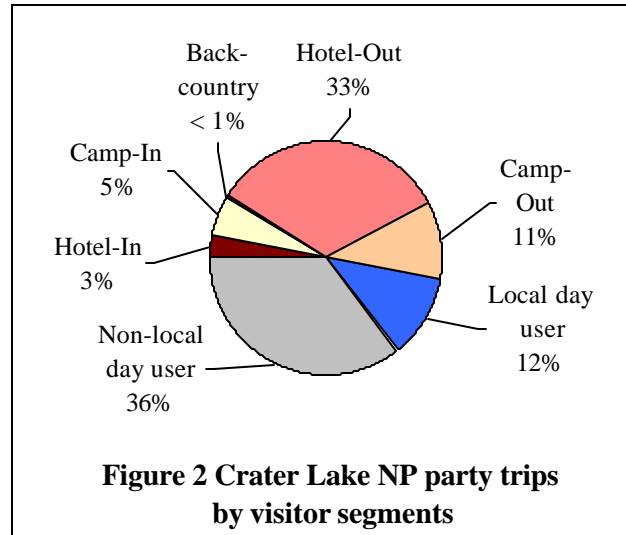
	Local day user	Non-local day user	Hotel-In	Camp-In	Back-country	Hotel-Out	Camp-Out
Length of stay in the region	1.00	1.00	1.98	1.71	1.50	1.80	2.93
Party size	3.24	2.89	2.98	2.75	2.00	2.87	2.70
Re-entries	1.05	1.01	1.07	1.07	1.00	1.09	1.16
Number of cases	34	62	22	36	3	141	59

<sup>3</sup> 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.

<sup>4</sup> Stays of more than 7 days or groups of more than 8 people were omitted in computing these averages.



Using these conversion parameters, 457,000 recreation visits were converted to 181,000 vehicle entries and 170,000 party-trips to the area in 2000 (Table 4). Local residents accounted for 12% of the total party trips; day trips from outside the region (including stays with friends and relatives or seasonal homes in the area) accounted for 36% (Figure 2). These party trips equated to 262,000 party nights in the region. Visitors staying at motels contributed 41% (4% inside the park) of total party nights in the region, and campers represented 20% (6% inside the park). We estimate that park visitors accounted for around 11,000 hotel room nights inside the park and 100,000 hotel room nights in area motels. Campers accounted for 16,000 and 54,000 camping nights inside and outside the park in 2001.



**Table 4 Visit measures for Crater Lake NP by segments, 2001**

	Local day user	Non-local day user	Hotel-In	Camp-In	Back-country	Hotel-Out	Camp-Out	Total
Vehicle entries	20,991	61,315	5,798	9,982	670	60,509	21,514	180,780
Party trips	19,898	60,796	5,403	9,340	670	55,444	18,559	170,110
Party nights	19,898	60,796	10,674	15,969	1,005	99,742	54,302	262,386
Pct of vehicle entries	12%	34%	3%	6%	0%	33%	12%	100%
Pct of party trips	12%	36%	3%	5%	0%	33%	11%	100%
Pct of party nights	9%	29%	4%	6%	0%	37%	14%	100%

### Visitor spending

Spending averages were estimated from the Crater Lake NP Visitor Study. 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 in the region. The survey covered expenditures that occurred within 100 miles of the park. Spending averages per party per night by segment are shown in Table 6.

**Table 5. Crater Lake NP visitor spending by lodging segments in local area (\$ per party day)**

Spending category	Local day user	Non-local day user	Hotel-In	Camp-In	Back-country <sup>a</sup>	Hotel-Out	Camp-Out
Motel, hotel cabin or B&B	0.00	0.00	134.64	0.00	4.86	93.68	0.00
Camping fees	0.00	0.00	0.00	14.90	2.16	0.00	14.18
Restaurants & bars	15.21	10.38	62.37	4.93	6.25	43.63	10.29
Groceries, take-out food/drinks	4.14	6.52	5.95	11.74	4.48	6.45	8.55
Gas & oil	5.44	9.42	6.69	11.97	6.76	12.81	8.95
Local transportation	0.00	0.17	0.00	0.09	0.47	3.74	0.00
Admissions & fees	10.26	8.18	14.35	7.82	3.54	19.03	7.95
<u>Souvenirs and other expenses</u>	<u>14.67</u>	<u>16.11</u>	<u>12.47</u>	<u>10.50</u>	<u>9.94</u>	<u>16.89</u>	<u>13.79</u>
Total	49.73	50.79	236.47	61.96	38.46	196.23	63.71
Number of cases	34	62	22	36	3	141	59

a: The backcountry camper spending average is the MGM2 generic medium default figure.

Local and non-local day visitors spent about \$50 per party per day. Campers either staying inside or outside the park spent around \$60 dollars per day. Visitors staying at park hotels spent \$237 per day or \$40 dollars more than visitors staying hotels outside the park. The differences are mainly from the higher expenses on the lodging and food service inside the park. The corresponding nightly room rate inside the park was \$137 and \$94 for lodges outside the park. Backcountry campers spent around \$38 dollars per party day, or about \$58 for a 1.5- night stay<sup>5</sup>.

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 Crater Lake NP in 2001 spent \$30.7 million in the local area (Table 6). Visitors spent \$10.8 million on motel/hotel rooms, \$6.6 million on restaurant meals, and \$4.0 million on souvenirs. Groups staying in area motels contributed about 64 percent (\$19.6 million) of the total spending to the region followed by visitors staying at campgrounds outside the park (11%) and day visitors coming from outside the region (10%).

<sup>5</sup> Due to a small number of backcountry campers sampled in the survey (n=3), the MGM2 default spending profile is used.

**Table 6. Total spending by Crater Lake NP visitors in 2001 (\$000's)**

Spending category	Local day user	Non-local day user	Hotel-In	Camp-In	Back-country	Hotel-Out	Camp-Out	Total	Pct
Motel, hotel cabin or B&B	0	0	1,437	0	5	9,343	0	10,786	35%
Camping fees	0	0	0	238	2	0	770	1,010	3%
Restaurants & bars	303	631	666	79	6	4,352	559	6,595	22%
Groceries, take-out food/drinks	82	396	64	188	5	643	465	1,842	6%
Gas & oil	108	573	71	191	7	1,278	486	2,714	9%
Local transportation	0	10	0	1	0	373	0	386	1%
Admissions & fees	204	497	153	125	4	1,898	432	3,313	11%
<u>Souvenirs and other expenses</u>	<u>292</u>	<u>979</u>	<u>133</u>	<u>168</u>	<u>10</u>	<u>1,685</u>	<u>749</u>	<u>4,016</u>	<u>13%</u>
Total	990	3,088	2,524	989	39	19,572	3,460	30,661	100%
Percent	3%	10%	8%	3%	0%	64%	11%	100%	

Dean Runyan Associates (2002) estimates that travelers spent \$496 million in the three counties of East Douglas (\$143 million), Jackson (\$247 million) and Klamath (\$106 million) in 2000. This spending includes all expenditures associated with trips of 50 miles or more away from home by domestic and foreign travelers<sup>6</sup>. Tourist spending generated a total of 8,760 jobs and 19.7 million in taxes in the three county area.

The \$31 million spent by Crater Lake NP visitors in 2001 represents about 6% of all tourist spending in the region and about 10% of lodging sales. Based on this comparison, park visitors appear to be more likely than other tourists to be staying overnight in commercial lodging in the three county area. As visitors staying in hotels and motels spend considerably more than other segments, encouraging overnight stays helps to increase local economic impacts.

## Economic Impacts of Visitor Spending

The \$30.7 million spent by Crater Lake NP visitors had a direct economic impact on the region of \$25.8 million in direct sales, \$8.6 million in personal income (wages and salaries), \$13.0 million in value added, and supported 733 jobs in the region<sup>7</sup> (Table 7). The lodging sector received the largest share of direct sales (\$10.8 million), followed by restaurants (\$6.6 million).

Direct effects in Table 7 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

<sup>6</sup> Spending does not include airfares.

<sup>7</sup> MGM2 generic rural area multipliers are applied in calculating these values.

Crater Lake NP captures 84% of visitor spending. Sixteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors<sup>8</sup>.

The sales multiplier for the region was 1.33, meaning that an additional \$0.33 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generated an additional 130 jobs, about \$2.9 million in personal income and \$5.3 million in value added.

**Table 7. Economic impacts of Crater Lake NP visitor spending, 2001**

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
<b>Direct Effects</b>				
Motel, hotel cabin or B&B	10,786	276	3,130	4,757
Camping fees	1,010	26	293	446
Restaurants & bars	6,595	206	2,077	2,893
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Gambling	0	0	0	0
Other vehicle expenses	0	0	0	0
Local transportation	385	13	203	239
Retail Trade	3,079	109	1,571	2,453
Wholesale Trade	430	5	173	294
<u>Local Production of goods</u>	<u>153</u>	<u>0</u>	<u>7</u>	<u>14</u>
<b>Total Direct Effects</b>	<b>25,751</b>	<b>733</b>	<b>8,593</b>	<b>12,959</b>
<u>Secondary Effects</u>	<u>8,539</u>	<u>130</u>	<u>2,871</u>	<u>5,299</u>
<b>Total Effects</b>	<b>34,290</b>	<b>863</b>	<b>11,463</b>	<b>18,259</b>
Multiplier	1.33	1.18	1.33	1.41

## Study Limitations and Error

The accuracy of the MGM2 estimates rests on the three inputs: visits, spending averages, and multipliers. The MGM2 generic “rural area” multipliers were selected to best represent the economic character of the region. Visitor segment shares and spending averages are derived from the 2001 Crater Lake National Park Visitor Survey. These are subject to sampling errors, measurement errors and some seasonal biases as we had to project to annual totals from the summer season VSP study.

<sup>8</sup>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.

The Crater Lake Visitor Survey was conducted during a 7-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, cases were weighted inversely to the park re-entry rate to correct for greater probabilities of selecting multi-entry visitors. Second, the segment shares for overnight visitors staying at hotels and campsites inside the park were adjusted to be consistent with park overnight stay data in the Public Use Statistics. Third, spending averages were adjusted downward to reflect lower off-season rates<sup>9</sup>. Length of stay, party size and re-entry rates were assumed to not vary by season. Finally, the shares for visitors staying at campsites outside the park were reduced by 20% to reflect less camping during the off-season.

The sampling errors for the estimates of the average spending per party night were 5% overall and ranged from 5- 18% for individual segments<sup>10</sup>. Spending averages can also vary by about 10% based on decisions to treat missing spending data as zeros or not, and how many and which outliers to delete<sup>11</sup>. Our analysis omitted cases with missing values in all spending categories and also cases with spending of more than \$1000 per party per day.

Depending on the direction and magnitude of errors in visits, spending, and multipliers, the errors may compound or cancel each other. The most important potential errors are in the estimates of visits and segment shares. As the model is linear, doubling visitors will double spending and impacts. Errors in other parameters, such as re-entry rates, lengths of stay and party sizes, also directly translate into errors in party nights, which are multiplied by the spending averages. Using a 95% confidence interval on the spending averages and total recreation visits in 2001, the park visitor spending is estimated to range between \$27.6 million and \$33.7 million in 2001.

In addition to these statistical issues, there are also conceptual issues regarding how much and which spending the park may claim. Around 75% of park visitors indicated that Crater Lake NP was their primary destination (Visitor Service Project, 2001). Some spending on trips where Crater Lake NP is not the primary destination, such as visiting friends and relatives or staying at seasonal homes, likely would not be lost to the region if Crater Lake NP were closed. Only one day's worth of spending is attributed to the park for visitors whose primary trip purpose was visiting friends/relatives or staying at seasonal homes.

Local visitors are often excluded in estimating economic impacts, but have been included here. Since they are a distinct segment, their contribution to the totals is readily estimated and subtracted from totals, as desired. Locals accounted for about \$1 million or 3% 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.

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<sup>9</sup>The nightly room fee was reduced by 5%, around \$5 dollars.

<sup>10</sup> Sampling errors depend on the number of cases sampled and the variation in the study population.

<sup>11</sup> Including four spending outliers will increase the average by 13%. Treating all cases with missing values (n=49) as zero's decreases the average spending by 11%.

## Summary and Discussion

Visitors to Crater Lake NP spent \$30.7 million within a 100-mile radius of the park in 2001. The total economic impact of visitor spending was \$25.8 million in direct sales, \$8.6 million in personal income, \$13.0 million in direct value added and 733 jobs. With multiplier effects, created by the re-circulation of money spent by tourists, visitor spending generated a total of \$34.3 million in local sales, and an associated \$11.5 million in personal income, \$18.3 million in value added and 863 jobs. Sectors receiving the greatest direct benefit from park visitors were lodging (\$10.8 million in direct sales) and restaurants (\$6.6 million).

The park's relative importance to the local economy can be identified by comparing these figures with local tourism and economic statistics. Total lodging sales in East Douglas, Jackson and Klamath County was \$60 million and total visitor spending was around \$496 million in 2000 (Dean Runyan Associates, 2002). Crater Lake NP visitors contributed around \$30.7 million in overall spending and \$10.8 million in lodging sales. This spending accounts for 6% of total tourism spending and 18% of total lodging sales in the three county region.

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 to an area hotel, for example, 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-out" segment in Table 8, generates an additional \$175,500 dollars in direct sales in the region,

**Table 8. Direct impacts of an additional 1,000 party nights by lodging segments, Crater Lake NP, 2001**

Segments	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
(Marginal Impacts per 1,000 party-nights)				
Local day visitor	\$36.6	1.13	\$13.7	\$21.0
Non-local day visitor	\$32.7	1.01	\$12.9	\$19.8
Motel-In visitor	\$222.3	6.16	\$68.9	\$103.1
Camp-In visitor	\$41.1	1.18	\$14.9	\$23.1
Back-country visitor	\$25.9	0.75	\$9.4	\$14.5
Motel-Out visitor	\$175.5	4.92	\$56.8	\$85.1
Camp-Out visitor	\$45.6	1.33	\$16.4	\$25.2

\$56,800 in personal income, \$85,100 in value added and 5 direct jobs. The impact of this alternative could be compared to others such as expanding campsites, a marketing campaign to increase day trips, etc.

The impacts presented in this report document the economic significance of 457,000 recreation visits to Crater Lake NP 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) a survey of off-season park visitors to refine the annual segment shares, party sizes, length of stay and spending profile; (2) general surveys of visitors to the region in cooperation with local tourism organizations to understand the park's share of the region's travel market and visitor patterns of use both inside and outside the park.

## References

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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"> <li>▪ Direct effects accrue largely to tourism-related business in the area</li> <li>▪ Indirect effects accrue to a broader set of economic sectors that serve these tourism firms.</li> <li>▪ Induced effects are distributed widely across a variety of economic sectors.</li> </ul>
Marginal impacts	Economic impacts created per additional visitors or dollars spent.