

Columbia River Gorge Meta-Analysis: A Spatial and Temporal Examination of Outdoor Recreation



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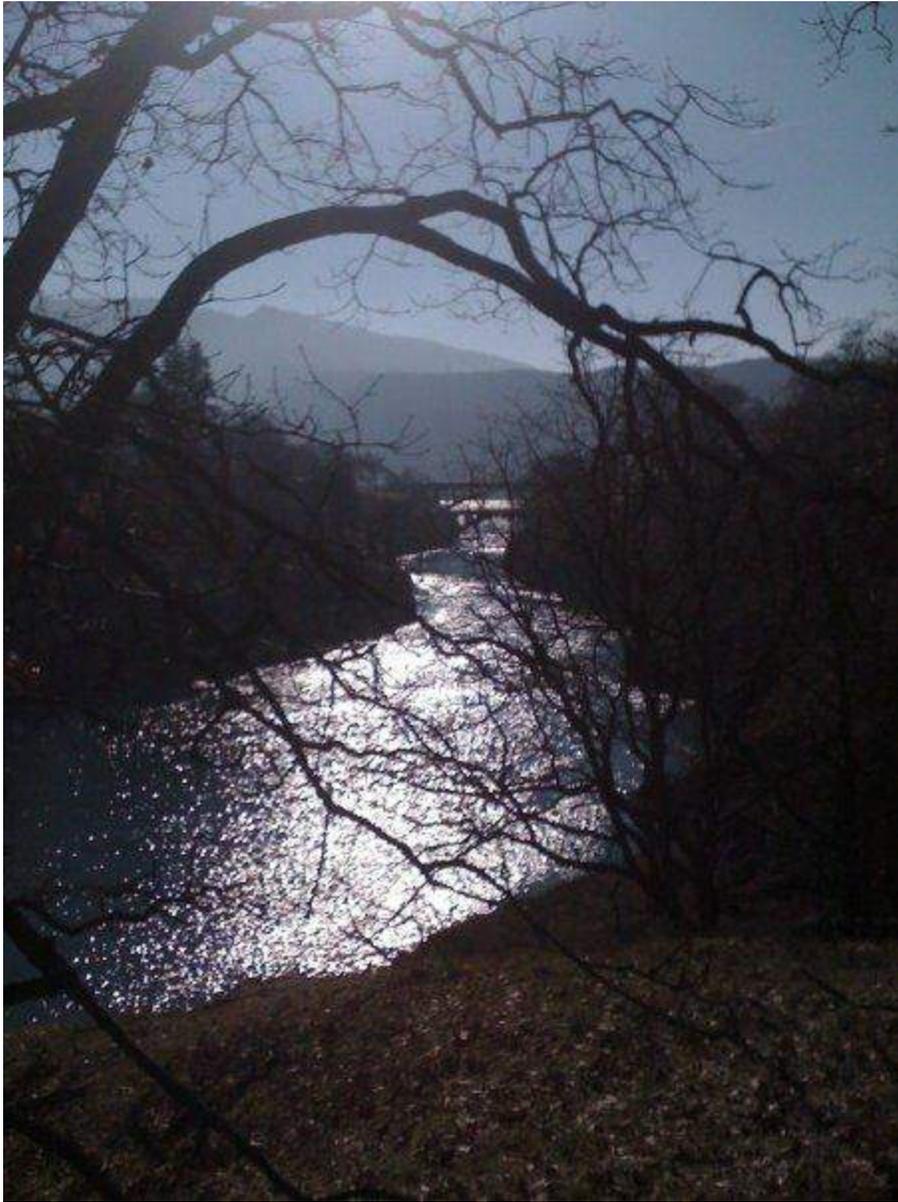
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**Columbia River Gorge Meta-Analysis:
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Executive Summary

Summary of the Overall Sample Analysis

Between 1997 and 2010, a total of 4,567 surveys were collected on various portions of the Columbia River Gorge in Oregon (n=4,045) and Washington (n=522). Over half (57.9%) of the sample was male, while an additional 42.1% was female. A majority of the respondents were Caucasian (90.8%) between the ages of 30 and 59 (60.5%) and earned an annual household income of \$99k or less (79.9%). The results show that some visitors traveled a considerable distance to recreate in the CRG (mean=665.38 miles), while a majority (53.2%) traveled 50 miles or less. Nearly two-thirds (64.1%) of the total sample indicated that they visited the CRG on day trips and spent an average of three hours (mean=3.14) participating in outdoor recreation activities. Repeat visitors also indicated that they spend an average of nearly 25 days (mean=24.79) annually in the CRG. Visitors in the CRG spend a substantial amount of money on outdoor recreation per year (mean=\$2,177.71). When asked about group spending patterns, over half (54.3%) of the respondents that they paid for their trip expenditures on their own. The trip expenditures that visitors spent the most on overall were *Private Lodging* (mean=\$172.49) and *Food and Beverages* (mean=\$65.27).

Visitors were also asked about motivations, trip satisfaction, perceived crowding and activity participation. The analysis revealed that nearly half (45.5%) of the visitors are motivated to recreate in the CRG because it is *an ideal location to participate in the activities that they enjoy*. Nearly all (96.8%) of the respondents rated their recreation experiences in the CRG as more than satisfactory. On average, visitors in the CRG perceived crowding between *slightly* and *moderately crowded* (mean=3.68). Popular primary recreation activities in the CRG were *hiking or walking* (36.0%), *viewing natural features* (22.5%) and *general sightseeing* (13.3%).

Summary of Activity Participation by Survey Year Analysis

From 2000-2010, visitors that participated in the studies were presented with a battery of 33 potential recreation activities and were asked to identify all that they took part in while visiting the Columbia River Gorge. Activity participation was then analyzed by survey year from the 2000-2010 National Visitor Use Monitoring (NVUM) Studies and the 2010 Columbia River Gorge Commission (CRGC) Study. After the initial survey year analysis, researchers compared survey year by age and race.

Several significant differences were found in activity participation between each survey year. The trends showed a steady increase in the participation levels of certain recreation activities such as *hiking and walking* and *relaxing*. Participation in *hiking and walking* jumped 22.1% between the 2000 NVUM study (62.5%) and 2010 NVUM study (84.6%). *Relaxing* saw a 13.8% increase in participation between the 2006 (39.7%) and 2010 (53.3%) studies.

Recreation participation in the Oregon portions of the CRG was also analyzed by year. Of the 33 activities, 15 produced significantly different results. In general, the trends show a steady decrease in activity participation between 2000 and 2010 with the exception of *hiking or walking*. The same analysis was conducted for the Washington portions of the CRG. Similar to the results from Oregon,

many activities showed a decrease in participation over the survey years with the exception of *driving for pleasure on roads*.

Outdoor recreation participation trends in Oregon and Washington were also analyzed by age. In Oregon, the largest proportion of recreationists was between the ages of 30 and 59 (2000=46.6%; 2006=67.3%; 2010=62.9%). Some activities, such as *hiking or walking*, remained consistently more popular with the younger recreationists (age 29 or younger). Other activities, such as *driving for pleasure on roads*, remained consistently more popular amongst the older recreationists (60 or older). In Washington, a majority of the recreationists fell between the ages of 30 and 59 in 2000 (63.8%) and 2006 (68.0%). In 2010, this age group represented the smallest portion of respondents (15.9%). The results showed a variety of trends in participation in Washington by age.

Additionally, activity participation was analyzed by race/ethnicity in the Oregon and Washington portions of the CRG. Caucasians made up a majority of the samples in both states (Oregon= 91.3%; Washington= 94.3%). However, the highest portions of Non-Caucasian respondents were recorded in 2010 (Oregon=10.4%; Washington=9.4%). In both states, viewing activities were more popular amongst Non-Caucasians. *Non-motorized water travel* remained more popular amongst Non-Caucasian than Caucasian respondents in Washington throughout each study year.

Columbia River Gorge Niche Analysis

The Columbia River Gorge was broken up into several areas according to geographical location and features for the data collection and analysis processes. The analysis details the results of trip expenditures, trip characteristics, visitor demography, overall satisfaction and perceived crowding and highlights significant differences found amongst visitor responses in each area.

Western Gateway- Oregon and Washington

Located 25 miles east of Portland and Vancouver, WA, the Western Gateway of the Columbia River Gorge is known for its powerful easterly winds and picturesque vistas of sheer cliff walls dotted with waterfalls. It serves as a natural portal of escape from urban life into serene natural landscapes.

Over half (59.9%) of the visitors in this area were between the ages of 30-59 years old. A majority of the Western Gateway visitors indicated that they were Caucasian (93.8%) and had an annual household income of \$99k or less (80.3%). Since the area is in close to two major urban centers, visitors indicated that they spent significantly more days (mean=93.67 days per year) participating in their primary recreation activities and traveled significantly shorter distances (mean=50.59 miles) than visitors in other areas. Generally, group sizes were smaller (mean=1.52 people per group) in the Western Gateway area than other places in the Gorge and visitors spent less on their recreation experiences (mean=\$6.24), especially parking, entry and activity fees (mean=\$0.77).

Wall and Falls

Upon entering the Gorge, visitors are enveloped by cliffs covered in lush greenery and numerous ribbons of cascading waterfalls. This is the Wall and Falls area that attracts millions of visitors annually from the Portland and Vancouver metro areas. The Walls and Falls area offers several miles of hiking trails that serve as access to breathtaking vistas and serenity of the Mark O Hatfield Wilderness. In addition to natural attractions, this section of the Gorge has an abundance of man-made structures of historical significance including the Columbia River Highway, Crown Point, Multnomah Falls Lodge and other Civilian Conservation Corps era structures.

A majority of the visitors surveyed in the Walls and Falls area were Caucasian (90.7%) between the ages of 30-59 (58.9%). Respondents in this area were significantly more likely to be visiting the Gorge on overnight trips (43.4%) and, along with Oak/Pine/Flowers visitors, spent a significantly higher amount of days away from home on their visits (mean=17.01 days). They were also significantly more likely to visit the Gorge for the sole reason that it was within the CRG (21.1%). However, visitors in the Walls and Falls area participated in their main activities less annually (mean=6.68 days) within the Gorge than visitors in other areas.

Skamania Highlands

Located along on the Washington side of the Columbia River, the Skamania Highlands offer visitors spectacular views of sweeping cliff lines, towering mountains and ancient flowing waters. One focal

point of the Skamania Highlands is rustically elegant Skamania Lodge. Located on 175 acres of rolling hills in the heart of the Gorge and built in the true Pacific Northwest style, the Lodge and its surrounding property attract thousands of visitors annually. The area boasts access to many recreation opportunities such as hiking, windsurfing, fishing and mountain biking.

A significantly higher portion of visitors in the Skamania Highlands reported being between the ages of 30-59 (94.2%) and earned an annual household income of \$99k or less (87.9%). A majority (94.2%) of the visitors reported that they were Caucasian. According to the analysis, the Skamania Highlands seem to attract more visitors on family vacations than other areas of the Gorge. A significantly lower portion of the respondents indicated they pay for only their trip expenses. The highest portion of visitors that paid for other group members were sampled in the Skamania Highlands area. Additionally, visitors in this area were significantly more likely to take picnics or be on family gatherings. Visitors in this area were also significantly more likely to participate (78.4%) in *hiking or walking* and were also more likely to claim this as their primary activity (55.0%).

Oak/ Pine/ Flowers (Washington and Oregon)

This area of the Columbia River Gorge acts as a transition zone between the lush Cascadian west and the arid High Desert east. This transition is evident through the area's flora change from oak and pine hardwood forest and wildflower meadows to grassy synclinal hills and plateaus. The diverse landscape is also dotted with Native American historical sites, small farms and rural communities. Popular recreation activities in this area of the Gorge include hiking, nature study and mountain biking.

A majority (66.1%) of the visitors to this area were between the ages of 30-59. The second highest portion (19.0%) of older recreationists was found to be visiting this area of the Gorge. Almost all of the visitors in this area were Caucasian (95.3%) and a majority (80.8%) had a household income of \$99k or less. When asked about group spending patterns, those that paid for their entire group in the Oak/Pine/Flowers area spent significantly more than those in other areas (mean=\$557.20). Additionally, shared group expenses were significantly higher in this area than in other areas of the Gorge (mean=\$220.78). The visitors that were on overnight trips in this area spent the longest amount of time in the Gorge (mean=22.19 days). Visitors in this area were significantly more likely to participate in *general viewing activities* (70.3%) and *bicycling* (17.2%). Furthermore, a significantly higher portion of visitors in this area (50.6%) reported that *non-motorized water travel* was their primary activity while in the Gorge. Conversely, visitors in this area were least likely to participate in *viewing wildlife* (22.3%) while visiting the CRG.

Columbia River

The Columbia River is one of the most renowned rivers in the United States. Historically, it was a last obstacle for many who made the arduous journey along the Oregon Trail. Today, the Columbia River is essential to the surrounding communities by providing electricity, flood control and a safe transportation corridor through the Cascades. It also supports crucial wetland and marsh habitats for birds, fish and other wildlife. The river also serves as a major recreation hotspot for fishing, boating, and windsurfing.

While a majority of the visitors were between the ages of 30-59 (63.6%), the highest portion of visitors over 60 (22.9%) were recreating in the Columbia River area. Additionally, the highest portion (19.2%) of Non-Caucasian respondents was visiting the Columbia River area. Visitors in this area of the Gorge spent significantly more on *gasoline and oil* (mean=\$84.88), *souvenirs and clothing* (mean=\$161.43),

and *entry, parking and recreation fees* (mean=\$29.40). Furthermore, Columbia River visitors that paid for their trip expense themselves spent more on average (mean=\$352.36) than visitors in others areas of the Gorge. A significantly higher portion (26.5%) of visitors on day trips spent over seven hours recreating in the Gorge. In regards to activity participation, Columbia River visitors were significantly more likely to take part in *fishing* (36.9%) and *viewing nature centers, interpretive trails and visitor centers* (40.3%). In contrast, this group of visitors was significantly less likely to participate in *nature study* (8.7%) and *hiking or walking* (40.9%). When asked about making improvements to recreation facilities, 100.0% of the visitors in the Columbia River area said that they felt improvements should be made.

Columbia Tributaries

Data collection in the Columbia Tributaries area of the Gorge took place in the White Salmon and Klickitat Wild and Scenic Rivers of Washington. The White Salmon River runs from the glacial slopes of Mt. Adams and winds its way through pristine, undeveloped landscapes in the Gifford Pinchot National Forest. The river also flows through orchards, farmland and rural housing communities. This river is extremely popular with rafters and kayakers for its extended white water season. The Klickitat River is the second longest free flowing river in the state of Washington and begins its course to the Columbia River from the high Cascades near Tieton Peak. The Klickitat flows mildly through spectacular basalt formations of the Klickitat Gorge where traditional Native American fishing techniques are still practiced.

The smallest amount (5.2%) of respondents in the age 60 or older category was recorded in the Columbia Tributaries area. Conversely, the highest amount (28.6%) of respondents age 29 or younger was recorded in this area. Almost all of the respondents were Caucasian (98.6%) and a majority had an annual household income of \$99k or less (84.6%). Visitors in the Columbia Tributaries area were significantly more likely to have children in their group (86.9%) and were more likely to be motivated to visit the area to spend time with companions (24.6%). Columbia River area visitors spent significantly less days (mean=15.71) recreating in the CRG annually than visitors in other areas. They were also least likely to say that improvements to recreation facilities were needed (38.5%). The analysis showed that visitors in this area of the Gorge were significantly less likely to participate in *viewing natural features* (62.7%), *nature study* (8.5%), *driving for pleasure* (22.0%), and *hiking or walking* (41.5%). On the contrary, Columbia River visitors were significantly more likely to take part in *non-motorized water travel* (52.9%), *other non-motorized activities* (14.6%) and *primitive camping* (6.1%).

Overall Analysis of Frequencies, Percentages and Means

Visitor Demographics and Trip Characteristics

Visitor Demographics

- The majority of the entire sample of CRG participants was male (57.9%). However, gender representation within the CRG was relatively even compared to the other studies looking at outdoor recreation participation throughout the Pacific Northwest.
- Nearly two-thirds (60.5%) of the overall sample indicated that they were between the ages of 30 and 59.
- Older recreationists made up the smallest portion (13.7%) of the visitors in the CRG throughout all of the study years.
- A vast majority (90.2%) of the sample of recreationists in the CRG indicated that they were Caucasian. While less than 10 percent (9.2%) of the sample was non-Caucasian.
- Over three-fourths (79.9%) of the total sample had a household income of \$99k or less.

Table 1. Visitor Demographics

	Frequency	Valid Percent
Gender		
Male	2725	57.9
Female	1978	42.1
Age (years old)		
29 or less	1151	25.8
30 to 59	2704	60.5
60 or older	613	13.7
Race		
Caucasians	3773	90.8
Non-Caucasians	381	9.2
Income		
\$99k and under	741	79.9
\$100k and over	186	20.1

Trip Characteristics

- The majority (88.6%) of those sampled throughout each study year were recreating in the Oregon portions of the CRG.
- The results show that many visitors were willing to travel a considerable distance to recreate in the CRG (mean travel distance=665.38). In fact, one-fourth (25.2%) of the total sample indicated that they traveled over 500 miles. This indicates the CRG is a popular travel destination for those visiting northern Oregon and southern Washington.
- On the contrary, over half (53.2%) of the sample traveled 50 miles or less to visit the CRG.
- The data shows that most visitors (64.1%) recreate on day trips while in the CRG. But over one-third (35.9%) of visitors stayed overnight while visiting the area.
- Those that recreated on overnight trips in the CRG stayed an average of five days in the area (mean=5.46 days).
- Those that indicated to be in the area on day trips spent an average of three hours in the CRG (mean=3.14 hours).
- The data shows that most visitors (63.4%) travel to the CRG for recreational purpose two times or less per year. Over one-fourth (28.1%) of the total sample spent three to six days in the CRG.

Table 2. Trip Characteristics

	Frequency	Valid Percent
State		
Oregon	4045	88.6
Washington	522	11.4
Distance traveled from home to CRG		
25 miles or less	457	18.7
26-50 miles	845	34.5
51-75 miles	174	7.1
76-100 miles	71	2.9
101-200 miles	152	6.2
201-500 miles	133	5.4
>500 miles	617	25.2
	Mean=665.38	
Visit Type		
Overnight	1257	35.9
Day Trip	2248	64.1
Trip Length in Days		
1-2 days	313	61.3
3 days	85	16.6
4-7 days	63	12.3
8 days or more	50	9.8
	Mean=5.46	
Trip Length in Hours		
1-2 hours	833	50.9
2-4 hours	532	32.5
5-6 hours	161	9.8
7 hours or more	112	6.8
	Mean=3.14	
Number of Days per Year in CRG		
2 or less	1135	63.4
3-6 days	502	28.1
7-14 days	57	3.2
15 days or more	95	5.3
	Mean= 24.79	

Activity Participation

Activity Participation in the CRG

- The data shows that site seeing activities are extremely popular in the CRG. A vast majority of the sample reported that they participated in *viewing natural features*.
- Nearly two-thirds of the sample indicated that they participating in *general sightseeing* (61.0%).
- Additionally over one-fourth the sample took part in *viewing historic sites* (29.0%) and *viewing nature centers* (29.2%)
- Nearly three-fourths (71.6%) of the respondents reported that they participated in *hiking or walking* while in the CRG. The highest portion (36.0%) of respondents also claimed that this was their primary recreation activity.
- Other popular recreation activities in the CRG included *relaxing/hanging out* (47.1%) and *driving for pleasure* (42.3%).

Table 3. Activity Participation

Participation in Activity **(Percent)	Activities	Primary Activity (Percent)
6.0	Developed camping	2.1
1.4	Primitive camping	<1.0
1.8	Backpacking	<1.0
1.9	Resorts, cabins, etc	<1.0
17.4	Picnics & Family time	4.1
84.4	Viewing natural features	22.5
29.0	Visiting historic sites	<1.0
29.2	Viewing nature centers	<1.0
13.6	Nature study	<1.0
61.0	General sightseeing	13.3
4.6	Fishing	2.5
<1.0	Hunting	---
42.3	Driving for Pleasure	2.7
<1.0	Motorized water travel	<1.0
<1.0	Other motorized activities	<1.0
71.6	Hiking or walking	36.0
<1.0	Horseback riding	<1.0
6.3	Bicycling	3.8
3.7	Non-motorized water travel	2.8
3.0	Other non-motorized activities	1.0
2.9	Gathering natural products	<1.0
---	Beach use	---
---	Rock climbing	---
47.1	Relaxing/hanging out	3.1
8.3	Other	2.6

Trip Expenditures

Trip Expenditures

- The analysis shows that CRG visitors spend a considerable amount of money on recreation annually. The largest portion (31.5%) of respondents reported that they spend over \$1,000 on recreation activities per year and the mean expenditure was over \$2,000 (mean=\$2,177.71).
- When asked about group spending patterns, over half (54.3%) of the respondents indicated that they paid for their own trip expenditures. Those that paid for themselves spent an average of \$53.86.
- Just over one fourth (26.5%) of the visitors reported that they shared trip expenditures. The average amount of shared expenditures was \$137.82.
- A minute portion of the total sample indicated that they paid for the expenditures of the entire group themselves. These respondents spent an average of \$244.92 while in the CRG.

Table 4. Trip Expenditures

	Frequency	Valid Percent
Amount Spent on Recreation Activities per Year		
\$25 or less	65	10.2
\$26-50	16	2.5
\$51-100	54	8.5
\$101-250	63	9.9
\$251-500	132	20.7
\$501-1,000	107	16.8
\$1,001 or more	201	31.5
	Mean=\$2,177.71	
Expense Sharing		
Shared expenses with others	168	26.5
Paid for self	345	54.3
Paid for all in group	93	14.6
Someone else in group paid for self	29	4.6
Amount of Expenses Shared with Others		
\$25 or less	45	51.1
\$26-100	27	30.7
\$101-500	9	10.2
\$501-1,000	4	4.5
\$1,001 or more	3	3.4
	Mean=\$137.82	
Amount of Expenses Paid for Self		
\$25 or less	320	84.2
\$26-100	33	8.7
\$101-500	17	4.5
\$501-1,000	6	1.6
\$1,001 or more	4	1.1
	Mean= 53.86	
Amount of Expenses Paid for All in Group		
\$25 or less	47	60.3
\$26-100	15	19.2
\$101-500	8	10.3
\$501-1,000	2	2.6
\$1,001 or more	6	7.7
	Mean=\$244.92	
Amount of Expenses Paid by Group		
\$25 or less	6	66.7
\$26-100	1	11.1
\$101-500	2	22.2
\$501-1,000	---	---
\$1,001 or more	---	---
	Mean=\$43.11	

Trip Expenditures (continued)

- The highest average in the trip expenditure categories was for *Private Lodging*. The CRG visitors that paid for *Private Lodging* spent an average of \$172.49 for their accommodations.
- Those that paid for *Government Lodging* on their trips spent considerably less (mean=\$32.60).
- Of those that paid for *Food and Beverages* in the Gorge, over half (59.5%) indicated that they spent less than \$25.00. An additional 25.3% said that they paid between \$26 and \$100 dollars on food and beverages while visiting the CRG.
- Over half of those that paid for *Gasoline and Oil* in the CRG paid less than \$25.00. An additional one-third spent between \$26 and \$100. The average fuel expenditure for visits to the CRG was \$38.52.
- Visitors indicated that they spent an average of \$35.99 on recreation activities within the CRG.
- Of those visitors that used an alternative mode of transportation to access the Gorge, a majority spent \$25.00 or less. The average amount spent on alternative transportation was \$25.83.
- Only a small number (n=232) of visitors indicated that they spent money on *Other Food* purchases. However, the average amount spent on this category was amongst the highest of all the trip expenditures at \$69.75.

Table 5. Trip Expenditures (continued)

	Frequency	Valid Percent
Amount Spent on Government Lodging		
\$25 or less	71	79.8
\$26-100	15	16.9
\$101-500	2	2.2
\$501-1,000	1	1.1
\$1,001 or more	---	---
	Mean=\$32.60	
Amount Spent on Private Lodging		
\$25 or less	61	43.6
\$26-100	25	17.9
\$101-500	42	30.0
\$501-1,000	10	7.1
\$1,001 or more	2	1.4
	Mean=\$172.49	
Total Lodging Expenses		
\$25 or less	301	67.5
\$26-100	40	9.0
\$101-500	86	19.3
\$501-1,000	15	3.4
\$1,001 or more	4	<1.0
	Mean=\$101.49	
Amount Spent on Food and Beverages		
\$25 or less	334	59.5
\$26-100	142	25.3
\$101-500	78	13.9
\$501-1,000	6	1.1
\$1,001 or more	1	<1.0
	Mean= \$65.27	
Amount Spent on Gasoline and Oil		
\$25 or less	415	58.2
\$26-100	258	36.2
\$101-500	38	5.3
\$501-1,000	2	<1.0
\$1,001 or more	---	---
	Mean=\$38.52	
Amount Spent on Recreation Activities		
\$25 or less	69	80.2
\$26-100	9	10.5
\$101-500	7	8.1
\$501-1,000	1	1.2
\$1,001 or more	---	---
	Mean=\$35.99	

Table 6. Trip Expenditures (continued)

	Frequency	Valid Percent
Amount spent on Souvenirs		
\$25 or less	349	81.0
\$26-100	59	13.7
\$101-500	23	5.3
\$501-1,000	---	---
\$1,001 or more	---	---
	Mean=\$22.26	
Amount Spent on Other Food		
\$25 or less	140	60.3
\$26-100	67	28.9
\$101-500	24	10.3
\$501-1,000	---	---
\$1,001 or more	1	<1.0
	Mean=\$69.75	
Amount Spent on Other Transportation		
\$25 or less	342	94.0
\$26-100	5	1.4
\$101-500	10	2.7
\$501-1,000	4	1.1
\$1,001 or more	3	<1.0
	Mean=\$25.83	
Amount Spent on Parking and Entry Fees		
\$25 or less	409	91.9
\$26-100	35	7.9
\$101-500	1	<1.0
\$501-1,000	---	---
\$1,001 or more	---	---
	Mean= \$6.17	
Amount Spent on Other Expenditures		
\$25 or less	306	82.5
\$26-100	56	15.1
\$101-500	9	2.4
\$501-1,000	---	---
\$1,001 or more	---	---
	Mean=\$16.36	

Most Important Reason for Visit and Overall Satisfaction

Most Important Reason for Visiting the CRG

- Nearly half (45.5%) of the sample indicated that the visit the CRG because it is a good place to participate in the recreation activities that they enjoy.
- Additionally, one fourth (24.3%) of the visitors indicated that they recreate in the CRG because they enjoy the place itself.
- Proximity to home was not a major factor in visitors' decisions to recreate in the CRG.

Table 7. Most Important Reason for Visiting the CRG

	Frequency	Valid Percent
Because I enjoy the place itself	539	24.3
It is a good place to do the outdoor activities I enjoy	1009	45.5
I want to spend more time with my companions	405	18.3
Because it is close to home	79	3.6
It is the Columbia River Gorge	186	8.4

Overall Satisfaction in the CRG

- An immense majority of the total sample indicated that they were more than satisfied with their recreational experiences in the CRG.
- Of the entire sample, only 11 respondents reported that they were less than satisfied with their visit to the CRG.

Table 8. Overall Satisfaction

	Frequency	Valid Percent
Less than Satisfied	11	<1.0
Satisfied	107	2.9
More than Satisfied	3585	96.8

Perceptions of Crowding

Perceptions of Crowding

- One-third (33.5%) of the visitors indicated that they felt moderately crowded while recreating in the CRG.
- Nearly one-fourth (20.7%) of the entire sample indicated that they did not feel at all crowded during their visits to the CRG.
- On average, visitors reported feeling slightly to moderately crowded (mean=3.68) in the CRG.

Table 9. Perceptions of Crowding

Perception of Crowding (%)	1	2	3	4	5	6	7	8	9	10	Mean
	Not at all Crowded	Slightly Crowded		Moderately Crowded			Extremely Crowded				
	20.7	18.9	14.0	12.1	9.9	11.5	6.6	3.5	1.7	1.0	3.68

Analysis of Recreation Participation in the Columbia River Gorge from 2000-2010

From 2000-2010, visitors that participated in each study were presented with a battery of 33 potential recreation activities and were asked to identify all that they took part in while visiting the Columbia River Gorge. Activity participation was then analyzed by survey year from the 2000-2010 National Visitor Use Monitoring (NVUM) Studies and the 2010 Columbia River Gorge Commission (CRGC) Study. After the initial survey year analysis, researchers searched for trends in activity participation by age and race.

Differences in Recreation Activity Participation in the CRG Since 2000

Differences in Recreation Activity Participation in the CRG Since 2000

- Of the battery of 33 potential recreation activities presented to visitors, 14 activities saw an increase in participation between the years 2000 and 2010. In contrast, six recreation activities saw a decrease in participation over the span of each survey year.
- The most significant increase in participation was observed with *hiking or walking* (+22.1%) between the three NVUM surveys. In the 2000 NVUM study, a 62.5% of the total sample participated in this activity, whereas the 2010 NVUM study yielded an 84.2% participation rate.
- *Relaxing* (+13.8%) also showed a significant difference in participation levels between the 2006 NVUM study (39.7%) and the 2010 NVUM study (53.3%).
- Additionally, the 2010 CRG (+12.3) showed a significant increase in participation with *fishing-all types* compared to the previous NVUM studies.
- Additional activities that showed a significant increase in participation include *gathering mushroom, berries, firewood or other natural products* (+4.9%), *FS managed resort, cabins, developed camps* (+4.5%), *non-motorized water travel* (+3.6%) and *developed camping* (+3.4).
- On the contrary, *viewing historic and prehistoric sites/areas* (-16.0%) showed a significant decrease in participation throughout the survey years. In the 2000 NVUM study, nearly half (45.5%) of the total sample indicated that they took part in this activity. In both the 2010 NVUM (21.4%) and 2010 CRG (28.0%) studies, only about one-fourth of the overall sample participated in this activity.
- More than half (56.4%) of the 2000 NVUM sample indicated that they participated in *pleasure driving on roads* while visiting the CRG. Yet, by the 2006 NVUM (33.5%) study participation in this activity dropped by -16.0% and stayed at relatively the same level in the 2010 NVUM (38.4%) and 2010 CRG (40.4%) studies.
- Other recreation activities that showed a decrease in participation between 2000 and 2010 include *nature study* (-4.7%), and *bicycling, including mountain bikes* (-4.5%).

Table 10: Differences in Recreation Activity Participation in the CRG Since 2000

Activities	2000 NVUM (n=1282)		2006 NVUM (n=1053)		2010 NVUM (n=1263)		2010 CRGC(n=736)		Change in percent
	N	%	N	%	N	%	N	%	
Hiking or walking**	685	62.5	763	72.5	1068	84.6	453	61.9	+22.1**
Relaxing**	---	---	418	39.7	673	53.3	---	---	+13.8**
Fishing-all types**	33	3.0	21	2.0	23	1.8	112	15.3	+12.3**
Picnic, family gathering in developed. site**	159	14.5	140	13.3	**261	20.7	161	22.0	+7.5**
Gathering mushrooms, berries, firewood, or other natural products**	12	1.1	30	2.8	35	2.8	44	6.0	+4.9**
FS managed resort, cabins, developed camps**	9	<1.0	12	1.1	19	1.5	39	5.3	+4.5**
Non-motorized water travel **	58	5.3	20	1.9	**7	<1.0	65	8.9	+3.6**
Developed Camping**	54	4.9	50	4.7	*85	6.7	61	8.3	+3.4**
Motorized water travel **	8	<1.0	3	<1.0	2	9.2	25	3.4	+2.7**
Other non-motorized activities**	28	2.6	25	2.4	33	2.6	38	5.2	+2.6**
View nature centers, trails, visitor center **	365	33.3	259	24.4	*360	28.5	226	30.9	+2.4**
Other motorized activities **	5	<1.0	2	<1.0	5	<1.0	21	2.9	+2.4**
Primitive camping**	13	1.2	9	<1.0	14	1.1	20	2.7	+1.5**
Hunting-all types *	2	<1.0	1	<1.0	1	<1.0	7	1.0	+0.8*
Backpacking**	32	2.9	10	<1.0	18	1.4	16	2.2	-0.7**
Bicycling, including mountain bikes**	122	11.1	51	4.8	*39	3.1	48	6.6	-4.5**
Nature study**	152	13.9	124	11.8	**220	17.4	67	9.2	-4.7**
Pleasure driving on roads **	618	56.4	353	33.5	**485	38.4	296	40.4	-16.0**
Viewing historic and prehistoric sites/areas **	499	45.5	228	21.7	270	21.4	206	28.0	-17.5**

Percent change indicates change in the participation percentage in 2000 in a given activity minus percent participated in 2010 in that activity.

* and ** indicate significant differences in percentage of respondents who participated in an activity between study years.

Differences in Recreation Participation in Oregon since 2000

Differences in Recreation Participation in Oregon since 2000

- When the data was analyzed with just the Oregon participants, it revealed that of 15 of the 33 recreation activities showed significant results between survey years.
- According to the results, significantly higher portions of visitors participated in *picnic, family gathering in developed site* in both of the 2010 studies (NVUM=21.0%; CRGC=22.4%) than the 2000 (15.1%) and 2006 (13.3%) NVUM studies.
- A significantly higher portion of visitors from the 2010 NVUM study (17.5%) indicated that they took part in *nature study* those from the 2000 (14.0%) and 2006 (11.7%) NVUM studies. Interestingly, the lowest portion of visitors that took part this activity was from the 2010 CRGC study (9.2%).
- Similarly, *hiking and walking* was significantly more popular amongst the 2010 NVUM visitors than the visitors that participated in the other three studies (2000 NVUM=62.1; 2006 NVUM=73.5; 2010 CRGC= 62.3%).
- Furthermore, 2010 NVUM visitors (53.6%) were significantly more likely to participate in *relaxing* than the 2006 NVUM visitors (40.4%). *Relaxing* was omitted from the 2000 NVUM and 2010 CRGC studies.
- The results show that visitors from the 2000 NVUM study (50.1%) were more likely to participate in *viewing historic and prehistoric sites/areas* than visitors from the other survey years (2006 NVUM=22.8%; 2010 NVUM=21.7%; 2010 CRGC=32.6%).
- Likewise, the portion of visitors from the 2000 NVUM study (36.6%) that participated in *view nature centers, trails, visitor centers* was significantly higher than in the other three studies (2006 NVUM=26.0%; 2010 NVUM=28.9%; 2010 CRGC=33.8%).
- Lastly, the data shows that visitors from the 2000 NVUM (59.5%) study were the most likely to participate in *pleasure driving on roads*.

Table 11: Differences in Recreation Participation in Oregon since 2000

Activity	NVUM2000		NVUM2006		NVUM2010		CRGC2010	
	N	%	N	%	N	%	N	%
Backpacking*	27	2.8	10	1.0	18	1.4	13	2.4
FS managed resort, cabins, dev camps**	8	<1.0	11	1.1	19	1.5	23	4.3
Picnic, family gathering in dev. Site**	146	15.1	129	13.3	261	21.0	121	22.4
Viewing historic and prehistoric sites/areas**	487	50.1	222	22.8	269	21.7	177	32.6
view nature centers, trails, visitor center**	355	36.6	253	26.0	359	28.9	183	33.8
Nature study**	136	14.0	114	11.7	217	17.5	50	9.2
Fishing-all types**	15	1.5	17	1.7	22	1.8	76	14.0
Pleasure driving on roads**	578	59.5	344	35.4	485	39.0	230	42.5
Other motorized activities**	5	<1.0	2	<1.0	5	<1.0	9	1.7
Hiking or walking**	603	62.1	715	73.5	1053	84.8	337	62.3
Bicycling, including mountain bikes**	105	10.8	45	4.6	38	3.1	24	4.4
Non-motorized water travel**	28	2.9	2	<1.0	4	<1.0	32	5.9
Other non-motorized activities**	20	2.1	2	2.2	31	2.5	28	5.2
Gathering mushrooms, berries, firewood, or other natural products**	9	<1.0	24	2.5	34	2.7	32	5.9
Relaxing**	---	---	393	40.4	666	53.6	---	---

* and ** indicate significant differences in percentage of respondents who participated in an activity between study years.

Differences in Recreation Participation in Washington since 2000

Differences in Recreation Participation in Washington since 2000

- Of the battery of 33 recreation activities presented in each of the studies, a total of 15 yielded statistically significant results when comparing visitor responses from Washington by survey year.
- According to the results, 2010 CRGC respondents were more likely to stay in developed camping areas (10.5%) or Forest Service managed accommodations (8.5%) than those from the NVUM studies.
- The data also revealed that the 2010 NVUM (38.1%) respondents were the least likely to participate in *viewing natural features* while recreating in the CRG. The NVUM data shows a decrease in participation in this activity by each survey year (2000=76.8%; 2006=67.5%). However, the highest participation rate was noted in the 2010 CRGC study (83.0%).
- Similarly, the respondents from the 2010 NVUM study were least likely to participate in both *viewing historic and prehistoric sites/areas* (4.8%), and *view nature centers, trails visitor centers* (4.8%). Again, the data shows a decrease in participation in these two activities between each of the NVUM studies, but an increase in the 2010 CRGC study.
- Furthermore, the data revealed that respondents from the 2010 NVUM survey were least likely to participate in *bicycling* (4.8%) and *non-motorized water travel* (14.3%) than respondents from each of the other studies.
- In contrast, respondents from the 2010 NVUM study were most likely to participate in *hiking or walking* (71.5%) than respondents from each other studies (2000 NVUM=65.6%; 2006 NVUM=60.0%; 2010 CRGC=60.6%).
- The analysis showed a decrease in participation in *fishing* between each of the NVUM study years (2000=14.4%; 2006=5.0%; 2010=4.8%). However, respondents from the 2010 CRGC (19.1%) study indicated a significantly higher rate of participation in this activity.
- Finally, the data indicated that respondents from the 2000 NVUM study were least likely to participate in *gathering mushrooms, berries, firewood and other natural products* (2.4%). Participation in this particular activity remained relatively stable throughout the later study years.

Table 12: Differences in Recreation Participation in Washington since 2000

Activity	NVUM2000		NVUM2006		NVUM2010		CRG2010	
	N	%	N	%	N	%	N	%
Camping in developed sites**	6	4.8	1	1.2	---	---	20	10.5
FS managed resort, cabins, developed camps**	1	<1.0	1	1.2	---	---	16	8.5
Picnic, family gathering in developed. site*	13	10.3	11	13.8	---	---	40	21.3
Viewing natural features like scenery, wildlife, plants etc.*	96	76.8	54	67.5	8	38.1	156	83.0
Viewing historic and prehistoric sites/areas**	12	9.7	6	7.5	1	4.8	29	15.3
View nature centers, trails, visitor centers**	10	8.0	6	7.5	1	4.8	43	22.9
Fishing-all types*	18	14.4	4	5.0	1	4.8	36	19.1
Off highway vehicle travel	6	4.8	---	---	---	---	---	---
Pleasure driving on roads**	40	32.0	9	11.2	---	---	66	35.1
Motorized water travel**	1	<1.0	---	---	---	---	13	6.9
Other motorized activities**	---	---	---	---	---	---	12	6.4
Hiking or walking**	82	65.6	48	60.0	15	71.5	114	60.6
Bicycling, including mountain bikes**	17	13.6	6	7.5	1	4.8	24	12.8
Non-motorized water travel**	30	24.0	18	22.5	3	14.3	32	17.0
Other non-motorized activities**	8	6.4	4	5.0	2	9.5	9	4.8
Gathering mushrooms, berries, firewood, or other natural products**	3	2.4	6	7.5	1	4.8	12	6.4

* and ** indicate significant differences in percentage of respondents who participated in an activity between study years.

Trends in Outdoor Recreation Participation in Oregon by Age since 2000

Trends in Outdoor Recreation Participation in Oregon by Age since 2000

- The majority (59.2%) of the entire sample of Oregon respondents fell into the adult category. This age group made up the largest portion of respondents from each survey year (2000=46.6%; 2006=67.3%; 2010=62.9%).
- Adult recreationists displayed a steady level of participation in *viewing natural features* between each survey year (2000=84.2%; 2006= 84.2%; 2010 84.9%) On the contrary, participation in this activity from the younger and older recreationist showed fluctuating trends. A greater portion of younger recreationists took part in *viewing natural features* in 2006 (87.2%) than in 2000 (86.3%), but decreased again in 2010 (85.4%). The older recreationists' participation levels decreased between 2000 (89.3%) and 2006 (84.3%), and increased again in 2010 (88.9%).
- The data shows a steady increase in *hiking or walking* participation with all three age groups. The most dramatic increases were recorded in the adult and older recreationist groups. In 2000, 59.4% of adults and 46.6% of older recreationists indicated that they took part in *hiking or walking* while in the CRG. By 2010, these percent rose to 80.5% for adults and 69.8% for older recreationists.
- Similarly, between 2006 and 2010, the number of respondents that participated in *relaxing* increased in all three age groups. The most substantial increase was observed with the older recreationists (2006=34.6%; 2010=48.5%).
- Conversely, the analysis revealed a steady decline in the amount of respondents that participated in *driving for pleasure on roads* with all three age groups. The most considerable decrease in participation was observed with older recreationist group. In the 2000 NVUM study, nearly three-fourths (71.8%) of the older recreationists indicated that they drove for pleasure in the CRG. However by 2010, less than half (48.9%) of the sample of older recreationists took part in this activity.
- Participation levels for *general viewing activities* showed different trends with each age group between 2000 and 2010. Participation increased with the younger recreationists (2000=43.8%; 2010=50.0%) and decreased with the adult group (2006=69.3%; 2010=60.6%). The same portion (82.4%) of older recreationists participated in *general viewing activities* in 2000 and 2010.

Table 13. Age of Respondents in Oregon Since 2000

Survey Year	Young (29 or less)		Adult (30 to 59)		Older (60 or more)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
2000	470	41.8	524	46.6	131	11.6
2006	180	19.2	632	67.3	127	13.5
2010	384	22.1	1095	62.9	262	15.0
Total	1034	27.2	2251	59.2	520	13.7

Figure 1. Trends in Viewing Natural Features Participation in Oregon by Age Since 2000

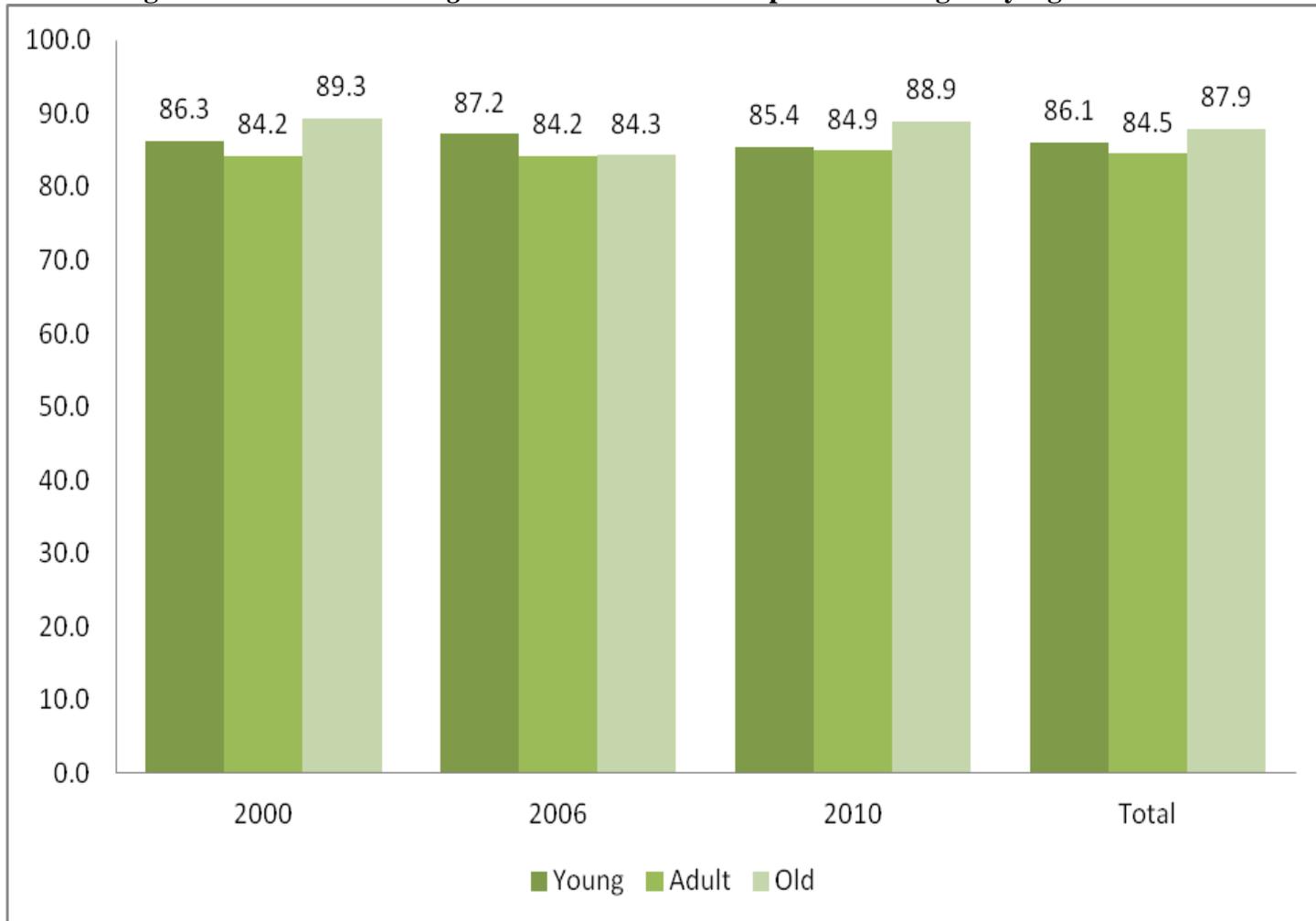


Figure 2. Trends in *Hiking or Walking* Participation in Oregon by Age Since 2000



Figure 3. Trends in *Driving for Pleasure on Roads* Participation in Oregon by Age Since 2000

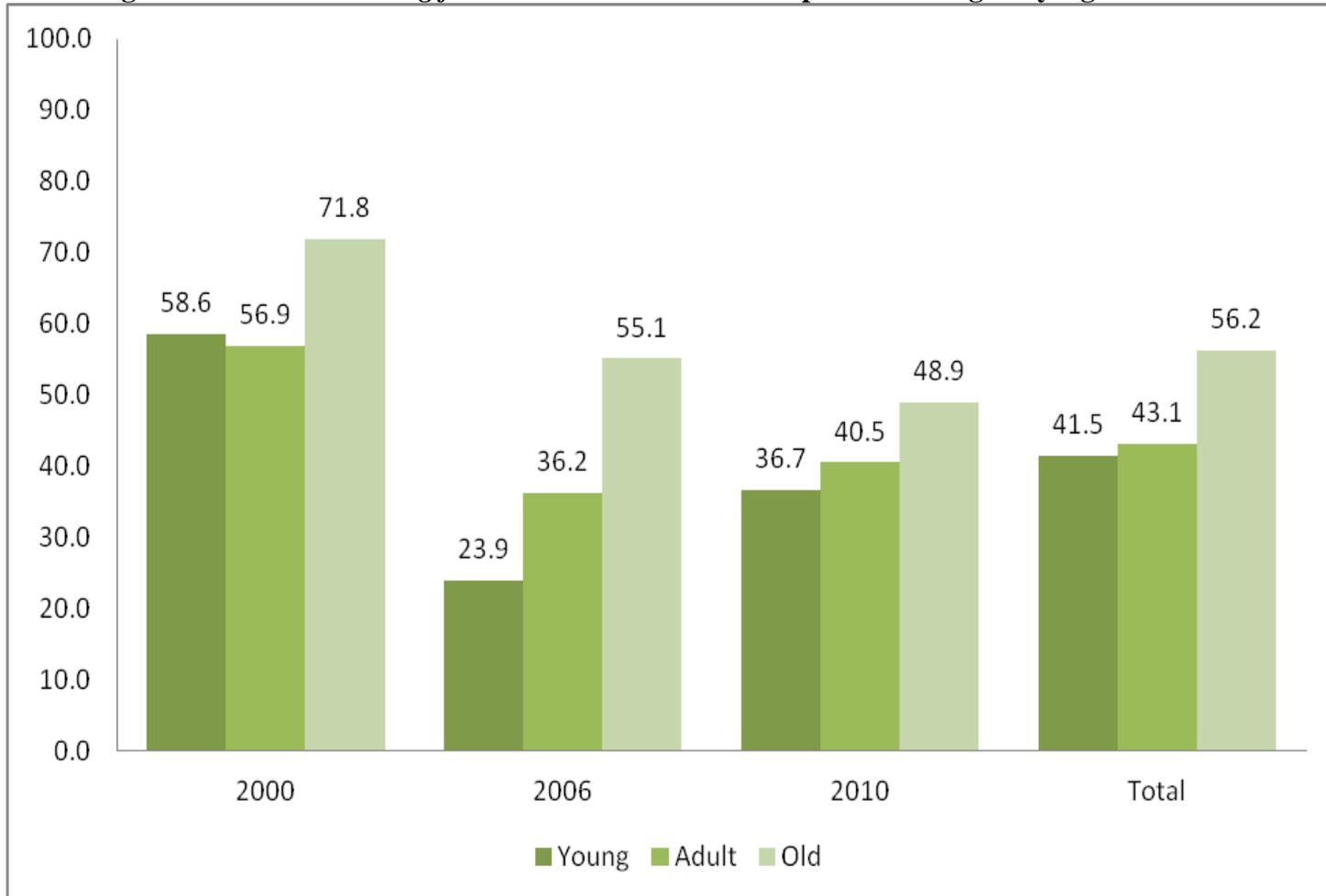


Figure 4. Trends in *Relaxing* Participation in Oregon by Age Since 2000

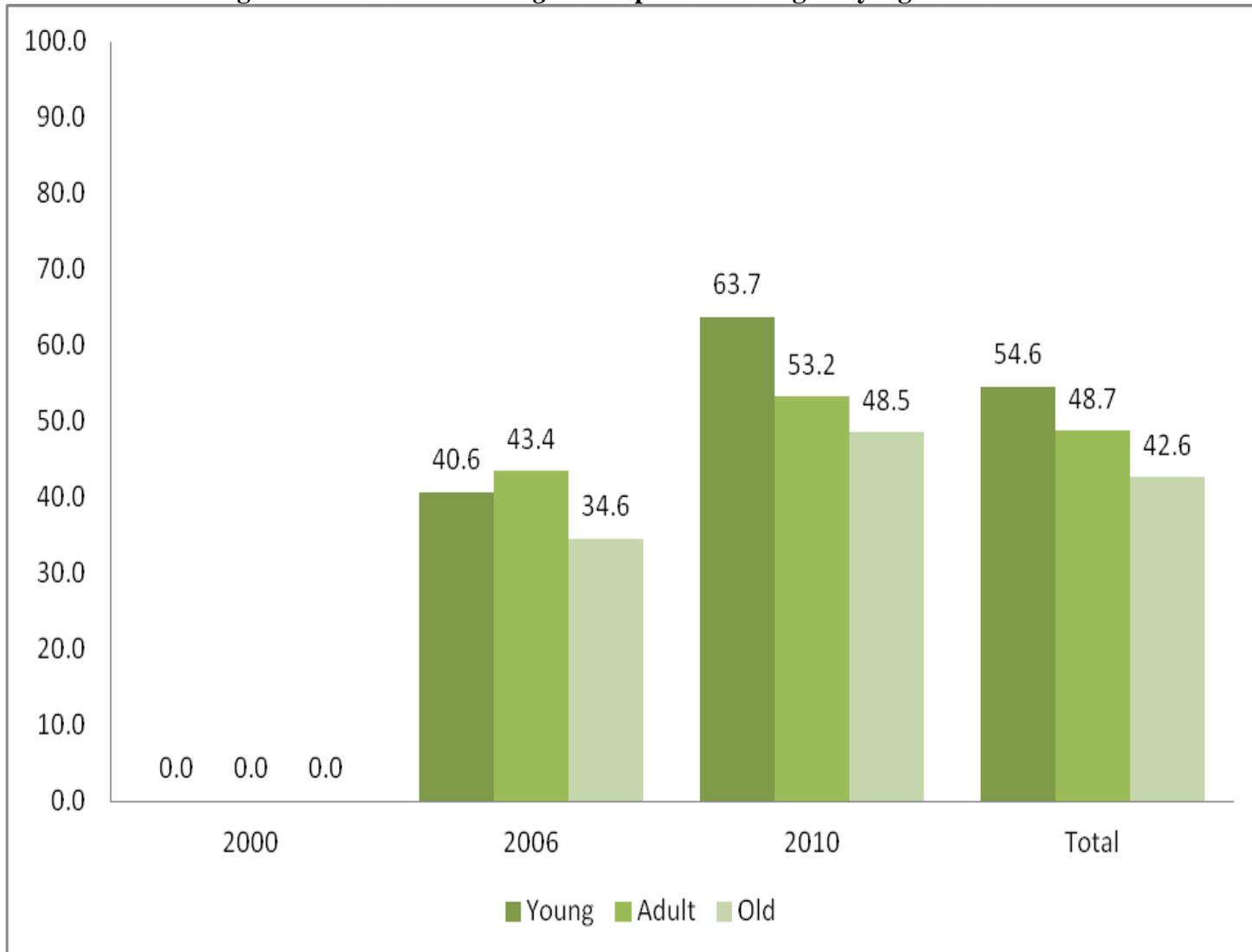
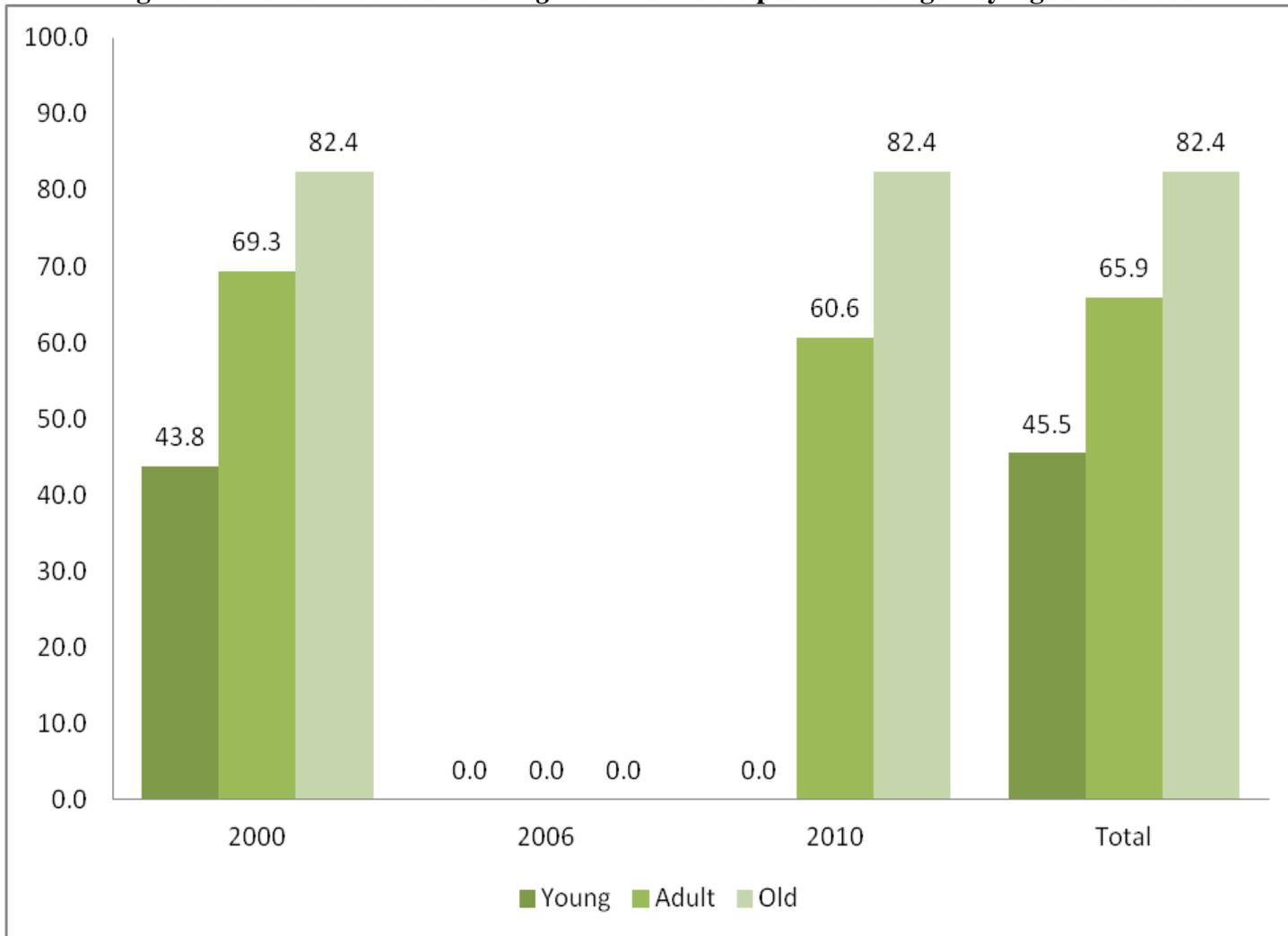


Figure 5. Trends in *General Viewing Activities* Participation in Oregon by Age Since 2000



**Trends in Outdoor Recreation Activity Participation in Washington by
Age Group since 2000**

Trends in Outdoor Recreation Activity Participation in Washington by Age Group since 2000

- As with the Oregon respondents, the majority (69.6%) of Washington respondents fell in the adult age category.
- According to the data, participation in *viewing natural features like scenery, wildlife, plants etc.* dropped during the 2006 study with all three age groups. The most dramatic change was observed with the youngest age group, when participation decreased from 68.6% in 2000, to 50.0% in 2006. In 2010, participation within this age group increased to 80.0%.
- Adults and older recreationist showed a trend of decreased participation in *hiking or walking* between each study year. A majority of both adult (72.3%) and older (83.3%) recreationists indicated that they participated in this activity during the 2000 NVUM study. However by 2010, participation by adults dropped to 63.3% and by older recreationists to 55.6%.
- Less than half of the younger recreationists took part in *hiking or walking* during both the 2000 (48.6%) and 2006 (42.9%) studies. However, by the 2010 study almost three-fourths (72.0%) of the respondents in this group indicated that they participated in this activity while in the CRG.
- The data shows a trend of increased participation in *general viewing activities, sightseeing* between the 2000 and 2010 studies, especially with the older recreationist group. In 2000, only 16.7% of respondents from this age group participated in this activity. The 2010 this percentage rose to 40.0%.
- Younger recreationists indicated throughout each study that *driving for pleasure on roads* was not an activity that they sought to take part in while in the CRG. In the 2006 study, no respondents from this age group participated in this activity.
- Adults and older recreationists displaying a varying trend in participation between each study year with *driving for pleasure on roads*. Between the 2000 and 2006 studies, participation decreased for adults (2000=37.3%; 2006=9.8%), whereas it increased for older recreationists (2000=16.7%; 2006=40.0%). In contrast, participation increased dramatically for adults (36.0%) in 2010 and decreased for older recreationists (29.6%).

Table 14. Age of Respondents in Washington Since 2000

Survey Year	Young (29 or less)		Adult (30 to 59)		Older (60 or more)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
2000	41	31.5	83	63.8	6	4.6
2006	14	18.7	51	68.0	10	13.3
2010	25	39.7	10	15.9	28	44.4
Total	80	19.6	284	69.6	44	10.8

Figure 6. Trends in Viewing Natural Features Participation in Washington by Age Group Since 2000

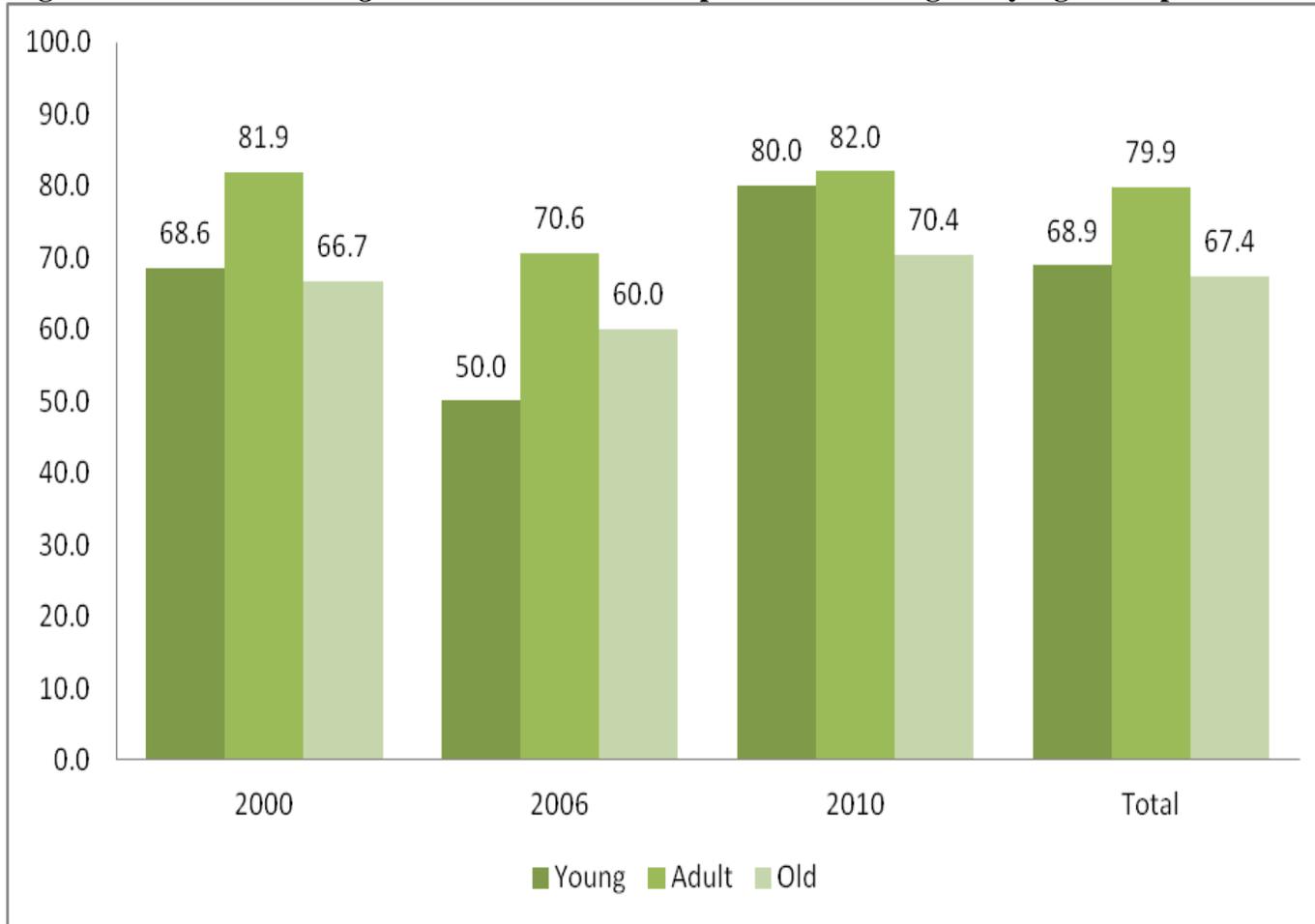


Figure 7. Trends in *Hiking or Walking* Participation in Washington by Age Since 2000

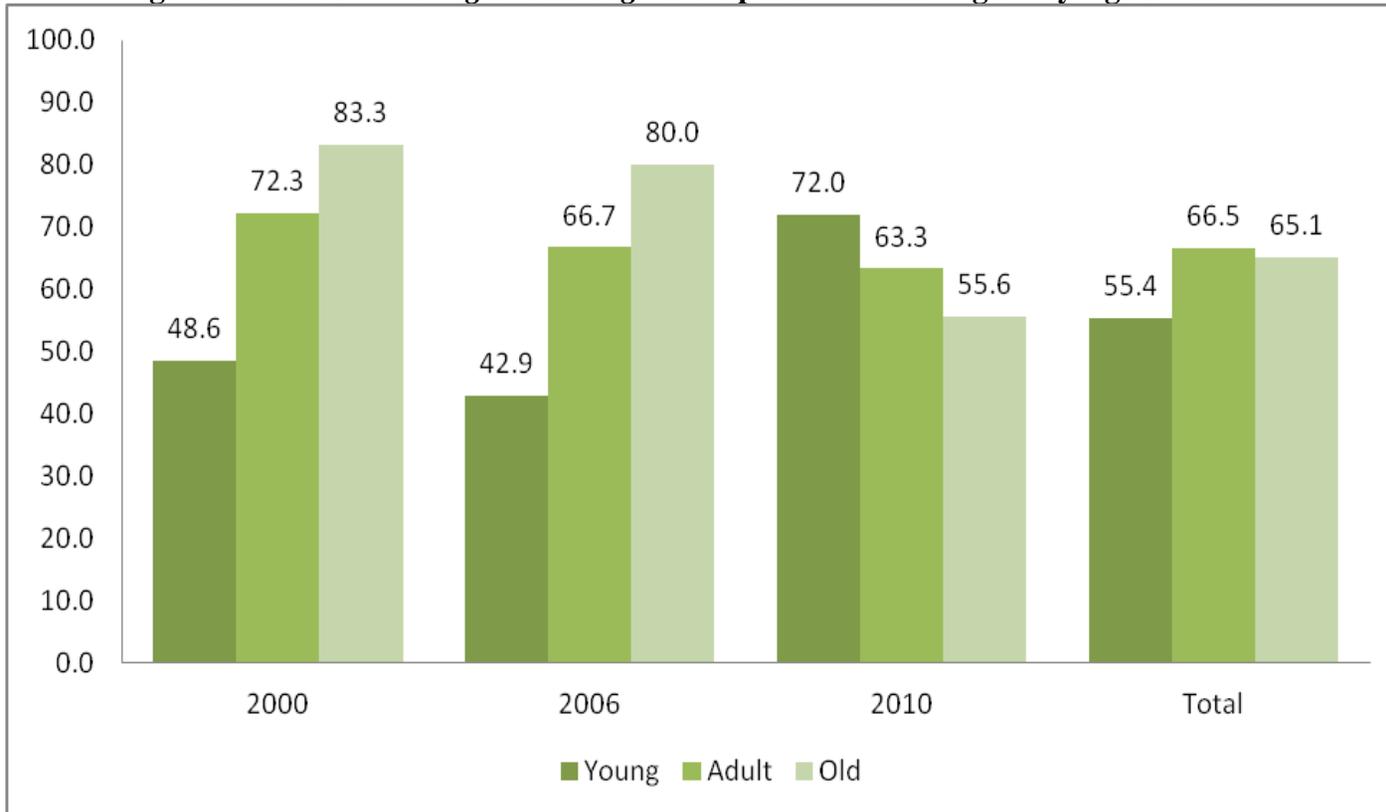


Figure 8. Trends in *General Viewing Activities* Participation in Washington by Age Since 2000

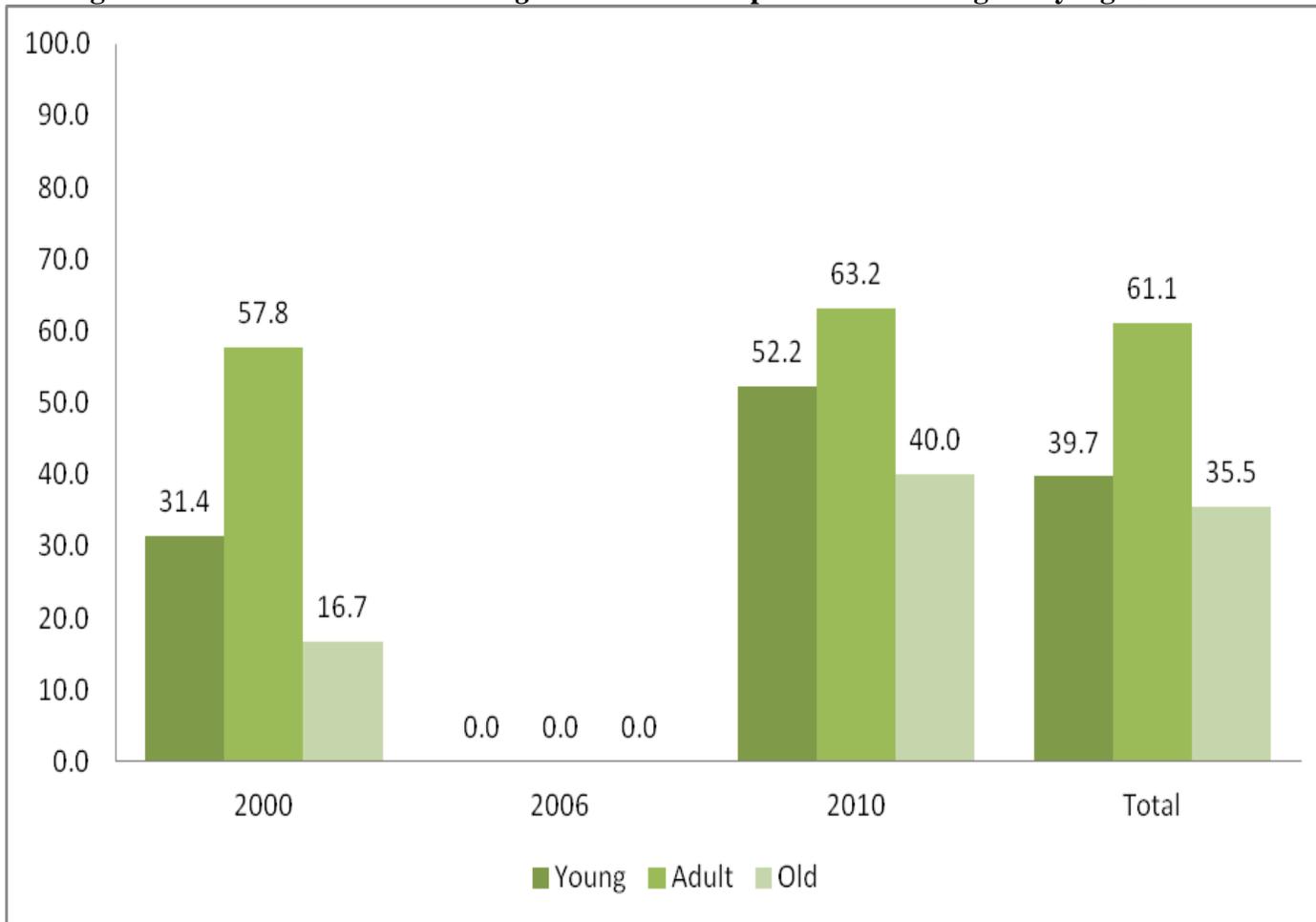


Figure 9. Trends in *Driving for Pleasure on Roads* Participation in Washington by Age Since 2000

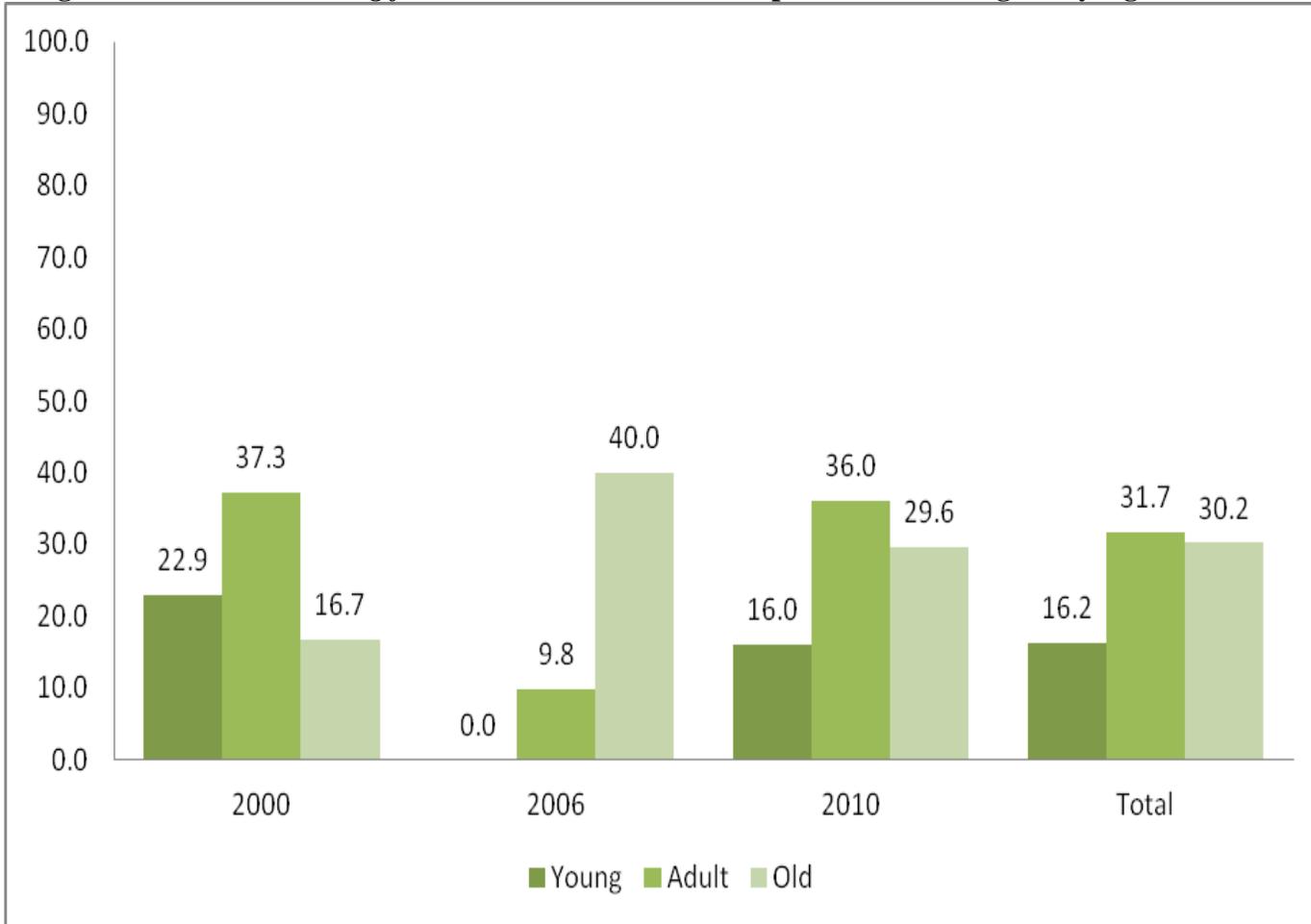
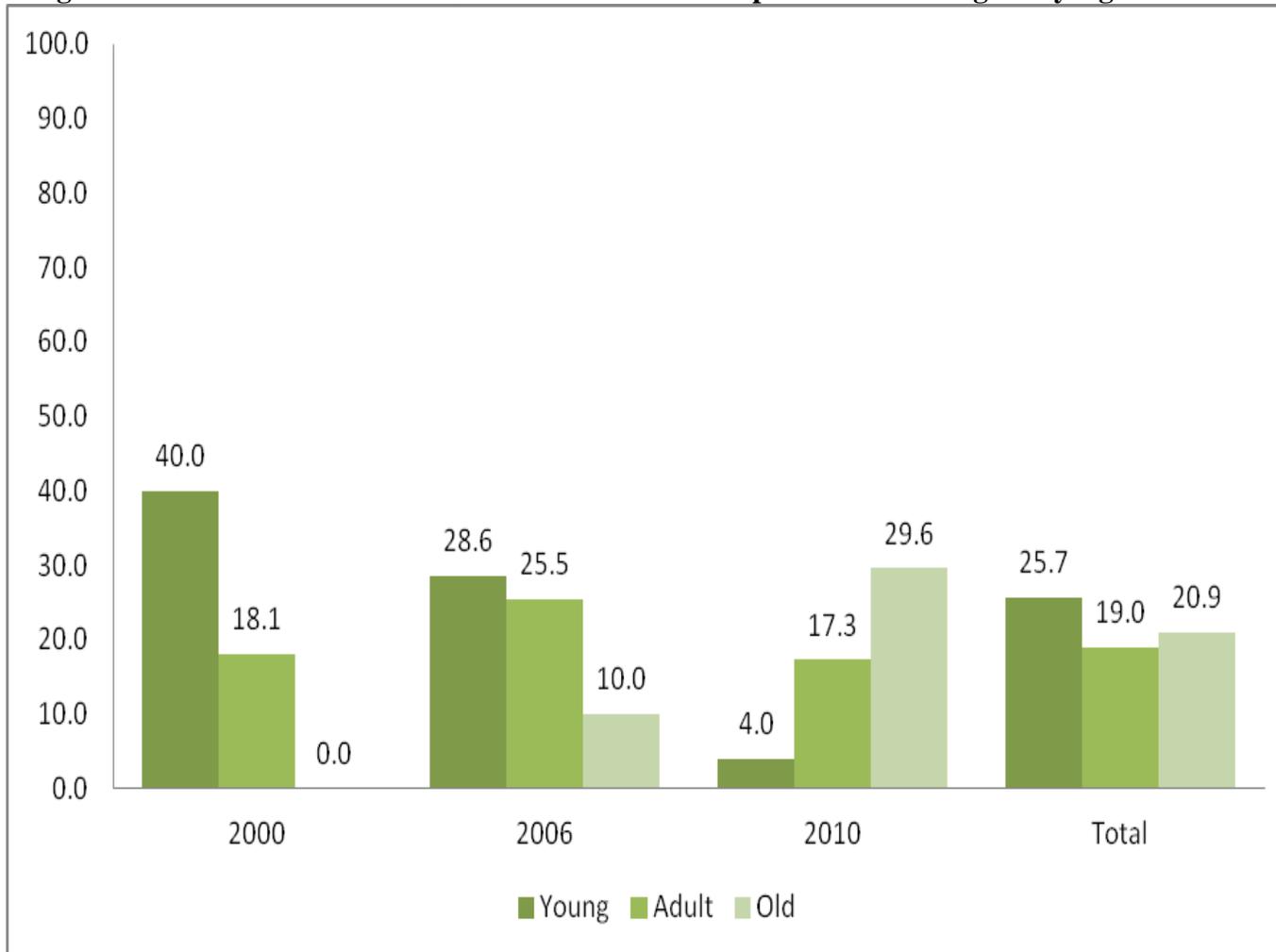


Figure 10. Trends in *Non-Motorized Water Travel* Participation in Washington by Age Since 2000



Trends in Recreation Participation by Race in Oregon Since 2000

Trends in Recreation Participation by Race in Oregon Since 2000

- A majority (91.3%) of the overall sample of respondents in the Oregon portions of the CRG indicated that they were Caucasian.
- The data shows that in the 2000 study, a greater portion of Caucasian respondents (86.5%) took part in *viewing natural features* while in the CRG. However in 2006 (89.6%) and 2010 (88.4%), a higher portion of non-Caucasian respondents participated in this activity.
- The data shows a steady trend in the participation levels of non-Caucasians in the most popular activities during the 2006 study. During this study year, greater portions of non-Caucasians participated in *viewing natural features* (89.6%), *hiking or walking* (74.3%), *driving for pleasure on roads* (40.0%), *viewing historic and prehistoric sites/areas* (29.6%), and *view nature centers* (36.1%) than Caucasians.
- However, in 2010, the trend reverses and shows higher levels of participation from Caucasians in the most popular activities within the Oregon portions of the CRG.

Table 15. Racial Representation Oregon by Survey Year

Survey Year	Caucasian		Non-Caucasian	
	<i>N</i>	%	<i>N</i>	%
2000	983	91.5	91	8.5
2006	699	94.6	40	5.4
2010	1521	89.6	176	10.4
Total	3203	91.3	307	8.7

Figure 11. Trends in Viewing Natural Features by Race in Oregon Since 2000

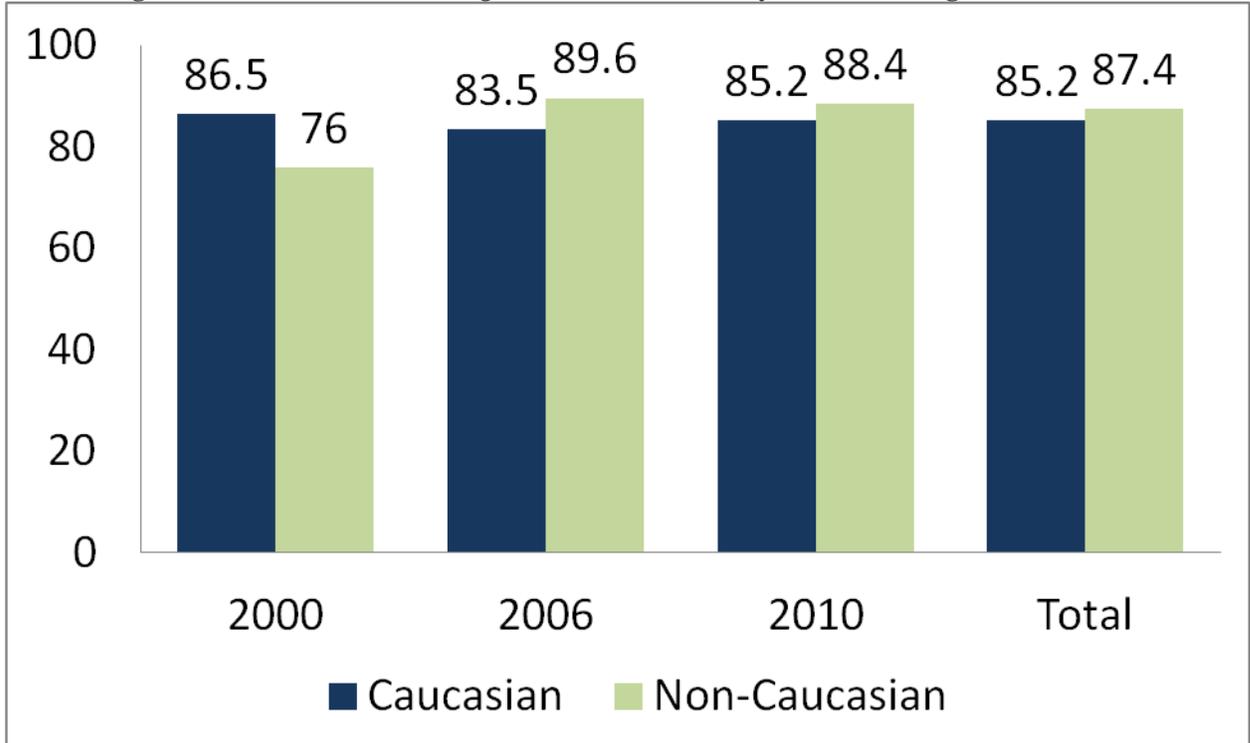


Figure 12. Trends in Hiking/Walking by Race in Oregon Since 2000

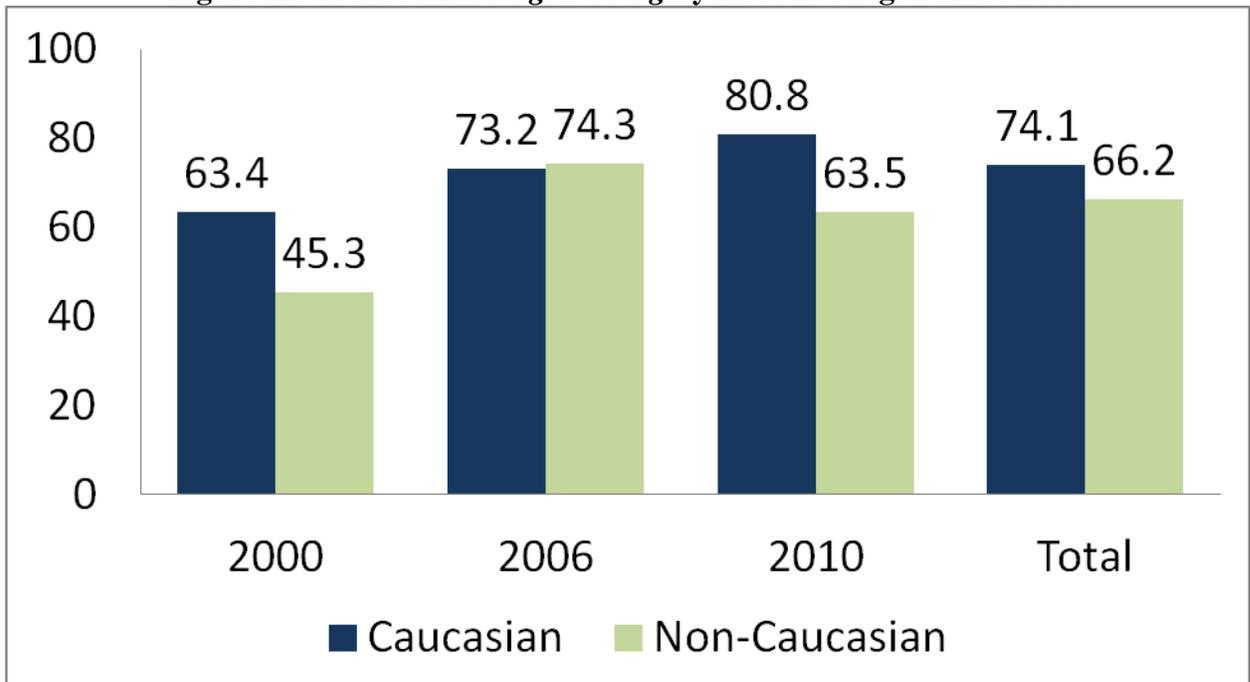


Figure 13. Trends in *Driving for Pleasure on Roads* by Race in Oregon Since 2000

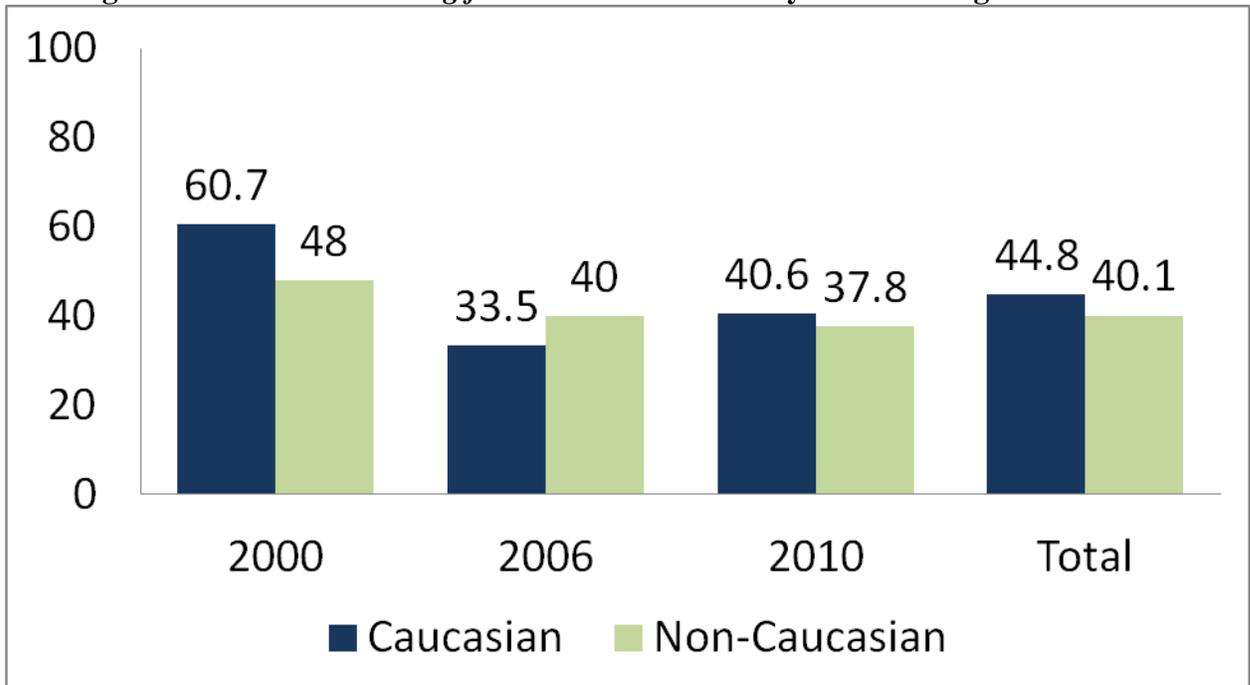


Figure 14. Trends in *Viewing Historic and Prehistoric Sites* by Race in Oregon Since 2000

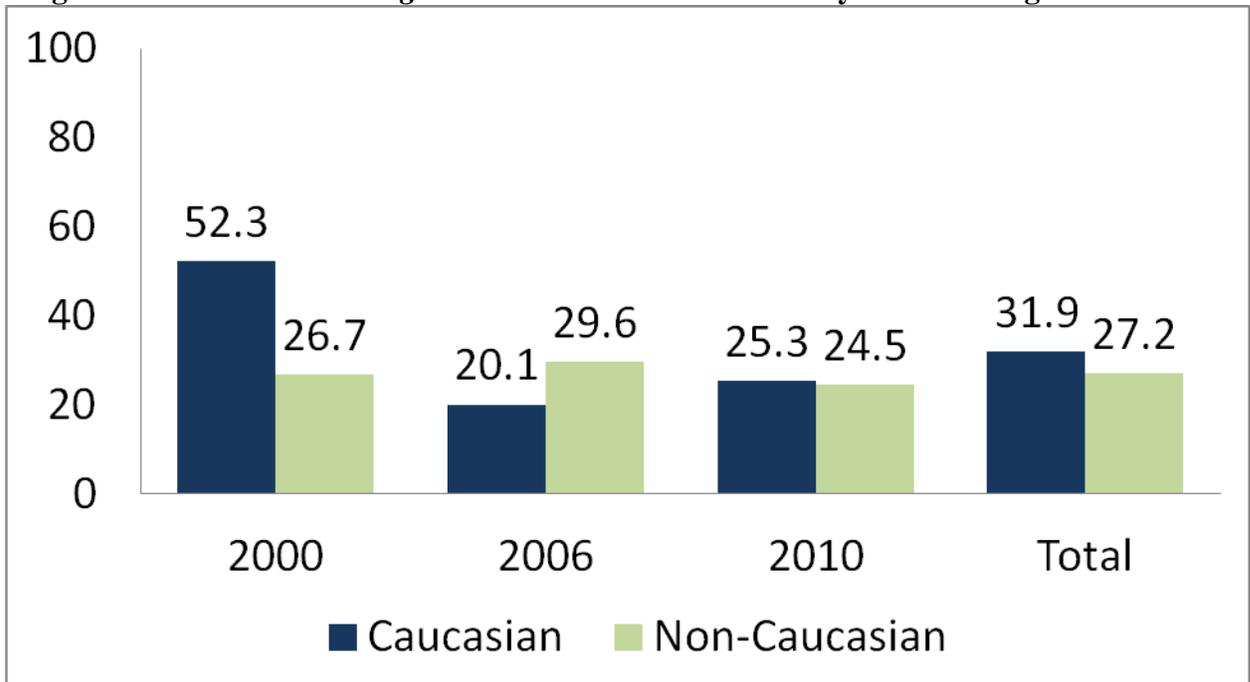
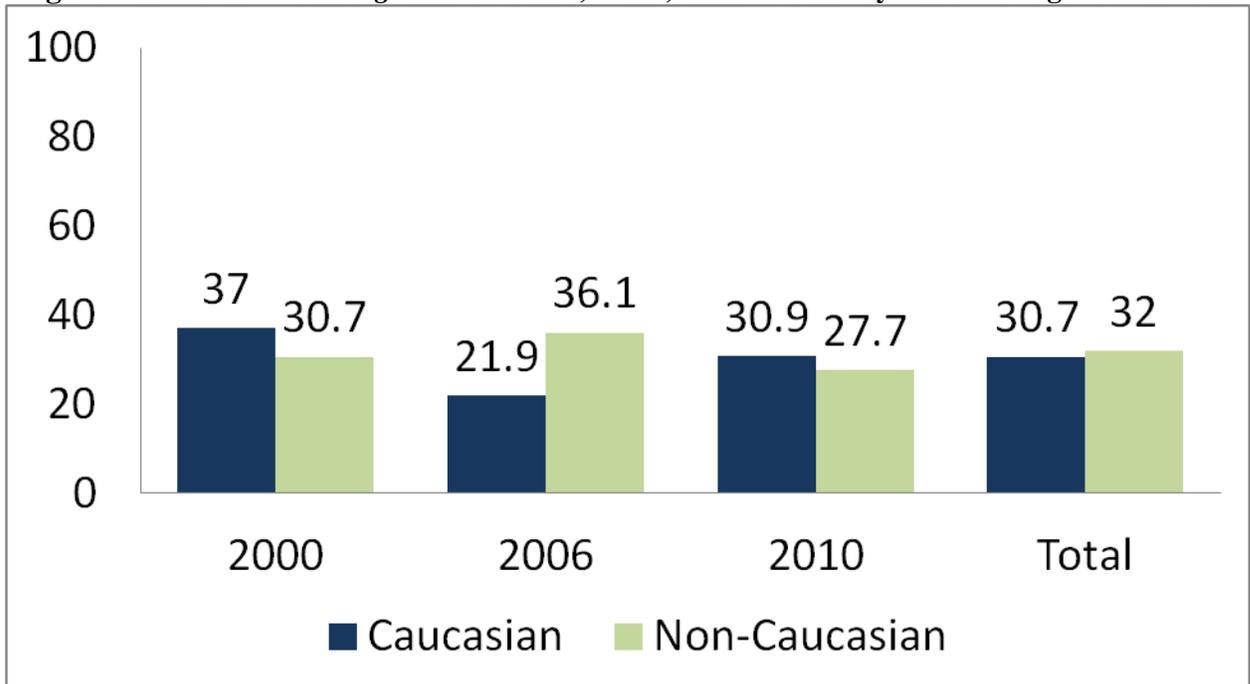


Figure 15. Trends in Viewing Nature Centers, Trails, Visitor Center by Race in Oregon Since 2000



**Trends in Recreation Participation by Race in Washington Since
2000**

Trends in Recreation Participation by Race in Washington Since 2000

- A majority of the respondents from each survey year were Caucasian (2000=98.4%; 2006=98.1%; 2010= 90.6%). The highest percentage of Non-Caucasian respondents was represented in the 2010 study. However, since the number of Non-Caucasian respondents was so low, the trends for Caucasian participants will only be reported.
- In 2000, over three-fourths (76.4%) of Caucasian respondents participated in *Viewing Natural Features*. However in 2006, only two-thirds (66.0%) of Caucasian respondents participated in this activity. Then in 2010, participation in *Viewing Natural Features* jumped to its highest level when 82.0% of Caucasian respondents indicated that they took part in this activity.
- The analysis shows a steady trend of participation in *Hiking and Walking* with Caucasian participants between each study (2000=66.7%; 2006= 67.9%; 2010=65.0%).
- Just under half (48.0%) of the Caucasian participants took part in *General Viewing Activities* according to the 2000 study results.
- However in 2010, participation in this activity increased to 57.3% amongst Caucasian respondents.
- According to the results, participation in *Driving for Pleasure on Roads* decreased dramatically between the 2000 (30.9%) and 2006 (5.7%) studies with Caucasian participants.
- The largest level of participation in *Driving for Pleasure on Roads* was recorded in 2010 when one third (32.8%) of Caucasian sample indicated that they took part in this activity.
- Caucasian participation in *Non-Motorized Water Travel* peaked in the 2000 study (23.6%).
- Participation decreased and remained relatively stable during the subsequent studies (2006=17.0%; 2010= 17.5%).

Table 16. Racial Representation in Washington by Survey Year

Survey Year	Caucasian		Non-Caucasian	
	<i>N</i>	%	<i>N</i>	%
2000	124	98.4	2	1.6
2006	53	98.1	1	1.9
2010	126	90.6	19	9.4
Total	361	94.3	22	5.7

Figure 16. Trends in Viewing Natural Features by Race in Washington Since 2000

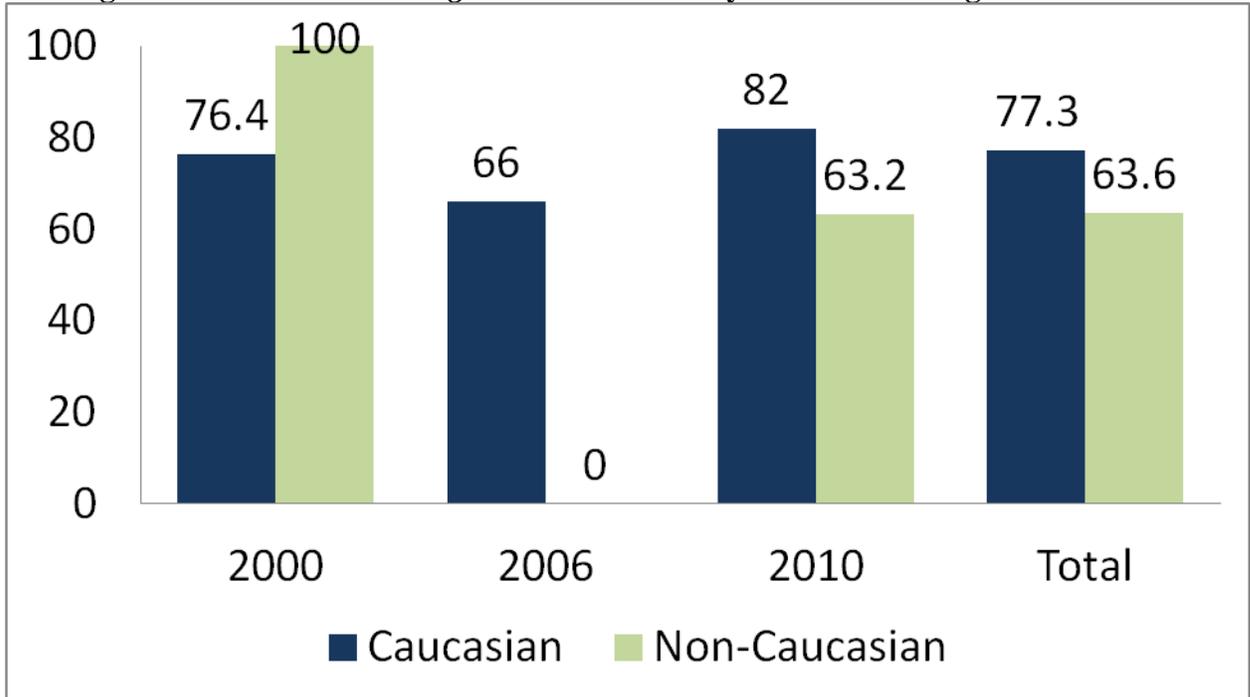


Figure 17. Trends in Hiking and Walking by Race in Washington Since 2000

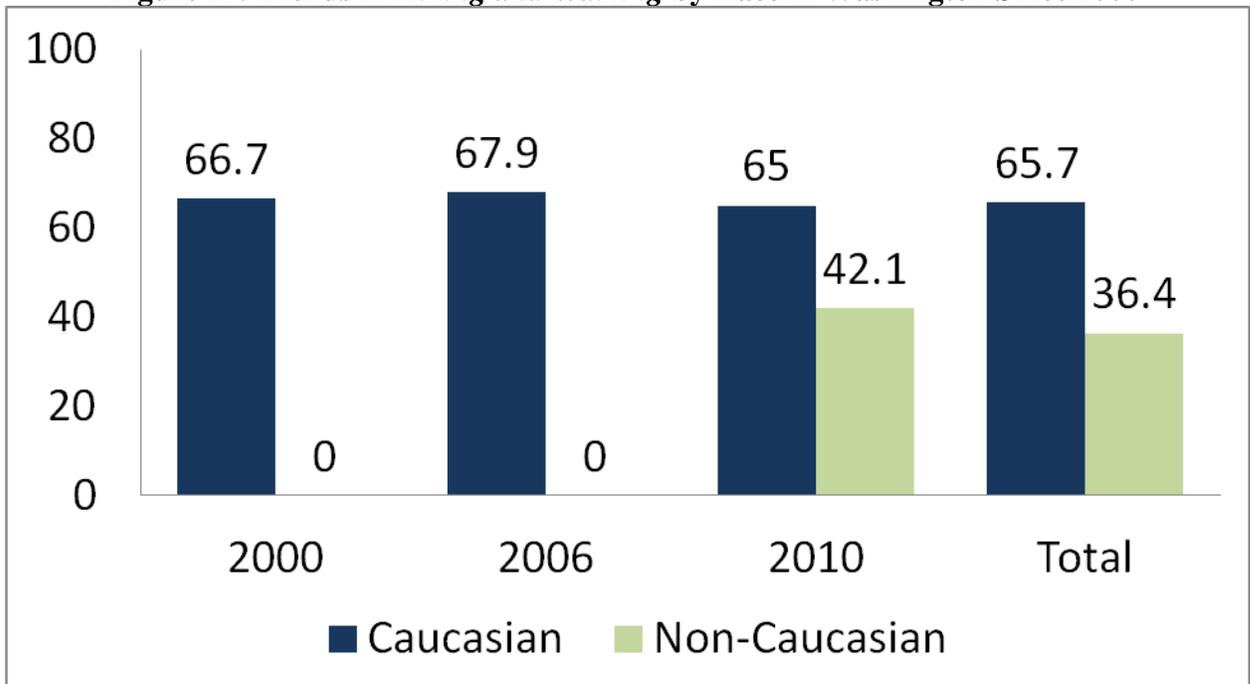
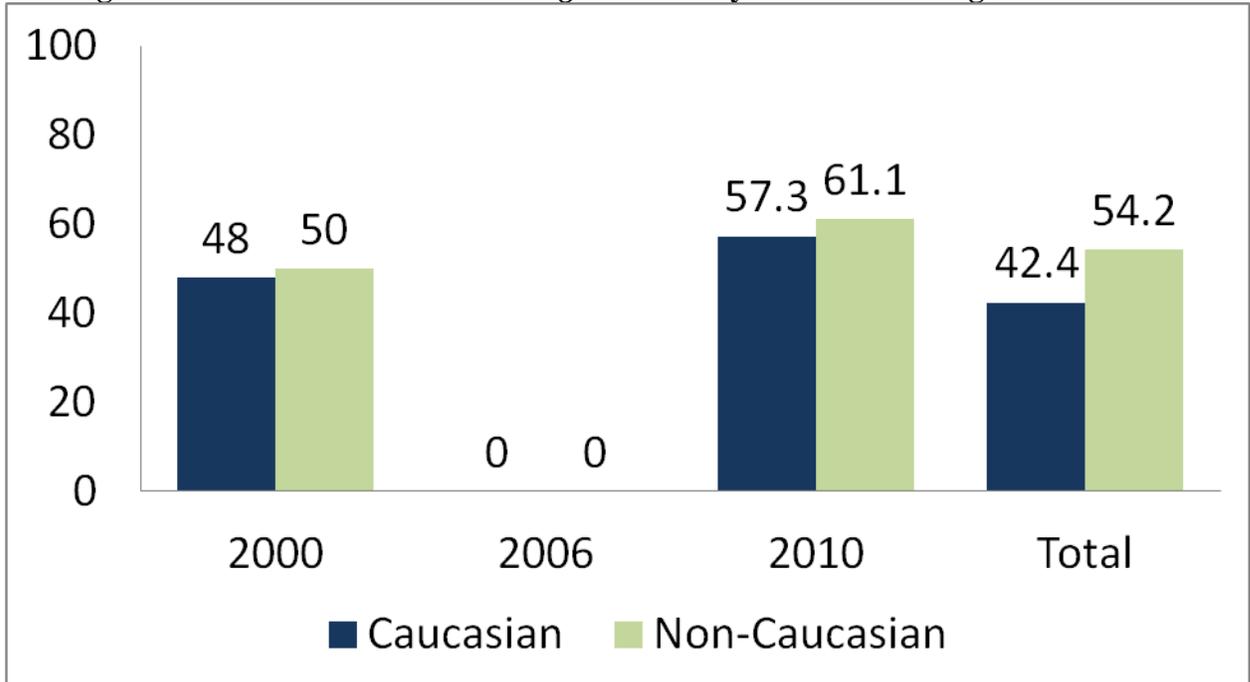


Figure 18. Trends in General Viewing Activities by Race in Washington Since 2000



* *General Viewing Activities* was not included in the 2006 study.

Figure 19. Trends in Driving for Pleasure on Roads by Race in Washington Since 2000

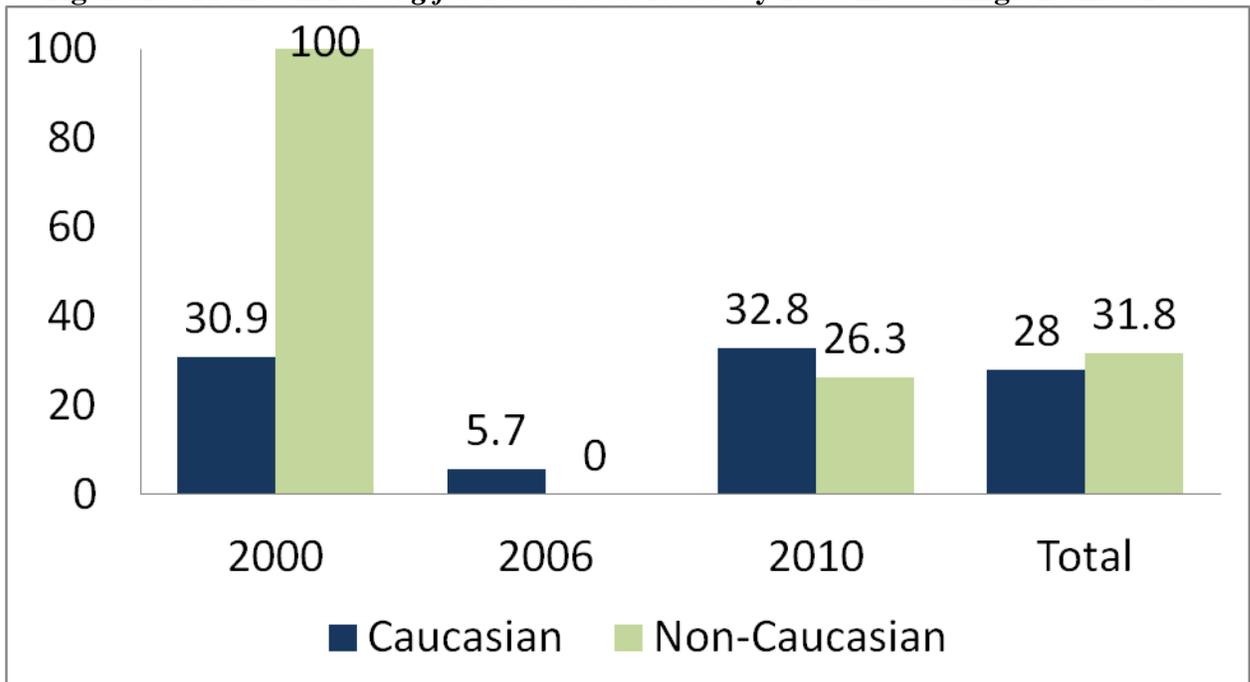
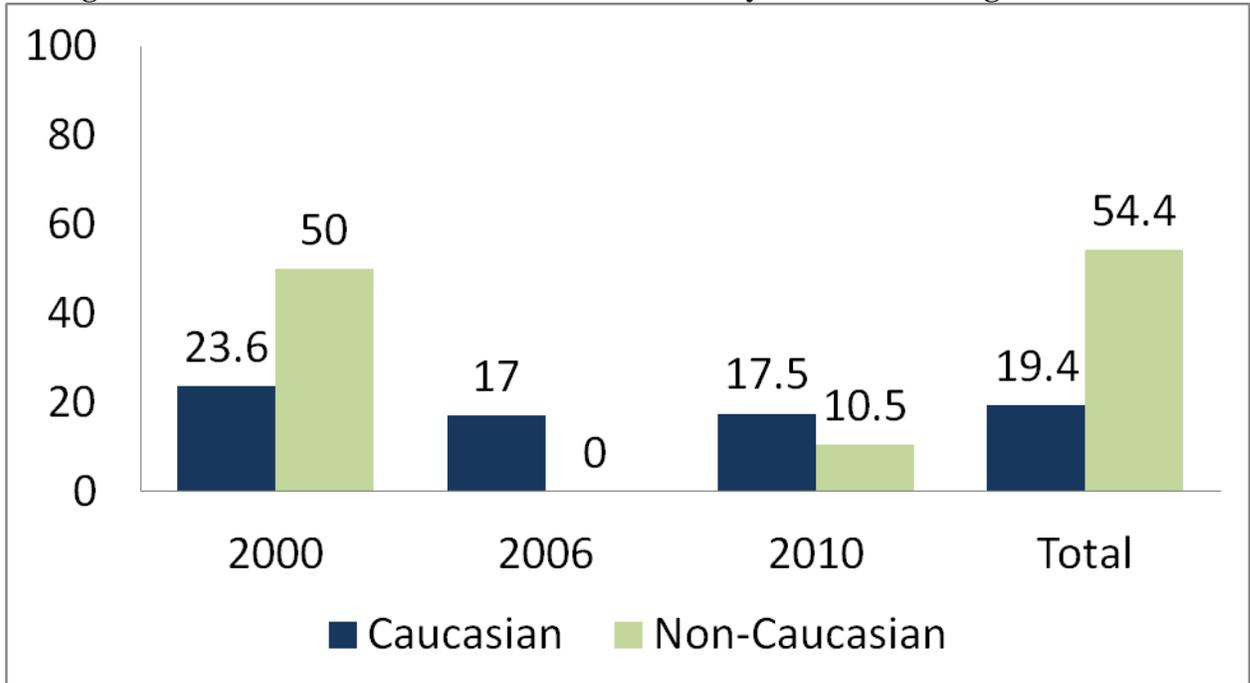


Figure 20. Trends in *Non-Motorized Water Travel* by Race in Washington Since 2000



Differences in Overall Satisfaction in the CRG Since 2000

Differences in Overall Satisfaction in the CRG Since 2000

- The data reflects a high level of satisfaction with the quality of recreational opportunities within the CRG throughout all the study years (mean satisfaction=2.97).
- The overall satisfaction level of the respondents from the 1997 CRG study (mean satisfaction=2.85) was significantly lower than levels from the other study years. However, it should be noted that overall satisfaction was still high for that year.
- Though not statistically significant, the highest level of overall satisfaction was recorded from the 2006 NVUM study (mean=2.99).

Table 17. Differences in Overall Satisfaction in the CRG Since 2000

Survey Year	<i>N</i>	<i>Mean</i>
1997	137	2.85
2000	431	2.95
2006	937	2.99
2010	1749	2.97
Total	3254	2.97

*Overall Satisfaction was rated on a 3-point scale where 1=less satisfied, 2=satisfied and 3=more than satisfied

Differences in Perceived Crowding in the CRG Since 2000

Differences in Perceived Crowding in the CRG Since 2000

- The lowest level of perceived crowding was recorded during the 2000 study (mean=4.04).
- In 2006, visitors indicated that they felt moderately crowded (mean=5.27) during their visit to the CRG which was the highest level of perceived crowding recorded of all the study years.

Table 18. Differences in Perceived Crowding in the CRG Since 2000

Survey Year	<i>N</i>	<i>Mean</i>
1997	---	---
2000	271	4.04
2006	266	5.27
2010	910	4.44
Total	1147	4.58

*Crowding was rated on a 10 point scale where 1=not at all crowded and 10=extremely crowded.

*Perceived crowding was omitted from the 1997 CRG stud

Analysis of Niche Areas in the Columbia River Gorge

In order to obtain the unique perspective of visitors throughout various areas, the Columbia River Gorge was broken up into seven niches. These niche areas were selected based off of geographic location within the Gorge or unique characteristic such as river tributaries. The following pages detail the results of trip expenditures, trip characteristics, visitor demography, overall satisfaction and perceived crowding and highlight significant differences found amongst visitor responses in each area.

Differences in Group Spending Patterns by CRG Niche Area

Differences in Group Spending Patterns by CRG Niche Area

- Of visitors who indicated that they paid for their experience themselves, those recreating at the Columbia River Area paid a significantly higher amount (mean= \$352.36) than visitors at other areas.
- Conversely, visitors who paid for themselves at the West Gateway Area paid a significantly lower amount (mean=\$6.24) than those at other areas.
- Some visitors indicated that they shared their trip expenses with other group members. The highest amount of shared expenses paid were recorded in the Oak Pine Flowers (mean=\$220.78) and Walls and Falls (mean=\$199.65) areas.
- Visitors that paid for their other group members paid a significantly higher amount at Oak Pine Flowers (mean=\$557.20), whereas those that visited the Columbia Tributaries area paid significantly less (mean= \$4.00).
- Finally, some visitors indicated that another group member covered the cost of their visit. The highest amounts were paid at the Walls and Falls area (mean=\$513.67).

Table 19. Differences in Group Spending Patterns by CRG Niche Area in USD

	Pay for Yourself*		Shared Expenses with Others		You Paid for Others		Someone Paid for You	
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>
Western Gateway	33	6.24	12	24.75	12	38.92	2	25.00
Wall and Falls	280	25.00	40	199.65	35	217.40	3	513.67
Skamania Highlands	21	37.29	16	23.75	14	365.14	2	89.00
Oak Pine Flowers	24	196.96	9	220.78	10	557.20	---	---
Columbia River	22	352.36	11	134.36	6	56.67	2	2.50
Columbia Tributaries	---	---	---	---	1	4.00	---	---
Total	380	53.86	88	137.82	78	244.92	9	43.11

Differences in Expense Sharing Patterns by CRG Niche Area

Differences in Expense Sharing Patterns by CRG Niche Area

- A significantly higher portion (33.3%) of visitors in the Columbia Tributaries indicated they shared travel costs with the other members of their group.
- On the other hand, this same group of visitors was least likely (8.3%) to pay the travel costs of everyone in their group.
- Visitors in the Skamania Highlands (47.1%) were least likely to pay for travels on their own.

Table 20. Differences in Expense Sharing Pattern by CRG Niche Area

	Share with Others		Pay for Yourself		You Paid for Both		Someone Paid for You	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	17	20.7	47	57.3	13	15.9	5	6.1
Wall and Falls	95	27.9	188	55.3	42	12.4	15	4.4
Skamania Highlands	18	26.5	32	47.1	15	22.1	3	4.4
Oak Pine Flowers	15	24.2	35	56.5	11	17.7	1	1.6
Columbia River	19	26.8	36	50.7	11	15.5	5	7.0
Columbia Tributaries	4	33.3	7	58.3	1	8.3	---	---
Total	168	26.5	345	54.3	93	14.6	29	4.6

Differences in Trip Expenditures by CRG Niche Area

Differences in Trip Expenditures by CRG Niche Area

- Of the eleven trip expenditure categories including in the study, three yielded statistically significant results- “Gasoline and Oil,” “Souvenirs and Clothing,” and “Entry, Parking, Recreation Fees.”
- The data shows that visitors in the Columbia River area paid significantly higher amounts in all three categories than visitors in other areas. They spent an average of \$84.88 on “Gasoline and Oil,” \$161.43 on “Souvenirs and Clothing,” and \$29.40 on “Entry, Parking and Recreation Fees.”
- Conversely, visitors to the Western Gateway area paid the least on “Gasoline and Oil” (mean=\$18.75) and “Entry, Parking and Recreation Fees” (mean=\$0.77).
- None of the visitors to the Columbia Tributaries area spent money on “Souvenirs and Clothing.”

Table 21. Differences in Trip Expenditures by CRG Niche Area

	Gasoline and Oil*		Souvenirs and Clothing*		Entry, Parking, Recreation Fees*	
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>
Western Gateway	64	18.75	32	5.59	35	0.77
Wall and Falls	507	35.84	344	20.97	339	5.37
Skamania Highlands	39	35.21	9	6.89	28	15.18
Oak Pine Flowers	54	56.76	38	26.58	34	8.00
Columbia River	41	84.88	7	161.43	5	29.40
Columbia Tributaries	8	22.13	1	0.00	4	13.00
Total	713	38.52	431	22.26	445	6.17

*All trip expenditure means are in US Dollars.

Differences in Trip Characteristics by CRG Niche Area

Differences in Trip Characteristics by CRG Niche Area

- Overall, the data shows that many visitors traveled to the CRG for recreation purposes frequently throughout the year with an average of 20 or more visits in five of the six areas examined.
- However, visitors at the Columbia Tributaries area reported a significantly lower amount of visits per year with an average of 15.71 visits.
- Several visitors reported that their trips to the CRG lasted several days. The longest trips were recorded at the Oak Pine Flowers (mean=22.19 days) and Wall and Falls (mean=17.01 days) areas.
- Many other visitors indicated that they were only on day trips to the CRG. Of those on day trips, visitors in the Columbia River area reported having the longest visits (mean=4.73 hours).
- Visitors were also asked to indicate how far they traveled to reach their destinations within the CRG. Those visiting the Wall and Falls area traveled a significantly longer distance (mean=770.51) miles than recreationists in other areas.

Table 22. Differences in Trip Characteristics by CRG Niche Area

	Days Spent per Year at the CRG*		Trip Length in Days*		Trip Length in Hours*		Travel Distance in Miles*	
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>
Western Gateway	233	38.69	10	6.30	102	2.39	98	50.59
Wall and Falls	1068	20.15	97	17.01	737	3.35	2008	770.51
Skamania Highlands	174	33.22	10	3.50	47	2.90	56	209.07
Oak Pine Flowers	179	40.50	16	22.19	113	2.95	118	237.96
Columbia River	238	38.89	26	2.77	151	4.73	144	241.88
Columbia Tributaries	611	15.71	352	1.75	488	2.65	25	109.80
Total	2503	24.94	511	5.46	1638	3.14	2449	665.38

Differences Trip Type by CRG Niche Area

Differences Trip Type by CRG Niche Area

- According to the data, a majority (64.1%) of the visitors in CRG were recreating on day trips.
- However, visitors at the Wall and Falls (43.%) area were most likely to be recreating in the CRG on overnight trips.

Table 23. Differences Trip Type by CRG Niche Area

	Day Trip		Overnight Trip	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Western Gateway	94	96.9	3	3.1
Wall and Falls	1140	56.6	875	43.4
Skamania Highlands	59	96.7	2	3.3
Oak Pine Flowers	105	84.0	20	16.0
Columbia River	175	97.8	4	2.2
Columbia Tributaries	675	65.7	353	34.3
Total	2248	64.1	1257	35.9

Differences in Trip Length (Days) by CRG Niche Area

Differences in Trip Length (Days) by CRG Niche Area

- The highest portion (61.3%) of the overall sample indicated that they spent 1-2 days recreating in the CRG.
- The analysis revealed that a significantly lower portion of visitors in the Oak Pine Flowers area (25.0%) spent 1-2 days recreating the Gorge.
- Recreationists in the Columbia River area (7.7%) were less likely to spend eight days or more visiting the Gorge.
- Additionally, visitors in the Columbia Tributaries area (4.8%) were significantly less likely to spend a time period of four to seven days in the Gorge than visitors in other areas.
- In contrast, visitors from the Columbia Tributaries area (21.0%) were more likely to spend a time period of three days recreating in the Gorge than those in other areas.

Table 24. Differences in Trip Length (Days) by CRG Niche Area

	1-2 days		3 days		4-7 days		8 days or more	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	4	40.0	---	---	3	30.0	3	30.0
Wall and Falls	21	21.6	6	6.2	31	32.0	39	40.2
Skamania Highlands	5	50.0	1	10.0	4	40.0	---	---
Oak Pine Flowers	4	25.0	1	6.2	5	31.5	6	37.5
Columbia River	18	69.2	3	11.5	3	11.5	2	7.7
Columbia Tributaries	261	74.1	74	21.0	17	4.8	---	---
Total	313	61.3	85	16.6	63	12.3	50	9.8

Differences in Trip Length (Hours) by CRG Niche Area

Differences in Trip Length (Hours) by CRG Niche Area

- Day visitors in the Western Gateway area were significantly more likely to spend 1-2 hours (70.6%) recreating in the CRG.
- In contrast, Western Gateway day visitors were least likely to spend 3-4 hours (12.7%) recreating in the CRG.
- The analysis showed that day visitors in the Columbia River area were least likely to recreate in the CRG for only 1-2 hours (37.1%).
- However, Columbia River area day visitors were significantly more likely to spend 7 hours (26.5%) or more participating in outdoor recreation in the CRG.
- Finally, only a minute portion (<1.0%) of day visitors in the Columbia Tributaries area reported that they spent 5-6 hours recreating in the Gorge.

Table 25. Differences in Trip Length (Hours) by CRG Niche Area

	1-2 hours		3-4 hours		5-6 hours		7 hours or more	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	72	70.6	13	12.7	12	11.8	5	4.9
Wall and Falls	350	47.5	232	31.5	100	13.6	55	7.5
Skamania Highlands	26	55.3	11	23.4	8	17.0	2	4.3
Oak Pine Flowers	57	50.4	35	31.0	14	12.4	7	6.2
Columbia River	56	37.1	32	21.2	23	15.2	40	26.5
Columbia Tributaries	272	55.7	209	42.8	4	<1.0	3	<1.0
Total	833	50.9	532	32.5	161	9.8	112	6.8

**Differences in Number of Developed Day Use Sites Visited by CRG
Niche Area**

Differences in Number of Developed Day Use Sites Visited by CRG Niche Area

- Visitors in the Western Gateway (mean= 0.47 Developed Day Use Sites) were less likely to recreate in multiple Developed Day Use Sites than visitors in other areas of the CRG.

Table 26. Differences in Number of Developed Day Use Sites Visited by CRG Niche Area

	Number of DUDS Visited *	
	<i>N</i>	<i>Mean</i>
Western Gateway	15	0.47
Wall and Falls	1068	1.74
Skamania Highlands	18	1.11
Oak Pine Flowers	33	0.85
Columbia River	---	---
Columbia Tributaries	1139	1.80
Total	1139	1.69

Differences in Perceived Crowding by CRG Niche Area

Differences in Perceived Crowding by CRG Niche Area

- According to the results of the analysis, visitors to the Wall and Falls (mean=4.86) area reported that they felt significantly more crowding than those recreating in other areas of the CRG.

Table 27. Differences in Perceived Crowding by CRG Niche Area

	Perceived Crowding	
	<i>N</i>	<i>Mean</i>
Western Gateway	164	3.20
Wall and Falls	1109	4.86
Skamania Highlands	130	3.20
Oak Pine Flowers	123	3.44
Columbia River	146	3.41
Columbia Tributaries	1083	2.65
Total	2755	3.68

*Perceived crowding was measured on a 9-point scale where 1=not at all crowded and 9=extremely crowded.

Differences in Main Activity Participation per Year by CRG Niche Area

Differences in Main Activity Participation per Year by CRG Niche Area

- Visitors were presented with a list of 30 potential recreational activities and were asked to indicate which was their primary activity while recreating in the CRG. They were then asked to indicate the amount of days per year they spent participating in that activity on Forest Service managed lands.
- Visitors in the Western Gateway spent a significantly greater amount of days per year (mean=93.67 days) on average participating in their primary activity on FS lands than those in other CRG areas.
- In contrast, visitors in the Wall and Falls area spent the least amount (mean=6.68 days) of days annually participating in their primary activity. This may indicate that the CRG is one of their main destinations for participating in those specific activities.

Table 28. Differences in Main Activity Participation per Year by CRG Niche Area

	Days Spent Participating in Main Activity on NF Lands per Year*	
	<i>N</i>	<i>Mean</i>
Western Gateway	98	93.67
Wall and Falls	1991	6.68
Skamania Highlands	30	42.10
Oak Pine Flowers	103	29.50
Columbia River	---	---
Columbia Tributaries	25	32.36
Total	2247	12.28

*The Columbia River area was not examined in the study years that correspond to this question.

Differences in Age and Race by CRG Niche Area

Differences in Age by CRG Niche Area

- The Skamania Highlands area attracted a significantly higher portion of middle aged recreations (70.3%).
- A significantly higher portion of older visitors recreated in the Columbia River area (22.9%), whereas the Columbia Tributaries area attracted the lowers portion of older recreations (5.2%).

Table 29. Differences in Age by CRG Niche Area

	29 year or younger		30-59 years		60 or older	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	98	28.5	206	59.9	40	11.6
Wall and Falls	898	28.2	1873	58.9	411	12.9
Skamania Highlands	44	18.6	166	70.3	26	11.0
Oak Pine Flowers	46	14.8	205	66.1	59	19.0
Columbia River	43	13.5	203	63.6	73	22.9
Columbia Tributaries	22	28.6	51	66.2	4	5.2
Total	1151	25.8	2704	60.5	613	13.7

Differences in Race by CRG Niche Area

- The highest portion (19.2%) of Non-Caucasian visitors recreated in the Columbia River area.

Table 30. Differences in Race by CRG Niche Area

	Caucasian		Non-Caucasian	
	<i>N</i>	%	<i>N</i>	%
Western Gateway	318	93.8	21	6.2
Wall and Falls	2627	90.7	270	9.3
Skamania Highlands	213	94.2	13	5.8
Oak Pine Flowers	286	95.3	14	4.7
Columbia River	261	80.8	62	19.2
Columbia Tributaries	68	98.6	1	1.4
Total	3773	90.8	381	9.2

Differences in Income by CRG Niche Area

Differences in Income by CRG Niche Area

- A significantly higher portion of visitors from Skamania Heights (87.9%) indicated that their household income was \$99k or less.

Table 31. Differences in Income by CRG Niche Area

	99k or Less		100k or more	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Western Gateway	49	80.3	12	19.7
Wall and Falls	582	79.3	152	20.7
Skamania Highlands	29	87.9	4	12.1
Oak Pine Flowers	59	80.8	14	19.2
Columbia River	---	---	---	---
Columbia Tributaries	22	84.6	4	15.4
Total	741	79.9	186	20.1

*The Columbia River area was not examined in the study years that correspond to this question.

**Differences in Groups with Children and Number of People per
Vehicle by CRG Niche Area**

Differences in Groups with Children by CRG Niche Area

- A significantly higher portion (86.9%) of groups in the Columbia Tributaries area indicated that they were recreating with children in their groups.

Table 32. Differences in Groups with Children by CRG Niche Area

	No Children in Group		Children in Group	
	<i>N</i>	%	<i>N</i>	%
Western Gateway	90	91.8	8	8.2
Wall and Falls	1534	77.0	458	23.0
Skamania Highlands	24	80.0	6	20.0
Oak Pine Flowers	93	90.3	10	9.7
Columbia River	---	---	---	---
Columbia Tributaries	41	13.1	271	86.9
Total	1782	70.3	753	29.7

*The Columbia River area was not examined in the study years that correspond to this question.

Differences in Number of People per Vehicle by CRG Niche Area

- Those visitors that traveled to the Western Gateway area of the CRG had significantly smaller groups (mean= 1.52 people) than the other areas of the Gorge.

Table 33. Differences in Number of People per Vehicle by CRG Niche Area

	Number of People per Vehicle*	
	<i>N</i>	<i>Mean</i>
Western Gateway	98	1.52
Wall and Falls	1992	2.80
Skamania Highlands	30	2.03
Oak Pine Flowers	103	2.47
Columbia River	---	---
Columbia Tributaries	25	2.80
Total	2248	2.72

*The Columbia River area was not examined in the study years that correspond to this question.

Differences in Opinion of Improving Recreation by CRG Niche Area

- Visitors throughout the CRG were asked whether or not improvements should be made to the recreation sites. All of the respondents (100.0%) in the Columbia River expressed that they felt that improvements should be made.
- Conversely, recreationists in the Columbia Tributaries (61.5%) are were most likely to say that no improvements should be made to the area.

Table 34. Differences in Opinion of Improving Recreation by CRG Niche Area

	Yes, Make Improvements		No, Do Not Make Improvements	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Western Gateway	89	82.4	19	17.6
Wall and Falls	253	61.6	158	38.4
Skamania Highlands	66	86.8	10	13.2
Oak Pine Flowers	49	69.0	22	31.0
Columbia River	108	100.0	---	---
Columbia Tributaries	5	38.5	8	61.5
Total	570	72.4	217	27.6

Differences in Overall Satisfaction by CRG Niche Area

Differences in Overall Satisfaction by CRG Niche Area

- Overall, a majority (96.8%) of the visitors to the CRG felt that their experiences were *More than Satisfactory*.
- Despite the high levels of satisfaction from the overall sample, visitors in the Columbia River area (8.3%) were more likely to rate their experience as *Satisfactory*.

Table 35. Differences in Overall Satisfaction by CRG Niche Area*

	Less than Satisfactory		Satisfactory		More than Satisfactory	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	2	0.8	9	3.6	242	95.7
Wall and Falls	3	0.1	60	2.3	2579	97.6
Skamania Highlands	1	0.5	6	3.2	181	96.3
Oak Pine Flowers	---	---	4	1.6	247	98.4
Columbia River	5	1.5	27	8.3	292	90.1
Columbia Tributaries	---	---	1	2.2	44	97.8
Total	11	0.3	107	2.9	3585	96.8

*Overall Satisfaction was rated on a 3-point scale where 1=less satisfied, 2=satisfied and 3=more than satisfied

Differences in Primary Motivation by CRG Niche Area

Differences in Primary Motivation by CRG Niche Area

- Nearly half (45.5%) of the overall sample identified felt that the CRG was a good places to participate in the activities that they enjoy.
- The data suggests that visitors feel that the CRG is a destination worth traveling to since, only a small portion (3.6%) indicated that they motivated to visit the CRG because it was close to home.
- A significantly smaller percentage of visitors to the Columbia Tributaries area reported that their primary motivations were to *enjoy the place itself* (14.6%) and *it was the CRG* (0.2%)
- However, a significantly higher percentage (24.6%) of visitors in the Columbia Tributaries indicated that they visited the area in order to spend more time with their companions.
- Visitors in the Wall and Falls area were significantly more likely to report that they were primarily motivated to recreate in the CRG because *it was the CRG* (21.1%).
- In contrast, visitors in the Wall and Falls area were less like to report *it is a good place to do the activities I enjoy* (28.5%) as their primary motivation for visiting the CRG.

Table 36. Differences in Primary Motivation by CRG Niche Area*

	I enjoy the place itself		It is a good place to do activities I enjoy		I want to spend more time with my companions		Close to Home		It was the CRG	
	N	%	N	%	N	%	N	%	N	%
Western Gateway	38	23.0	77	46.7	25	15.2	4	2.4	21	12.7
Wall and Falls	226	35.4	182	28.5	79	12.4	17	2.7	135	21.1
Skamania Highlands	43	31.2	63	45.7	20	14.5	3	2.2	9	6.5
Oak Pine Flowers	43	34.4	41	32.8	15	12.0	7	5.6	19	15.2
Columbia River	43	29.1	79	53.4	19	12.8	7	4.7	---	---
Columbia Tributaries	146	14.6	567	56.5	247	24.6	41	4.1	2	0.2
Total	539	24.3	1009	45.5	405	18.3	79	3.6	186	8.4

Differences in Activity Participation by CRG Niche Area

Differences in Activity Participation by CRG Niche Area

Visitors were presented with an extensive battery of twenty nine recreation activities that are permitted within the CRG. First, they were asked to identify all of the activities they participated in or planned to participate in while recreating in the Gorge. They were then asked to identify which of those was their primary activity. The analysis revealed several significant differences in regards to activity participation throughout the various areas in the CRG. Tables 20-31 report these significant differences. In addition, significant differences were found in what recreationists considered their primary activity in the Gorge. Table 32 highlights these differences.

Differences in Developed Camping and Primitive Camping Participation by CRG Niche Area

- Only small portions of the overall sample of visitors in the CRG participated in *Developed Camping* (6.0%) or *Primitive Camping* (1.4%).
- Of those that did participate in *Developed Camping*, a significantly higher concentration of visitors did so in the Columbia River area (9.9%).
- The analysis showed that people were more likely to participate in *Primitive Camping* in the Columbia River (6.0%) and Columbia Tributaries (6.1%) areas.
- All of the visitors interviewed in the Western Gateway area reported that they did not utilize primitive campsites while visiting the CRG.

Table 37. Differences in Developed Camping and Primitive Camping Participation by CRG Niche Area

	Developed Camping*				Primitive Camping *			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	9	2.6	332	97.4	---	---	341	100.0
Wall and Falls	195	6.4	2875	93.6	36	1.2	3034	98.8
Skamania Highlands	9	4.4	196	95.6	2	1.0	202	99.0
Oak Pine Flowers	18	6.1	279	93.9	4	1.3	293	98.7
Columbia River	15	9.9	137	90.1	9	6.0	140	94.0
Columbia Tributaries	4	4.8	79	95.2	5	6.1	77	93.9
Total	250	6.0	3898	94.0	56	1.4	4087	98.6

Differences in Staying in FS Managed Property and Picnic and Family Gathering by CRG Niche Area

- A significantly higher number of visitors in the Columbia River area (10.1%) stayed in *FS Managed Resorts, Cabins, Developed Camping Areas*.
- One fourth (25.0%) of the visitors in the Skamania Highlands area went picnicking or had a family gathering in the CRG.
-

Table 38. Differences in Staying in FS Managed Property and Picnic and Family Gathering by CRG Niche Area

	Staying in FS Managed Resorts, Cabins, Developed Camping Areas*				Picnic or Family Gathering *			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	1	0.3	340	99.7	33	9.7	308	90.3
Wall and Falls	48	1.6	2875	93.6	549	17.9	2519	82.1
Skamania Highlands	5	2.5	199	97.5	51	25.0	153	75.0
Oak Pine Flowers	9	3.0	288	97.0	51	17.2	246	82.8
Columbia River	15	10.1	134	89.9	29	19.5	120	80.5
Columbia Tributaries	1	1.2	81	98.8	8	9.6	74	89.2
Total	250	6.0	3898	94.0	721	17.4	3420	82.6

Differences in Viewing Natural Features and Viewing Historic and Prehistoric Sites by CRG Niche Area

- A majority (84.4%) of the overall sample reported that they participated in the *Viewing Natural Features (scenery, wildlife, plants)*, whereas just over one-fourth (29.0%) of the sample participated in *Viewing Historic and Prehistoric Sites*.
- Despite the overall high level of participation, a significantly lower portion of visitors in the Columbia Tributaries area (62.7%) said that they participating viewing natural features.
- Additionally significantly lower portions of visitors in the Columbia Tributaries (13.6%) and Skamania Highlands (13.7%) areas reported *Viewing Historic and Prehistoric Site*.

Table 39. Differences in Viewing Natural Features and Viewing Historic and Prehistoric Sites by CRG Niche Area

	Viewing Natural Features (scenery, wildlife, plants)*				Viewing Historic and Prehistoric Sites*			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	253	74.2	88	25.8	75	22.0	266	78.0
Wall and Falls	2667	86.9	403	13.1	960	31.2	2112	68.8
Skamania Highlands	166	81.4	38	18.6	28	13.7	177	86.3
Oak Pine Flowers	240	80.8	57	19.2	93	31.3	204	68.7
Columbia River	121	81.2	28	18.8	36	23.7	116	76.3
Columbia Tributaries	52	62.7	31	37.3	11	13.6	70	86.4
Total	3499	84.4	645	18.6	1203	29.0	2945	71.0

Differences in Viewing Nature Centers and Nature Study Participation by CRG Niche Area

- Over one-fourth (29.2%) of the overall sample reported that they visited nature centers, interpretive trails and visitor centers.
- A significantly higher percentage (40.3%) of visitors in the Columbia River area stated that they visited Nature Centers, Interpretive Trails or Visitor Centers.
- In contrast, visitors at Skamania Highlands (9.8%) were least likely to visit a Nature Center, Interpretive Trail or Visitor Center.
- Overall, only a small portion (13.6%) of the sample participated in *Nature Study* within the CRG.
- Visitors in the Wall and Falls area (14.6%) were most likely to participate in *Nature Study*, whereas visitors in the Columbia Tributaries (8.5%) and Columbia River (8.7%) areas were least likely to participate.

Table 40. Differences in Viewing Nature Centers and Nature Study Participation by CRG Niche Area

	View Nature Centers, Interpretive Trails, Visitor Centers*				Nature Study *			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	64	18.8	277	81.2	32	9.4	309	90.6
Wall and Falls	984	32.1	2086	67.9	447	14.6	2623	85.4
Skamania Highlands	20	9.8	184	90.2	25	12.3	179	87.7
Oak Pine Flowers	73	24.6	224	75.4	39	13.1	258	86.9
Columbia River	60	40.3	89	59.7	13	8.7	136	91.3
Columbia Tributaries	9	11.0	73	89.0	7	8.5	75	91.5
Total	1210	29.2	2933	78.0	563	13.6	3580	86.4

Differences in Viewing Nature Centers and Nature Study Participation by CRG Niche Area

- A majority of the overall sample reported that they participated in neither *General Viewing Activities* (94.0%) or *Fishing* (95.4%).
- Of all the areas in the Gorge, visitors in Oak Pine Flowers were significantly more likely to participate in *General Viewing Activities* (70.3%).
- Recreationists in the Columbia River area (36.9%) were more likely to participate in *Fishing* than those in other areas of the CRG.

Table 41. Differences in General Viewing and Fishing Participation by CRG Niche Area

	General Viewing Activities*				Fishing*			
	YES		NO		YES		NO	
	N	%	N	%	N	%	N	%
Western Gateway	122	52.1	112	47.9	14	4.1	327	95.9
Wall and Falls	655	63.4	378	36.6	80	2.6	2990	97.4
Skamania Highlands	94	54.0	80	46.0	17	8.3	187	91.7
Oak Pine Flowers	130	70.3	55	29.7	12	4.0	285	96.0
Columbia River	87	58.4	62	41.6	55	36.9	94	63.1
Columbia Tributaries	27	50.9	26	49.1	11	13.4	71	86.6
Total	250	6.0	3898	94.0	189	4.6	3954	95.4

Differences in Hunting and Driving for Pleasure on Roads Participation by CRG Niche Area

- Nearly half (42.3%) of the overall sample participating in *Driving for Pleasure on Roads*.
- However, visitors in the Columbia Tributaries (22.0%) and Western Gateway (25.8%) areas were least likely to list *Driving for Pleasure* as one the activities in which they participating in.

Table 42. Differences in Hunting and Driving for Pleasure on Roads Participation by CRG Niche Area

	Hunting*				Driving for Pleasure on Roads *			
	YES		NO		YES		NO	
	N	%	N	%	N	%	N	%
Western Gateway	1	0.3	340	99.7	88	25.8	253	74.2
Wall and Falls	4	0.1	3066	99.9	1383	45.0	1687	55.0
Skamania Highlands	1	0.5	203	99.5	63	30.9	141	69.1
Oak Pine Flowers	2	0.7	295	99.3	131	44.1	166	55.9
Columbia River	3	2.0	146	98.0	69	46.3	80	53.7
Columbia Tributaries	---	---	82	100.0	18	22.0	64	78.0
Total	11	0.3	4132	99.7	1752	42.3	2391	57.7

Differences in Hiking or Walking and Bicycling Participation by CRG Niche Area

- Nearly three-fourths (71.7%) of the entire indicated that they participating in *Hiking or Walking* while in the CRG.
- Visitors in the Columbia River (40.9%) and Columbia Tributaries (41.5%) areas were less likely to participate in *Hiking or Walking* than visitors in other areas of the Gorge.
- Only a small portion of the overall sample indicated that they cycled while in the CRG. However, the analysis showed that visitors in the Oak Pine Flowers (17.2%) area were more likely to cycle than visitors elsewhere.

Table 43. Differences in Hiking or Walking and Bicycling Participation by CRG Niche Area

	Hiking or Walking *				Bicycling, including mountain bikes *			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	217	63.6	124	36.4	22	6.5	319	93.5
Wall and Falls	2320	75.6	750	24.4	157	5.1	2913	94.9
Skamania Highlands	160	78.4	44	21.6	6	2.9	198	97.1
Oak Pine Flowers	177	59.6	120	40.4	51	17.2	246	82.8
Columbia River	61	40.9	88	59.1	13	8.7	136	91.3
Columbia Tributaries	34	41.5	48	58.5	11	13.4	71	86.6
Total	2969	71.7	1174	28.3	260	6.3	3883	93.7

Differences in Non-Motorized Water Travel and Gathering Natural Products by CRG Niche Area

- Visitors in the Columbia Tributaries area (52.9%) reported a significantly higher level of participation in *Non-Motorized Water Travel* than visitors recreating in other areas of the CRG.

Table 44. Differences in Non-Motorized Water Travel and Gathering Natural Products by CRG Niche Area

	Non-Motorized Water Travel *				Gathering mushrooms, berries, firewood, or other natural products *			
	YES		NO		YES		NO	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Western Gateway	19	5.6	322	94.4	16	4.7	325	95.3
Wall and Falls	45	1.5	3025	98.5	72	2.3	2998	97.7
Skamania Highlands	3	1.5	201	98.5	8	3.9	196	96.1
Oak Pine Flowers	10	3.4	287	96.6	12	4.0	285	96.0
Columbia River	31	20.8	118	79.2	10	6.7	139	93.3
Columbia Tributaries	45	52.9	40	47.1	3	3.7	79	96.3
Total	153	3.7	3993	96.3	121	2.9	4022	97.1

Differences in Other Non-motorized Activities and View Wildlife Participation by CRG Niche Area

- Despite low participation levels from the overall sample (3.0%), visitors in the Columbia Tributaries area (14.6%) were more likely to participate in *Other Non-motorized Activities* than visitors recreating in other areas.
- Nearly half (40.2%) of the overall sample indicated that they viewed wildlife while in the CRG.
- The results show that visitors in the Oak Pine Flowers area (22.3%) were the least likely to participate in Wildlife viewing.

Table 45. Differences in Other Non-motorized Activities and View Wildlife Participation by CRG Niche Area

	Other Non-motorized Activities *				View Wildlife *			
	YES		NO		YES		NO	
	N	%	N	%	N	%	N	%
Western Gateway	17	5.0	324	95.0	42	39.3	65	60.7
Wall and Falls	76	2.5	2994	97.5	835	41.0	1202	59.0
Skamania Highlands	4	2.0	200	98.0	16	53.3	14	46.7
Oak Pine Flowers	9	3.0	288	97.0	25	22.3	87	77.7
Columbia River	6	4.0	143	96.0	---	---	---	---
Columbia Tributaries	12	14.6	70	85.4	12	40.0	18	60.0
Total	124	3.0	4019	97.0	930	40.2	1386	59.8

*The Columbia River area was not examined in the study years that correspond to the participation variable "View Wildlife."

Differences Other Activity Participation by CRG Niche Area

- Over half (57.9%) of the visitors in the Western Gateway area reported participating in activities that were not included in the survey, which was significantly higher than visitors in other areas of the CRG.

Table 46. Differences Other Activity Participation by CRG Niche Area

	Other Activity *			
	YES		NO	
	N	%	N	%
Western Gateway	62	57.9	45	42.1
Wall and Falls	109	5.4	1928	94.6
Skamania Highlands	1	3.3	29	96.7
Oak Pine Flowers	19	17.0	93	83.0
Columbia River	---	---	---	---
Columbia Tributaries	2	6.7	28	93.3
Total	193	8.3	2123	91.7

Differences in Primary Activity by CRG Niche Group

Differences in Primary Activity by CRG Niche Group

- The analysis showed that the most popular primary activities in the CRG were *Hiking and Walking* (36.0%), *Viewing Natural Features* (22.5%) and *General Sightseeing* (13.3%).
- Of all the areas in the CRG, a significantly higher percentage (26.8%) of visitors in the Wall and Falls area reported *Viewing Natural Features* as their primary activity.
- Over half (55.0%) of the visitors in Skamania Highlands area reported *Hiking or Walking* as their primary activity which was a significantly higher percentage than in other areas of the CRG.
- Visitors in the Oak Pine Flowers area (50.6%) were significantly more likely to claim *Other Non-motorized Water Travel* as their primary activity than visitors in other areas of the Gorge.
- In contrast, visitors in the Oak Pine Flowers area (1.2%) were less likely to indicate *General Sightseeing* as their primary recreational activity in the CRG.

Table 47. Differences in Primary Activity by CRG Niche Group

	Western Gateway		Walls and Falls		Skamania Highlands		Oak Pine Flowers		Columbia River		Columbia Tributaries		total	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Developed Camping	4	1.2	66	2.2	4	2.1	---	---	6	2.2	4	3.5	84	2.1
Picnics and Family Gathering	18	5.3	113	3.8	16	8.5	1	1.2	14	5.0	---	---	162	4.1
Viewing Natural Features	22	6.5	799	26.8	15	7.9	13	15.3	46	16.5	4	3.5	899	22.5
General sightseeing	68	20.1	366	12.3	12	6.3	1	1.2	61	21.9	24	20.9	532	13.3
Fishing	7	2.1	29	1.0	12	6.3	9	10.6	2	0.7	40	34.8	9	2.5
Driving for pleasure	6	1.8	90	3.0	2	1.1	---	---	11	4.0	---	---	109	2.7
Hiking or walking	100	29.5	1170	39.2	104	55.0	2	2.4	58	20.9	2	1.7	1436	36.0
Bicycling	18	5.3	90	3.0	3	1.6	1	1.2	38	13.7	1	0.9	151	3.8
Non-motorized water travel	9	2.7	27	0.9	1	0.5	43	50.6	6	2.2	24	20.9	110	2.8
Relaxing/hanging out	2	0.6	106	3.6	1	0.5	8	9.4	8	2.3	---	---	125	3.1
Other activities	51	15.0	41	1.4	---	---	---	---	11	4.0	---	---	103	2.6

**Discussion of Outdoor Recreation Trends:
US, Pacific Northwest, Oregon, and Washington**

The Need for Information about Recreation Uses and Trends

Reliable information about recreation participation and visitor use trends (changes in demand) is essential for the effective management of natural resources. In order to provide desirable recreation opportunities and quality experiences, managers need information on trends in outdoor activity participation. For instance, hiking trails in Wilderness can provide opportunities for solitude and contemplation as well as skill development. On the contrary, designated off-highway vehicle (OHV) trails near urban areas can provide opportunities for family bonding and social experiences.

Information on use patterns and trends provides indications about existing recreation demand. This is useful for determining long-term and short-term agency priorities, resource allocation at local, regional and national levels. This information also helps identify appropriate niches for various locations (McCool and Cole 2001). For example, knowing about an increase in the popularity of whitewater kayaking in a certain location or region might lead managers to anticipate a spike in future use at specific sites or areas. Additionally, this information may be useful in identifying potential conflicts (e.g., conflicts between boaters and anglers, stock use and mountain biking, etc.). Information on recreation trends and activities can increase management awareness and the ability to be proactive. For example, if visitor use data shows that a specific Wilderness area is attracting inexperienced hikers, management might allocate more resources to enhance the efficiency and effectiveness of search and rescue efforts.

Use and trend information is also crucial for monitoring and evaluating the effectiveness of management actions that have been implemented. For example, management actions such as the development of a new campground, prohibition of campfires at a Wilderness destination, or closure of popular forest roads used by hunters have both intended and unintended consequences (e.g., Hall and Cole 2000). Monitoring the effects of management actions is critical for determining effectiveness of existing plans and the need for making necessary adjustments. Information about effects or changes at one site may also be useful in understanding where to replicate or avoid similar changes at another site.

In today's sometimes contentious and even competitive environment, this information is needed by the agency to defend funding for recreation programs and facilities, as well as to make decisions that protect recreation values and opportunities desired by users. Additionally, there are legal mandates for obtaining and reporting some types of information. This report seeks to examine US outdoor recreation participation trends at the following three levels: nationally, regionally in the states of Oregon and Washington, and locally in the Columbia River Gorge NSA.

Issues in Evaluating Recreation Trend Data

Obtaining a clear, accurate perspective on trends in recreation participation can be difficult. For instance, different studies use different methods, and the effects of method variation on responses are often unknown. Different methods used in Oregon, Washington, and Alaska include phone interviews, on site interviews, and mail-back surveys. Some surveys only interview participants who are 18 years or older, whereas others include children as young as 6. Other studies ask people to report on their own individual behavior, while others ask for information on some or all household members. Finally, some studies ask people to recall their activities over the course of a year, whereas others ask respondents to recall activities within only a few months.

Various studies classify activities differently, so it can be difficult to know whether data for the "same" activity are really comparable across studies. Since response rates are not always reported and non-response bias is not always accounted for, studies yielding low response rates can be majorly affected. All of these issues make extrapolating data representing an entire population quite complex and can again create difficulties in comparing results between studies.

Aside from the issues surrounding the methods used to obtain and analyze data, interpreting trends can be challenging because of substantial fluctuations in activities from year to year. Trends for a given activity may depend on the timeframe examined. A few-year snapshot may convey one impression, whereas a longer series of data may indicate the opposite. For example, the popularity of fishing appeared to declining in the mid-1990s. However according to Roper's annual study, participation rebounded in 1999 and has remained at or above

1994 levels. Year-to-year trends are affected by many factors, such as the economy, weather, the extent of wildfires, and changes in technology, to name a few. Therefore, examining multiple sources and looking across longer time horizons is strongly recommended when discerning trends

National Trends in Outdoor Participation

The population of United States reached 308.7 million in 2010. It is expected to grow at a rate of 0.9% until 2030 and 0.8% after 2030 until 2050 when the population is projected to reach 440 million (Shrestha & Heisler, 2011). Overall, much of the growth in terms of concentration of population (people per square mile) has occurred in the Northeast coastal areas, the Southern Appalachians, the Chicago metro area, the California coast and the Pacific Northwest (Cordell 2012). Participating in a variety of outdoor recreation activities has always been one of the most important leisure time pursuits of the American population (Manning 2005). This is particularly true in the Pacific Northwest, where an extremely high proportion of residents recreate outdoors.

There have been noticeable changes in recreation participation trends over the past few decades. These variations in trends may be attributed to changes in population demographics,, the fluctuating ratio of the rural/urban population, technological advances and changes people's in lifestyle (Cordell 2011, Manning, 2005).

Figures show that the current population structure of the United States, in terms of age, ethnicity, and urban and rural inhabitants is starkly different than it was in 1950 (Shrestha & Heisler, 2011). Each of these features of population has its own role in determining leisure and outdoor activity selection. One significant change that has occurred in the US population in recent years is that the US has become more racially and ethnically diverse, primarily because of rapid immigration. Studies have concluded that one's race or ethnicity can be a determinant in which outdoor activities or settings he or she chooses (Manning 2005, Cordell, 2012). The trends show that although the population of all races has been growing, Hispanic and Asian populations have grown faster rates in the last two decades (110% and 95%, respectively) than others. With the population becoming increasingly diverse, the proportion of the white population is declining. In 1950, the ratio of white and nonwhite population was 85:15, and is

now 72:28. The growth of the Hispanic population has increased at a higher rate in southeastern states. Substantial growth in the Hispanic population can be also seen in coastal counties of Oregon and Washington (Cordell 2012).

Age is another important factor that affects people's outdoor recreation choices. Demographic trends indicate that the population of the United States is rapidly aging. The percentage of the older population was 8% in 1950, but has increased to 13% in 2010 and it is expected to reach 20.2% in 2050 (Shrestha & Heisler, 2011). The fastest growing age groups since 1990 have been people in the age range of 44—54 years old, and 55 and above. There has been decline in 25-34 age group nationally, with steep decline in the Northern (-17%) and Pacific Coast regions (-4.3%). The most rapidly aging region is the Rocky Mountains, followed by South and Pacific Coast. There has been also decline in population of ages 10 and younger in the Northern states.

Likewise the ratio of urban and rural inhabitants has also changed significantly. In 1950, 35% of the US population lived in rural settings while 65% lived in urban settings. However in 2010, the percentage of urban dwellers increased to 81% and the rural population decreased to 19%.

The variety of outdoor recreation choices available to Americans in the recent decades is quite different as well. This is primarily due to technological advancements and increasing access to more geographical areas. Developments in the safety and cost efficiency of outdoor gear such as cameras, binoculars, GPS systems and off-road vehicles have created new ways to use natural areas for recreation previously not available to the masses in previous generations. These technological advancements have had a substantial impact on outdoor recreation participation.

Outdoor Recreation Activity Participation Trends

According to the most recent survey conducted by The Outdoor Foundation (2011), 48.6% of all Americans participated in one or more of the 40 outdoor activities included in the survey at least once in the year 2008.

Between 2000 and 2009 the total number of people who participated in one or more of the 60 recreation activities grew by 7.5% (an estimated rise from 208.5 million to over 220 million) and the total number of activity days increased over 32%. According to ORRRC, in the 1960s the most popular outdoor activities were the following: driving for pleasure, swimming, walking, playing outdoor games or sports, sightseeing, picnicking, fishing, bicycling, attending outdoor sports events, boating, nature walks, and hunting. Additional popular activities were camping, horseback riding, and water skiing, hiking, and attending outdoor concerts or other events.

Changes in recreation participation trends have long been studied in the United States. The 1982-83 Nationwide Recreation Survey (NRS) showed that about 89% of the population (16 years or older) participated in one or more outdoor recreation activities (van Horne, Szwak & Randall, 1986). There were also significant changes reported regarding the most popular activities compared to those in 1960 (Cordell 2008, in *The Latest Trend in Nature-Based Outdoor Recreation*). The most popular activities in 1982-83 were the following: swimming, walking, visiting zoos and parks, picnicking, driving for pleasure, sightseeing, attending outdoor sports events, fishing, and bicycling. The 1994-95 National Survey on Recreation and the Environment (NSRE) showed that an estimated 94.5% (over 189 million) of the population aged 16 or older participated in one or more outdoor recreation activities during a 12-month period, which constituted 67% of the total population. The four most popular activities in 1994-95 were walking (66.7%), viewing scenery/a beach or watershed/ (62.1%), family gatherings outdoors (61.8%) and sightseeing (56.6%).

By 2000, the population of the nation rose to 284 million and a noticeable change had occurred in the proportion of the total population that participated in outdoor recreation. Participation increased from 67% in 1994-95 to 83% of the total population in 2000(Cordell

2008). According to the Outdoor Recreation for 21st Century America, viewing and photographing birds gained the most popularity of all outdoor recreation activities (grew by more than 200%), followed by day hiking (193%), backpacking (182%), and snowmobiling. Other activities that gained notable popularity include outdoor concert entertainment, walking for pleasure, camping in developed sites, canoeing/kayaking, downhill skiing, and swimming in natural waters. Participation in each of the above-mentioned activities increased by 50% to 100% since 1982-83.

Recent trend shows that US residents' overall participation in outdoor recreation activities, including nature-based recreation, is growing, even though some traditional activities have been in decline Cordell (2012). Between the years 2000 and 2009, the total number of people who participated in one or more of the key outdoor recreation activities grew by 7.5%, and the total number of recreation days increased by over 32%.

Current trends also show that what outdoor recreation activities people choose to participate in is noticeably different from the past. Participation in hunting and fishing has been declining, yet these activities are being replaced by other activities, such as wildlife or bird watching and photography (Cordell 2012). Another noticeable change is that there has been an increase in participation in nature-based recreation activities. Among the top nature-based activities, there has been an increase in the number of participants by 7.1% between 2000 and 2009 (from 196 million to 210 million) and the number of recreation days grew by 40% (37 billion days to 52 billion days). One activity that has seen tremendous growth in both the number of participants and recreation days is *viewing and photographing nature* which includes viewing birds, other wildlife, fish, vegetation, and natural scenery,

In 2012, a longitudinal (1982—2009) analysis of participation trends in 33 outdoor recreation activities showed that activities such as walking outdoors have seen highest growth in the number of participants (i.e. from 91.9 million to 200 million, a positive increase of 106 million), followed by, viewing or photographing wild birds (+63.3 million), attending outdoor sport events (+56.9 million), day hiking (+55.5 million), visiting outdoor nature centers (+46.5 million), attending outdoor concerts/plays/other events (+44.7 million), sightseeing (+44.1 million),

swimming in natural waters (+42.0 million), picnicking (+38.3 million), driving for pleasure (+37.2 million), running or jogging (+35.3 million), boating (+34.9 million), bicycling (+32.8 million), and driving off roads (+29.3 million) and swimming in outdoor pool (27.4 million) (Cordell et al., 2012). Little or no increase has occurred in sailing (+0.0 million) cross country skiing (+0.9 million) and ice-skating (+1.6 million). One activity that showed a decline in participation was outdoor tennis (-6.3 million).

The fastest growing activities in terms of percentage are non-traditional and non-consumptive activities. For example, viewing and photographing nature (scenery, birds and wildlife) has grown fastest over this period (304%), followed by day hiking (228%), backpacking (167%), off-road vehicle driving (153%), canoeing/kayaking (119%) and walking outdoors (118%). Participation in traditional consumptive activities such as hunting and fishing, which were once seen as primary outdoor pursuits, showed only minor growth (+27.9% and +32%, respectively).

The Pacific Coast saw a higher percentage of participation than other regions in walking for pleasure, picnicking, visiting beaches and bicycling. On the contrary, participation in big game hunting throughout this region decreased by four percent. The percentage of participants spending more than 25 recreation days annually was higher for driving off-road (24%) and day hiking (20%) in 2005-09 than in 1982-83 (17% and 12%, respectively). The percentage of participants spending 11 to 25 recreation days was higher for backpacking (15%) and day-hiking (17%) in 2005-09 than in 1982-83 (9% and 14%, respectively). The percentage of participants spending 3 to 10 recreation days was higher for backpacking horseback riding (34%), swimming in natural waters (50%) snowmobiling (42%), sailing (43%) primitive camping (52%), downhill skiing (52%) and cross country skiing in 2005-09 than in 1982-83

Visiting recreation and historic sites and non-motorized boating showed moderate growth in total recreation days. Three of the other activity groups (hunting and fishing, backcountry activities, and motorized activities) showed very little change in participation from 2000 to 2009, while various forms of skiing, including snowboarding, declined in total recreation days.

Public lands continue to be of utmost importance to outdoor recreationists. According to Cordell (2012), visitation to various units of both the National Park System and Bureau of Land Management have been relatively stable, while visitation at National Wildlife Refuges and other areas managed by the U.S. Fish and Wildlife Service has shown steady growth. Visitation to National Forests, however, showed some decline. The percentage of the population visiting recreation and historic sites on public land is substantial in both the East (60%) and the West (69%). Popular recreation activities in public lands are viewing and photographing nature, viewing scenery, viewing wildlife and birds, fishing and other backcountry activities. Hunting seems to be declining in public lands, especially in the East. About 57% of the hunting on public lands occurs in the West compared to 43% in the East. According to the National Fishing, Hunting, and Wildlife-Associated Recreation Survey, only 39% of hunters used public lands, while 82% used privately owned lands. For wildlife watchers, publicly owned lands were the most popular destinations for observing, feeding, or photographing. Just 38% of wildlife watchers visited private areas. About 27% of wildlife watchers visited both public and private land.

Outdoor Activity Participation Trend by Demography

The most recent survey conducted by The Outdoor Foundation (2011) showed that participation was highest among people in the 6-12 age group (64%) and lowest among people age 45 or higher (38%). Overall, America's youth do spend a substantial amount of time recreating outdoors. The National Kids Survey showed that approximately two-thirds of youth ages 6 to 19 reported spending two to three hours outdoors on a typical weekday, and over three-fourth reported spending two or more hours outdoors on typical weekend days. Less than 5% spent no time outdoors on either weekdays or weekend days. Recent trends from 2006-2008, however, indicated that participation rate among youth in outdoor activities declined significantly in the 6-12 age group (from 78% to 64%) and the 13-17 age group (from 69% to 61%). However, from 2008 to 2010, the participation rate of both of these youth age groups seems remains constant at 62%.

Although the population of outdoor recreations is no longer predominantly male, female participation in outdoor recreation was comparatively lower than males in terms of percentage of

the total population, number of activities, number of recreation days and expenditures in 1982-83. The Outdoor Foundation has pointed out that female and ethnically diverse groups are significantly underrepresented in many surveys (in Cordell 2010 RPA Assessment-invited paper). Cordell (2012) reported that in 2009 male participation (56%) was higher than female participation (43.4%). However, the representation of females (52%) was higher in terms of percent of total population than in 1982-83. According to The Outdoor Recreation Participation Report in 2011 (in The Outdoor Foundation Study), the percentage of female participation in outdoor activities even in recent years was lower than males for most age groups, except for age group 18-25, in which female participation (51%) was slightly higher than males (49%). Female participation was especially lower among children (age group 6-12) and older age groups (age groups 45 or older). A sharp decline in women's participation occurred after the 51-55 age group.

Activity-wise, there were also notable differences in participation between males and females. In 1982-83, the average number of outdoor activities in which males participated at least once or more in the past 12 months was eight, while females participated in seven outdoor activities. Similarly, males averaged a total of 44 recreation days in a twelve month period, whereas females averaged 30 recreation days. On average, males spent \$396 in outdoor recreation during a twelve month period, while females spent almost \$100 less.

In terms of race, participation in outdoor recreation is significantly higher among white Americans than any other race for all age groups. White Americans make up 80% of all outdoor participants in all activities included in the survey, whereas African-Americans make up 7%, Asians/pacific islanders 5%, Hispanic 5% and other racial/ethnic groups 3%.

Outdoor recreation participation trends also show that different segments of society chose varying types and levels of activities in different settings. For example, visiting recreational and historic sites was significantly higher for non-Hispanic whites and middle-aged people with a higher level of education, higher income than those who were not born in the US. These sites were also popular among non-Hispanic white teenagers. Likewise site seeing and photography were higher for non-Hispanic whites between the ages of 35-54, and with higher education and income. Backcountry activity participation was highest among white and Native American

males under the age of 55, with high levels of education and income and who resided in rural areas. Hunting, fishing, motorized outdoor activities were higher among rural, non-Hispanic white males with middle to high income. Non-motorized boating activities and skiing were higher for younger non-Hispanic white urban males with higher income and education.

Constraints to Participation

From the 1994-95 study, “lack of time,” “lack of money,” “areas too crowded,” “no companions,” inadequate information,” “inadequate facilities” and “personal health” were the most prominent constraints for people participating in outdoor activities (Chapter V. Cordell, McDonald, Teasley, Bergstrom, Martin, Bason, & Leeworthy).

Johnson, Bowker and Cordell (2001) analyzed outdoor participation constraints for participants in the 1995 NSRE survey (data collected in 1991-1994) and Green (2012) analyzed the outdoor constraints for participants in the 2009 NSRE survey (reference http://www.srs.fs.usda.gov/pubs/ja/2009/ja_2009_green_001.pdf downloaded on July 25, 2102). A comparison of these two studies shows that in 1995 survey 12 constraint items were included, but in 2009 survey 18 constraint items were included. Both studies modeled each constraint separately with a number of independent variables including age, sex, race and type of residence (rural or non-rural). The results indicate that various types of constraints limited Americans’ participation in outdoor activities in the past as well as in the recent years. They also indicated that some segments of society (women, children, older people, as well as African-American and Hispanic respondents) perceived more constraints than others. Additionally, the results indicated that the number of constraints have increased for older people, females and non-whites in recent years.

In 1995, “lack of money” and “no transportation” constrained fewer Asian than white participants, but constrained higher percentage of African-American and Hispanic participants. “Lack of time” was most critical constraint for Asian and Hispanic participants, and lowest for white participants. There was noticeable difference in the type of constraints encountered by participants and non-participants of outdoor recreation activities. For those who did participate, “insufficient time,” “no money” and “no companions” were not important issues, but for the non-

participant group “no money,” “insufficient time,” and “inadequate information” were important issues. “Lack of time” “lack of money” and “inadequate facilities” were not a problem for older people in both 1995 and 2009, but older people perceived “physical health” and “safety issues” as important constraints in 2009. In 1995, there was no difference in the number and type of constraints faced by outdoor participants of different races; though African-American non-participants were more likely to be constrained by “personal safety.” The 2009 study, however, showed that in comparison to white participants, African-American respondents reported at least 12 more constraint items. African-American participants also felt a greater number of constraints than Hispanic and Asians/Pacific Islander participants..

In 1995, female non-participants faced fewer constraints like “personal safety,” “inadequate facilities,” “inadequate information,” “outdoor pests,” and also “lack of funds.” However, in 2009 females encountered all types of personal, and structural, and psychological constraints including “lack of time for family reasons” and “lack of money,” which were significantly higher than males with the exception of “no time because of work” (Gary et al in Cordell 2012, page 70).

In 1995, rural residents were less constrained by 'not enough time' and “outdoor pests” than urban types, but in 2009 they were more likely to report constraints such as “inadequate transportation,” “crowded areas,” and “safety.”

Demographic Changes in Oregon and Washington

Recreation participation in the Pacific Northwest (Oregon and Washington) is also increasing rapidly. The pattern in participation in outdoor activities is also expected to change from increasing racial and ethnic diversity because of in-migration of Hispanic and Asians populations, an increasingly aging population and an increasing number of urban dwellers..

According to the 2010 Census, the population of Oregon and Washington reached 3.83 million and 6.72 million, respectively. The population of Oregon is forecasted to increase by 41.3% to reach 4.28 million by the year 2030, at a rate of 1.16% per year. During the same

period, Washington's population is expected to increase by 46.3% to reach 8.62 million by 2030, at a rate of 1.28% per year. These two states equate to 3.5% of the national population (OR 1.2% & WA 2.2%). As far as population growth rate is concerned, Oregon and Washington have far outpaced the national growth rate for the last few decades. For example, between the years 1950 and 2010, the national annual population growth rate was at 1.44%, while those of Oregon and Washington have been 1.87% and 2.1%, respectively. During that period, the population of Oregon and Washington increased by 152% and 182%, respectively, against 104% increase across the United States.

Also between 1990-2000, the population growth rate in Oregon and Washington was much higher than the national average. During this period, the U.S. population grew by 13.2%, while Oregon and Washington's populations grew by 20.4% and 21.1%, respectively. Additionally, these two states belonged to ten states where the population increased by more than 20%. The population growth rate in these states has observed a slight decline in the last decade (2000-2010) but it is still far higher than the national average (US=7.5%, Oregon=12%, Washington=4.1%). This increasing population phenomenon has affected and is expected to affect the demand of various types of outdoor recreation activities in both states.

An increasing number of people in Oregon and Washington are living in urban areas (in incorporated cities and towns). In 1950, only 48% of population in Oregon and 53% population in Washington lived in urban areas. In 2010, the percentage of the total population living in incorporated cities and towns and cities had increased to 70% (nearly 2.7 million people) for Oregon and about 63% (nearly 4.2 million people) for Washington. The most populated counties in Oregon are Multnomah (0.735 million) and Washington (0.529 million). Two other highly populated counties are Clackamas and Lane County, each having population more than 0.350 million. All of these populated counties have seen highest number of population increase between the years 2000 to 2010, with Washington County seeing the highest increase (84,000). In terms of growth rate, Deschutes County topped all of the other counties with a population increase of 36.7%. Polk and Washington Counties were second and third, respectively, regarding population growth rate. The most populated counties of Washington State are Kings County (1.931 million), followed by Pierce County and Snohomish County, respectively, each

having population over half a million. These three counties have also seen highest increase in population in the recent years (2000-2010), while Franklin County has seen highest rate of increase.

The ethnic composition of Oregon and Washington has changed rapidly over the last few decades. This can be largely attributed to national and international immigration to these states. Although the number and percentage of minorities in this region is still less than the national average (USA=27.6%, OR=16.3%, WA=22.73%), their percentages are increasing rapidly in comparison to the white population (non-Hispanic). The proportion of the white population has declined from 90% in 1990 to 83% in Oregon and from 87% to 77% in Washington. In Oregon, the non-white population in 1990 was 0.266 million (about 9.4% of total population - OPRD, 2003), but it reached 0.626 million in 2010 (about 16.3% of total population including people of multi-race - Census 2010). In Washington, during the same time, the non-white population increased from .645 million (13% of total population) to 1.528 million (23% of total population). The change also shows that between the year 1990-2010, the Hispanic or Latino population has increased almost four times as much in Oregon (from 0.112 million to 0.450 million) and about three times as much in Washington (from .214 million to .756 million). Within the same time period, the Asian population (excluding Pacific Islanders and Native Hawaiian) in Oregon and Washington has also increased rapidly. In both Oregon and Washington the population has surged by more than 100% (to .141 million from less than 0.069 million in OR, and to .481 million from .203 million in WA). A slight increase in both the African American and American Indian/Alaska Native populations also occurred within the region. The African-American population in Oregon increased from 46,178 to 69,206 and the American Indian/Alaska Native population increased from 37,848 to 53,203. In Washington, the African-American population increased from 0.146 million in 1990 to .240 million, while the American Indian/Alaska Native population escalated from 76,397 to 0.103 million.

The current Hispanic population of Oregon and Washington is about 11% (still lower than the national average of 17%) but growing rapidly. On the other hand, the African-American population (OR 1.8%, WA 3.56%) is not only lower than national average (12.6%), but is also growing slower in comparison to Hispanic and Asian populations. The Asian

population is also growing rapidly throughout the region, especially in Washington. Washington's Asian population's proportion is higher (OR 3.7%, WA 7.2%) than the national average (4.8%). Additionally the proportions of American Indian/ Alaska Native (OR 1.4%, WA 1.5%, USA .09%) and Native Hawaiian and Pacific Islander (OR .34%, WA .60%, USA .20%) are higher than national average, as is the proportion of mixed race population.

As mentioned earlier, immigration is one of the main reasons for the increase in population growth in Oregon and Washington. Among the people who migrated to the region, a substantial amount were foreign born. For example, nearly 36% of the minority population of OR is foreign born and many of them are from Latin America (48%) and Asia (28%). The Asians and Hispanic/Latino populations are expected to increase in the coming years as well. Another fact is that in both states, much of the population growth is occurring near National Forests such as the Columbia River Gorge National Scenic Area, the Gifford Pinchot National Forest, and the Mt. Hood National Forest near Portland, and the Mt Baker-Snoqualmie National Forest near Seattle. Many immigrants to this region value outdoor recreation highly (Duffy-Deno 1998, English et al. 2000, Johnson and Beale 2002, Rasker et al. 2004, Rudzitis and Johansen 1989). The demand for outdoor recreation among this population is different, however, than demands from the white population. Therefore, the increasing foreign immigrant factor has the potential to increase outdoor recreation demand both in numbers and types.

The populations of Oregon and Washington are also aging quickly. According to the 2010 Census, the percentage of the population over age 50 is 34% in Oregon and 32% in Washington. For some time, the percentage of the population over age 65 will continue to increase, while younger age groups (<18 years) will remain relatively stable in size. Oregon and Washington are projected to experience more than 100% growth in the 65 and older age group by 2030. Accordingly, residents over the age of 65 are projected to make up over 18% of the population in both states (U.S. Census Bureau 2005). These changes in population size, diversity and age are also likely to affect trends in outdoor recreation.

Another factor that might influence the outdoor recreation situation in this region is income. As family incomes increase, people are naturally able to participate more in outdoor recreation activities. The data shows that the household incomes of the residents in both the

states are increasing (<http://www.census.gov/hhes/www/income/data/statemedian/>). The median family income of Oregonians has increased from \$42,499 in 2000 to \$50,526 in 2010, and for Washingtonians from \$42,525 to \$56,253.

Outdoor Recreation Trends in Pacific Northwest (Oregon & Washington)

Outdoor recreation is highly valued by people living throughout Pacific Northwest. Several national studies indicate that participation rates and utilization of public lands are higher in the Pacific Northwest (Oregon and Washington) than in many other parts of the country. According to the 1994-95 NSRE report, participation was higher for most activities in the Pacific Northwest than in the rest of United States per capita (Hall, Heaton, & Kruger (2009). Burchfield, Miller and Anderson (2002) also found that about half of the population in Pacific Northwest participates in outdoor recreation activities, which is higher than the national average. Considering the rapid growth rate of minorities in Oregon and Washington, it is expected that the trend of recreation participation by activity will change. As a result, recreation providers in these states should consider the needs of all ethnic groups when planning for outdoor recreation opportunities. Trends show that resource managers have already started researching the needs of a more diversified population. One good example of these actions is the 2008-2012 SCORP Plan study aimed especially at understanding minority participation in outdoor recreation in Oregon.

The major activities in which people of the Pacific Northwest participate in include viewing scenery/wildlife, snow and ice activities, camping, hunting, fishing, boating, and outdoor adventure activities. Important outdoor adventure activities in the region include hiking, backpacking, off-road driving, mountain climbing, orienteering, rock climbing, caving and horseback riding. All types of camping are important elements of outdoor recreation for people in the Pacific Northwest. Both developed and undeveloped camping show high levels of participation (Burchfield, et al., 2002). Although the total visitor days of recreation use on Forest Service sites increased between 1986 and 1996, the PNW region showed a slight decline in visitor days of recreation use between 1994 (62.5 million days) and 1997 (50.5 million days) (Burchfield, et al., 2002) . As noted earlier, visitation on USDA Forest Service units may be declining.

Oregon Trends

The most recent SCORP survey reinforces the perception that Oregonians consider outdoor recreation as an important part of their life style. Between 2001 and 2002, approximately 73% of Oregon households reported participating in outdoor recreation activities (Hall, Heaton, and Kruger (2009)). The users emphasized the need for protection of water bodies, fish and wildlife habitats and endangered species. They also perceived that recreation areas should be managed in ways that would maximize tranquility and natural qualities. Users are also asking for more family-oriented activities closer to home for shorter stays. The areas managed by the National Park Service are being visited for shorter durations than in the past, especially the areas closer to recreationists' homes. They are also expecting quality information about the area before paying for their visits, particularly from the internet. They are also seeking better services at the sites. US Army Corps of Engineers areas are visited most often for water-based recreation activities. The demand for water based recreation activities is expected to increase, thus making improvements in managing increased conflicts an important issue in these areas (OPRD 2003). The Oregon Parks and Recreation Department is emphasizing preservation and enhancement of "protected species" while maintaining recreation access. Because of emphasis on preservation, public access to many federal lands is restricted.

Participation Trends by Activity in Oregon

The demand for outdoor recreation opportunities in closer proximity to recreationists' homes is increasing throughout Oregon. Although running and walking for exercise are important outdoor recreation activities for Oregonians, the most popular activity is passive "viewing" of different features of nature such as scenery, wildlife, and birds. Oregon is also seeing an increasing demand for motorized and non-motorized trails, as well as alternative camping facilities such as yurts, cabins and RV camping facilities, especially in coastal areas. Though not directly comparable, Cordell et al. (2004) provided estimates from the NSRE study for participation in outdoor recreation on a state-by-state basis, and there is considerable overlap in the types of activities investigated in Oregon's SCORP and the NSRE. However, each survey includes some unique activities and questions are often phrased differently (e.g., the NSRE asks about "coldwater fishing," whereas the SCORP asks about "fishing from a bank").

Both the Oregon SCORP Plan and the NRSE study results analyzed by Cordell (2004) found that picnicking, sightseeing, and hiking are emerging as most popular activities; camping, off-road driving, and motor boating are in the middle range of popularity; and kayaking, horseback riding, and hunting are less popular. The actual participation estimates made by these two studies are dramatically different for most items but provide some meaning. For example, the Oregon SCORP reported that 23% of the Oregon population participates in picnicking, compared to 62% by NSRE respondents. Differences such as this may be attributed to fact that SCORP reported participation percentages for all Oregonians while NRSE used percentages for Oregonians age 16 or older (Hall, Heaton, and Kruger, 2009).

According to The Oregon State Parks and Recreation Department (2006), the number of visits to state parks increased from 1971 and 1989 but appeared to plateau from 1990 to 2003. Likewise, the Oregon Department of Fish and Wildlife's records (2004) of sales and fees of hunting licenses showed that there has been a slight, but steady decline in hunting and fishing over the last two decades (1985-2003) (Hall et al., 2009).

The most recent recreation trends were analyzed in the Oregon SCORP (Plan 2008-2012). In terms of percentage of people participating, the top five outdoor recreation activities for Oregonians are walking (80%), picnicking (68%), sightseeing (63%), visiting historic sites (62%) and ocean beach activities (54%). Other popular activities are day hiking (52%), taking children/grandchildren to playground (39%), exploring tide pools (37%), freshwater beach activities (33%) and other nature/wildlife observation (31%). In terms of participation intensity (number of days spent per year), walking (64.3 days), bird watching (16.2 days), jogging (12.6 days), sightseeing (9.9 days), and bicycling on road/path (7.7 days) were the top five outdoor activities.

The SCORP study also revealed that about 22% of Oregonians spend more time participating in outdoor recreation currently than they did five years ago, and 46% spend about the same amount of time recreating. On the contrary, 32% of Oregonians actually spend less time participating in outdoor recreation. Participation varies only modestly across gender, with females having a slightly lower intensity (days) and rate (number) than males. In regards to age,

older respondents are much more likely than others to be spending less time recreating outdoors. The activity that had the highest number of participation days between all age groups and both genders was walking. Participation intensity and rate both increased significantly with income.

The SCORP study also provided insight to future trends. It is predicted that in 10 years for now, walking will remain as the most popular recreational activity followed by bicycling, jogging, bird watching, and day hiking. Activities that are expected to increase in terms number of recreation days over the next 10 years are taking children/grandchildren to playgrounds, bicycling (road/path), picnicking, ocean/beach activities and day hiking. The number of recreation days across all activities is expected increase by 28% in 10 years. The five fastest growing activities in terms of number of recreation days will be snowshoeing (404%), cross country skiing (247%), waterfowl hunting (222%), yurts/camper/cabins (228%), and sailing (170%). The other activities that are supposed to more than 150% in terms of user days are white-water rafting, fly fishing, snowmobiling, rock climbing/mountaineering and mountain biking.

Motivations for Recreation Participation in Oregon

Among the 16 motivation items, “to have fun” and “to be in the outdoors” were the two most important motivations for outdoor recreation participation in Oregon outdoor recreation studies. “To experience challenge and excitement” was the least important motivational item. Looking to the future, fun and being outdoors will most likely remain the most important motivations. Over three-fourths of the respondents agreed that family members encourage them to engage in outdoor recreation (only 16% disagreed).

Crowding in Oregon

According to the recent SCORP, only about 20% of users who visited state parks and other types of recreation areas where affected by crowding. In these cases, campgrounds were identified as crowded by the most users (28%), followed by water areas (15%), and parking areas (10%). Among those who felt crowded, 60% felt “moderately crowded” and 18% felt “extremely crowded.” Additionally, 30% of those that experienced crowding did so during the

afternoon. Another 12% indicated feeling crowded during the morning while an additional 12% felt crowded in the evening.

One important factor to consider about Oregon is that outdoor recreation resources are used regularly by out of state residents as well as in state residents. According to the 2003 SCORP demand analysis, the participation of non-residents was very high for many recreation activities. These included sightseeing, picnicking, visiting cultural/historical sites, ocean/beach activities, nature/wildlife observation, RV/trailer camping, photography, bird watching, skiing and sledding. Out of state residents consist of 5-20% of the users for each of the aforementioned activities and account for millions of recreation use days annually.

Washington Trends

In Washington, more than half of the state's population participates in some form of outdoor recreation. Roughly half of this activity occurs on locally managed lands, with the other half shared among state, federal, and private providers.

Participation Trends by Activity in Washington

In 1987, the top ten outdoor activities were the following: jogging/running, walking in neighborhood parks, outdoor photography, sightseeing and exploring, visiting the beach/each combing, bicycle riding, swimming/wading at a beach, swimming/wading at an outdoor pool, using park playground equipment, picnicking (IAC 1990). A comprehensive survey in 1990 showed that that the top ten activities were as follows: walking for pleasure/exercise, running/jogging, visiting zoos/fairs, bicycling, mountain biking, tent camping (campgrounds), tent camping (backcountry), RV camping, day hiking, and attending sports events (IAC 1990). Walking and photography remained top activities in both periods. From the 1987 survey, IAC (1990) reported that 76% of Washington's households walked or hiked for recreation. However, after 12 years (in 2002), participation in the same category was at 53% of Washington's population (IAC 2002). The sizable difference in participation rates was attributed to differences in survey methods rather than a decline in participation because the 1990 results were reported

by household participation, while the 2000 results are reported by individual participation (IAC 2002).

Participation trends in the 1990's and 2000's were reported in IAC (2002, 2003) and Cordell (2004). The 2003-2007 SCORP describes the existing situation in the participation levels of 170 different outdoor recreation activities grouped into 15 categories and forecasts their future demands. Cordell et al. (2004) also provided recreation participation estimations for the Washington population ages 16 and older from their NSRE data. Hall et al., (2009) compared these two reports and found that NSRE estimates were much higher than those of the IAC. Again, caution should be used when examining multiple sources of data. The SCORP estimates were for the entire state population while NSRE estimates were for state residents ages 16 and older. The differences for some activities are so substantial, that may be only attributed to methodological differentiations. For example, the NRSE reports that for Washington, "picnicking" is the top outdoor recreation activity in terms of participation by the highest percent of the population (65%). On the other hand, the IAC estimated that picnicking was seventh in terms of participation by population percentage (20%). In these two studies, similar estimates are made for hiking (IAC 52%, NSRE 48%), hunting (IAC 7%, NSRE 10%), and horseback riding (IAC 4%, NSRE 7%). Yet, there are some noticeable differences in the popularity of activities between the two studies. For example, the top outdoor recreation activities in the IAC (2002) study were walking/hiking (53%), outdoor sports (45%), nature activities (43%), sightseeing (23%), bicycling (21%), indoor activities (21%) picnicking (20%), water activities (19%) and snow/ice activities (18%). The top activities in the NSRE study were picnicking (64%), sightseeing (47%), driving for pleasure (46%), viewing/photographing wildlife (51%), visiting historic sites (48%), day hiking (47%), bicycling (47%), swimming in natural water (46%), visiting wilderness/primitive areas (45%) and developed camping (42%). Despite some differences, both studies indicate that hiking/walking, outdoor sports, picnicking, sightseeing, viewing/photographing wildlife, visiting historic sites (48%), bicycling, water activities (19%) and snow/ice activities are the most popular recreation activities of Washington state.

The most recent trends in outdoor recreation participation in Washington are described by the Washington State Recreation and Conservation Office from 2007. The agency indicated that recreation participation is increasing throughout most outdoor recreation activity areas in

comparison to 2002. For example participation in “walking” increased from 52% to 73%, “nature activity including viewing and photographing” increased from 42% to 53% and “picnicking” from 20% to 46%. These three activity areas were still the most popular form of recreation activities in natural areas in terms of number of people participating. In comparison to 2002, there were significant increases in participation in 2007 within many other outdoor recreation activity areas. For example, community center activity (20% to 45%), sightseeing (22% to 35%), water activities (18% to 36%), bicycling (from 20% to 30%), ORV use (9% to 18%) and camping (12% to 17%). Snow/ice activity, fishing and hunting activity areas showed no changes in participation levels from 2002 to 2007.

Participation by Demography

Female participation in some activities e.g., hunting, fishing, OHV use, climbing) was at a lower level than male participation. However, a greater portion of females participated in sightseeing, nature center visits and walking with or without pets than males. In other activities there were not many differences in terms of gender. The activities which required skill and energy, such as sports activities, bicycling, water activities, snow-ice activities, off-road driving, fishing and hunting, camping, horse riding, were likely to increase in participation up to age group 35-49, but declined after age 49. This decline may be due to changes in individual health and lifestyle. Participation in nature activities and sightseeing were likely to increase until age 49, after which it began to decline. Residents 50 to 64 years old participated in sightseeing (in general) at a significantly higher rate (35.0%) than those under 20 (18.0%). Children under ten and teens were more likely to participate in playground recreation, jogging or running, swimming, basketball, soccer and baseball than older Washingtonians. Teens were more likely to participate in baseball, roller or in-line skating, court games, volleyball, football and softball than any other age group.

Non-white non-Hispanic residents reported jogging or running at a higher rate (44.1%) than other residents. Participation of non-Hispanic white residents was significantly higher in most of the nature and adventure activities including biking, OHV use, hunting, climbing, mountaineering, water activities, snow/ice activities and some sports like golf or football.

Basketball at an outdoor facility had a higher participation level among Hispanic residents (26.7%) than others. White non-Hispanic residents participated in golf at a higher rate (10.7%) than other Washingtonians.

Washingtonians with incomes of \$75,000 or more showed higher rates of participation in playground recreation, aerobics or other fitness activity at a facility, weight conditioning with equipment at a facility, jogging or running, swimming, court games, soccer and golf than those in other income brackets. People with incomes of \$50,000 up to \$75,000 participated in badminton at an outdoor facility at a higher rate than those in other income ranges.