



OUTDOOR RECREATION SCARCITY AND ABUNDANCE IN WESTERN OREGON: A SPATIAL ANALYSIS

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PREPARED BY:

ECONorthwest

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For over 40 years ECONorthwest has helped its clients make sound decisions based on rigorous economic, planning, and financial analysis. For more information about ECONorthwest: www.econw.com. The primary ECONorthwest contributors to this report were Mark Buckley and Austin Rempel. . ECONorthwest received valuable input and guidance from Zachary Jarrett of the BLM. ECONorthwest also gratefully acknowledges the data and assistance provided by Terry Bergerson and Brady Callahan of the Oregon Parks Recreation Department.

This assistance notwithstanding, ECONorthwest is responsible for the content of this report. The staff at ECONorthwest prepared this report based on their general knowledge of microeconomics, economic conditions in western Oregon, outdoor recreation, and on information derived from government agencies, private statistical services, the reports of others, interviews of individuals, or other sources believed to be reliable. ECONorthwest has not independently verified the accuracy of all such information, and makes no representation regarding its accuracy or completeness. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available.

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For more information about this report:

Mark Buckley
buckley@econw.com
KOIN Center
222 SW Columbia Street
Suite 1600
Portland, OR 97201
503.222.6060

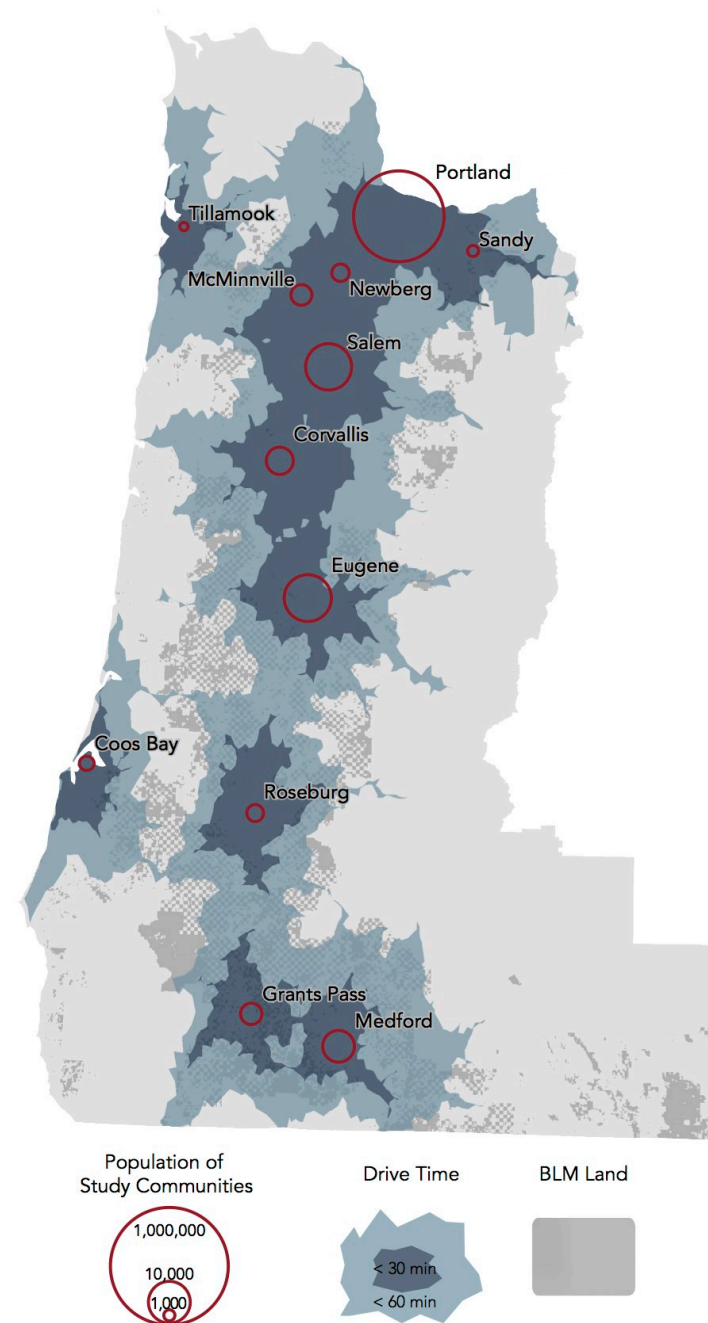
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EXECUTIVE SUMMARY

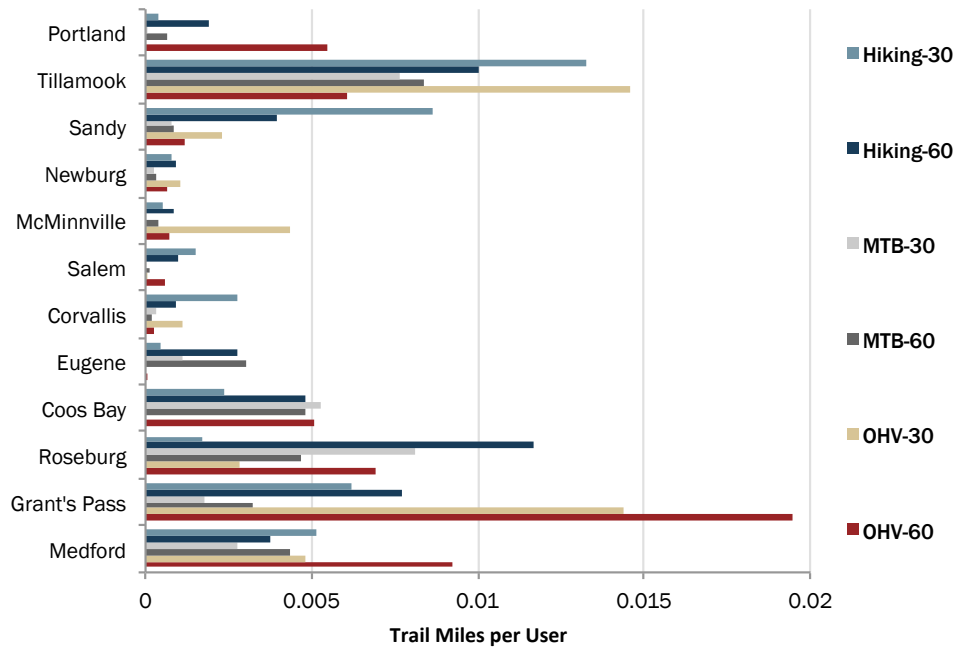
Outdoor recreation is a fundamental amenity in western Oregon. This report details an analysis into the current supply of and demand for outdoor recreation opportunities on public lands in western Oregon.

Some of the specific highlights of this analysis for outdoor recreation scarcity and abundance in western Oregon are:

- Public land overall is most scarce within proximity of communities in the northern Willamette Valley.
- Trails of all types and camping opportunities are most scarce within the Willamette Valley for the region as a whole.
- Mountain-biking trails are particularly scarce within 30-minute drive times of communities in the northern Willamette Valley in particular.
- OHV trails are most scarce in the central to southern Willamette Valley, from Salem to Eugene.
- Camping opportunities are scarce throughout the Willamette Valley, particularly in the northern portion.



Trail Miles per User, by Type, Distance, and Community



This figure shows the availability of trails open to hiking, mountain biking ('MTB') and off-highway vehicle (OHV) use within 30 and 60 minute driving distances of each community, relative to the size of the local user population.

Relative Ranking of Trail Miles, by Type and Distance, Within Each Community

Community	Category	Trail Miles Per User	Community	Category	Trail Miles Per User	Community	Category	Trail Miles Per User
Coos Bay	MTB 30	0.00525	McMinnville	OHV 30	0.00433	Roseburg	Hiking 60	0.01164
	OHV 60	0.00510		Hiking 60	0.00084		MTB 30	0.00812
	Hiking 60	0.00481		OHV 60	0.00069		OHV 60	0.00694
	MTB 60	0.00480		Hiking 30	0.00053		MTB 60	0.00468
	Hiking 30	0.00237		MTB 60	0.00040		OHV 30	0.00283
	OHV 30	0.00000		MTB 30	0.00000		Hiking 30	0.00170
Corvallis	Hiking 30	0.00277	Medford	OHV 60	0.00925	Salem	Hiking 30	0.00153
	OHV 30	0.00108		Hiking 30	0.00514		Hiking 60	0.00099
	Hiking 60	0.00089		OHV 30	0.00479		OHV 60	0.00060
	MTB 30	0.00029		MTB 60	0.00435		MTB 60	0.00014
	OHV 60	0.00025		Hiking 60	0.00372		OHV 30	0.00004
	MTB 60	0.00021		MTB 30	0.00278		MTB 30	0.00000
Eugene	MTB 60	0.00304	Newburg	OHV 30	0.00105	Sandy	Hiking 30	0.00862
	Hiking 60	0.00277		Hiking 60	0.00094		Hiking 60	0.00397
	MTB 30	0.00108		Hiking 30	0.00079		OHV 30	0.00232
	Hiking 30	0.00046		OHV 60	0.00066		OHV 60	0.00118
	OHV 60	0.00003		MTB 60	0.00034		MTB 60	0.00087
	OHV 30	0.00000		MTB 30	0.00028		MTB 30	0.00077
Grant's Pass	OHV 60	0.01945	Portland	OHV 60	0.00545	Tillamook	OHV 30	0.01459
	OHV 30	0.01434		Hiking 60	0.00189		Hiking 30	0.01326
	Hiking 60	0.00770		MTB 60	0.00062		Hiking 60	0.01000
	Hiking 30	0.00620		Hiking 30	0.00039		MTB 60	0.00835
	MTB 60	0.00324		MTB 30	0.00008		MTB 30	0.00766
	MTB 30	0.00174		OHV 30	0.00000		OHV 60	0.00609

This table shows the availability of trails open to hiking, mountain biking ('MTB') and off-highway vehicle use within 30 and 60 minute driving distances, relative to the size of the local user population, and ranked from highest (in blue) to lowest (in red) for each community.

INTRODUCTION

Outdoor recreation is a defining characteristic of western Oregon. This report details an analysis into the current supply of and demand for outdoor recreation opportunities on public lands in western Oregon. Specifically it answers the questions:

- What are the current outdoor recreation opportunities in western Oregon?
- What are the current demands for outdoor recreation opportunities in western Oregon, spatially?
- What are the scarcities in outdoor recreation opportunities in western Oregon?

By identifying the supply and demand for outdoor recreation in western Oregon, we can deduce the areas of greatest scarcity, and the types of outdoor recreation experiencing the greatest scarcity, by geography. With this information, future investments in outdoor recreation resources can be targeted to generate the greatest potential value by satisfying the greatest needs. With high value opportunities, other secondary opportunities for economic development grow as well.

This analysis includes outdoor recreation opportunities across all land ownership and administration categories, but does focus on opportunities offered by lands administered by the Bureau of Land Management (BLM).



Photo courtesy of the International Mountain Bicycling Association

DEMAND FOR OUTDOOR RECREATION

Outdoor recreation plays an important role in the health and quality of life of Oregonians. People decide to visit, take jobs, start or expand businesses, and raise families in western Oregon in part of the high quality amenities and lifestyle the area provides. Some well-educated and productive workers will choose to live in places with valuable outdoor recreation amenities, and possibly pass up higher-paying jobs in places where the quality of life would not be as great.¹ Outdoor recreation opportunities not only influence where in the country people choose to live and work, but also where within a state, and even where within a particular city. Travel and tourism decisions are even more sensitive than residence decisions to the location, quality, and concentration of outdoor recreation opportunities.

In these ways and others, Oregon's outdoor recreation provides a diverse suite of benefits and outcomes to residents and visitors, and these directly and indirectly spur economic opportunities for businesses, workers and investors. Responding to these sources of demand for outdoor recreation can thus provide benefits and economic development.

Demand for outdoor recreation has played a central role in analysis of natural resources by economists for decades. The factors of demand for outdoor recreation vary across individual

preferences, and include a number of complex components. In one of the earliest texts on the subject, *Economics of Outdoor Recreation*, first published in 1966, the authors identify that the “whole recreation experience” provides value and includes “anticipation, travel to, experience on the site, travel back, and recollection” (Clawson and Knetsch 1966 p. 49). While the benefit derived from an experience can vary from person to person, there are costs that constrain the frequency, duration, and options. There are opportunity costs of the participant's time, travel costs, equipment and material costs, potentially access fees, and other indirect costs for food, lodging and complementary services. Benefits must outweigh costs to the individual to justify a trip, and in particular to decide to repeat a particular trip.

Given the preferences and costs facing an individual, the primary drivers of the quality of a recreation trip are the quality of the site, the proximity of the site, and congestion levels of the site. Variety in terms of options can be an important driver for the overall number of trips during a year. This value, or consumer surplus, is the real force behind the numerous gains to participants and communities from outdoor recreation opportunities.² Therefore, investments to provide quality opportunities are most valuable when they are close to potential users. In this study we investigate proximity as a leading factor for outdoor recreation value. In particular, recognizing that time and related

travel costs are primary constraints on individual trips, we focus on identifying the availability (and scarcity) of outdoor recreation near population centers.³ In particular, we analyze the availability within half-hour and hour driving distances from major population centers in western Oregon. By considering per capita availability, we also incorporate congestion.

Demand for outdoor recreation sites varies across the landscape. Preferences for outdoor recreation types and amounts are not uniform across the population. Previous research has explored the societal, lifestyle, and demographic factors that determine demand for outdoor recreation (e.g. Cordell 2012, Bowker et al. 2012). These factors include:

- Population size
- Gender
- Age
- Race
- Ethnicity
- Education
- Income
- Supply of recreation opportunities
- Location, place of residence and proximity to recreation opportunities

¹See for example Deller, S., et al. 2001 and Lorah, P., & Southwick, R. 2003.

²For greater detail see discussion of the recreation demand curve, Ch. 5 in Loomis and Walsh 1997.

³Tradeoffs between financial travel costs and travel time vary by individual as a function of relative scarcities for the individual. For example, someone facing greater scarcity of time than money would prioritize proximity, while someone facing greater scarcity of money than time would prioritize low travel costs. People with less available time also tend to have higher opportunity costs for time spent traveling. All else equal, distance provides a proxy for overall travel cost (time and expenditures).

Examples of trends that are currently affecting demand for recreation across the nation include the aging of the baby boomer generation, income changes, time constraints, changes in family structure, migration to urban areas, and immigration.

NATIONAL TRENDS

To shed light on the overall demand for outdoor recreation in western Oregon, it is useful to consider broader, national trends as well as statewide trends. The following summary of national trends is taken from the *Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment* (Cordell 2012):

- **Preferences for outdoor recreation activities have been changing over time.** Participation in “traditional” outdoor activities such as fishing and hunting has generally been declining, in favor of other activities, such as wildlife and bird watching.
 - **Overall outdoor recreation participation is growing,** oftentimes faster than background population growth.
 - **Over the past few decades, particularly strong growth in participation has been observed for the overall group of nature-based activities termed “viewing and photographing nature.”** Substantial growth has occurred in both participation and annual days for nature-based viewing activities like viewing birds, wildlife, fish, wildflowers/trees, and natural scenery.
 - **Different segments of society prefer different types and levels of participation in different mixes of outdoor activities.**
- The following examples further illustrate the influence that demographic, societal, and lifestyle characteristics have on outdoor recreation preferences and participation:
- Visiting recreation or historic sites was significantly higher among non-Hispanic Whites, late teenagers, middle-aged people, people with some college to completion of advanced degrees, higher income people, and the foreign born.
 - Viewing and photographing nature was higher among people with higher education, higher incomes, non-Hispanic Whites, people ages 35 to 54, those having some college to post graduate education, and those earning more than \$50,000 per year.
 - For backcountry activities, participation was highest among males, Whites, Native Americans, people less than 55 years, well-educated people with higher incomes, and rural residents.
 - Participation in hunting, fishing, and motorized outdoor activities was higher among rural, non-Hispanic White males with middle-to-high incomes.
 - **Outdoor recreation opportunities that require less developed settings (that is, excluding more urban recreational activities, like field sports and jogging) take place primarily on public lands.**
 - The percentage of population that recreates on public land is substantial in both the eastern United States (60 percent) and the western United States (69 percent).
- In the West, slightly more than 60 percent of viewing and photographing nature activity occurs on public land.
 - In both the East and West, around three-fourths of backcountry activity occurs on public lands.
 - In the West, 57 percent of hunting occurs on public forestlands.
 - The majority of cross-country skiing (67 percent in the West) is estimated to occur on public lands.
 - **Visitation trends vary among public land management agencies:**
 - Visits to various units of the National Park System have been relatively stable, while visitation at National Wildlife Refuges and other areas managed by the U.S. Fish and Wildlife Service has shown fairly steady growth.
 - Visitation at Bureau of Land Management areas has been relatively stable over the years, while visitation to national forests has been declining.
 - State park visitation grew steadily from 1992 through 2000 then declined until 2005. Since 2005, state park visitation increased through 2008 before dipping again in 2009.
 - **Most popular motivations associated with outdoor recreation include being outdoors, experiencing nature, getting away from the demands of everyday life, being with family, and contributing to health, physical exercise, and/or training.**

■ **Participation rates will continue to change over the coming decades:**

- The five activities projected to grow fastest in per capita participation over the next 50 years are developed skiing (20 percent to 50 percent increase), undeveloped skiing (9 percent to 31 percent), challenge activities (6 percent to 18 percent), equestrian activities (3 percent to 19 percent), and motorized water activities (-3 percent to 15 percent).
- The activities projected to see the strongest declines to low growth in per capita adult participation rates include visiting primitive areas (-5 percent to 0 percent decrease), motorized off-road activities (off highway vehicles - OHV) (-18 percent to 0 percent), hunting (-31 percent to -22 percent), and fishing (-10 percent to -3 percent).
- Growth of per capita participation rates for other activities will either hover around zero or grow minimally.
- While activities currently experiencing high participation levels may not show large percentage increases in participant numbers, even small percentage increases in popular activities can mean quite large increases in participants.

STATE TRENDS

Oregon’s 2013-2017 Statewide Comprehensive Outdoor Recreation Plan (SCORP) (OPRD 2013) summarizes outdoor recreation trends occurring in the state, citing many of the same issues and topics:



■ **Patterns in outdoor recreation participation by Oregon’s residents are very similar to those of the nation.**

■ Certain differences in outdoor recreation preferences can be identified between Oregon’s residents and those of the nation:

- Activities where Oregon participation is five percent or more over U.S. participation include:
 - Developed camping (+27 percent greater in Oregon than the U.S. on average)
 - Attending outdoor concerts (+14 percent)
 - Snowshoeing (+7 percent)

- Activities where Oregon participation is five percent or more under U.S. participation include:
 - Swimming in an outdoor pool (-23 percent)
 - Fishing (-10 percent)
 - Motor boating (-8 percent)

■ Other identified trends and issues affecting outdoor recreation demand in the state, include:

- **Population growth**
- **A rapidly aging population**
- **A growing minority population**
- **Fewer youth learning outdoor skills**
- **Increasing levels of physical inactivity**

See Table 15, Figure 18.

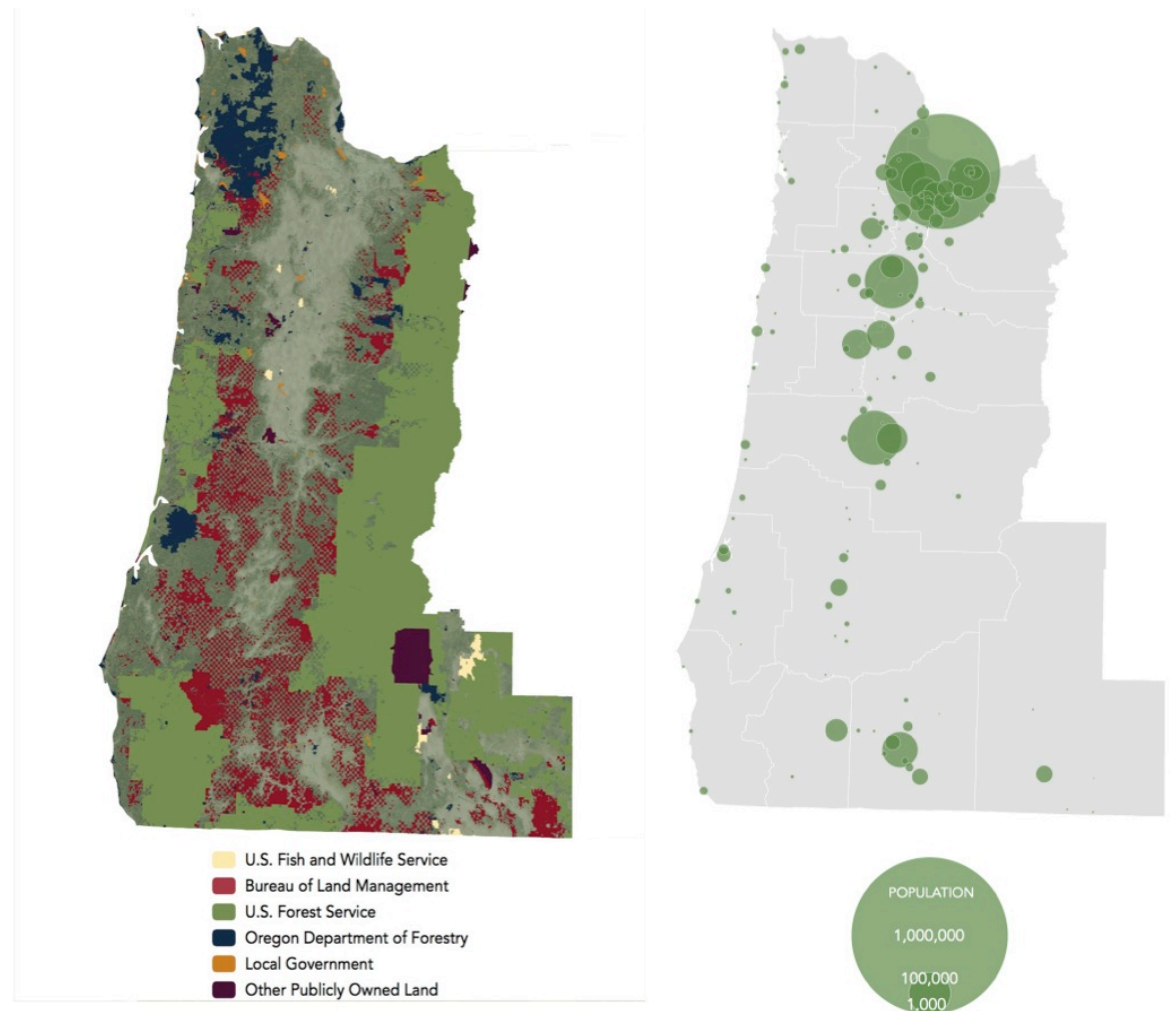
OUTDOOR RECREATION IN WESTERN OREGON

An assessment of the demand for outdoor recreation opportunities that the BLM provides in western Oregon requires consideration of the BLM's recreation resources, the overall supply of recreation resources in the planning area, the user population, and how changes in supply could address scarcities that would increase usage and benefit.

Western Oregon is nationally and globally recognized for providing world-class outdoor recreation opportunities, with extensive forests, rivers and mountains, including access, facilities and trails throughout. A variety of public agencies - including the BLM, Forest Service (FS), National Park Service (NPS), Fish and Wildlife Service (FWS), Oregon Parks and Recreation Department (OPRD), Oregon Department of Forestry (ODF), and a variety of local agencies and private entities - manage these lands and the associated recreation opportunities (Figure 1). While there is a large amount of overlap in the recreation opportunities provided by public land agencies, they also have dominant niches (White et. al. 2014). For example, the BLM and FS tend to provide opportunities on less developed, backcountry areas, FWS lands emphasize wildlife, fish, and birds, and the NPS is known for managing unique, iconic areas, like Crater Lake.

Recreation opportunities within proximity to population centers experience the most demand, and consequently have the potential to provide the most value, if they provide the right types of outdoor recreation (Figure 1).

Figure 1. Land Ownership and Population Centers in Western Oregon



Sources: PSU Population Center 2012, U.S Census 2014

Note: The 'Other Publically Owned Land' includes lands owned by the Army Corps of Engineers, Bureau of Reclamation, and National Oceanic and Atmospheric Administration, which tend to focus on water resources.

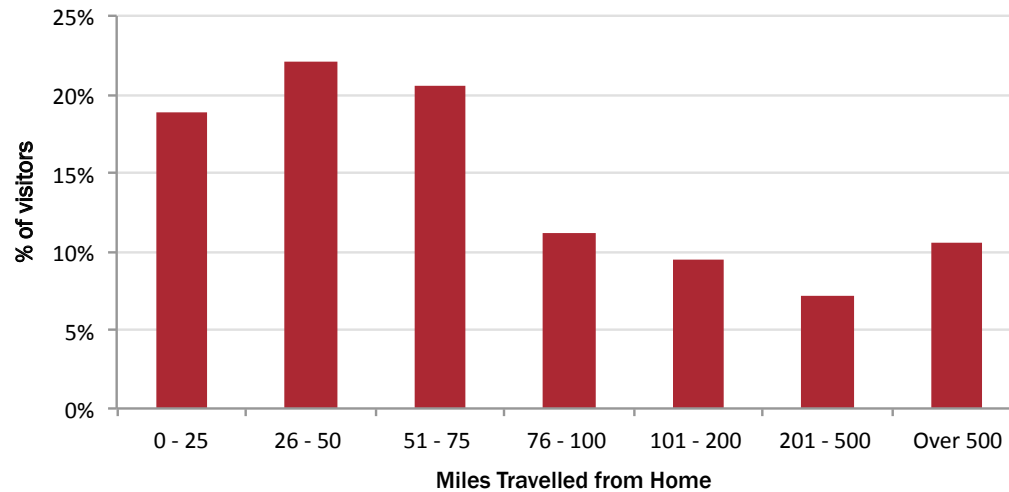
As indicated by population centers, demand for outdoor recreation is unevenly distributed in western Oregon. The northern Willamette Valley is the most heavily populated portion of the region, dominated by the Portland metro area.

The Forest Service and Bureau of Land Management are the major public landowners in western Oregon (Figure 1). The BLM manages 2,550,939 acres of land in western Oregon (equating to approximately 11 percent of the region's land base) and, relative to other public landowners, has a higher proportion of its land in close proximity to population centers.

Population centers and public lands do not tend to occur in close proximity to each other. While population is generally concentrated in the northern half of the region, the majority of public lands are found in the south, and in the more rugged areas (i.e. the Cascades and the Coast Range) outside of the heavily developed and populated Willamette Valley.

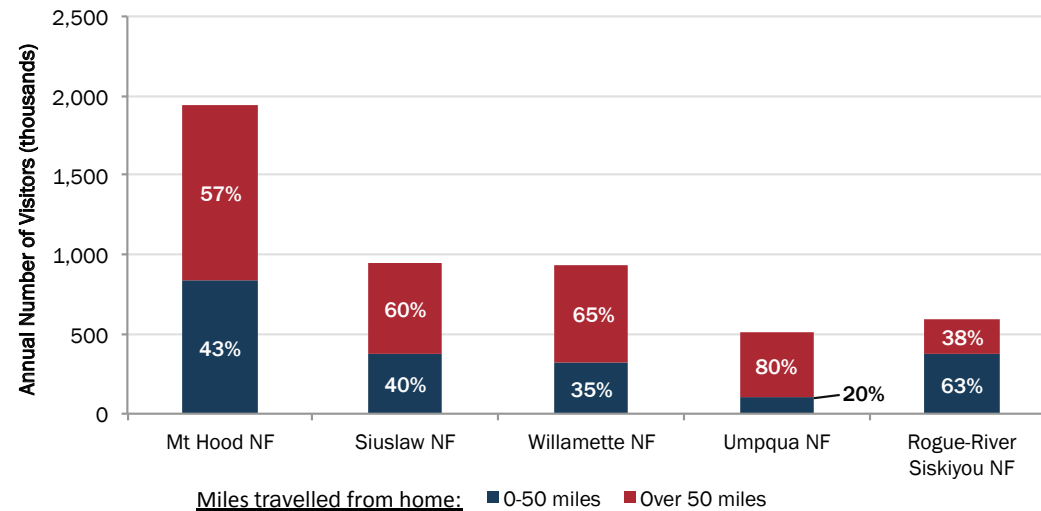
Researchers consider site attributes and travel costs, including time, to be the primary factors for variation in demand from one site to another, and for decisions between recreation and other forms of leisure (Loomis and Walsh, 1997, White et al. 2014). For most federally owned lands, studies have shown that at least half of all visits come from people who live within 50 miles (USDA Forest Service 2013). Data collected for visitors to National Forests in western Oregon, specifically, 41 percent of a given area's recreational visitors come from within 50 miles (Figure 2). This indicates that, while the characteristics of communities living within those proximate zones are especially important

Figure 2. Distance Travelled, Recreational Visitors to USFS Lands in Western Oregon, 2012



Source: USFS National Visitor Use Monitoring Program, 2012

Figure 3. Number of Visitors and Distance Travelled, Western Oregon Forests, 2012



Source: USFS National Visitor Use Monitoring Program, 2012

to consider, lands in western Oregon also have significant regional, national, and/or international markets.

The number of visitors, and the distances they travel to recreate, also appear to vary systematically by forest, with proximity to population centers (Figure 3).

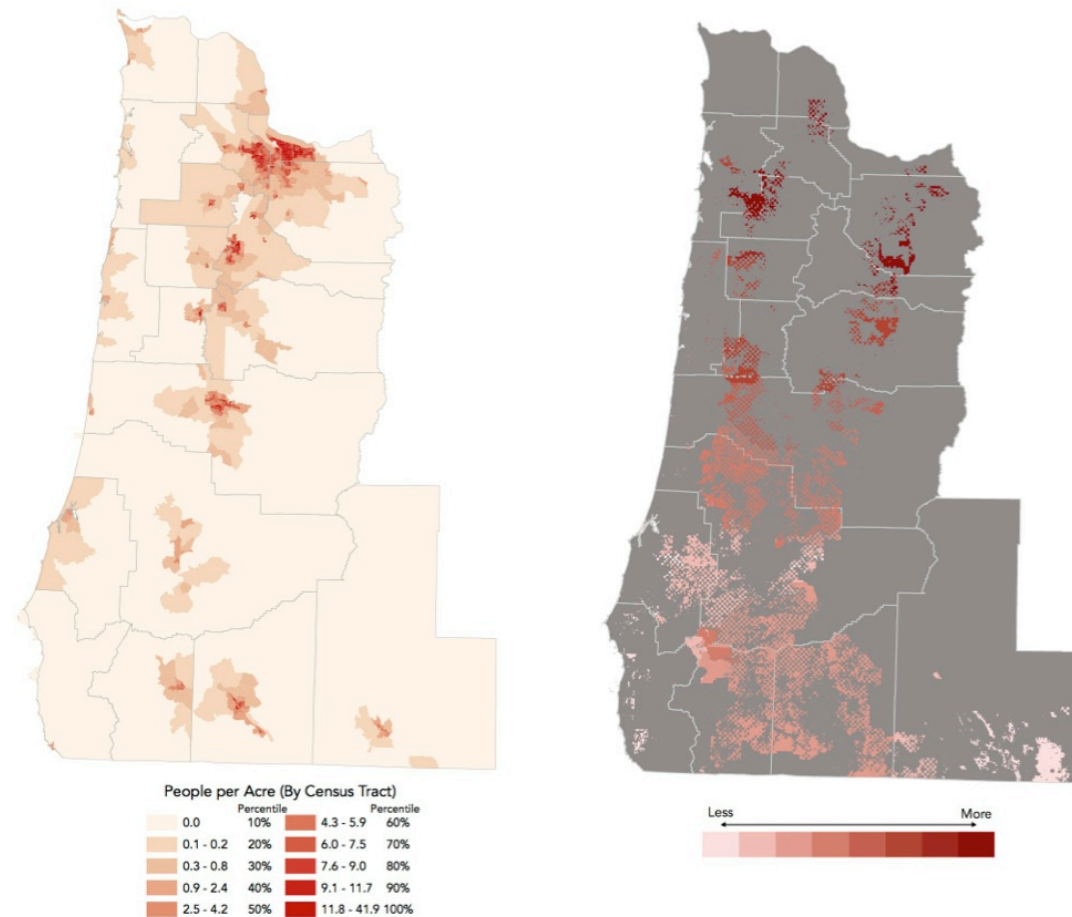
OUTDOOR RECREATION ON BLM LANDS

The BLM—through the location and characteristics of the lands it manages, as well as its management and policies regarding recreation—plays a unique role in the provisions of recreation opportunities in the region. The 2013-2017 Oregon SCORP provides the following summary of BLM's lands and provider role:

“The BLM often manages public lands within an hour of urban areas and larger rural communities in Oregon. BLM-administered lands in these areas are often intermixed with private lands.

The demand for undeveloped recreation (target shooting, hunting, off-highway vehicle use, camping, etc.) on BLM-administered lands in these areas is growing. The supply for these recreation activities is often static or declining as private forest and rangelands are increasingly closed to public motorized access due to problems with dumping, vandalism, drugs and long-term occupancy. The demand for motorized recreation activities continues to grow, while environmental concerns and conflict with other recreational groups makes providing for these activities more difficult on

Figure 4. Population Density and BLM-Owned Land Weighted by Total Population Living Within 50 miles



Sources: ODF 2011, U.S Census 2014

BLM-administered lands. This is especially true for off-highway motorized use.”

In line with the overall distribution of population in the region, BLM's lands in northern Oregon and the Willamette Valley have the greatest number of people living nearby, therefore, the

largest potential user population (Figure 4). It should be noted that, while BLM's lands in southwestern Oregon are generally closer to population centers, such as Medford, the nearby populations are still smaller.

Recreational use is measured and recorded using a variety of metrics. The BLM uses its Recreation Management Information System (RMIS), which provides estimates of total visits, visitor days and numbers of participants (Table 1, on the next page):

- A **visit** is defined as the entry of one person onto BLM lands, and use for any amount of time. The BLM only records visits at the District level, and these are not broken out by recreation type.⁴
- A **visitor day** represents an aggregate of 12 visitor hours at a site or area (Bureau of Land Management. 2014). One visitor day in the data set might be the compilation of several individual visits that sum to a total of 12 hours.
- **Participants** are people that participate in an activity. It is useful to note that a visitor that both camps and hunts would be counted as two participants.

Estimates for total outdoor recreation activity in western Oregon, developed using survey data, are also provided in the Oregon SCORP. The SCORP measures recreation in terms of **user occasions** (the number of times people engage in an activity) and **percent of the population that participates in an activity** (estimated at the state and county scales). Due to the differing metrics used by the BLM and the Oregon SCORP, it is difficult to accurately or definitively estimate how much of total recreation activity in western Oregon occurs on BLM lands.⁵



Table 1 shows the number of participants and visitor days, by activity type, that took place on BLM lands in western Oregon in 2013. Mirroring national and state trends, ‘wildlife viewing, interpretation and nature study’ had the highest number of participants (roughly a quarter of people who recreated on BLM lands in western Oregon participated in this activity). “Driving for pleasure” (18 percent), “camping and picnicking” (12 percent) and non-motorized travel (11 percent) were other categories with large numbers of participants.

“Camping and picnicking” was the most popular activity on BLM lands, in terms of hours spent (or visitor days), which is reflective of the fact that, along with high numbers of participants, camping is often a long duration activity. Hunting was the second most popular activity (mainly driven by the long hours required for big game hunting), followed by “wildlife viewing, interpretation and nature study,” and “driving for pleasure.”

⁴The BLM’s management units include state or regional offices, at the top, below which there are Districts, followed by Field Offices or Resource Areas.

⁵Intersecting BLM RMIS data (reported in visitor days, visits, and participant) with Oregon’s SCORP data (reported in user occasions) does not yield a useful comparison. Even when controlling for the recreation types that the BLM does not provide (more urban uses, such as recreation that occurs on paved trails and tennis courts, for example), recreation on BLM lands in western Oregon only amounts to 0.56 percent of the total user occasions reported in the SCORP, western Oregon. This figure seems unrealistic, and may be indicative of some fundamental misalignment in metrics or categories.

Table 1. Total 2013 Visitor Days and Participants, by Activity, to all Western Oregon BLM Field Offices

Activity	Participants	% of Total	Visitor Days	% of Total	Activity	Participants	% of Total	Visitor Days	% of Total
Camping and Picnicking	1,273,349	11.8%	938,290	29.0%	Nonmotorized Winter Activities	50,444	0.5%	14,723	0.5%
Camping	671,172	6.2%	854,366	26.4%	Skiing - Cross Country	1,282	> 0.0%	296	> 0.0%
Picnicking	602,177	5.6%	83,924	2.6%	Snow Play - General	48,837	0.5%	14,354	0.4%
Driving for Pleasure (Along Designated BLM Roadways)	1,959,729	18.2%	376,562	11.6%	Snowshoeing	325	> 0.0%	73	> 0.0%
Driving For Pleasure	1,368,048	12.7%	369,933	11.4%	Snowmobile and other Motorized Winter Activities	6,903	0.1%	1,896	0.1%
Staging/Comfort Stop	591,681	5.5%	6,629	0.2%	Snowmobiling	6,903	0.1%	1,896	0.1%
Fishing	598,420	5.6%	181,746	5.6%	Specialized Nonmotorized Activities and Events	458,870	4.3%	111,012	3.4%
Boat Launching	17,397	0.2%	593	> 0.0%	Archery	28,878	0.3%	11,808	0.4%
Fishing - Freshwater	569,023	5.3%	180,153	5.6%	Climbing - Mountain/Rock	1,550	> 0.0%	258	> 0.0%
Fishing - Salt Water	12,000	0.1%	1,000	> 0.0%	Geocaching	39,901	0.4%	9,255	0.3%
Hunting (Big Game, Upland Game, and Migratory Game Birds)	1,063,709	9.9%	485,911	15.0%	Hang-Gliding/Parasailing	28,369	0.3%	10,978	0.3%
Hunting - Big Game	661,538	6.1%	364,010	11.3%	Model Airplane/Rocket	14,797	0.1%	3,699	0.1%
Hunting - Other	300	> 0.0%	75	> 0.0%	Orienteering	54	> 0.0%	7	> 0.0%
Hunting - Small Game	144,981	1.3%	43,284	1.3%	Skating - Roller/Inline	680	> 0.0%	113	> 0.0%
Hunting - Upland Bird	244,929	2.3%	74,752	2.3%	Social Gathering/Festival/Concert	33,056	0.3%	18,338	> 0.0%
Hunting - Waterfowl	8,262	0.1%	1,940	0.1%	Specialized Sport/Event (Non-Motor)	5,836	0.1%	711	> 0.0%
Trapping	3,699	> 0.0%	1,850	0.1%	Spectator Sport	286	> 0.0%	48	> 0.0%
Motorized Boating	97,622	0.9%	41,843	1.3%	Target Practice	305,463	2.8%	55,797	1.7%
Power Boating	90,341	0.8%	38,809	1.2%	Swimming and Other Water-Based Activities	424,376	3.9%	106,537	3.3%
Water Skiing	7,281	0.1%	3,034	0.1%	Swimming/Water Play	414,464	3.9%	104,159	3.2%
Motorized Off-Highway Vehicle Travel	826,256	7.7%	272,792	8.4%	Wind Surfing	9,912	0.1%	2,378	0.1%
OHV - ATV	287,035	2.7%	102,198	3.2%	Wildlife Viewing, Interpretation, and Nature Study	2,564,574	23.8%	385,596	11.9%
OHV - Cars/Trucks/SUVs	243,823	2.3%	73,317	2.3%	Environmental Education	87,153	0.8%	15,168	0.5%
OHV - Dunebuggy	1,105	> 0.0%	92	> 0.0%	Gather Non-Commercial Products	241,383	2.2%	76,312	2.4%
OHV - Motorcycle	283,195	2.6%	93,486	2.9%	Interpretive Programs	17,301	0.2%	1,053	> 0.0%
Rock Crawling-4WD	11,098	0.1%	3,699	0.1%	Nature Study	42,246	0.4%	7,210	0.2%
Nonmotorized Boating	224,876	2.1%	74,580	2.3%	Photography	194,224	1.8%	23,865	0.7%
Canoe/Kayaking	4,248	> 0.0%	396	> 0.0%	Recreation Inquiry	4,266	> 0.0%	36	> 0.0%
Personal Watercraft	1,820	> 0.0%	152	> 0.0%	Rockhounding/Mineral Collection	85,742	0.8%	20,479	0.6%
Row/Float/Raft	218,808	2.0%	74,032	2.3%	Viewing - Cultural Sites	36,842	0.3%	715	> 0.0%
Nonmotorized Travel (Hiking, Biking, and Horseback Riding)	1,211,201	11.3%	243,325	7.5%	Viewing - Other	190,183	1.8%	96,628	3.0%
Backpacking	22,614	0.2%	7,767	0.2%	Viewing - Scenery/Landscapes	482,095	4.5%	62,436	1.9%
Bicycling - Mountain	195,728	1.8%	56,607	1.7%	Viewing - Wildflowers	60,665	0.6%	5,959	0.2%
Bicycling - Road	160,194	1.5%	32,624	1.0%	Viewing - Wildlife	787,368	7.3%	69,561	2.2%
Hiking/Walking/Running	733,443	6.8%	117,923	3.6%	Viewing - Interpretive Exhibit	335,106	3.1%	6,174	0.2%
Horseback Riding	97,899	0.9%	28,257	0.9%					
Racing - Bicycle	1,323	> 0.0%	147	> 0.0%	Total: All Activities	10,760,329	100.0%	3,234,813	100.0%

Source: ECONorthwest, based on data from the BLM RMIS.

Table 2. Summarized Survey Results from the BLM Western Oregon Interactive Recreation Website, 2014

Community	Interpretation/Education /Nature Viewing	Non-Motorized Trails	Water Trail	Hiking	Mountain Biking	Equestrian	Non-Motorized Trail Uses Combined	Motorized Trails OHV	Hunting - Fishing	Camping-picnicking	Other Rec Types*	TOTAL RESPONSES
Coos Bay	6	10	0	3	24	2	39	67	6	4	22	144
Percentage	4%	7%	0%	2%	17%	1%	27%	47%	4%	3%	15%	100%
Corvallis	6	9	1	10	51	6	77	30	10	3	27	153
Percentage	4%	6%	1%	7%	33%	4%	50%	20%	7%	2%	18%	100%
Eugene	12	12	0	12	59	11	94	52	18	6	24	206
Percentage	6%	6%	0%	6%	29%	5%	46%	25%	9%	3%	12%	100%
Grants Pass	6	29	0	23	43	16	111	76	7	7	51	258
Percentage	2%	11%	0%	9%	17%	6%	43%	29%	3%	3%	20%	100%
McMinnville	7	4	0	8	21	5	38	31	6	8	23	113
Percentage	6%	4%	0%	7%	19%	4%	34%	27%	5%	7%	20%	100%
Medford	11	44	0	31	61	13	149	116	6	7	80	369
Percentage	3%	12%	0%	8%	17%	4%	40%	31%	2%	2%	22%	100%
Newberg	5	4	0	2	22	4	32	29	5	4	28	103
Percentage	5%	4%	0%	2%	21%	4%	31%	28%	5%	4%	27%	100%
Portland	6	15	1	4	101	7	128	57	11	6	65	273
Percentage	2%	5%	0%	1%	37%	3%	47%	21%	4%	2%	24%	100%
Roseburg	5	9	0	11	25	10	55	75	5	3	33	176
Percentage	3%	5%	0%	6%	14%	6%	31%	43%	3%	2%	19%	100%
Salem	5	12	0	7	33	10	62	36	10	6	25	144
Percentage	3%	8%	0%	5%	23%	7%	43%	25%	7%	4%	17%	100%
Sandy	3	9	1	8	38	7	63	43	6	4	24	143
Percentage	2%	6%	1%	6%	27%	5%	44%	30%	4%	3%	17%	100%
Tillamook	6	9	1	8	34	6	58	47	12	3	54	180
Percentage	3%	5%	1%	4%	19%	3%	32%	26%	7%	2%	30%	100%
All Study Communities	78	166	4	127	512	97	906	659	102	61	456	2262
Percentage	3%	7%	0%	6%	23%	4%	40%	29%	5%	3%	20%	100%

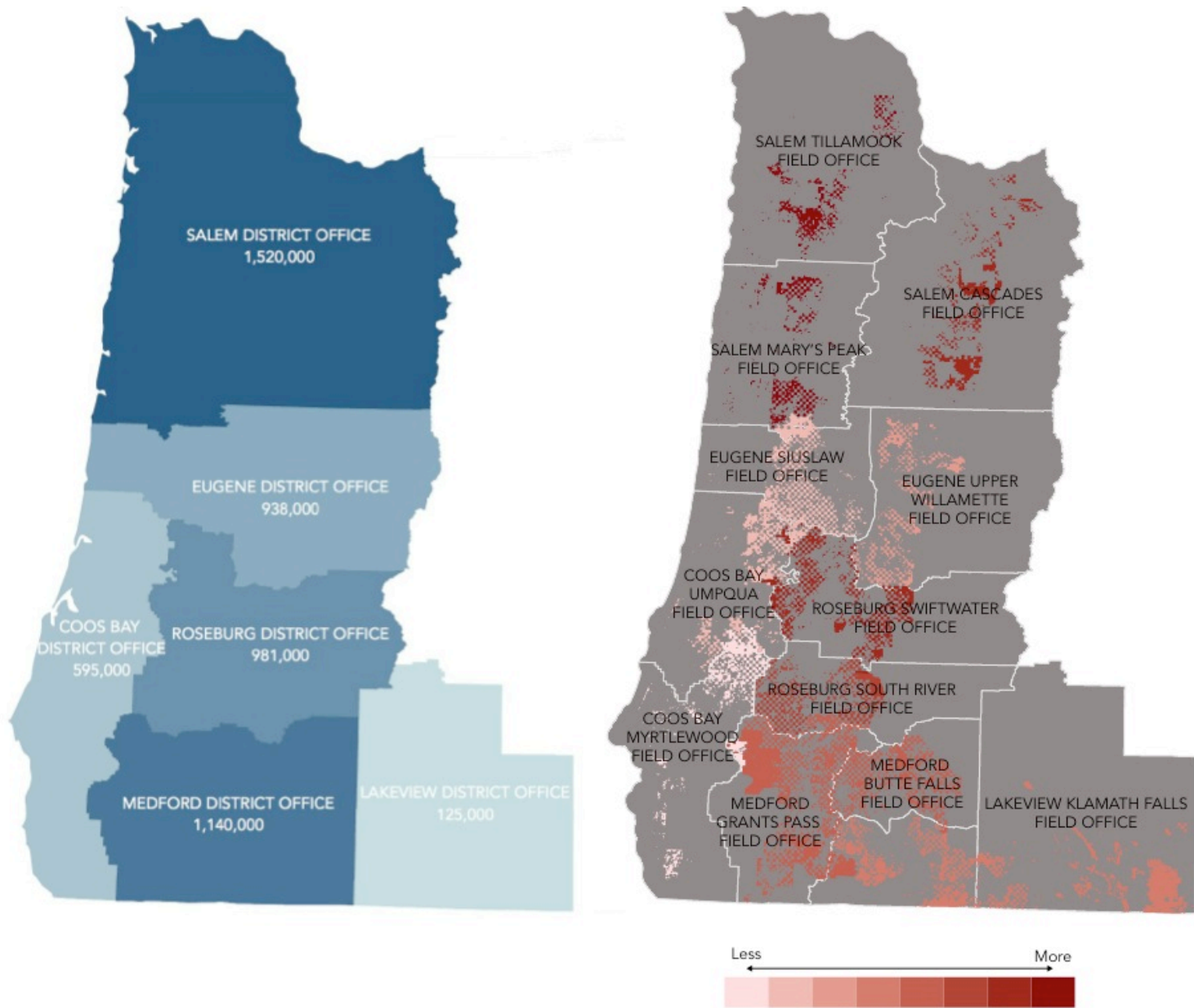
Note: The 'Other Rec Types' category includes the BLM categories of 'Hang Gliding-Paragliding', 'Shooting', 'Gold Panning-Dredging', 'River Recreation', 'Rock Hounding', 'Climbing' and 'Winter Recreation'.

The BLM also collected information regarding recreation participation and needs from website visitors in 2014 (Table 2). The results for the selected study communities are presented below, and particularly notable results, relevant to the present analysis, are highlighted in green. Perhaps reflecting BLM's unique provider role, and the interest groups and users that frequent

its lands, mountain biking and OHV had the highest numbers of respondents across the region, and certain communities had particularly high levels of interest. Non-motorized trail uses, grouped together, had a very high rate of participation among respondents. Roseburg and Coos Bay indicated greater interest in OHV use than non-motorized trail use.

Salem is the largest district office in western Oregon, by area, and BLM lands within this district see the highest number of visits. Across the western Oregon field offices, the number of visits generally tracks with the population living within 50-miles (See Figure 5).

Figure 5. Total Visits in 2012, by BLM District



Source: BLM RMIS

The numbers of visitor days, at the District and Field Office level, are also correlated with the size of nearby populations (Figure 6).

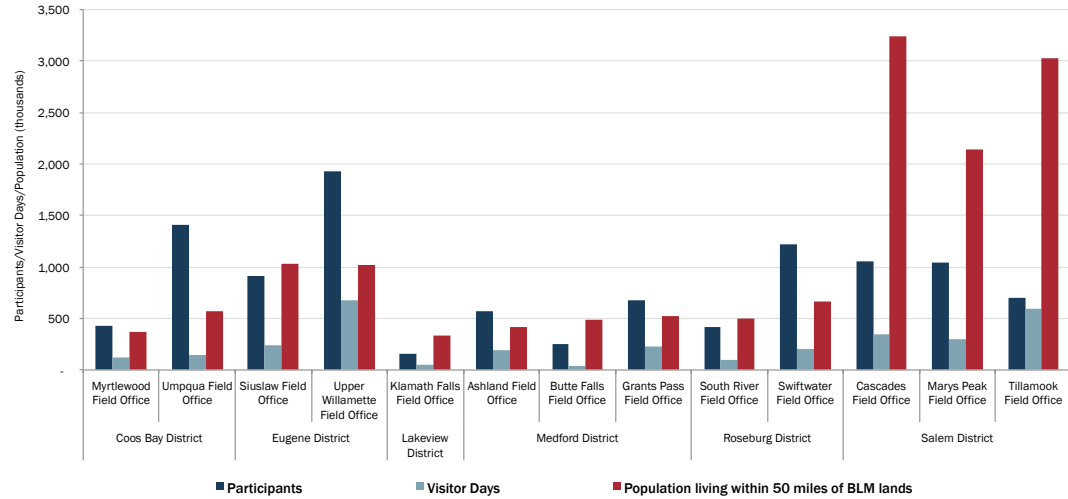
Based on the positive relationship between visitor days and local population size, we can identify offices that currently have higher or lower numbers of visitor days than we might expect (Figure 7). Given the size of the local user population, we might expect higher use levels in the Klamath Falls, Butte Falls and Cascades Field offices, for example, which may be indicative of latent, or untapped, demand. On the other hand, the Upper Willamette Field Office and the Tillamook Field Office, in particular, have higher use intensities than we would expect, given the size of the local population, which may indicate some special draw or trip quality experienced by users in those areas.

ACTIVITY SPECIFIC RECREATION DATA

Outdoor recreation use is not distributed evenly across the landscape, and instead follows patterns arising from availability of natural features, access and development, and demand. Below, we present use data for motorized trail use, non-motorized trail use, and camping and picnicking in western Oregon.⁶ An understanding of current regional patterns of use is useful to describe demand and potential scarcities.

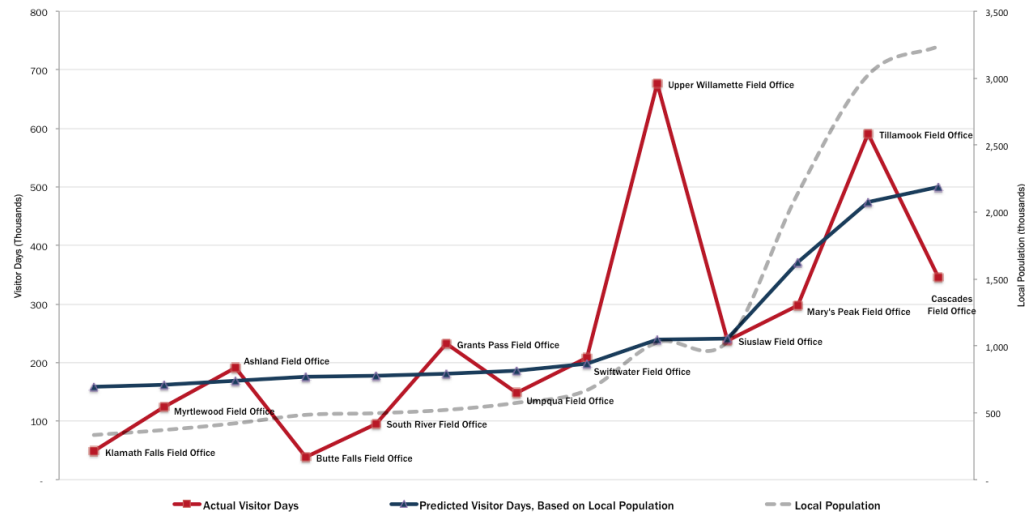
Note that, in the following maps, boundaries and units of measurement do not align perfectly; SCORP results are reported in user occasions, at county level, while BLM’s measurements are reported in visitor days, and correspond to individual Field Offices.

Figure 6. Participants, Visitor Days, and Local Population, by BLM District and Field Office, 2013



Source: BLM RMIS, U.S Census 2014a

Figure 7. Actual 2013 visitor days and predicted visitor days based only on local population size



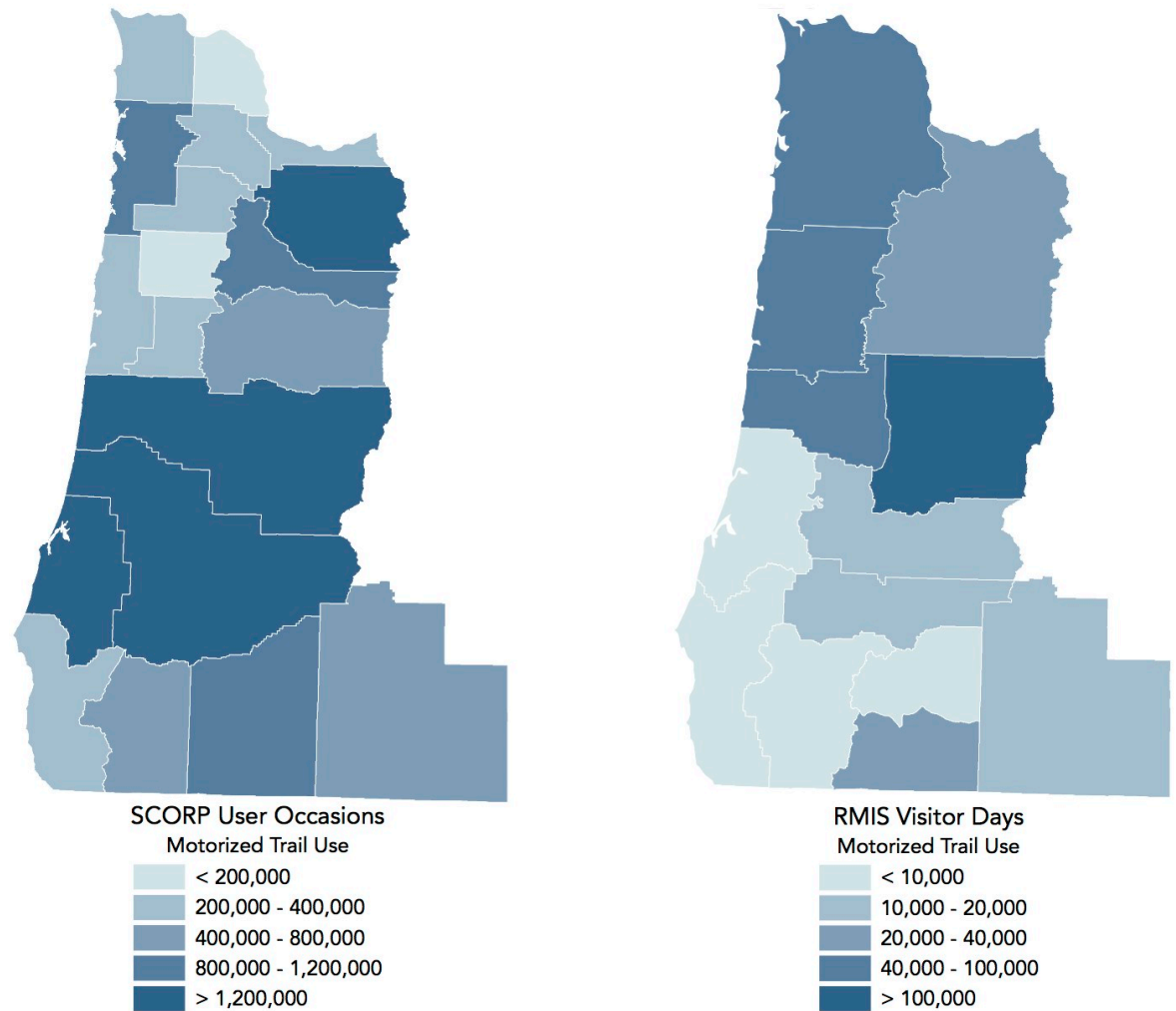
Source: BLM RMIS, U.S Census 2014

⁶These activity groupings, shown in Table 1, correspond to BLM recreation reporting conventions.

SCORP data show a concentration of motorized trail uses in the Mount Hood/Clackamas county area, and in west-central Oregon (Lane, Douglas and Coos counties).

On BLM lands, motorized trail use is concentrated in the northern half of the region, particularly in the Eugene Upper Willamette Field Office, which primarily comprises the eastern half of Lane County. High use levels also occur on lands within the Salem Tillamook Field Office, Salem Mary's Peak Field Office, Eugene Siuslaw Field Office, and the Medford Ashland Field Office.

Figure 8. Motorized Trail Use in Western Oregon: All Lands (Left), BLM-Owned Lands (Right)

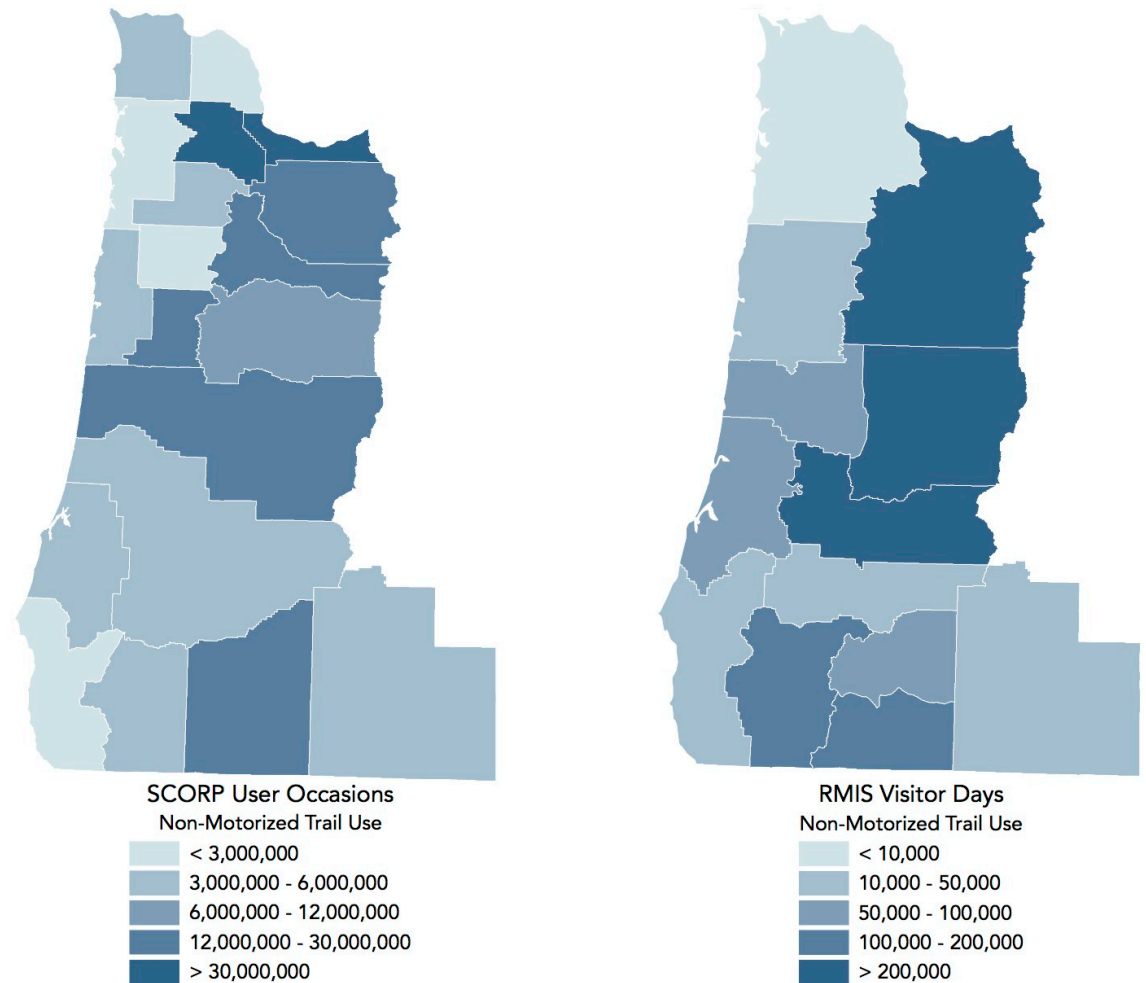


Source: OPRD 2013-2018 SCORP Survey, BLM RMIS 2013

Non-motorized trail use is concentrated in the northern half of the region (Lane County and upwards). The patterns are broadly similar for BLM lands, with elevated use levels on the BLM offices east of the Willamette Valley. Additionally, there are relatively high levels of use in Jackson and Josephine counties (around Medford, Ashland and Grant's Pass).

It is also useful to note however, that, as indicated by user occasions for recreation on all western Oregon lands, non-motorized trail uses outweigh motorized trail uses by an order of magnitude (roughly, 263 million users occasion, versus 15 million). On BLM lands, however, visitor days are roughly similar (and higher for motorized uses), with 272 thousand spent on motorized trail use versus 243 thousand spent on non-motorized trail uses (Table 1). This difference is further indication of the special role that BLM plays in providing motorized trail recreation opportunities in western Oregon.

Figure 9. Non-Motorized Trail Use in Western Oregon: All Lands (Left), BLM-Owned Lands (Right)

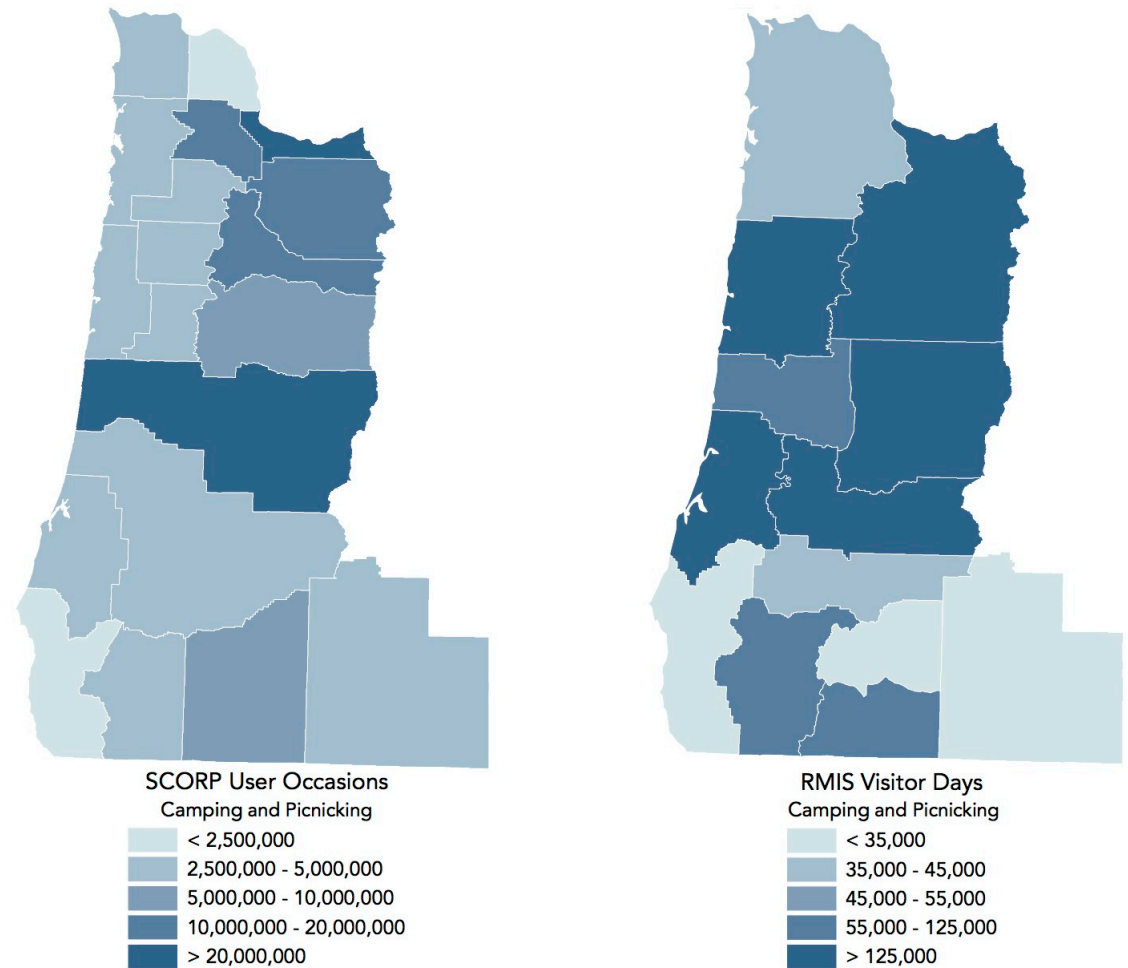


Source: OPRD 2013-2018 SCORP Survey, BLM RMIS 2013

Camping and picnicking is similarly concentrated in the northern half of the region, with particularly high levels of use in Lane and Multnomah counties, and the other counties bordering the Cascades.

On BLM lands (where this is the single most popular activity, in terms of total time spent - Table 1), use is more broadly and evenly distributed, with a concentration of use in the northern half of the region (including the regions on the western side, away from the Cascades) as well as relatively high levels around Jackson and Josephine counties.

Figure 10. Camping and Picnicking in Western Oregon: All Lands (Left), BLM-Owned Lands (Right)



Source: OPRD 2013-2018 SCORP Survey, BLM RMIS 2013

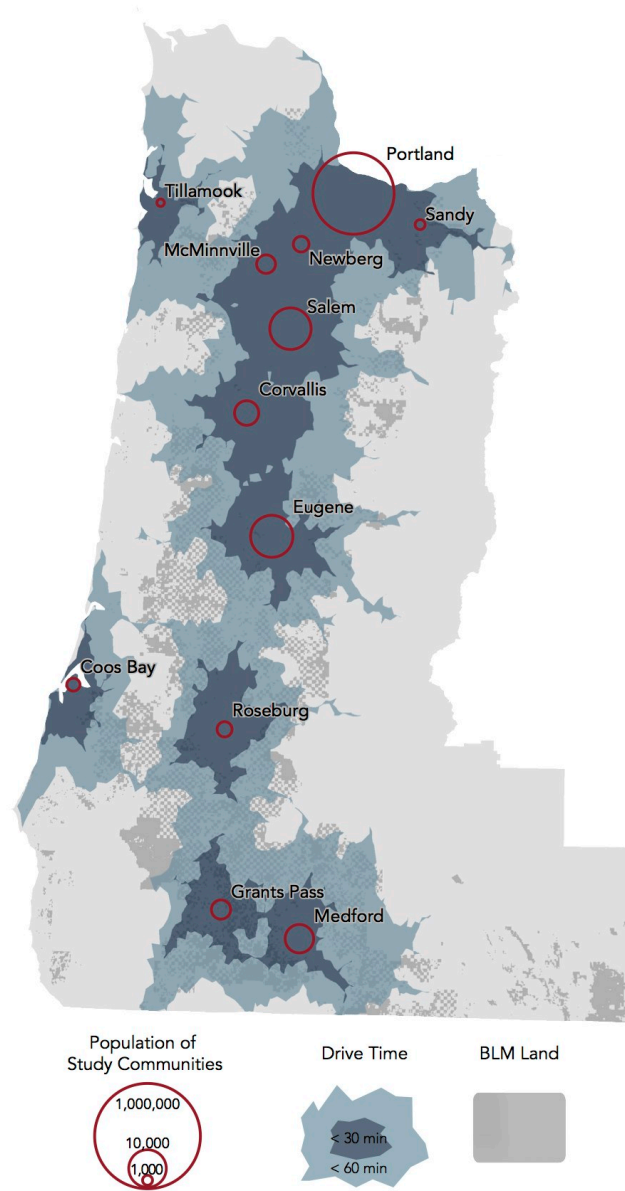
INTERSECTION OF OUTDOOR RECREATION SUPPLY AND DEMAND

In this section, we assess existing levels of recreation opportunity relative to the user population living within 30- and 60-minute proximities. The BLM has decided to focus on twelve population centers in western Oregon, achieving a wide spatial coverage and capturing the majority of the region's population (Figure 11).

The map depicts the 30-minute and 60-minute 'travelsheds', or service areas, surrounding each study community, and the size of the city's population (PSU 2012). These are visual representations of the area accessible within a 30-minute and 60-minute drive, using actual road networks, from the center of each community. We identified travelsheds using ESRI's Network Analyst extension, which makes use of actual road networks and travel times. Note that many of the travelsheds overlap with one another.

45 percent of western Oregon is accessible within an hour of driving time from one of these population centers, and 56 percent of all of BLM lands within this region also fall within the one-hour travel proximity. Land ownership surrounding the study communities is shown in Table 3. State land agencies (ODF and OPRD, primarily), BLM, and FS tend to be the largest public landowners within a one-hour drive, but the exact ranking varies by community.

Figure 11. Study Communities and Travelsheds



Sources: PSU Population Center 2012

Table 3. Public Land Ownership Within a 60-Minute Drive Time of the Study Communities (Acres)

Community	Local Government	State of Oregon	US Bureau of Land Management	US Fish and Wildlife Service	US Forest Service	Other	Total
Coos Bay	603	52,463	61,967	1,021	16,308	3,521	135,883
Percentage	0%	39%	46%	1%	12%	3%	100%
Corvallis	10,223	58,001	135,512	11,206	33,433	26,683	275,058
Percentage	4%	21%	49%	4%	12%	10%	100%
Eugene	5,861	30,016	250,370	8,668	417,184	12,983	725,082
Percentage	1%	4%	35%	1%	58%	2%	100%
Grant's Pass	1,233	17,324	599,175	-	135,590	227	753,549
Percentage	0%	2%	80%	0%	18%	0%	100%
McMinnville	16,552	116,814	59,011	8,540	94,304	14,383	309,604
Percentage	5%	38%	19%	3%	30%	5%	100%
Medford	3,488	7,974	574,410	-	651,489	2,682	1,240,043
Percentage	0%	1%	46%	0%	53%	0%	100%
Newburg	17,360	126,211	63,141	8,539	1,790	1,480	218,521
Percentage	8%	58%	29%	4%	1%	1%	100%
Portland	21,066	205,326	36,677	9,829	422,050	41	694,989
Percentage	3%	30%	5%	1%	61%	0%	100%
Roseburg	1,698	10,712	373,321	360	415,228	176	801,495
Percentage	0%	1%	47%	0%	52%	0%	100%
Salem	14,658	45,217	76,415	14,228	486,929	4,416	641,863
Percentage	2%	7%	12%	2%	76%	1%	100%
Sandy	17,020	11,632	31,065	9,952	429,926	5,680	505,275
Percentage	3%	2%	6%	2%	85%	1%	100%
Tillamook	19,004	233,046	54,036	137	119,446	14,299	439,968
Percentage	4%	53%	12%	0%	27%	3%	100%

METHODOLOGY AND DATA SOURCES

Though they would be the most convenient tool for this analysis, GIS data regarding trails are not as of this writing detailed enough, in terms of spatial coverage or information regarding usage, to be relied upon exclusively. This limitation has been noted previously, following the 2004 Oregon statewide trails inventory, a comprehensive effort to inventory all of the state’s trails (Wing 2004). Addressing this limitation is an identified priority for future data efforts.

Currently, certain entities, such as the USFS and BLM, have a large proportion of their trails mapped to some degree while other entities, such as county and state agencies, do not always make GIS data available, and those data often have low resolution or provide little information about existing trail uses.

Online databases, with user-generated content and precise spatial coordinates, exist as a more complete and detailed source of information. A notable limitation of online user databases is that they typically do not identify the managing entity, so ownership information is unavailable in some cases, to describe the supply measurements.

Public Land. To assess local availability of public land, where most outdoor recreation takes place, we used GIS data provided by ODF (ODF 2011).

Hiking Trails. For hiking trails, we used AllTrails (<http://alltrails.com/>), an online recreation database, to search for hiking opportunities within 30 and 60 miles of the study communities (roughly equivalent to the 30-minute and one-hour drive times), and tallied the difficulty

levels and mileages reported. Where necessary, we compared the online trail maps to the travelsheds visually to identify trails within distance of the study communities. Given BLM’s role in providing trail-based recreation, this analysis focused on unsurfaced trails in less developed areas. Unsurfaced trails are best captured under those trails that AllTrails classifies as ‘moderate’ and ‘hard’ in difficulty. Those trails classified as ‘easy’ are not included in this analysis because they do not accurately reflect the typical type of trail-based experience (e.g. unpaved) that the BLM provides. We based this decision on expert opinion, and the fact that most local hiking opportunities were listed with the moderate/hard rating, while the ‘easy’ rating typically apply to surfaced, urban trails that do not provide the same kind of recreational value.

Mountain Biking Trails. For mountain bike trails, we made use of two online, spatially explicit mountain biking-specific databases: Singletracks (<http://www.singletracks.com/>) and the MTB Project (<http://www.mtbproject.com/>). These data sources are similar in that they both provide trail miles, difficulty ratings, and easily accessible spatial information on web map interfaces. While the two sites typically have a great deal of redundancy in terms of trail listings, they also contain individual, user-generated listings that do not always appear on other sites. Where necessary, we compared the online trail maps to the travelsheds visually to identify trails within distance of the study communities. In keeping with BLM’s provider role, the trails considered in this analysis were almost entirely singletrack, natural surface mountain bike trails.

OHV Trails. We also used AllTrails as the primary source of information regarding OHV trails. We cross-checked the accuracy and coverage of the data with state and federal GIS data on OHV permitted areas, as well as the online user database RiderPlanet USA (<http://www.riderplanet-usa.com/>). These data sources were not detailed enough to distinguish between various OHV types, such as 4x4, ATV and off-road motorcycles. We included all difficulty levels for OHV. Note that we did not include other general forest, backcountry, and/or dirt roads, which are often used for OHV riding, unless they were listed in the online databases.

Camping. The most complete information source available regarding camping opportunities is the website UScampgrounds.info (<http://www.uscampgrounds.info/>). The site provides spatial coordinates for all campgrounds and camping opportunities, so we could complete the camping analysis entirely in GIS. Camping opportunities are classified with information regarding both tent and RV uses, and we counted both kinds of opportunities. While some information is provided regarding capacity, this information was not complete enough across all study areas to be used.

Local User Populations. For each activity, we estimated the size of the population living within the community's 30-minute and 60-minute driving distances (Census Tract-level data, 2010). Based on county-level participation rates for each activity, reported in the 2012-2018 SCORP, we were able to estimate the proportion of the local population that might participate in a given activity. These figures were the basis for the per capita scarcity analyses.

In accordance with the information presented previously, actual user populations for a given recreation type would be most accurately described and modeled as some function of proximity in combination with a range of demographic factors such as age, income, gender, and ethnicity. An assessment of this level of detail was beyond the scope of the current study, however, and we elected to use a proximity model combined with activity- and county-specific participation rates, reported in SCORP and calculated based on extensive survey data, to easily encompass these other factors in a single measurement.

Limitations and Gaps. It should be noted that, using these methods and data sources, and given the goals of the study, we did not explicitly account for:

- The quality of various recreation opportunities
- The capacity of individual recreation sites
- Dispersed recreation opportunities
- The natural availability and distribution of certain features that draw recreation (such as mountains and forests)
- How amenities (like bathrooms and parking lots), users fees, and marketing affect use and demand
- Variation in access for long-distance visitors.

ANALYSIS AND RESULTS

This analysis focuses on two measures of scarcity:

- 1) Scarcity of supply (e.g., trail miles/ acres/sites), with calculated averages and quartiles, relative to conditions in other study communities
- 2) Scarcity in relation to size of the potential local user population (demand and need), with calculated averages and quartiles, relative to conditions in other study communities. This is a separate a measure of scarcity, weighted by population.

We include these separate measures to distinguish between raw availability and relative availability. For example, Portland has reasonably high levels of supply of certain kinds of opportunities, but also a great deal of demand.

We estimated user populations using the size of the population living within certain proximities, and county-level, activity specific participation rates data provided in the 2013-2018 Oregon SCORP. Average participation rates for each of the focus activities (across the study communities) were:

- 46 percent for hiking
- 11 percent for mountain biking
- 10 percent for off-road vehicle use
- 35 percent for camping

Using the information presented here, investments in additional facilities or recreational development can be targeted to benefit communities and regions with:

- The largest user population
- The lowest existing supply
- The lowest existing supply, relative to the user population (highest number of users, per unit of supply)

Notes on interpreting the results:

- The units of supply per user figures, presented in the summary tables, are only meaningful in a relative sense. They are meant primarily for comparison, and the numbers themselves have little importance. Interpreted literally, they might correspond to millimeters of trail per user, for example. For a realistic interpretation, it is more useful to consider the reverse, which is users per unit of supply (e.g., number of users per trail mile), for which the relative measurements and rankings are the same.
- To facilitate comparisons among the twelve study communities, we included quartile rankings for each of our metrics. The first quartile is defined as the middle number between the smallest number and the median of the data set. The third quartile is the middle value between the median and the highest value of the data set. Measurements below the first quartile fall in the bottom 25 percent of the range (equating to the three communities with the lowest measurement for a given metric), while measurements that pass the third quartile make up the top 25 percent of measurements (representing the top three communities).
- In this study 'low' and 'high' are used in a relative sense, as defined by the subset of study communities in western Oregon. In

Table 4. Results Summary – Top Four Communities by User Population, Scarcity of Supply, and per Capita Scarcities

Resource/Activity	30-Minute Drive Time						60-Minute Drive Time					
	Size of Potential Local User Population		Scarcity of Supply		Scarcity of Supply, Relative to Size of Potential Local User Population		Size of Potential Local User Population		Scarcity of Supply		Scarcity of Supply, Relative to Size of Potential Local User Population	
	Rank	Community	Rank	Community	Rank	Community	Rank	Community	Rank	Community	Rank	Community
Public Land	1	Portland	1	Newburg	1	Portland	1	Newburg	1	Coos Bay	1	Newburg
	2	Newburg	2	McMinnville	2	Newburg	2	Portland	2	Newburg	2	McMinnville
	3	Salem	3	Portland	3	Salem	3	Salem	3	Corvallis	3	Corvallis
	4	Sandy	4	Salem	4	Sandy	4	McMinnville	4	McMinnville	4	Sandy
Hiking	1	Portland	1	McMinnville	1	Portland	1	Portland	1	Coos Bay	1	McMinnville
	2	Newburg	2	Coos Bay	2	Eugene	2	Newburg	2	Tillamook	2	Corvallis
	3	Salem	3	Roseburg	3	McMinnville	3	Salem	3	Corvallis	3	Newburg
	4	Sandy	4	Eugene	4	Newburg	4	McMinnville	4	Medford	4	Salem
Mountain Biking	1	Portland	1	Salem	1	Salem	1	Portland	1	Salem	1	Salem
	2	Salem	2	McMinnville	2	McMinnville	2	Salem	2	Corvallis	2	Corvallis
	3	Newburg	3	Corvallis	3	Portland	3	Newburg	3	Coos Bay	3	Newburg
	4	Eugene	4	Portland	4	Newburg	4	Corvallis	4	McMinnville	4	McMinnville
OHV	1	Newburg	1	Coos Bay	1	Coos Bay	1	Newburg	1	Eugene	1	Eugene
	2	Salem	1	Eugene	1	Eugene	2	Salem	2	Corvallis	2	Corvallis
	3	Sandy	1	Portland	1	Portland	3	McMinnville	3	Tillamook	3	Salem
	4	Portland	2	Salem	2	Salem	4	Sandy	4	Coos Bay	4	Newburg
Camping	1	Portland	1	McMinnville	1	McMinnville	1	Portland	1	McMinnville	1	McMinnville
	2	Newburg	2	Newburg	2	Newburg	2	Newburg	2	Newburg	2	Newburg
	3	Salem	3	Salem	3	Salem	3	Salem	3	Salem	3	Salem
	4	McMinnville	4	Corvallis	4	Portland	4	McMinnville	4	Corvallis	4	Portland

areas with large user population and small supply, demand likely exceeds supply, which might manifest itself as crowding, lower participation rates, or longer travel times and substitution. Note that this may still occur in areas with high supply, if the demand is higher than the supply can satisfy. In areas with small user population and low supply, demand is likely satisfied by supply.

Table 4 presents the top four communities, by user population, scarcity of supply, and per capita scarcities. These are the communities with the largest user populations, the lowest nearby accessible supply of certain recreation opportunities, or the fewest nearby units of supply, per user.

Important patterns in these results include:

- Total miles of hiking trails greatly outnumber those open to recreation activities like mountain biking and off-road vehicle use, where the visitor experience is highly dependent upon activity specific trail planning, design and management.
- Non-motorized trail availability generally seems to coincide with the size of user population levels and demand. A part of this pattern could be due to limitations in the online data sources used in this study; larger online user populations could lead to better and more complete mapping.
- Relative to the baseline supply of public land, trail miles and number of campgrounds

tend to vary substantially. Intuitively, different areas might have differing supplies of natural features suitable to various recreation types, and it is likely that the proportion of public land owned by various management agencies (as well as their associated investment levels and recreation management policies) influences local availability.

- The geographic division between population centers and undeveloped land is evident. The majority of western Oregon’s population lives in the northern part of the region, in the Willamette Valley, while the majority of public lands and recreation opportunities are found in the rugged, mountainous areas in the Cascade and Coast Ranges, and in the southern part of the region.

These results are examined in greater depth below.

Public Land

We included public land as a proxy for general outdoor recreation opportunity, and as a basis for comparison regarding the influence of varying levels of recreation development (e.g. trail miles) and regional participation rates.⁷ It is important to remember that not all public lands are open or accessible to the public, and that not all provide any, much less similar kinds of, recreation opportunities. The supply of public land is more or less fixed, so scarcity is likely to increase across the study area, state and nation as the population continues to grow over the next 50 years.

Table 5. Demand/Supply – Public Land, 30-Minute Drive Time

Community	Population	Public Land Within Travelshed (acres)	Acres of Public Land Per Person
Coos Bay	53,921	36,631	0.68
Corvallis	201,622	18,011	0.09
Eugene	337,718	25,079	0.07
Grant's Pass	121,116	91,193	0.75
McMinnville	124,442	7,252	0.06
Medford	180,471	33,499	0.19
Newburg	515,492	6,321	0.01
Portland	1,396,478	11,879	0.01
Roseburg	96,117	20,775	0.22
Salem	423,093	12,424	0.03
Sandy	394,012	27,862	0.07
Tillamook	24,321	41,630	1.71
1st Quartile	114,866	12,288	0.05
Median	191,047	22,927	0.08
3rd Quartile	401,282	34,282	0.33

Table 6. Demand/Supply – Public Land, 60-Minute Drive Time

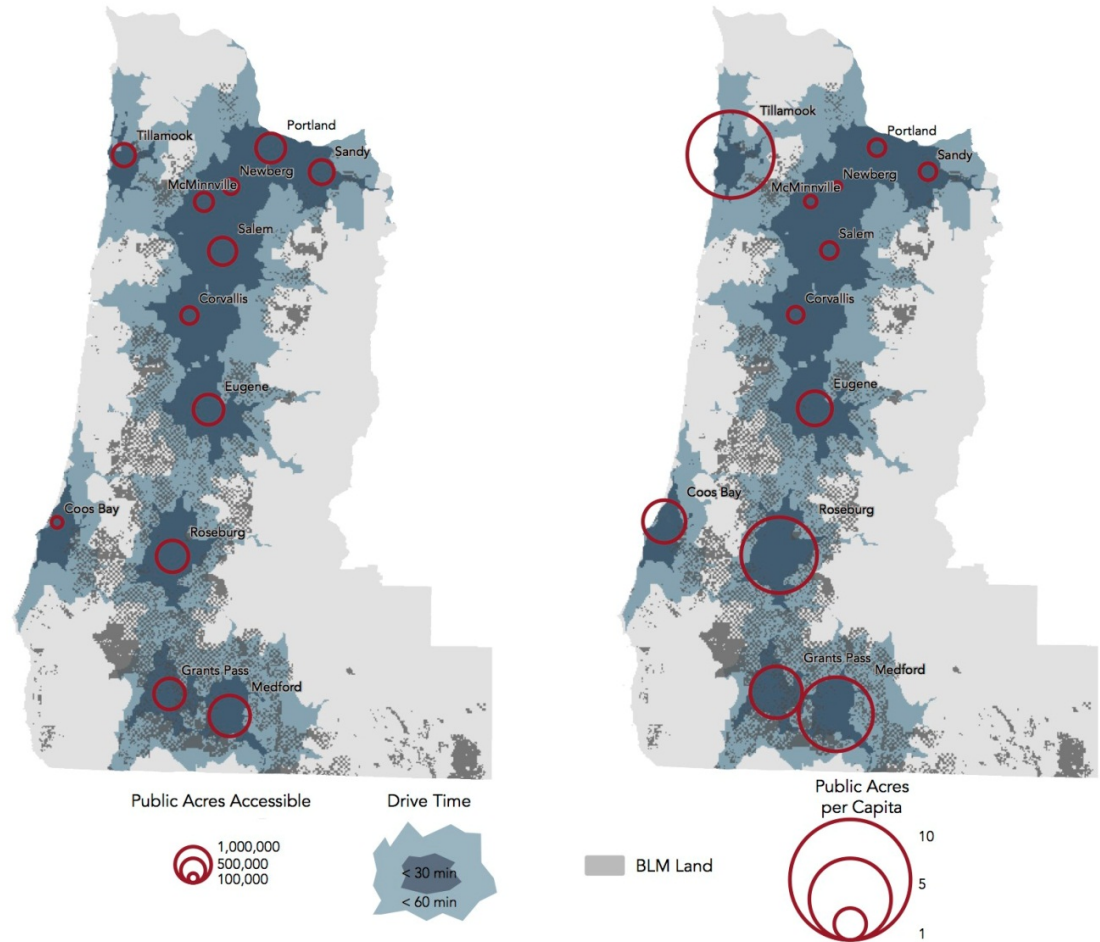
Community	Population	Public Land Within Travelshed (acres)	Acres of Public Land Per Person
Coos Bay	82,511	135,883	1.65
Corvallis	927,432	275,058	0.30
Eugene	645,281	725,082	1.12
Grant's Pass	328,960	753,549	2.29
McMinnville	1,661,439	309,604	0.19
Medford	291,658	1,240,043	4.25
Newburg	2,104,270	218,521	0.10
Portland	2,051,307	694,991	0.34
Roseburg	181,317	801,495	4.42
Salem	1,860,538	641,863	0.34
Sandy	1,566,414	505,275	0.32
Tillamook	78,264	439,999	5.62
1st Quartile	264,073	300,968	0.32
Median	786,357	573,569	0.73
3rd Quartile	1,711,214	732,199	2.78

⁷In contrast to the other recreation categories presented, we applied no specific recreation type or corresponding participation rate for this measurement. We analyzed the whole population (rather than a specific user population) living within the travelsheds. We compiled public land ownership data by federal and state entities, and may underestimate public lands managed by local governments, such as small, urban parks.

Within 30 minute's drive, Newburg, McMinnville, and Portland have the lowest supplies of public land. Public lands with proximity to Portland, Newburg, and Salem, meanwhile, have the highest potential for crowding, based on existing acreages and the size of nearby populations.

Within 60 minute's drive, Coos Bay, Newburg, and Corvallis have the lowest supplies of public land available. Relative to nearby user populations, however, Newburg, McMinnville, and Corvallis have the lowest levels of public land per user, and therefore potentially face crowded recreation conditions. These results are shown in Figure 12.

Figure 12. Acres of Public Land and Supply Per Capita Within 60-Minute Drive Time, Western Oregon, 2014



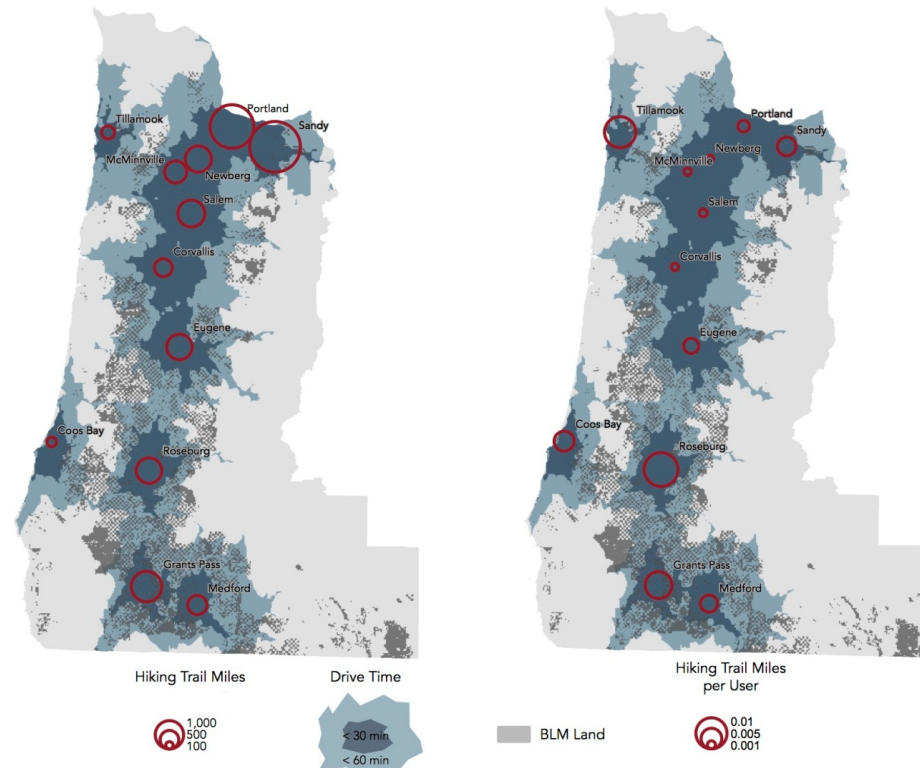
Source: OPRD SCORP 2013, ODF 2011

Within 30 minute's drive, McMinnville, Coos Bay, and Roseburg have the fewest miles of hiking trails accessible. Portland, Eugene, and McMinnville have the highest number of users, per trail mile.

Within an expanded geographic scope, 60 minute's drive, Coos Bay still has among the fewest miles of trail available, while Tillamook, and Corvallis are added to the list. Trails in the Willamette Valley tend to have the highest number of users per mile, with McMinnville, Corvallis, and Newburg among the lowest.

Based on county-level data provided in the 2013-2018 Oregon SCORP, hiking participation rates in the study communities ranged from 34 percent of the population (Tillamook), to 55 percent (Portland), to 55 percent (Portland).

Figure 13. Miles Of Hiking and Supply Per Capita Within 60-Minute Drive Time, Western Oregon, 2014



Source: OPRD SCORP 2013, AllTrails (www.alltrails.com)

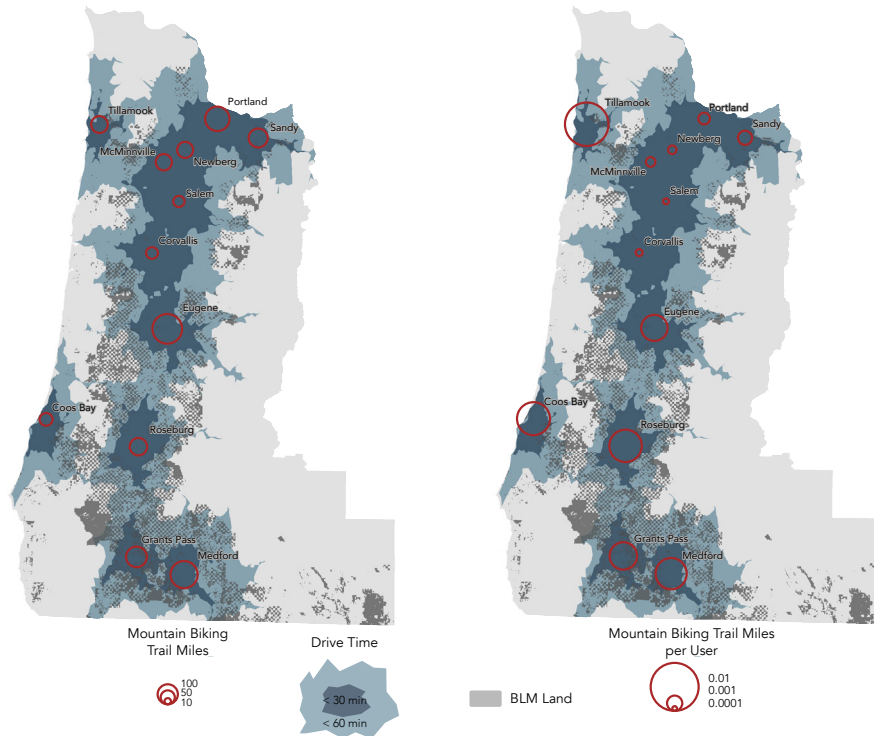
Table 7. Demand/Supply – Hiking Trails, 30-Minute Drive Time

Community	County Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay	40%	21,353	51	0.0024
Corvallis	54%	108,473	300	0.0028
Eugene	47%	160,078	73	0.0005
Grant's Pass	46%	55,592	345	0.0062
McMinnville	46%	56,994	30	0.0005
Medford	47%	85,002	437	0.0051
Newburg	46%	236,095	187	0.0008
Portland	55%	773,649	298	0.0004
Roseburg	41%	39,120	66	0.0017
Salem	50%	213,239	326	0.0015
Sandy	45%	177,305	1,528	0.0086
Tillamook	34%	8,366	111	0.0133
1st Quartile	44%	51,474	72	0.0007
Median	46%	96,737	242	0.0020
3rd Quartile	48%	186,289	330	0.0054

Table 8. Demand/Supply – Hiking Trails, 60-Minute Drive Time

Community	County Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay	40%	32,674	157	0.0048
Corvallis	54%	498,958	443	0.0009
Eugene	47%	305,863	846	0.0028
Grant's Pass	46%	150,993	1,162	0.0077
McMinnville	46%	760,939	641	0.0008
Medford	47%	137,371	512	0.0037
Newburg	46%	963,756	901	0.0009
Portland	55%	1,136,424	2,142	0.0019
Roseburg	41%	73,796	859	0.0116
Salem	50%	937,711	928	0.0010
Sandy	45%	704,886	2,800	0.0040
Tillamook	34%	26,923	269	0.0100
1st Quartile	44%	121,477	495	0.0010
Median	46%	402,411	853	0.0032
3rd Quartile	48%	805,132	986	0.0055

Figure 14. Miles of Mountain Biking and Supply Per Capita Within 60-Minute Drive Time, Western Oregon, 2014



Mountain Biking Trails

Within 30 minute's drive, McMinnville, Salem, and Corvallis have the fewest miles of mountain biking trails accessible. Portland, Corvallis, and Newburg have the highest number of users, per existing trail mile (or, alternatively, the lowest number of trail miles per user). Within an expanded geographic scope, 60 minute's drive, Salem, Corvallis, and Coos Bay have the fewest mountain bike trail miles accessible. Mountain bike trails in the Willamette Valley tend to have the highest number of users per mile, particularly the areas around Salem, Corvallis, and Newburg. These results are shown in Figure 14.

Based on county-level data provided in the 2013-2018 Oregon SCORP, mountain biking participation rates in the study communities ranged from 7 percent of the population (Sandy), to 17 percent (Corvallis).

Source: OPRD SCORP 2013,, Singletracks (www.singletracks.com), MTB Project (www.mtbproject.com)

Table 9. Demand/Supply – Mountain Biking Trails, 30-Minute Drive Time

Community	County Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay	11%	5,716	30	0.005
Corvallis	17%	34,276	10	0.000
Eugene	11%	36,811	40	0.001
Grant's Pass	10%	11,990	21	0.002
McMinnville	9%	11,698	-	-
Medford	14%	25,988	72	0.003
Newburg	9%	48,456	14	0.000
Portland	11%	159,198	13	0.000
Roseburg	9%	8,554	70	0.008
Salem	12%	50,348	-	-
Sandy	7%	26,005	20	0.001
Tillamook	11%	2,651	20	0.008
1st Quartile	9%	10,912	12	0.0002
Median	11%	25,996	20	0.0009
3rd Quartile	12%	39,723	32	0.0034

Table 10. Demand/Supply – Mountain Biking Trails, 60-Minute Drive Time

Community	County Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay	11%	8,746	42	0.0048
Corvallis	17%	157,663	34	0.0002
Eugene	11%	70,336	214	0.0030
Grant's Pass	10%	32,567	106	0.0032
McMinnville	9%	156,175	63	0.0004
Medford	14%	41,999	183	0.0044
Newburg	9%	197,801	66	0.0003
Portland	11%	233,849	146	0.0006
Roseburg	9%	16,137	76	0.0047
Salem	12%	221,404	32	0.0001
Sandy	7%	103,383	90	0.0009
Tillamook	11%	8,531	71	0.0083
1st Quartile	9%	28,460	58	0.0004
Median	11%	86,859	73	0.0020
3rd Quartile	12%	167,698	116	0.0044

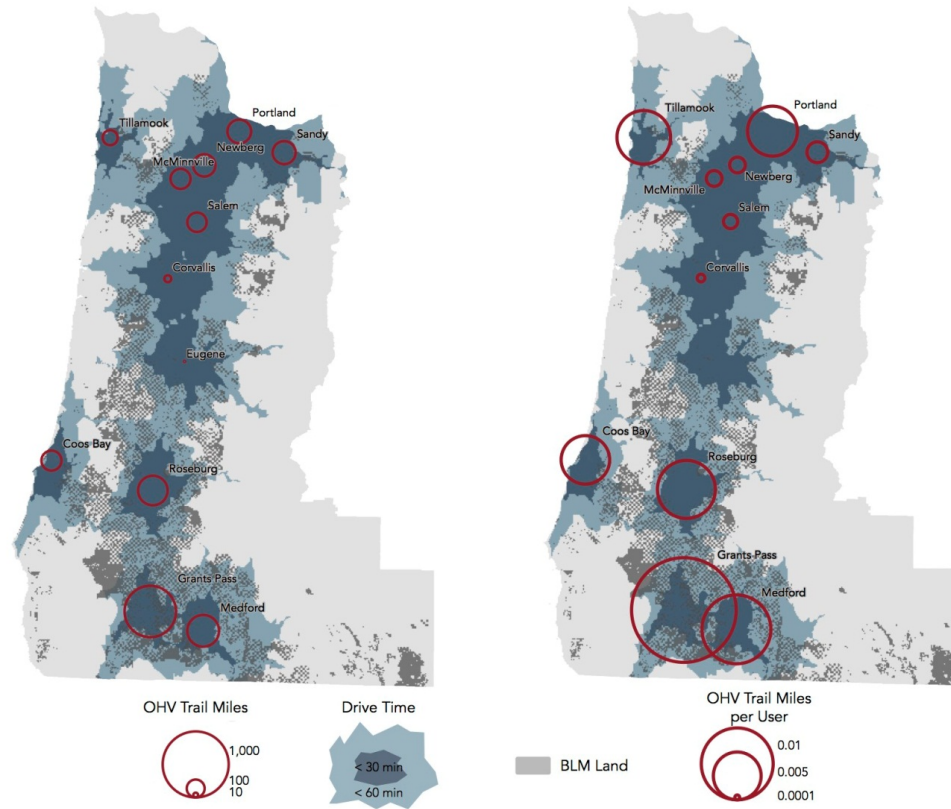
OHV Trails

Within 30 minute's drive, Coos Bay, Eugene, and Portland have the fewest miles of OHV trails accessible. These same communities, in the same order, also have the highest number of users, per trail mile.

Within the 60-minute travelsheds, Eugene, Corvallis and Tillamook have the fewest miles accessible. OHV trails in the lower parts of the Willamette Valley, mainly as a result of few existing trails, tend to have the highest number of users per mile, particularly the areas around Eugene, Corvallis, and Salem. These results are shown in Figure 15.

Based on county-level data provided in the 2013-2018 Oregon SCORP, OHV participation rates in the study communities ranged from 2 percent of the population (Portland), to 29 percent (Coos Bay).

Figure 15. Miles of OHV Trails and Supply Per Capita Within 60-Minute Drive Time, Western Oregon, 2014



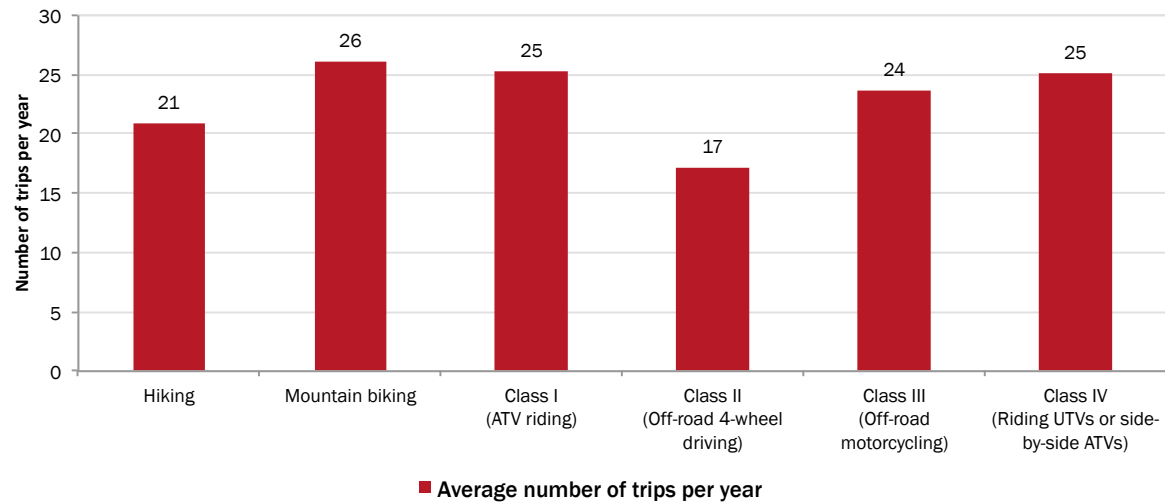
Source: OPRD SCORP 2013, AllTrails (www.alltrails.com), RiderPlanet USA (www.riderplanet-usa.com/)

Table 11. Demand/Supply – OHV Trails, 30-Minute Drive Time

Community	County	Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay		29%	24,258	124	0.0051
Corvallis		10%	89,033	22	0.0002
Eugene		6%	38,072	1	0.0000
Grant's Pass		10%	33,554	653	0.0194
McMinnville		11%	179,435	124	0.0007
Medford		10%	30,041	278	0.0093
Newburg		11%	227,261	150	0.0007
Portland		2%	30,770	168	0.0054
Roseburg		19%	34,994	243	0.0069
Salem		11%	197,217	119	0.0006
Sandy		9%	137,844	162	0.0012
Tillamook		16%	12,835	78	0.0061
1st Quartile		9%	30,587	109	0.0006
Median		10%	36,533	137	0.0031
3rd Quartile		12%	148,242	186	0.0063

Table 12. Demand/Supply – OHV Trails, 60-Minute Drive Time

Community	County	Participation Rate	Local User Population	Trail Miles	Trail Miles Per User
Coos Bay		29%	15,853	-	-
Corvallis		10%	19,356	21	0.00108
Eugene		6%	19,925	-	-
Grant's Pass		10%	12,354	177	0.01434
McMinnville		11%	13,440	58	0.00433
Medford		10%	18,589	89	0.00479
Newburg		11%	55,673	58	0.00105
Portland		2%	20,947	-	-
Roseburg		19%	18,551	53	0.00283
Salem		11%	44,848	2	0.00004
Sandy		9%	34,673	80	0.00232
Tillamook		16%	3,989	58	0.01459
1st Quartile		9%	15,250	2	0.00003
Median		10%	18,972	55	0.00170
3rd Quartile		12%	24,379	64	0.00444

Figure 16. Participation Frequency for Trail-Based Recreation Activities

Source: OPRD 2013-2018 SCORP Survey, Table 2.2

More detail on the comparisons in per-user and total trail miles by community are available in Appendix Figures A1 and A2, and Tables A1 and A2.

An additional dimension to consider regarding the supply and demand for trail-based recreation activities is the frequency with which users participate. The average numbers of trips per user, per year, for trail-based activities in Oregon are shown in Figure 16. Mountain bikers participate most frequently, followed closely by various classes of off-road vehicle users. Thus, even though mountain biking and off-road vehicle use are less popular across the total population than less equipment-intensive trail activities like hiking, in terms of per capita participation rates, use levels on mountain biking and OHV trails may in fact be slightly higher than the numbers above suggest, due to more frequent participation. Given that the availability of mountain biking and OHV trails is also more limited, the actual number of users per hour, per day, and per mile could potentially be higher on these trails than on some hiking trails.

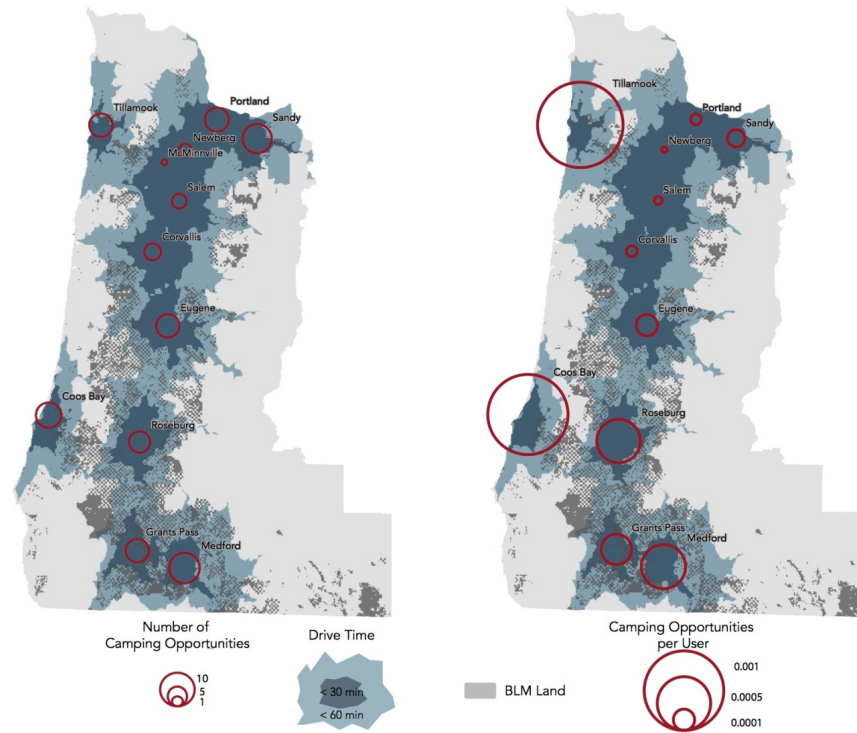
Campgrounds

Within 30 minute's drive, McMinnville, Salem, Newburg and Portland have the fewest number of campgrounds available. These communities also have the highest number of users, per existing campground.

The relative rankings do not change with an expanded geographic view. McMinnville, Newburg, and Salem still have the lowest number of campgrounds within proximity, as well as the highest number of users per campground. These results are shown in Figure 17.

Based on county-level data provided in the 2013-2018 Oregon SCORP, camping participation rates in the study communities ranged from 26 percent of the population (Tillamook), to 41 percent (Corvallis).

Figure 17. Number of Camping Opportunities and Supply Per Capita Within 60-Minute Drive Time, Western Oregon, 2014



Source: OPRD SCORP 2013, 'USA Campgrounds Info' (www.uscampgrounds.info/)

Table 13. Demand/Supply – Campgrounds, 30-Minute Drive Time

Community	County Participation Rate	Local User Population	Number of Camping Opportunities	Camping Opportunities Per User
Coos Bay	32%	17,470	3	0.000172
Corvallis	41%	82,463	11	0.000133
Eugene	35%	116,850	2	0.000017
Grant's Pass	39%	47,477	6	0.000126
McMinnville	35%	43,181	0	0.000000
Medford	37%	66,052	3	0.000045
Newburg	35%	178,876	1	0.000006
Portland	39%	539,041	1	0.000002
Roseburg	31%	29,892	6	0.000201
Salem	32%	137,082	0	0.000000
Sandy	31%	122,932	9	0.000073
Tillamook	26%	6,250	11	0.001760
1st Quartile	32%	39,859	1	0.000005
Median	35%	74,258	3	0.000059
3rd Quartile	37%	126,469	7	0.000143

Table 14. Demand/Supply – Campgrounds, 60-Minute Drive Time

Community	County Participation Rate	Local User Population	Number of Camping Opportunities	Camping Opportunities Per User
Coos Bay	32%	26,734	27	0.00101
Corvallis	41%	379,320	13	0.00003
Eugene	35%	223,267	23	0.00010
Grant's Pass	39%	128,952	24	0.00019
McMinnville	35%	576,519	2	0.00000
Medford	37%	106,747	38	0.00036
Newburg	35%	730,182	8	0.00001
Portland	39%	791,805	25	0.00003
Roseburg	31%	56,390	20	0.00035
Salem	32%	602,814	11	0.00002
Sandy	31%	488,721	35	0.00007
Tillamook	26%	20,114	23	0.00114
1st Quartile	32%	94,158	13	0.00003
Median	35%	301,293	23	0.00009
3rd Quartile	37%	583,093	26	0.00036

INVESTMENT POTENTIAL AND IDENTIFIED NEEDS

If the total area of public lands and waters in western Oregon remains stable over the coming decades, per capita availability can only decline over time as population increases (White et. al. 2014).⁸ The ability of public lands and resources to meet future recreation demand will depend primarily on development and management patterns of recreation opportunities on current public lands, future recreation participation rates, the distribution of users in relation to recreation resources, and the availability of substitutes for these opportunities. Maintenance and development of transportation systems and infrastructure will continue to be vital for providing access to recreation opportunities

While the public land base is essentially fixed, legislative and executive designations as well as the agencies' various regulations and rules can alter the supply of recreation opportunities available. The BLM is currently weighing various management alternatives and approaches in western Oregon, and these alternatives will affect the mix of specific recreation activities permitted (for example, changes from motorized to non-motorized uses) and the balance between recreation and other uses (for example, recreation versus forest management and mineral extraction). These sorts of decisions and changes can effectively increase or decrease the acreages available for recreation.

In this study we have identified areas with needs and capacities related to specific recreation types. The BLM, based on the amount and

type of lands it owns within proximity to individual communities, as well as the various management approaches it is considering, has differing levels of ability to address these needs, and perhaps relieve conditions of scarcity. The BLM generally has greater opportunity to relieve scarcity in areas where it has more land nearby that is available for recreation management (Table 3), but this also depends on other factors, such as the natural characteristics of the land (and how well they are suited to various recreation types), whether recreation activities are permitted, whether the lands are open to timber, mineral and/or energy extraction, and whether there is adequate access (e.g. some lands are 'locked up' by adjacent patchworks of private lands, or do not have nearby transportation infrastructure in place).

Some of the specific highlights of this analysis for outdoor recreation scarcity and abundance in western Oregon are:

- Public land overall is most scarce within proximity of communities in the northern Willamette Valley.
- Trails of all types and camping opportunities are most scarce within the Willamette Valley for the region as whole.
- Outside of the Willamette Valley, Coos Bay faces the greatest scarcity of trail resources.
- The communities facing the greatest scarcity of trails relative to the other communities changes when expanding out from 30-minute drive times to 60-minute drive times.

- Mountain-biking trails are particularly scarce within 30-minute drive times of communities, in the northern Willamette Valley in particular.
- OHV trails are most scarce in the central to southern Willamette Valley, from Salem to Eugene.
- Camping opportunities are scarce throughout the Willamette Valley, particularly in the northern portion.

More detail on the comparisons in per-user and total trail miles by community are available in Appendix Figures A1 and A2, and Tables A1 and A2.

Overall, these findings suggest that new trails and camping opportunities developed near the Willamette Valley and the northern portion in particular will provide the greatest value. These regional scarcities for more specialized trail types of mountain-biking and OHV are likely exacerbated by the relatively high frequency of trips for participants in these forms of recreation.

⁸See Table A3 and Figure A3 in the Appendix for more detail on projected growth in demand.

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APPENDIX

Figure A1. Trail Miles, by Type, Distance, and Community

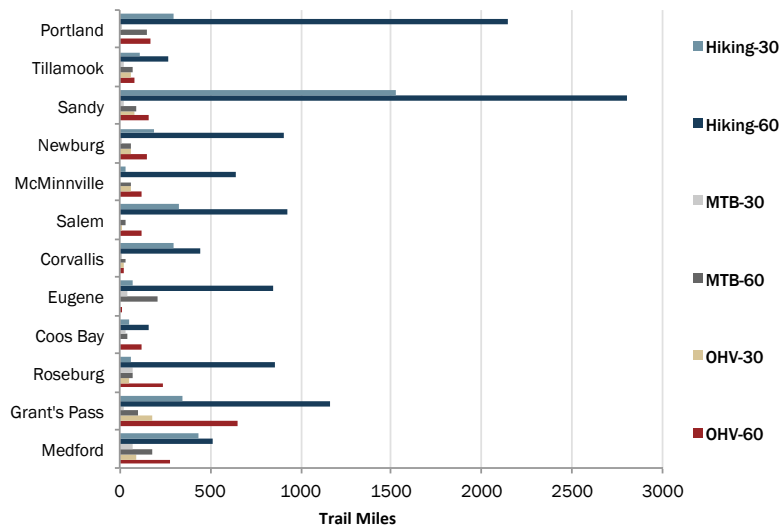


Figure A1 shows the availability of trails open to hiking, mountain biking ('MTB') and off-highway vehicle (OHV) use within 30 and 60 minute driving distances of each community, relative to the size of the local user population.

Table A1. Relative Ranking of Trail Miles, by Type and Distance, Within Each Community

Community	Category	Trail Miles	Community	Category	Trail Miles	Community	Category	Trail Miles
Coos Bay	Hiking 60	157	McMinnville	Hiking 60	641	Roseburg	Hiking 60	859
	OHV 60	124		OHV 60	124		OHV 60	243
	Hiking 30	51		MTB 60	63		MTB 60	76
	MTB 60	42		OHV 30	58		MTB 30	70
	MTB 30	30		Hiking 30	30		Hiking 30	66
	OHV 30	0		MTB 30	0		OHV 30	53
Corvallis	Hiking 60	443	Medford	Hiking 60	512	Salem	Hiking 60	928
	Hiking 30	300		Hiking 30	437		Hiking 30	326
	MTB 60	34		OHV 60	278		OHV 60	119
	OHV 60	22		MTB 60	183		MTB 60	32
	OHV 30	21		OHV 30	89		OHV 30	2
	MTB 30	10		MTB 30	72		MTB 30	0
Eugene	Hiking 60	846	Newburg	Hiking 60	901	Sandy	Hiking 60	2800
	MTB 60	214		Hiking 30	187		Hiking 30	1528
	Hiking 30	73		OHV 60	150		OHV 60	162
	MTB 30	40		MTB 60	66		MTB 60	90
	OHV 60	1		OHV 30	58		OHV 30	80
	OHV 30	0		MTB 30	14		MTB 30	20
Grant's Pass	Hiking 60	1162	Portland	Hiking 60	2142	Tillamook	Hiking 60	269
	OHV 60	653		Hiking 30	298		Hiking 30	111
	Hiking 30	345		OHV 60	168		OHV 60	78
	OHV 30	177		MTB 60	146		MTB 60	71
	MTB 60	106		MTB 30	13		OHV 30	58
	MTB 30	21		OHV 30	0		MTB 30	20

Table A1 shows the availability of trails open to hiking, mountain biking ('MTB') and off-highway vehicle use within 30 and 60 minute driving distances, relative to the size of the local user population, and ranked from highest (in blue) to lowest (in red) for each community.

Figure A2. Relative Trail Miles per User, by Type, Distance, and Community

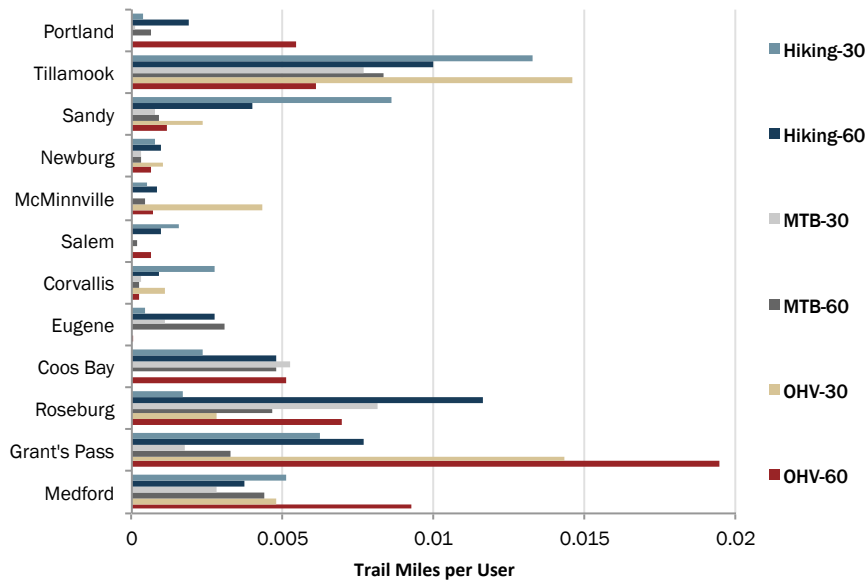


Figure A2 shows the availability of trails (in terms of the total mileage) open to hiking, mountain biking ('MTB') and off-highway vehicle (OHV) use within 30 and 60 minute driving distances of each community.

Table A2. Relative Ranking of Trail Miles per User, by Type and Distance, Within Each Community

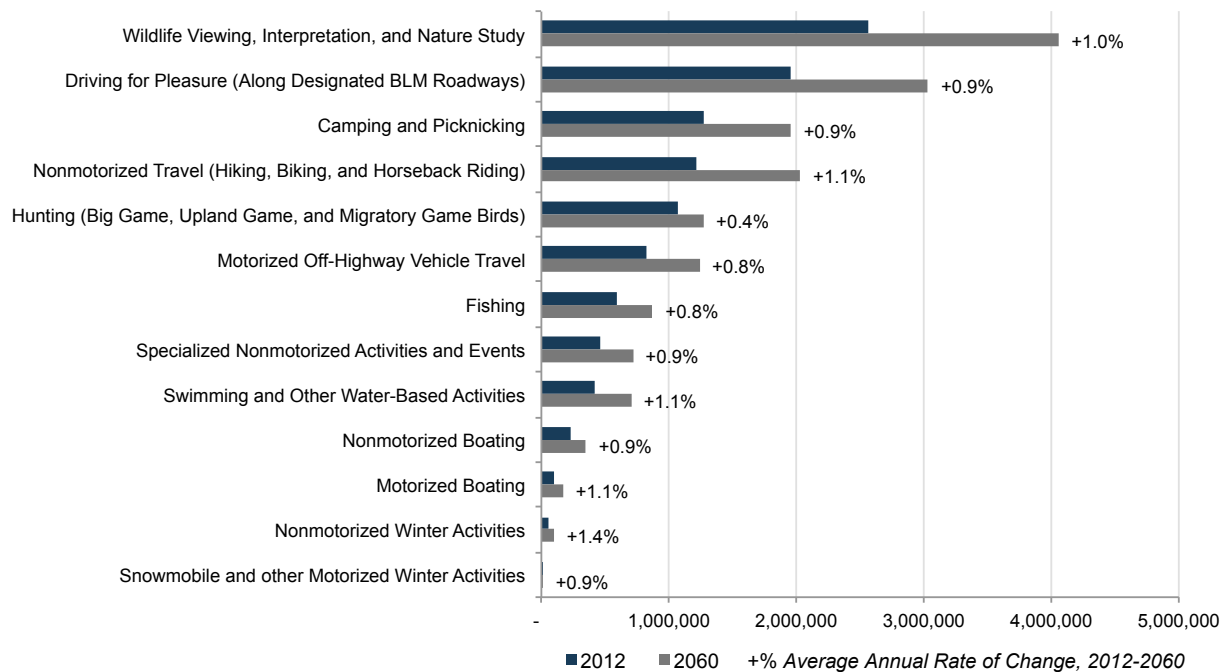
Community	Category	Trail Miles Per User	Community	Category	Trail Miles Per User	Community	Category	Trail Miles Per User
Coos Bay	MTB 30	0.00525	McMinnville	OHV 30	0.00433	Roseburg	Hiking 60	0.01164
	OHV 60	0.00510		Hiking 60	0.00084		MTB 30	0.00812
	Hiking 60	0.00481		OHV 60	0.00069		OHV 60	0.00694
	MTB 60	0.00480		Hiking 30	0.00053		MTB 60	0.00468
	Hiking 30	0.00237		MTB 60	0.00040		OHV 30	0.00283
	OHV 30	0.00000		MTB 30	0.00000		Hiking 30	0.00170
Corvallis	Hiking 30	0.00277	Medford	OHV 60	0.00925	Salem	Hiking 30	0.00153
	OHV 30	0.00108		Hiking 30	0.00514		Hiking 60	0.00099
	Hiking 60	0.00089		OHV 30	0.00479		OHV 60	0.00060
	MTB 30	0.00029		MTB 60	0.00435		MTB 60	0.00014
	OHV 60	0.00025		Hiking 60	0.00372		OHV 30	0.00004
	MTB 60	0.00021		MTB 30	0.00278		MTB 30	0.00000
Eugene	MTB 60	0.00304	Newburg	OHV 30	0.00105	Sandy	Hiking 30	0.00862
	Hiking 60	0.00277		Hiking 60	0.00094		Hiking 60	0.00397
	MTB 30	0.00108		Hiking 30	0.00079		OHV 30	0.00232
	Hiking 30	0.00046		OHV 60	0.00066		OHV 60	0.00118
	OHV 60	0.00003		MTB 60	0.00034		MTB 60	0.00087
	OHV 30	0.00000		MTB 30	0.00028		MTB 30	0.00077
Grant's Pass	OHV 60	0.01945	Portland	OHV 60	0.00545	Tillamook	OHV 30	0.01459
	OHV 30	0.01434		Hiking 60	0.00189		Hiking 30	0.01326
	Hiking 60	0.00770		MTB 60	0.00062		Hiking 60	0.01000
	Hiking 30	0.00620		Hiking 30	0.00039		MTB 60	0.00835
	MTB 60	0.00324		MTB 30	0.00008		MTB 30	0.00766
	MTB 30	0.00174		OHV 30	0.00000		OHV 60	0.00609

Table A2 shows the availability of trails (in terms of the total mileage) open to hiking, mountain biking ('MTB') and off-highway vehicle use within 30 and 60 minute driving distances, and ranked from highest (in blue) to lowest (in red) for each community.

Table A3. Projected Recreation Demand, Participants by Activity, Western Oregon BLM Lands, 2012-2060

BLM Recreation Categories	Current Number of Participants		Projected Number of Participants				Annual Growth Rate	% Change 2012-2060
	FY 2012	2020	2030	2040	2050	2060		
Wildlife Viewing, Interpretation, and Nature Study	2,564,574	2,810,926	3,149,289	3,456,865	3,751,811	4,056,276	1.0%	58%
Driving for Pleasure (Along Designated BLM Roadways)	1,959,729	2,140,696	2,388,704	2,610,605	2,819,454	3,033,896	0.9%	55%
Camping and Picknicking	1,273,349	1,389,106	1,548,035	1,689,978	1,822,216	1,956,881	0.9%	54%
Nonmotorized Travel (Hiking, Biking, and Horseback Riding)	1,211,201	1,334,041	1,499,867	1,666,874	1,841,117	2,031,541	1.1%	68%
Hunting (Big Game, Upland Game, and Migratory Game Birds)	1,063,709	1,111,142	1,159,767	1,197,012	1,232,188	1,270,468	0.4%	19%
Motorized Off-Highway Vehicle Travel	826,256	887,031	955,996	1,035,266	1,128,804	1,238,989	0.8%	50%
Fishing	598,420	645,558	706,223	760,591	814,388	872,763	0.8%	46%
Specialized Nonmotorized Activities and Events	458,870	501,333	559,264	612,440	663,431	716,455	0.9%	56%
Swimming and Other Water-Based Activities	424,376	467,997	526,296	583,388	640,883	701,192	1.1%	65%
Nonmotorized Boating	224,876	242,296	262,362	286,958	315,870	349,744	0.9%	56%
Motorized Boating	97,622	107,563	119,936	133,508	149,019	167,485	1.1%	72%
Nonmotorized Winter Activities	50,444	56,687	64,711	73,679	84,205	97,138	1.4%	93%
Snowmobile and other Motorized Winter Activities	6,903	7,428	7,998	8,734	9,629	10,697	0.9%	55%
Total (all activities)	10,760,329	11,701,805	12,948,446	14,115,899	15,273,015	16,503,525	0.9%	53%

Figure A3. Projected Recreation Demand, Participants by Activity, Western Oregon BLM Lands, 2012-2060



Source, ECONorthwest with data from BLM RMIS and Cordell, H.K. 2012.