

# Spending and Economic Activity from Recreation at Oregon State Park Properties—Columbia River Gorge Management Unit



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## **Executive summary**

The spending of visitors to Oregon State Parks properties generates economic activity in the communities located around those properties. We use a survey of visitors to Oregon State Parks properties located in the Columbia River Gorge Management Unit to estimate the average trip spending of visitors. We then combine those estimates of average spending with estimates of the number of recreation visits and an economic model to quantify the magnitude of local economic activity generated from Oregon State Parks visitor spending.

The average trip spending of visitors ranges from about \$40 per party per trip for local residents on day trips to nearly \$226 per party per trip for non-local residents on overnight trips away from home. On average, most local area expenses are for gasoline, groceries, and purchases in restaurants/bars. The reported 3.5 million visits annually to Oregon State Parks properties in the Columbia River Gorge Management Unit yield about \$50 million in visitor spending in local communities. Non-local residents account for about \$33 million of that spending.

The economies of local communities are bolstered by the total spending from visitors and from the “chain reaction” of economic activity that results when those businesses and their employees also spend money in the local community. That chain reaction is also referred to as the “multiplier effect.” For the Columbia River Gorge Management Unit, spending in the local areas around Oregon State Parks properties generates about \$46 million in total sales, about 648 full and part-time jobs, and generates total labor income of \$15 million. Counting only the spending of non-local visitors, the economic impact of visitor spending associated with the Columbia River Gorge Management Unit amounts to total sales of \$31 million, 436 full and part-time jobs, and \$10 million in labor income.

The average spending of visitors to Oregon State Parks properties within the Gorge was found to be slightly lower than visitors to properties along the Oregon Coast. Lower levels of spending by Oregon State Parks visitors in the Columbia Gorge likely traces to the presence of fewer opportunities for spending (e.g., traditional tourism businesses) and fewer overnight visits relative to the Coast. The spending patterns found for properties within the Columbia River Gorge were generally consistent with those found for visitors to Milo McIver State Park. The spending patterns around that property and the pattern of types of visits for individuals recreating there are more similar to that of the Columbia River Gorge properties. Because the number of visits within the Columbia River Gorge Management Unit is fewer than along the Coast, total visitor spending and economic activity of recreation use is lower than that found for the Coast. However, the economic activity resulting from recreation at State Parks’ properties in the Columbia River Gorge is substantial and important to the local economies around those properties.

## **Introduction**

The properties of the Oregon State Parks system provide a valuable recreation resource for residents of and visitors to Oregon. Additionally, the towns and cities around Oregon State Parks properties benefit economically from Department spending for property operations and from the spending of visitors recreating at Oregon State Parks facilities. In many cases, the economic activity generated from recreation visitors is an integral component of local economies. This report describes the spending, and associated economic activity, of recreation visitors to Oregon State Parks properties within the Columbia River Gorge Management Unit.

This report relies on survey data collected during the summer of 2012 from visitors to a subset of properties (Box 1) located in the Columbia River Gorge Management Unit. More than 4,000 completed surveys were collected. A portion of those surveys are used in this analysis. Day use areas of properties were sampled via on-site visitor surveys; overnight use areas (i.e., campgrounds) were sampled through an online survey of visitors using the Oregon State Parks reservation system. The survey was designed to measure visit and visitor characteristics, visitor satisfaction, and visitor trip spending in the local area around the property. The questions used to elicit local recreation trip spending were consistent with those used in the USDA Forest Service recreation monitoring program (Zarnoch et al. 2011).

Measuring how the spending of recreation visitors affects the economies of local communities requires 1) an estimate of total recreation visitation within different trip types, 2) an estimate of the average spending of recreation visitors engaged in different trip types, and 3) a model of the local economy.

### **Box 1—Oregon State Parks properties sampled in 2012**

#### Columbia River Gorge Management Unit

Ainsworth  
Benson  
Bridal Veil Falls  
Dabney  
Lewis and Clark  
Mayer  
Memaloose  
Rooster Rock  
Starvation Creek  
Vista House

## **Average trip spending**

Spending averages were estimated using data collected from visitors to all of the properties sampled in 2012. Survey respondents reported trip expenditures made by their entire travel party within 30 miles of the visited facility. Trip expenses were reported within 10 expenditure categories, such as spending for hotels/motels/B&Bs, campground fees, restaurants, and gas and oil. Because they were interviewed in the middle of the trip, respondents interviewed in day use areas were asked to report expenses already made as well as anticipated expenses. Expenses at home in preparation for the trip and expenditures traveling to, but beyond 30 miles of the property, were not reported. The visitor spending reported here does not represent spending for equipment, gear, or other durable goods that might be used for recreation.

Our goal is to estimate spending averages for meaningful groups of visitors. In developing the approach to grouping visitors, we recognize that visitor spending is mostly influenced by the type of recreation trip taken (day or overnight) and whether the individual lives in the immediate area of the recreation destination (White and Stynes 2008). In general, the recreation activity of the trip has little influence over trip spending once the type of trip is taken into account. In our approach, we have grouped visitors to Oregon State Parks into five distinct segments by type of trip:

- **Non-local day trips:** non-local residents on day trips to the area,
- **Non-local overnight:** non-local residents staying overnight at the property or in the area,
- **Local day trips:** local residents on day trips to the area,
- **Local overnight:** local residents staying overnight at the property or in the area,
- **Non-primary:** visits where recreating at the property is not the primary reason for the trip away from home.

Local residents were identified as those who travelled 30 miles or less from home to reach the facility. Visitors were classified as overnight visitors if they reported a night spent away from home in the local area, reported local expenses on lodging or camping, or claimed to be participating in camping at the property. Visitors not classified as overnight were classified as day visitors. In some cases, an individual may be on an overnight trip away from home but on only a day trip to the local area. Those individuals were classified as “day” visitors. Finally, visitors were classified as non-primary visitors if their stated reason for traveling away from home was something other than recreation or if the property was not the main recreation destination. In some analyses, it is desirable to exclude the recreation trip spending of non-primary visitors. Note that for the Columbia River Gorge Management Unit the majority of non-primary visits are associated with non-locals. That pattern is similar to that found for visitors to Coastal Region Oregon State Parks properties and visitors to recreation areas managed by the USDA Forest Service.

The spending averages developed for year 2012 are based on a sample of 3,221 visitors. Average trip spending for parties recreating at Oregon State Parks Columbia River Gorge properties ranges from about \$40 for those parties on local day trips to about \$225 per trip for non-local parties on overnight trips to the area (Table 1). Most of the expenditures of parties on day trips are for food and gasoline. For non-local overnight visitors, camping fees, gasoline, and food account for nearly all of the locally-made recreation spending. Local overnight visitors spend most of their money on food, gasoline, and camping fees.

**Table 1—Average spending of visitors to Oregon State Parks Columbia River Gorge Management Unit properties, \$ per party per trip**

<b>Spending categories</b>	<b>Non-local Day</b>	<b>Non-local Overnight</b>	<b>Local Day</b>	<b>Local Overnight</b>	<b>Non-primary</b>
Lodging	0.00	27.52	0.00	19.06	37.02
Camping	0.00	33.44	0.00	27.69	12.32
Restaurant	11.10	41.39	6.29	22.24	35.42
Groceries	10.48	40.10	15.40	38.61	20.92
Gasoline	16.43	46.98	11.89	26.30	33.28
Entry Fees	3.11	11.65	3.53	9.65	5.36
Recreation & entertainment	1.38	6.94	1.91	4.84	3.16
Souvenirs and other expenses	<u>1.87</u>	<u>17.57</u>	<u>1.06</u>	<u>4.02</u>	<u>12.22</u>
<b>Total</b>	<b>44.37</b>	<b>225.60</b>	<b>40.08</b>	<b>152.41</b>	<b>159.71</b>
Sample size	336	463	821	154	1,447
Std. dev. of total	53.0	259.3	48.9	176.5	282.8
Percent error (95% level)	13.0%	10.7%	8.5%	18.7%	9.3%

All figures expressed in 2012 dollars. Percent error represents the size of the 95% confidence interval around the estimate of total visitor spending. For instance, if we had completed a census of all non-local day visitors, we expect that the “true” average spending would fall somewhere between \$38.60 (44.37 \*0.87) and \$50.14 (44.37 \* 1.13).

## Recreation visits

According to Oregon State Parks’ figures, properties in the Columbia River Gorge Management Unit received over 3.5 million recreation visits in 2012. Information from visitor surveys was used to determine the types of recreation trips taken to Oregon State Parks properties (Table 2). In the Columbia River Gorge, the majority of visits are non-primary visits; local day visits are the second most common type of visit. The high rate of non-primary visits at Oregon State Parks Columbia River Gorge Management Properties likely reflects the Columbia Gorge as being a recreation destination facilitated by the presence of Oregon State Parks properties rather than those properties being the specific trip destination. Compared to the Coastal Region, properties

within the Columbia River Gorge Management Unit receive relatively fewer non-local overnight visits (19% for the Coastal Region), relatively greater local day visits (11% for the Coastal Region), and a slightly smaller share of non-primary visits (55% for the Coastal Region).

**Table 2—Trip-type distribution of visits to Oregon State Parks properties, Columbia River Gorge Management Unit properties**

Non-local Day	Non-local Overnight	Local Day	Local Overnight	Non-primary	Sum
13%	8%	29%	5%	45%	100%

### Total visitor spending

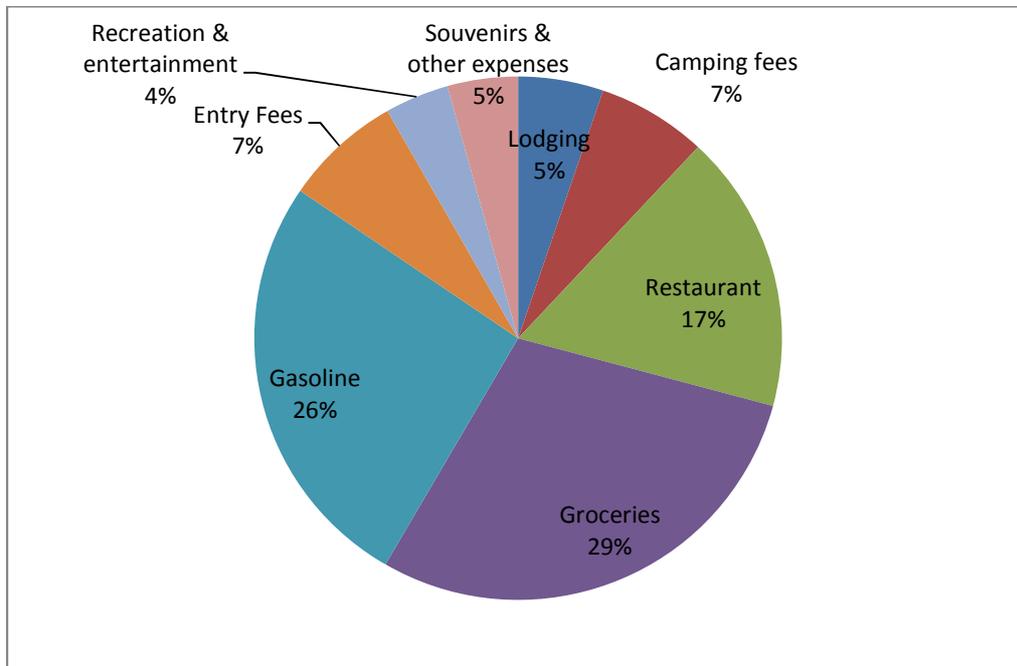
Because visitor spending is on a party basis, we first convert the reported number of visits to party visits based on average party sizes estimated from the visitor survey data. The nearly 3.5 million visits to Oregon State Parks properties in the Columbia River Gorge generate about \$50.1 million in visitor trip spending within the communities around the properties (Table 3). Non-local overnight visitors have the greatest total spending (\$15.4 million) of any visitor group. Spending for groceries (\$15.7 million) and gasoline (\$9.8 million) constitute the greatest total expenses for recreation groups (Figure 1). Including the non-primary visits from non-locals, visitors from outside the area (non-locals) spent about \$33 million in communities around Oregon State Parks properties in the Columbia River Gorge Management Unit.

**Table 3—Total trip spending annually by visitors within 30 miles of Oregon State Parks properties in the Columbia River Gorge Management Unit (\$ millions), 2012**

Spending category	Non-local Day	Non-local Overnight	Local Day	Local Overnight	Non-primary <sup>a</sup>	Total
Lodging	0	2,037	0	874	0	2,911
Camping	0	2,475	0	1,269	0	3,744
Restaurant	1,270	3,012	1,599	1,002	2,511	9,394
Groceries	1,186	2,887	3,872	1,721	6,083	15,749
Gasoline	1,296	2,358	2,084	817	3,274	9,829
Entry Fees	363	865	915	443	1,437	4,023
Recreation & entertainment	161	515	495	222	778	2,171
Souvenirs & other expenses	<u>213</u>	<u>1,273</u>	<u>268</u>	<u>180</u>	<u>421</u>	<u>2,355</u>
<b>Total</b>	<b>4,489</b>	<b>15,422</b>	<b>9,233</b>	<b>6,530</b>	<b>14,504</b>	<b>50,178</b>

All figures expressed in 2012 dollars.

<sup>a</sup> We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks property when already in the area for some other reason.



**Figure 1—Expenditure pattern of visitors to Oregon State Parks, Columbia River Gorge Management Unit, 2012.**

### **Economic contribution of Oregon State Parks visitors**

Spending by recreation visitors for the purchase of goods (e.g., souvenirs) and services (e.g., restaurant meals or guided trips) creates economic activity in the communities around Oregon State Parks properties. To provide a good or service to a visitor, a business typically must hire employees and buy goods and services (e.g., fuel, fresh produce) from other businesses in the local area. Additionally, the employees of businesses serving visitors use their income to make their own household purchases in town. This “chain reaction” of economic activity in local communities resulting from visitor spending is quantified by a metric referred to as an “economic multiplier.” The economic activity resulting from the initial spending by visitors is referred to as the “direct effect;” the activity associated with businesses and employees interacting because of visitor spending are “secondary effects.” The combination of direct and secondary effects is referred to as the “total effect.”

There are several important considerations for interpreting the estimates of the economic contribution of visits to Oregon State Parks. First, in traditional economic impact analysis, the spending of those who live within the impact area of the park (within 30 miles—local residents) would be excluded from the analysis because their spending does not represent “new” money to the region. Because we have included the spending of locals, we refer to this analysis as an economic contribution analysis. Second, we have included only a portion of the spending of

those visits where the stated reason for the trip away from home was something other than visiting the Oregon State Parks property (e.g., business, visiting friends and relatives, recreating elsewhere). Economic contribution or impact analyses attempt to estimate the economic activity associated strictly with the presence of the recreation site. Because the recreation facility did not cause the trip away from home in those “non-primary” visits, much of the spending by those individuals cannot be attributed strictly to the property. We have applied the average spending of local resident day visitors to those visits where the trip was caused by something other than recreating at the property. Local resident day visitor spending is considered a conservative estimate of the additional cost of recreating at the property for someone who is already in the local area. Third, we have relied on the economic multipliers included in Money Generation Model-version 2 estimated for small cities throughout the United States. Those economic multipliers adequately characterize the economies of small city communities within the U.S., but were not estimated using data only from Oregon communities.

We characterize the economic contribution of recreation visitor spending in terms of business sales, full- and part-time jobs, labor income, and value added.

- **Sales** are the sales of firms within the region associated with visitor spending.
- **Jobs** are the number of jobs in the region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions. The economic modeling software informing this analysis (IMPLAN) does not supply jobs estimates in terms of full-time equivalents or in terms of total hours of work.
- **Personal income** includes wage and salary income, proprietor’s income and employee benefits.
- **Value added** is a commonly used measure of the contribution of an industry or region to gross national or gross state product. Value added is personal income plus rents and profits, plus indirect business taxes. As the name implies, it is the “value added” by the region to the final good or service being produced. Value added 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.

Note that the values for direct effect sales are less than total visitor spending. This occurs because for some types of purchases (e.g., gasoline, sporting goods, and souvenirs) only the retail and wholesale margin portions of visitor expenditures will accrue to the local economy. For those purchases, the expenditure associated with the cost of producing the product (e.g., refining gasoline) immediately “leaks” out of the region because that product (refined gasoline) is not made within the region. The “capture rate” describes what portion of total spending results in direct sales of products and services produced in the region. In this analysis, the regional capture rate is about 56%.

The economic contribution of recreation visitor spending in the Columbia River Gorge Management Unit is reported in Table 4.

**Table 4—Economic contribution to local communities from Oregon State Parks visitor spending, Columbia River Gorge Management Unit, 2012**

<b>Sector/Spending category</b>	<b>Sales \$000's</b>	<b>Jobs</b>	<b>Labor Income \$000's</b>	<b>Value Added \$000's</b>
<b>Direct Effects</b>				
Motel, hotel cabin or B&B	2,911	34	713	1,558
Camping fees	3,745	48	1,154	1,720
Restaurants & bars	9,394	177	3,046	4,861
Admissions & fees	4,023	84	1,132	2,361
Recreation & entertainment	2,171	45	611	1,274
Grocery stores	3,984	71	1,944	2,878
Gas stations	2,192	25	892	1,529
Other retail	1,178	22	562	895
Wholesale trade	1,451	10	532	1,089
Local production of goods	1,187	2	75	229
<b>Total Direct Effects</b>	<b>\$32,236</b>	<b>516</b>	<b>\$10,661</b>	<b>\$18,394</b>
Secondary effects	14,413	132	4,342	8,721
Multiplier	1.45	1.26	1.41	1.47
<b>Total Effects</b>	<b>\$46,649</b>	<b>648</b>	<b>\$15,003</b>	<b>\$27,114</b>

Collectively, the direct spending of visitors to Oregon State Parks properties in the Columbia River Gorge Management Unit supports about 516 full and part time jobs, \$10 million in labor income, and \$18 million in value added (Table 5). The secondary activity generated from visitor spending increases sales by about \$14 million, supports an additional 132 full and part-time jobs, and \$4 million in income.

**Table 5— Economic contribution to local communities from Oregon State Parks visitor spending, Columbia River Gorge Management Unit, 2012**

<b>Effect</b>	<b>Sales \$000's</b>	<b>Jobs</b>	<b>Labor Income \$000's</b>	<b>Value Added \$000's</b>
<b>Direct Effects</b>	32,236	516	10,661	18,394
Secondary Effects	14,413	132	4,342	8,721
<b>Total Effects</b>	46,649	648	15,003	27,114

## Economic impact of Oregon State Parks visitors

The primary difference between economic contribution and economic impact analyses is the inclusion of spending by local residents in the former analysis. Economic impact analysis attempts to quantify the economic activity generated from “new” money brought to the region. Economic impact analysis attempts to quantify the amount of economic activity that would be lost to the region were the attraction not present. In this analysis, we include the non-primary visits that are associated with non-locals. As in all other analyses, we apply the average spending of day visitors already in the area to non-primary visits. The economic impact of Columbia River Gorge Management Unit visitation results in about \$21 million in direct sales, supports 347 full and part-time jobs, and generates about \$7 million in labor income (Table 6). Secondary economic activity from non-local visitor spending generates an additional \$9 million in sales and supports an additional 89 full and part-time jobs.

**Table 6— Economic impact to local communities from Oregon State Parks non-local visitor spending, Columbia River Gorge Management Unit, 2012**

<b>Effect</b>	<b>Sales \$000's</b>	<b>Jobs</b>	<b>Labor Income \$000's</b>	<b>Value Added \$000's</b>
<b>Total Direct Effects</b>	<b>21,697</b>	<b>347</b>	<b>7,168</b>	<b>12,359</b>
Secondary Effects	9,693	89	2,919	5,864
<b>Total Effects</b>	<b>31,390</b>	<b>436</b>	<b>10,087</b>	<b>18,223</b>

## Property-level reporting

Property-level estimates of economic activity are desirable for a variety of local management purposes. In 2012, only a portion of the Oregon State Parks properties within the Columbia River Gorge Management Unit underwent visitor sampling. Lacking survey data for each individual property, we assume that the average spending of visitors and the distribution of trip types at unsampled properties is similar to that observed at nearby sampled properties. For example, the average spending of local day visitors at an unsampled property is likely similar to the average spending of local day visitors at a nearby sampled property. The distribution of trip types is more likely to differ meaningfully between sampled and unsampled properties. In computing property-level spending, we assume the trip-type distribution at unsampled properties is represented by the average trip type distribution estimated from sampled properties. The transferability of trip-type distribution may be limited for sites such as waysides and small facilities used primarily as intermediate stops on recreation trips. We control for differences across all properties related to the presence of a campground within the property.

Property-level estimates represent the economic activity generated in the local communities around the individual properties (Table 7). Results for individual properties can be summed to the regional totals. Economic activity generated in communities around properties is reported both in terms of economic contribution and economic impact. The economic impact results are computed based only on the spending of non-local visitors. The magnitude of economic activity generated around individual properties traces mostly to the amount of recreation use at the property and the presence of a campground.

**Table 7—Property-level economic activity generated from recreation visitor trip spending in 2012**

Property	Day visits	Overnight visits	Total spending (\$000's)	Total spending—non-locals (\$000's)	Economic contribution			Economic impact (non-local visitors only)		
					Jobs	Labor income (\$000's)	Value added (\$000's)	Jobs	Labor income (\$000's)	Value added (\$000's)
AINSWORTH	0	22,744	777	712	11	254	459	10	233	421
BENSON	118,624		1,866	1,219	24	555	1,004	16	367	662
BRIDAL VEIL FALLS	221,566		3,484	2,277	45	1,037	1,875	30	685	1,237
CROWN POINT	585,064		5,521	3,607	71	1,643	2,970	47	1,085	1,960
DABNEY	232,560		3,657	2,390	47	1,089	1,968	31	719	1,298
GUY W TALBOT	306,010		4,812	3,145	62	1,433	2,589	41	946	1,708
HISTORIC COLUMBIA										
RIVER HIGHWAY	332,300		5,226	3,415	67	1,556	2,812	44	1,027	1,855
KOBERG BEACH	220,000		3,460	2,261	45	1,030	1,862	29	680	1,228
LEWIS AND CLARK	257,046		4,042	2,641	52	1,203	2,175	34	794	1,435
MAYER	154,462		2,429	1,587	31	723	1,307	21	477	862
MEMALOOSE	0	26,796	916	838	13	300	541	12	275	496
PORTLAND WOMENS FORUM	307,368		2,900	1,895	37	863	1,560	25	570	1,030
ROOSTER ROCK	486,256		7,647	4,997	98	2,276	4,114	65	1,503	2,715
STARVATION CREEK	186,944		2,940	1,921	38	875	1,582	25	578	1,044
VIENTO	<u>72,302</u>	<u>14,662</u>	<u>501</u>	<u>459</u>	<u>7</u>	<u>164</u>	<u>296</u>	<u>6</u>	<u>150</u>	<u>271</u>
<b>TOTAL</b>	<b>3,480,502</b>	<b>64,202</b>	<b>50,179</b>	<b>33,363</b>	<b>648</b>	<b>15,003</b>	<b>27,114</b>	<b>436</b>	<b>10,087</b>	<b>18,223</b>

## **Limitations**

This analysis incorporates a large volume of data collected from a variety of Oregon State Parks properties. The estimates of average visitor spending are computed from several thousand survey responses. To estimate average visitor spending and total spending attributable to Oregon State Parks properties, we follow the framework adopted by the USDA Forest Service and the National Park Service. Many of the uncertainties and errors in recreation economic impact studies tend to inflate impact estimates (Stynes and White 2006). To counter that general pattern, we have adopted a conservative approach to estimating visitor spending and the attribution of visitor spending. The estimates of average spending found in this study are consistent with those reported for the USDA Forest Service and National Park Service (White and Stynes 2010, Stynes 2011). The numbers of recreation visits at each property are Oregon State Parks' estimates developed using established internal procedures.

In some cases, visitors may enter and exit properties multiple times in a single day during a single visit or may complete visits to a single property on consecutive days in conjunction with an overnight stay (e.g., at a hotel) in the local area. Multiple entries and exits on a given day during a single visit have the potential to inflate the estimate of the number of actual visits, and thereby the estimates of total spending, received at a property. To the extent re-entry is not corrected for in the existing visit estimates, the estimates of total spending may be inflated. The spending averages for overnight visitors represent spending in the local area during the entire trip. To the extent that some visitors might stay overnight in hotels or motels (a single trip), but enter the same property on multiple consecutive days (multiple visits), the estimate of total spending may be inflated. Re-entry to the same property on consecutive days during the same trip likely presents little issue for the properties considered here.

There are several Oregon State Parks properties located in the Columbia River Gorge. Given the proximity of properties to one another, it is possible for individuals to complete visits to multiple properties during a single trip to the Columbia River Gorge. When multiple properties are visited on a single trip, it makes it difficult to attribute visitor spending across the properties. In addition, in some cases when the properties are within 30 miles of each other, visits to multiple properties on the same trip could lead to double-counting of trip expenditures, i.e., average visitor spending for the trip is applied to each property's visit. We have adjusted downward by 60% the number of visits to the Crown Point State Scenic Area and the Portland Women's Forum State Scenic Viewpoint to correct for a pattern of concurrent visits involving both those properties. Although there is the potential for some double counting of expenditures, our conservative treatment of non-primary visits (where multi-property visits would likely be classified) dampens the potential magnitude of double counting.

A subset of properties in the Columbia River Gorge Management Unit was sampled in 2012. To develop estimates for all properties collectively and for properties not sampled, we assume the distribution of trip types at properties not sampled can be represented by the sampled properties.

For some distinct types of properties, such as waysides or historical sites, the trip-type distribution may not fully represent the types of trips those properties receive. Likely, the standard trip-type distribution underestimates the share of non-primary trips to those locations.

To estimate the economic activity in rural communities associated with Oregon State Parks visitor spending, we must rely on models of the economies of those communities. In any application, the extent to which the model is an adequate representation of reality influences the accuracy of model results. In this study, we have relied on an established modeling system, the Money Generation Model-version 2. That modeling system has been used for a variety of applications at the federal, state, and local levels.

To estimate the average spending of recreation visitors, we rely on data collected from a sample of recreation visitors. The percent errors (or size of the 95% confidence intervals relative to the estimated means) of our estimated figures are in most cases 8% to 13% (Table 1). The interpretation of the percent error is that we are 95% confident that the true average spending is, in most cases, within 8% to 13% of our estimated mean. For one spending average, a small sample size lead to percent error of more than 18%. The percent errors found in this study are fairly typical of those found for outdoor recreation visitor spending.

It is not common practice to place confidence intervals on estimates of economic contribution or impact. Further, we are not able to do so in this case because variance estimates were not provided for Oregon State Parks visitation figures. Further, the variance patterns around the spending averages reported above do not trace though linearly to the contribution and impact estimates from the economic model. The reasonableness of the estimated economic effects is frequently judged based on the statistical confidence regarding the inputs (i.e., average visitor spending and recreation use estimates). In this analysis we have relied on response coefficients to estimate economic activity (see Appendix). Because we do that, one could estimate economic activity across a range of visitation figures. This allows a user to get some idea of how sensitive estimates of economic activity are to changes in input assumptions.

Expenditures by Oregon State Parks to operate and staff properties also create economic activity in local communities. We have not estimated that economic activity here. However, we do model the economic activity generated from expenditures for campground fees. The fees we estimate here are collected by Oregon State Parks as well as private campgrounds and other public campgrounds. Campground fees collected by Oregon State Parks are largely spent in the local area by the same property for campground operation. Because of how we have handled campground fees, those “operation” expenditures by Oregon State Parks are represented partially in this analysis. Because it would lead to some double counting, the economic activity results reported here should not be added directly to any estimates of economic activity developed for Oregon State Parks operations and staffing.

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## **Appendix—Analytical methods**

### Data for estimating visitor spending

We adopted a variety of rules for data cleaning and exclusion in developing visitor spending averages. The rules we have adopted in this analysis are consistent with those used in estimating visitor spending for the USDA Forest Service and National Park Service. Survey data were excluded from this analysis if the respondent appeared to have stopped completing the survey (78 cases), the spending was determined to be an outlier or a contaminant (600 cases), or the respondent failed to answer questions that allowed us to classify them as a local or non-local visitor (269 cases) (Table 8).

Of those who appeared to finish the survey, there were 1,336 observations where expenditures in all categories were blank. Respondents who leave all spending categories blank often do so because either 1) the respondent in fact did not have any spending and indicated that zero spending by leaving the responses blank or 2) refused to report their spending. Like in previous analyses for Oregon State Parks, and consistent with the approach used for the USDA Forest Service, when a respondent who finished the survey left all spending questions blank, we have filled those blanks with zeros. All else being equal, that will reduce estimated average spending. Additionally, some respondents provided responses to some spending categories but left other categories blank. In those cases, we also have filled the blank responses with zeros.

In addition to handling missings, we also adopted rules to minimize the influence of contaminant and outlier observations. Contaminants are observations that do not belong to the population or are erroneous observations. An observation that includes spending that actually occurred outside the 30-mile radius around the recreation site or an observation that misplaces the decimal point when reporting an expense (i.e., 1,000.00 dollars versus 10.00) are both examples of contaminants. An outlier is an observation that does belong to the population under study but has undue influence on the estimation of the sample mean given the small size of the sample. For example, some day visitors may spend \$800 during an outdoor recreation trip, but such spending is uncommon and the vast majority of visitors spend substantially less or nothing at all (Stynes and White 2006). When sample sizes are small, outlier observations can significantly influence the estimate of the sample mean.

In these spending averages, we excluded observations under the following conditions:

- The number of nights spent away from home in the local area was greater than 30,
- The reported size of the group was greater than 10 individuals,
- Spending per day/night was greater or equal to \$500 or spending on recreation and equipment rental was greater or equal to \$500 in total,
- We could not classify the respondent as local or non-local or the respondent did not state if nights were spent in the local area.

**Table 8—Cases excluded from analysis**

<b>All surveyed cases</b>	<b>4,168</b>
<b>Respondents only partially completing survey</b>	<b>78</b>
<b>Outlier and contaminant cases</b>	<b>600</b>
Nights spent locally > 30	27
Group size > 10	373
Spending per night >= \$500 or recreation equipment expenses >= \$500	200
<b>Unable to classify into a visitor segment</b>	<b>269</b>
Did not answer if any nights were spent locally	183
Could not classify as local or non-local	86
<b>Cases for economic analysis</b>	<b>3,221</b>

Determining trip-type distribution and average party size

Visit estimates for year 2012 were provided for individual properties by Oregon State Parks. Visits were reported separately for day use areas and overnight facilities of individual properties. In the sampling effort, visitors within day use areas were surveyed on-site via intercept sampling; visitors using overnight facilities were surveyed online using reservation records. From those separate samples of day and overnight visitors, we determined the shares of survey respondents completing day and overnight visits, the share of local and non-local visits, and the share of non-primary visits. For day-use-only properties, we distributed visits into trip types using only responses from those individuals sampled at day use properties. For properties with both day- and overnight-use areas, we apportioned day visits across trip types using the day use area sample and overnight visits across trip type using the overnight use sample. In determining the trip-type distribution, we assumed that we have a representative sample of visits to Oregon State Parks properties.

To estimate total spending, the estimates of recreation use and average visitor spending must be placed in the same units. For this study we have converted visits to party visits using estimates of average party size, within trip type. Average party size estimates were computed for the Columbia River Gorge Management Unit using the collected survey data (Table 9).

**Table 9—Average number of visitors per party, by trip type**

<b>Area</b>	<b>Non-local Day</b>	<b>Non-local Overnight</b>	<b>Local Day</b>	<b>Local Overnight</b>	<b>Non- primary</b>
Columbia River Gorge MU	3.2	3.1	3.7	3.4	3.1

Response coefficients for economic analysis

To accommodate a range of options for completing analyses for individual properties or in aggregate and to facilitate excluding particular trip types (e.g., visits from local residents) we used response coefficients to estimate economic activity generated by visitor spending. Response coefficients relate a given number of visits (e.g., 10,000 party visits) or amount of spending (e.g., \$1 million in spending) to the response in the local economy (Table 10). Response coefficients were estimated for the Columbia River Gorge Management Unit within the Money Generation Model—version 2. Year 2010 multipliers representing generic small city areas were used for analyses of Columbia River Gorge Management Properties. To match the multiplier year, average spending figures were deflated to 2010 dollars using Bureau of Labor Statistics price indices for the economic sectors related to visitor spending. The availability of the response coefficients allow for revision of the economic contribution or impact analysis given revised visitation estimates or with changes in the types of trips included (e.g., only overnight trips).

**Table 10—Response coefficients by trip type for the Columbia River Gorge Management Unit, per 10,000 party visits in each trip type**

	<b>Non-local Day</b>	<b>Local Day</b>	<b>Non-local Overnight</b>	<b>Local Overnight</b>	<b>Non- primary<sup>a</sup></b>
<b>Direct Economic effects</b>					
Sales (\$000's)	\$ 226	\$ 191	\$ 1,470	\$ 994	\$191
Jobs	4	3	22	15	3
Personal Income (\$000's)	\$ 76	\$ 66	\$ 469	\$ 314	\$ 66
Value added (\$000's)	\$ 130	\$114	\$ 810	\$ 541	\$ 114
<b>Total Economic Effects</b>					
Sales (\$000's)	\$ 321	\$ 273	\$ 2,154	\$ 1,464	\$ 273
Jobs	5	4	29	19	4
Personal Income (\$000's)	\$ 105	\$ 90	\$ 678	\$ 458	\$ 90
Value added (\$000's)	\$ 188	\$ 163	\$ 1,222	\$ 825	\$ 163

<sup>a</sup> We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks property when already in the area for some other reason.