Economic Contributions of Bend Park and Recreation District

Benefits and Impacts

November 2017

Prepared for:

Bend Park and Recreation District

FINAL REPORT

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Acknowledgments

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That assistance notwithstanding, ECONorthwest is responsible for the content of this report. The staff at ECONorthwest prepared this report based on their general knowledge of the economics of recreation, amenities, and regional economies. ECONorthwest also relied 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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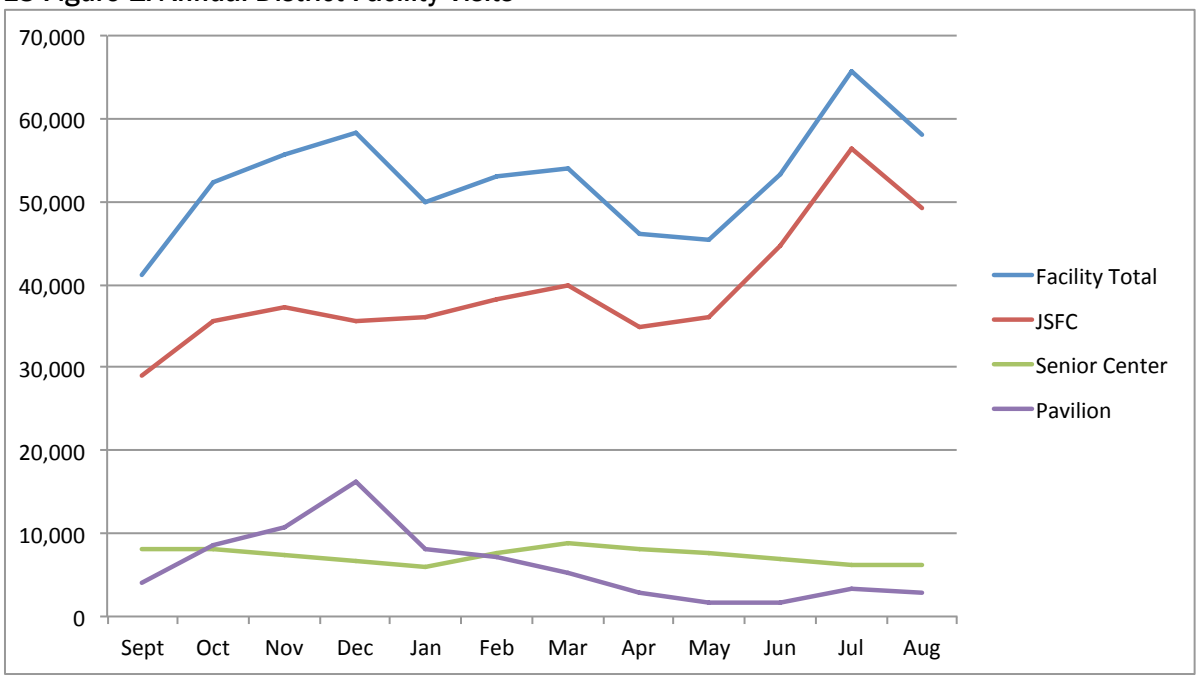
Table of Contents

Executive Summary

This is a study of the economic importance of the Bend Park and Recreation District, particularly from the perspective of District residents. The primary research questions for this study address the economic value of services and opportunities provided by the District, the economic impact associated with visitors using District services, and the importance of the District's offerings and amenities to Bend's business environment.

ES Figure 1. Annual District Facility Visits



Note: See main report for detail on data.

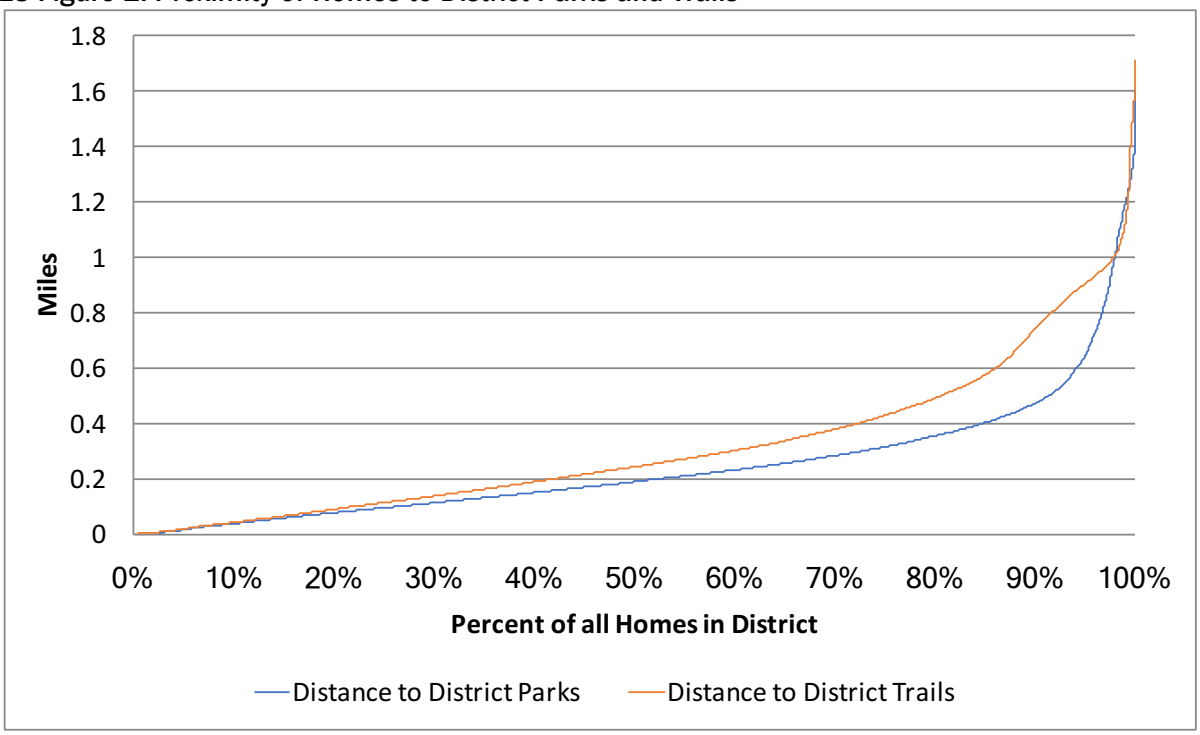
The Bend Park and Recreation District provides a wide range of services essential to the lifestyle and health of the majority of Bend residents. Residents annually make millions of trips to use District facilities, programs, trails, parks, and events. Visitors do so as well, to a lesser extent. Visitor participation generates millions of dollars annually in local spending, which generates millions of dollars of local income and hundreds of jobs, as well as important contributions to the regional tax base.

Some of the key findings by the numbers are:

- Over 1 million annual recreation facility and program visits (ES Figure 1)
- Nearly all homes in Bend are within 1 mile of a park and/or a trail provided by the District, with half of homes within a quarter mile (ES Figure 2)
- Over 1 million annual trips on District trails
- 130,000 annual attendees of events on District properties
- Over $65 million in annual total user benefits across all District offerings (ES Table 1)
- 4.8 to 6.6 million total annual user visits and experiences across all District offerings

- Long term benefits of $930 million (10 years) to $1.8 billion (20 years) for all District offerings (ES Table 2)
- Over $150 million contributed to resident property value
- $3.2 million in annual visitor spending associated with events on District properties
- $70 million in annual visitor spending associated with visitor use of District offerings
- 235,000 people visited the Bend Whitewater Park in its first full summer of operations, not counting those who came to watch

ES Figure 2. Proximity of Homes to District Parks and Trails



Note: See main report for detail on data.

The importance of these District services is evidenced by the premiums people pay to live near the amenities. The $150 million contributed to the value of resident home assets in Bend captures only differences in value within Bend, as opposed to contributions to the appeal of Bend as a whole for all residents. Home value contributions and visitor spending support the regional tax base as well. The amenities improve the overall quality of life in Bend in ways that are important for attracting businesses and a skilled workforce. The industries influenced by Bend's quality of life and regional amenities have been more resilient than other industries, and seen greater strides in employment and wages. The overall regional attraction is an important force supporting, maintaining and growing Bend's economy while other communities lose businesses and people to the major metropolitan areas.

ES Table 1. Annual Value of District Service Usage ($ in Thousands)

Event/Activity	Annual Average Net Benefit ($000s)	Resident Share of Benefit ($000s)	Visitor Share of Benefit ($000s)	Total Trips	Visitor Percentage of Total Participants
Event Runs/Walks	$2,937	$2,202	$734	90,930	25%
Other Recreation Competitions	$814	$610	$203	25,198	25%
Art/Entertainment Events	$508	$381	$127	24,741	25%
Religious Events	$35	$35	$0	850	0%
Community/Holiday Events	$727	$545	$182	35,360	25%
Child Events/Camps	$99	$99	$0	2,411	0%
All Trail Usage	$15,131-$23,346	$11,348-$17,510	$3,783-$5,837	1,581,311	25%
Floating River	$4,689	$3,517	$1,172	265,107	25%
Field/Court Tournaments	$716	$86	$630	22,167	88%
JSFC	$9,712	$8,741	$971	472,570	10%
Senior Center	$1,803	$1,623	$180	87,750	10%
Pavilion	$1,489	$1,340	$149	72,441	10%
Sports & Programs	$8,977-$12,076	$8,079-$10,869	$898-$1,208	436,792-587,628	10%
Other Park	$17,291-$34,581	$15,562-$31,123	$1,729-$3,458	1,682,689-3,365,378	10%
Total	**$65,000-$94,000**	**$54,000-$79,000**	**$11,000-$15,000**	**4,800,000-6,600,000**	

Note: See main report for detail on data.

ES Table 2. 10 and 20-Year Net Value of District Service Usage

Activity/Event	Ten Year Total Benefit ($000s)	Ten Year Total Trips (000s)	Twenty Year Total Benefit ($000s)	Twenty Year Total Trips (000s)
Event Runs/Walks	$29,137	1,005	$56,157	2,254
Other Recreation Competitions	$8,074	278	$15,562	625
Art/Entertainment Events	$5,045	273	$9,723	613
Religious Events	$347	9	$668	21
Community/Holiday Events	$7,210	391	$13,897	876
Child Events/Camps	$983	27	$1,895	60
All Trail Usage	$231,647	17,474	$446,460	39,196
Floating River	$46,523	2,930	$89,664	6,571
Field/Court Tournaments	$7,103	245	$13,690	549
Juniper	$96,364	5,222	$185,725	11,714
Senior Center	$17,893	970	$34,487	2,175
Pavilion	$14,772	801	$28,470	1,796
Sports and Programs	$119,826	6,494	$230,943	14,566
Other Park	$343,125	37,189	$661,313	83,418
TOTAL	**$930 million**	**73.4 million**	**$1.8 billion**	**165 million**

Note: All values in thousands but for bottom line totals in actual amounts. See main report for detail on data.

1 Introduction

1.1 Background and Study Objective

The quality of life and access to world-class recreation and outdoor amenities contribute to the culture and lifestyle that make Bend a desirable place to live and visit. The region's environment provides a special context to create a community that prioritizes healthy, active living with sports, fitness, and outdoor recreation as daily activities. Bend Park and Recreation District (BPRD or District) plays a crucial role in supplying the local, close-to-home piece of this picture. With busy lives the availability of high quality options just minutes away can be the difference between healthy activity once a week or less, and a consistent daily way of life. The variety of facilities the District provides covers an important range of recreational, instructional, and public health oriented opportunities. The parks and trails cater to a wide range of users, while also facilitating access to the region's natural amenities.

The District's close-to-home recreation, fitness and outdoor opportunities differentiate Bend in the Pacific Northwest, so as to provide the full package capitalizing on the region's natural resources particularly for residents. While the mountains, forests and desert combined with frequent sunshine and the Deschutes River first attract attention, the availability of trails, parks and recreation facilities after work and school, on the way home or just out the door are what allow people to take advantage of the lifestyle on a daily basis. Deschutes County residents report in surveys that improvements to health and fitness are the most valuable benefit of parks and recreation services[1].

This study is an attempt to identify and communicate the value of these District services from an economic perspective. In this context, economic techniques can help categorize and describe the comprehensive set of services and associated benefits to all users, with valuation of the importance of these services to individuals and the community as a whole. Economic tools cannot necessarily capture all of the ways that District services affect residents and visitors in Bend, and so this work should be seen as complementary to other efforts to consider the total value to the community as scarce resource allocation decisions arise.

This study is organized around a series of research questions intended to collectively calculate and communicate the major contributions of District services to residents. Residents are the primary focus as they are mostly responsible for funding the District and important decisions concerning the District's governance. The study also investigates visitor activity. Visitor activity can be beneficial to residents by contributing to local spending and financial justification for

[1] Randall Rosenberger and Kreg Lindberg, "*Oregon Resident Outdoor Recreation Demand Analysis*," Oregon State University, November 12, 2012. http://www.oregon.gov/oprd/PLANS/docs/scorp/2013-2018_SCORP/Demand_Analysis.pdf

major events that residents also enjoy. Visitors might also become residents who support the community providing important services in their own right and employing residents.

The key questions for this study are:

- **What is the economic value of District services to residents?**
- **How does District-supported tourism benefit district residents?**
- **How does the District contribute to business activity in the region, and what is its market impact?**

Answering these questions involves several related analyses and use of numerous data sources, some collected by the District directly but also from other sources such as Oregon Parks and Recreation Department and the Oregon Employment Department. We describe the overall approach below.

1.2 Approach and Report Organization

This economic assessment of the District's contributions focuses on understanding the supply of services offered by the District, the demand for these services primarily from Bend residents and secondarily by tourists, and the resulting use levels by activity type. The study also addresses economic impacts attributable to spending as a result of tourist activity associated with District resources and events. Differences in property values reveal the relative importance people place on being close to parks and trails. Property value analysis serves to highlight an additional aspect of the value Bend residents place on the District's amenities. Finally, we investigate trends in business activity in Bend to explore business patterns associated with recreation and the outdoors, and the potential role Bend's quality of life plays in stimulating and maintaining private business activity.

Analyses in this study are based on the best available data. Whenever possible, analyses involved the District's own collected data and related market transaction data. Secondarily, we rely upon state surveys of residents for recreation participation and demand. Finally, any benefits without robust underlying data to understand usage and value are characterized qualitatively.

2 Economic Value of District Services

The District provides access to outdoor and facility-based recreation for Bend residents. Visitors to the region benefit from these opportunities as well. Quantifying the direct community benefits provided by the District is difficult because users do not always pay directly or at a full market price. This is especially true for parks, trails, and natural areas.

Benefits to users come in the form of net benefit or consumer surplus: the difference between the amount a user would be willing to pay for a good or service and the price they pay. Consumer surplus effectively conveys how much pleasure a user is receiving while recognizing the direct costs to the user. For example, although many trail users would be willing to pay for trail access and frequently do so in places where such fees are collected (e.g. Northwest Forest Pass), there are no direct charges for District trails. Some of the services the District provides via facilities include Juniper Swim and Fitness Center (JSFC), Bend Senior Center (Senior Center), and The Pavilion. For many activities at these facilities, the District provides access at lower costs than would be necessary by fully private means, supporting access to a fuller swath of the community and promoting activities that benefit the entire community. Bend as a whole is better off when its populace is healthy, active and engaged, and has areas and opportunities to socialize and develop bonds. This is particularly important for youth as unhealthy and even dangerous pursuits grow in appeal.

Summing benefit totals across an entire community of users provides the community with a measure of overall economic importance. One measure of overall economic value of District services is the total amount of usage combined with the value per trip or activity per user. Extensive research exists on the average consumer surplus created by the kinds of recreational, fitness, and instructional activities the District provides. This analysis relies on the compilation of all outdoor recreation valuation studies compiled by the Oregon State University College of Forestry for the U.S. Forest Service.[2] We also use similar studies to address the full range of activities the District supports.

This analysis does not comprehensively monetize the value of every benefit derived from the District. Beyond direct benefit while participating, District-supported activities can provide long-term benefits as well. Physical activity can improve overall quality of life and lower medical bills. Research increasingly shows the widespread benefits of a healthy lifestyle, including less work absenteeism and even improved cognition[3]. Recreation amenities can

[2] College of Forestry, "*Recreation Use Values Database*," Oregon State University, available at: http://recvaluation.forestry.oregonstate.edu/.

[3] Castelli, D.M., Hillman, C.H., Buck, S.M. and Erwin, H.E., 2007. Physical fitness and academic achievement in third- and fifth-grade students. Journal of Sport and Exercise Psychology, 29(2), pp.239-252; Sibley, B.A. and Etnier, J.L., 2003. The relationship between physical activity and cognition in children: a meta-analysis. *Pediatric Exercise*

improve private property values. People make and maintain relationships through shared activities.

Residents also receive benefits indirectly through other public services. Natural areas in urban settings, particularly trees, contribute to air and water quality, and buffer extreme temperatures. A 2012 U.S. Environmental Protection Agency (USEPA) study in Corvallis, OR estimated $9 per tree per year in value from these services[4]. Greater social cohesion fostered by shared, open spaces can reduce the level of policing, counseling, and incarceration required by a city's residents, further contributing to the savings.[5] Natural areas can bolster the city's economy by increasing the values of homes and attracting businesses to the area.

2.1 District Benefits to Residents

2.1.1 District Recreation Facilities

The District's recreation facilities –JSFC, Senior Center, and The Pavilion – support an array of indoor and outdoor recreation, fitness and enrichment opportunities. Visitation levels demonstrate the high use of these facilities by District residents and, albeit less frequently, visitors. A survey of District residents conducted in 2011 found 51 percent of respondents participated in an organized recreation program provided by the District.[6] Within the same group of respondents, 79 percent of households with children under 10 years old participated in organized recreation programs. More recently in the 2017 Community Survey for Facility Use, 53 percent of respondents reported use of JSFC and 23 percent use of the Senior Center.[7]

Science, *15*(3), pp.243-256; Colcombe, S. and Kramer, A.F., 2003. Fitness effects on the cognitive function of older adults: a meta-analytic study. *Psychological Science*, *14*(2), pp.125-130.

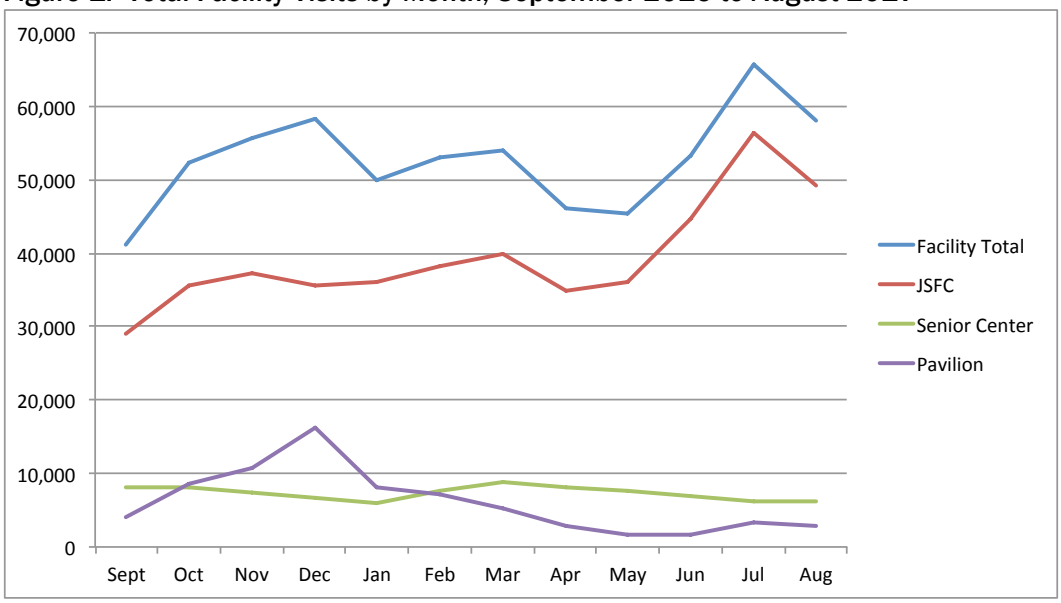
[4] Phillips, D., C. Burdick, B. Merja, and N. Brown. 2012. Assessment of ecosystem services provided by urban trees: public lands within the urban growth boundary of Corvallis, Oregon. U.S. Environmental Protection Agency, Corvallis, Oregon, USA.

[5] The Trust for Public Land's Center for City Park Excellence, "*The Economic Benefits of Denver's Park and Recreation System,*" City and County Denver, July 2010, available at: http://cloud.tpl.org/pubs/ccpe-denver-park-value-report.pdf.

[6] Citizen Survey for the Bend Park and Recreation District. 2011. Presentation. October.

[7] 2017 Community Survey for Facility Use, Bend Park and Recreation District.

Figure 1: Total Facility Visits by Month, September 2016 to August 2017



Source: BPRD.

Figure 1 shows monthly visits by facility for September 2016 through August 2017, the most recent completed year on the District seasonal calendar. While various programs operate across all facilities, JSFC is dominated by pool and fitness activities, fitness and social activities are the leading activities for the Senior Center, and ice-skating related activities are the primary generator for Pavilion attendance. JSFC is responsible for the majority of all monthly visits year-round, and its highest visitation numbers are during the summer when recreation swim visits soar, driving July as the month with the highest total District facility visitation. December just barely edges out August for the month with the second most total facility visits, driven by the Pavilion's peak visitation numbers due to holiday ice skating.

Table 1. Total Seasonal Facility Visits, 2016-2017

Facility	Fall	Winter/Spring	Summer	Year Total
JSFC	137,483	185,006	150,081	**472,570**
Senior Center	30,405	37,977	19,368	**87,750**
Pavilion	39,471	25,287	7,683	**72,441**
Seasonal Total	**207,359**	**248,270**	**177,132**	**632,761**

Source: BPRD. Note: Fall includes Sept-Dec, Winter/Spring includes Jan-May, and Summer includes June-Aug.

Total counted visits for the 12-month period were 632,761 across the three facilities (Table 1). JSFC hosted 472,570, the Senior Center 87,750, and the Pavilion 72,441 of counted visits. These visitation numbers are underestimated by approximately 5% as several activities and user groups bypass the check-in or registration process and are therefore not included in the visitation numbers. Spectators are also not included in these visitation numbers. Spectators can range from family members observing children in activities to spectators watching swim meets

and hockey contests. If included, these would account for tens of thousands of additional facility visits.

Each of the three facilities has a primary category of use, namely swimming at JSFC, ice-skating at the Pavilion, and recreation/wellness at the Senior Center. The breakdown for each facility in terms of total visits is:

- **JSFC: 60% swimming – 40% non-swimming**
- **Pavilion: 83% ice-based – 17% non-ice**
- **Senior Center: 90% recreation/wellness – 10% social activities**

Other Organized Programs

In addition to facility visits, the District operates programs at other sites including schools, parks, and the recently re-opened Art Station (formerly a non-profit run facility). Programs include sports leagues and camps for youth and adults, art classes for youth and adults, , youth activity and enrichment programs including before and after school, outdoor programs including camps and guided trips, and therapeutic recreation programs for youth and adults with disabilities. Organized sport programs, dominated by team sports are the largest category, followed by youth recreation programs which include before and after school programs of high importance for working families (Table 2). In total, the District sees over a million facility and program visits annually, with 59 percent at one of the three primary facilities and 41 percent at other sites.

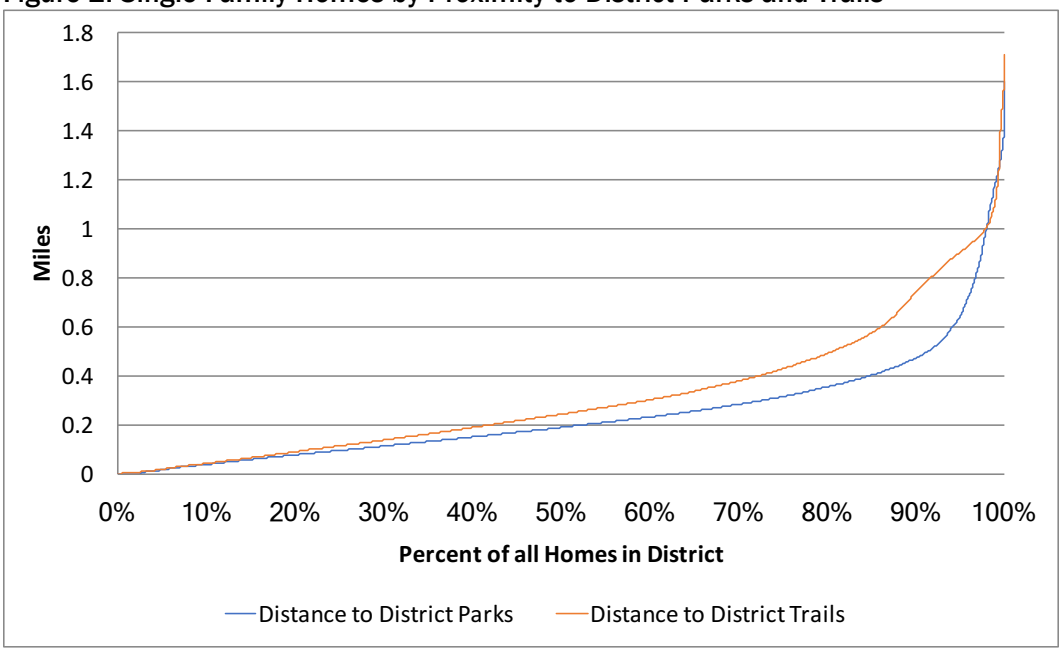
Table 2. Total Facility and Program Visit Count

Division	Total Visits
Juniper Swim & Fitness Center	472,570
Sports	219,433
Youth Recreation	194,946
Bend Senior Center	87,750
Pavilion	72,441
Youth Enrichment	10,088
Outdoor	5,062
Therapeutic Recreation	4,320
Art Station	2,943
Total	**1,069,553**

Source: BPRD. Note: Visits from 2016-2017 season for all categories but Sports (2015-2016), Youth Recreation (2015-2016) and Art Station (incomplete 2016-2017 opening in Oct 2016 and full programming beginning in Jan 2017).

2.1.2 District Parks and Trails

Figure 2. Single Family Homes by Proximity to District Parks and Trails



Source: Parcel data from PropertyRadar.

The District oversees and manages 2,712 acres of parks, recreation land, and natural areas as well as 65 miles of trails.[8] Parks and trails are a weekly to daily aspect of life for most residents. A 2017 survey of residents by the District found that 85 percent of households reported that they use soft-surface trails, and 85 percent reported that they use hard-surface trails[9]. According to the survey results and corroborated by state recreation survey data described later, trails are the District resource utilized by the largest share of residents. The Statewide Comprehensive Outdoor Recreation Plan (SCORP) survey found Oregonians put the highest outdoor recreation priority for the future on increased dirt/soft trail development[10]. After trails, riverfront parks and natural area parks were the next most widely used resources across all resident households.

The District's parks and trails are widely distributed across its region, providing opportunities close to most homes. The chart in Figure 2 shows the distance of single-family home parcels within the District area to the nearest park and trail. Roughly half of all homes are within a quarter mile of a District trail, and similarly more than half of homes are within a quarter mile of a District park. Nearly all homes are within a mile of a park and a trail.

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[8] BPRD. 2017. Park Inventory – 2017 SDC Update. More recent additions not included.

[9] Community Needs Survey for the Bend Park and Recreation District. 2017.

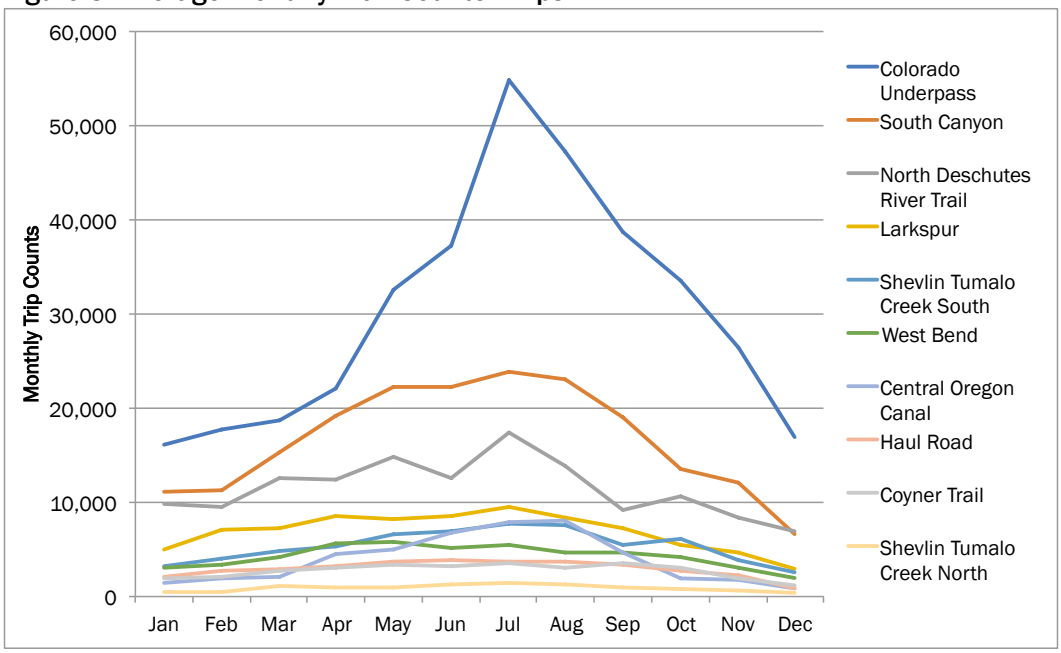
[10] Randall Rosenberger and Kreg Lindberg, "*Oregon Resident Outdoor Recreation Demand Analysis*," Oregon State University, November 12, 2012, available at: http://www.oregon.gov/oprd/PLANS/docs/scorp/2013-2018_SCORP/Demand_Analysis.pdf.

District Trail Data

District trails range substantially in annual traffic. Trail counters throughout the District trail network have collected data since 2012, including continuously for eight major trails beginning in the summer of 2014. The trails with counters, listed in Figure 3, collectively connect to most of the District's trails and geographically span much of the District's region. Trails along the Deschutes River are the most popular by far, with the highest counts recorded at the Colorado Avenue Underpass adjacent to the Whitewater Park, followed by the South Canyon Trail along the Deschutes River south of Reed Market Road, and third on the Deschutes River Trail at First Street Rapids. Count data also starkly show the seasonal pattern across all trails of high summer usage and low winter usage. In total based on these trip counter data we estimate the District's trails to experience over 1 million annual trips (Table 3). Limited trail counter data exist for other trails, particularly in heavily used areas within the urban corridor. These counts give a sense of use levels for some specific parks. For example, the Farewell Bend footbridge connecting Farewell Bend Park and Riverbend Park (between the Old Mill District and Bill Healy Bridge) and the Drake Park footbridge connecting Drake Park to Harmon Park each experience several hundred thousand users annually.

While some trips might be double-counted by trail counters, these trails can also be accessed at other points that would not be counted. Furthermore, the District supports many trails that are not represented in these counts, including valuable trails along the Deschutes River near downtown such as in Drake Park. Collectively, the trails represented here with counters total 32.2 miles, just under half of the District's total trail inventory.

Figure 3: Average Monthly Trail Counter Trips



Source: BPRD staff and Trafx.net. Note: Data represent average of 2014-2016 data except for Colorado Underpass. Colorado Underpass data available only for February through September 2017 with other months based on average pattern in trail usage (with respect to months with data) across all other trails for those months.

Table 3. Average Annual Trail Counter Trips

Trail	Annual Trip Counts
Colorado Underpass	362,324
South Canyon	199,854
North Deschutes River Trail	138,339
Larkspur	83,034
Shevlin Tumalo Creek South	64,418
West Bend	51,335
Central Oregon Canal	46,900
Coyner Trail	35,134
Haul Road	32,731
Shevlin Tumalo Creek North	10,779
Total	**1,024,847**

Source: BPRD Staff and Trafx.net. See notes on data sources from preceding figure.

Deschutes River Access - Floating and Paddling

The trail miles described above do not include floating on the Deschutes River (Paddle Trail). Kayaking, paddleboarding, and tubing are all popular along the Deschutes River through town, and with the completion of the Bend Whitewater Park, no portage is necessary for the well used trip from Riverbend Park to Drake Park. A counter on the Floater Channel of the Bend Whitewater Park recorded 181,169 trips in September 2016 and May through August 2017, and an additional 58,939 trips on the Portage Path for the same period, which allows floaters to bypass the Bend Whitewater Park. These counts sum to 240,107 trips. These counts do not capture trips during other months of the year, nor do they capture paddlers and surfers using the center whitewater channel. Furthermore, these trip counts do not include float trips that do not pass Colorado Avenue. Many paddlers seeking a flatwater experience stay upstream or downstream of the Bend Whitewater Park. Paddleboarders for example often access the river at Riverbend Park paddle upstream and back, going uncounted. Users starting their trips at the downstream end of the Bend Whitewater Park or in Drake Park, possibly taking out at Brooks Park near Newport Avenue also are not counted in this estimate.

Users of the whitewater channel for kayaking, surfing, whitewater paddleboarding and bodyboarding go uncounted in these estimates as mentioned. While nowhere near the number of users of the floater channel, the surf and kayak features are destinations for dedicated enthusiasts. The users of the whitewater features are a strong spectator attraction; the footbridge above the park is frequently busy with viewers on weekends and summer days. Comprehensive usage estimates do not yet exist for the whitewater channel. ECONorthwest did conduct a full review of use data for other whitewater parks as part of a feasibility study for the proposed whitewater park at Willamette Falls. Based on that analysis of available user data and interviews with managers for other whitewater parks with a longer tenure, we estimated 17,000 to 33,000 annual user visits for a park of the Bend Whitewater Park's scale, and 27,000 to 53,000 spectators[11]. Board surfing has become particularly popular, with surfers using the Green Wave

[11] ECONorthwest. 2015. Willamette Falls Whitewater Park: a Prospective Analysis.

in the Bend Whitewater Park nearly all daylight hours of surfable conditions. Such inland surf opportunities are particularly scarce and valuable as demonstrated by popularity and use levels.

In addition to the Bend Whitewater Park and flatwater sections of the Deschutes River within the central portion of Bend, the Deschutes River offers whitewater sections year around that rely upon District access points at riverfront parks. While difficult to fully estimate the number of whitewater boaters and trips among Bend residents, the Bend Whitewater Facebook Group has 1,100 members. Also, given the reliable nature of the river's volume due to irrigation-based releases upstream, Bend often has the best whitewater options in the state during late summer and early fall, attracting visitors from throughout the Northwest and beyond. Considering the number of whitewater paddlers in the area, amount of activity reported online, SCORP participation rates, and paddling seasons, a conservative estimate would be several thousand whitewater trips annually facilitated by the District's river access within Bend. Such reliable whitewater access near an urban corridor is rare.

Beyond the Bend Whitewater Park, the District provides over 20 riverfront parks and river access points. Other access to the river is limited to private land. Collectively the District's river access options provide Bend residents with a unique, year around set of flatwater and whitewater opportunities on the Deschutes River, arguably the defining natural amenity of Bend. Collectively including trails along the river, riverfront parks and river launches, it is difficult to fully capture the economic importance of the access to the Deschutes River supported by the District.

2.1.3 Overall Resident Outdoor Recreation Activity

Oregon Parks and Recreation Department surveys residents on their outdoor recreation activity as part of the SCORP[12]. We can estimate participation rates for District residents by isolating those responses from District zip codes. Many of the activities in the survey are provided by the District, and some survey questions specify local participation. For some activities it is difficult to completely isolate the extent exclusively attributable to District resources, but focusing on those activities where the District is the primary local provider provides a basis. Also, the most recent SCORP data include 85 Bend resident respondents, a low enough number that the results shouldn't be interpreted as a statistically significant representation, but rather a snapshot of participation rates. County-level data are more reliable, of which Bend residents represent half of the respondents.

Table 4 shows some of the SCORP-reported activities that the District provides, with comparisons of participation rates of Bend residents to other Deschutes County residents and to

[12] Randall Rosenberger and Kreg Lindberg, "*Oregon Resident Outdoor Recreation Demand Analysis*," Oregon State University, November 12, 2012, available at: http://www.oregon.gov/oprd/PLANS/docs/scorp/2013-2018_SCORP/Demand_Analysis.pdf.

the state as a whole. This information can be interpreted as the share of each population group that participates at least once annually in each activity. For example, 76 percent of Bend residents walk on trails at least once annually. The table also shows the percent of the Bend resident participation for each activity that was reported to take place locally meaning within Deschutes County (although not necessarily within the District). For the trail and path based activities, Bend resident participation rates are above the state average and that of other Deschutes County residents. The vast majority of resident activity in these categories does fall within the boundaries of Deschutes County.

Deschutes County residents have the highest rate of participation for non-motorized water activities of any county in Oregon. They also have the highest rate of participation across the state for organized outdoor recreation programs. Similarly, Deschutes County residents have the second highest participation rate for non-motorized trail activities, behind only Baker County and tied with Hood River County.

SCORP also tracks where recreation takes place for all residents within the state. 13 percent of all non-motorized statewide flatwater recreation takes place in Deschutes County, and 41 percent of all whitewater recreation. Whitewater recreation in Deschutes County is the most concentrated activity by all state residents in one county across all forms of recreation analyzed in SCORP. And these data were collected prior to opening of the Bend Whitewater Park. 28 percent of respondents to the 2017 Community Needs Survey reported use of the Whitewater Park. Clearly Deschutes County has a strong comparative advantage in whitewater recreation, and the Bend Whitewater Park is an important investment in capitalizing on that resource and improving access to the sport for residents.

Table 4: Bend Resident Outdoor Activity Participation Rates and Percentage of Participation in Deschutes County

Activity	Level of participation			Share of Bend Resident Participation Occurring in Deschutes County
	Statewide Average	Deschutes County	Bend Average	
Local trail walking	61%	70%	76%	100%
Trail/path running	15%	20%	26%	95%
Trail biking	12%	25%	29%	97%
Biking, paved path	25%	31%	32%	94%
Picnicking	50%	53%	42%	94%
Playground use	48%	34%	32%	100%
Dog walking/parks	30%	41%	43%	98%
Flatwater paddling/floating	12%	32%	34%	98%
Whitewater paddling	13%	14%	17%	97%
Fishing from shore	17%	19%	23%	95%
Fly fishing	6%	13%	21%	94%
Outdoor concerts, fairs, and festivals	52%	60%	67%	100%
Baseball/softball	9%	7%	5%	99%
Soccer and other field games	10%	9%	9%	99%
Tennis	9%	11%	11%	98%
Other court games	11%	6%	7%	88%
Skateboarding	4%	9%	6%	98%
Orienteering	5%	9%	9%	78%

Source: Oregon SCORP 2011 and ECONorthwest analysis of SCORP survey data.
Note: SCORP results do not refine the location of activity participation lower than the county level. Resident participation in Deschutes County represents activity that occurs within the boundaries of Deschutes County.

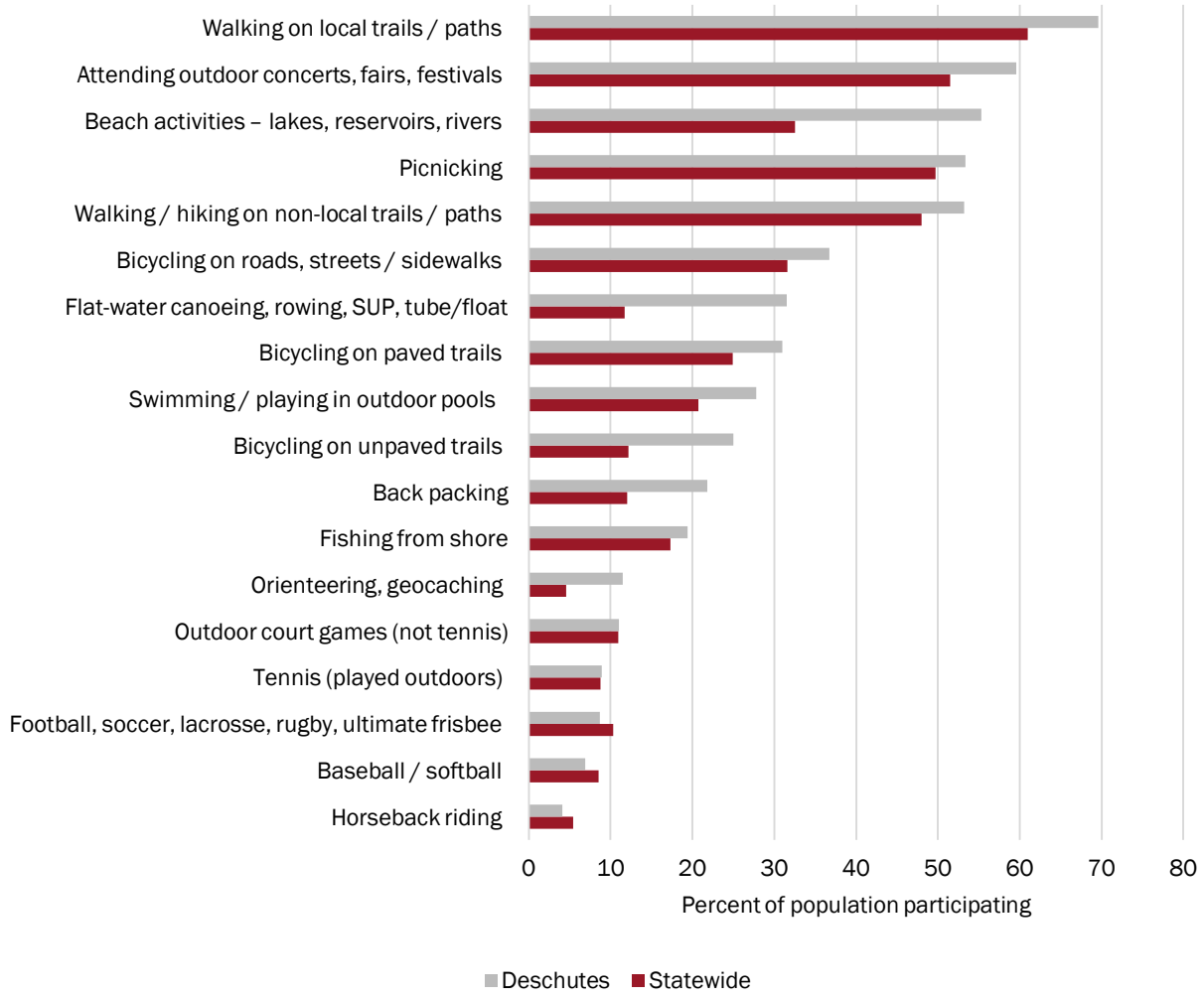
A sample of activities included in the SCORP survey show how Deschutes County and Bend residents in particular compare to state averages for participation rates (Table 4). Trails are one of the most important outdoor recreation resources statewide, and even more so in Bend. Outdoor events are also important to a majority of Bend residents. Across all of these activities, nearly all activity for Bend residents occurs locally.

Residents and visitors have local recreational opportunities on other jurisdictions' facilities. For instance, residents can engage in walking or running on trails at nearby State Parks, Bureau of Land Management and U.S. Forest Service lands. In general, though, the District's offerings are closer to home for residents, with the exception of those living near Pilot Butte State Park where both the District and State Parks offer recreational opportunities.

As with floating, weather shapes the availability of the other District activities. For instance, cold temperatures stop most people from participating in floating the Deschutes River in the winter. Both winter and summer, though, bring residents chances to recreate in District

facilities. A comparison of statewide and Deschutes County participation rates serve as a foundation for understanding how the District enables its constituency to recreate frequently and in an array of activities.

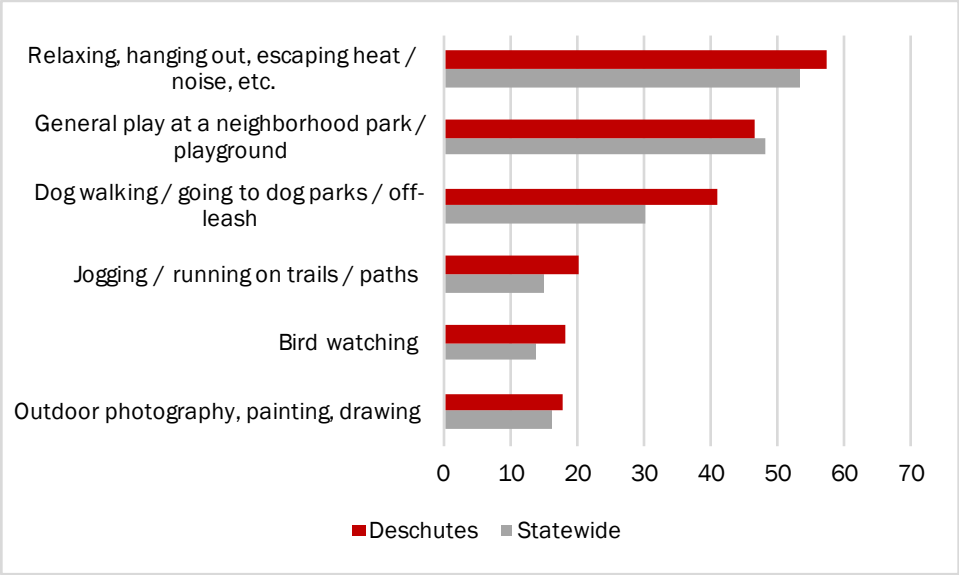
Figure 4: Summer Activity Population Participation Rates, Statewide vs. Deschutes County Residents



Source: 2011 Oregon SCORP report.

Deschutes County residents, in the case of most summer activities offered by the District, recreate at a higher rate than Oregon residents (Figure 4). For example, County residents are particularly more inclined to walk on local paths (7 percent more), attend concerts, fairs, and, festivals (8.1 percent), and paddle/float on flatwater (19.8 percent more). The District has a role in facilitating each of these three activities within District limits. These participation rates generally align with the percent of Bend residents who reported needs for similar activities in the District's 2017 Community Needs Survey.

Figure 5: Year-Round Activity Population Participation Rates, Statewide vs. Deschutes County Residents



Source: 2011 Oregon SCORP report.

For general recreation activities less dependent on specific natural resource amenities such as trails and water, Deschutes County participation rates are more similar to statewide averages (Figure 5). General outdoor relaxation and use of playgrounds are important to about half the population at the state and county levels.

2.1.4 Participation in District-Hosted Events

The District hosts and provides areas for others to host festivals, races, outdoor concerts, tournaments, and other competitive and community events throughout the year. While these events attract tourists, residents enjoy easy access as well and are often the target audience. Major events generally rely on high participation numbers to justify the investments in resources, necessitating participation of both residents and visitors in some cases for financial feasibility. Based on events with available participant numbers, in 2016 almost 130,000 people attended events on District property (Table 5).

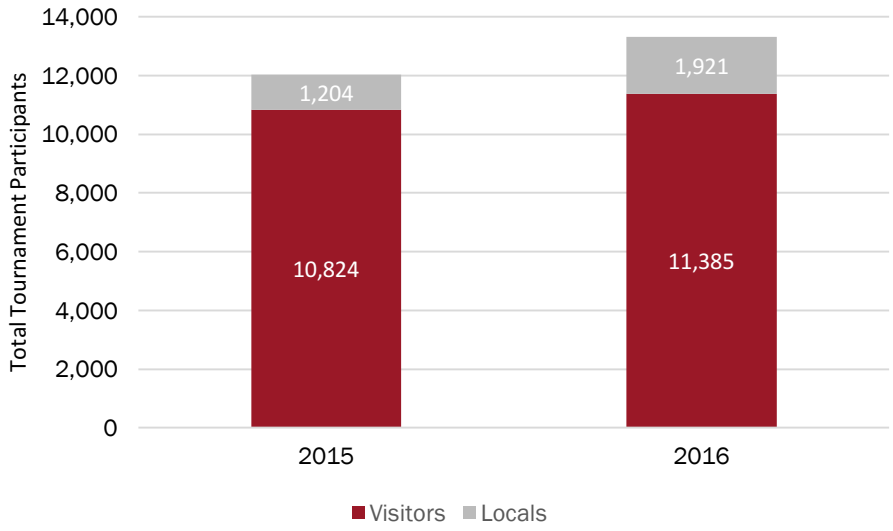
Table 5: 2016 Attendance at Events on District Sites

Event Type	Number of Total Participants
Runs/Walks	51,960
Community/Holiday Events	35,360
Art/Entertainment Events	24,741
Other Recreation Competitions	14,399
Child Events/Camps	2,411
Religious Events	850
Total	129,720

Source: BPRD.

At least 90 events selected a District site as their venue in 2016. Runs and walks drew the most with nearly 52,000 participants; this tally does not include spectators. Bend Memorial Clinic's Munch & Music Series in Drake Park accounted for 21,000 of the art/entertainment event aggregate attendance figure. Other large events in terms of participants include: July 4th Festival (~20,000), Flashback Cruz (~4,500), Pole Pedal Paddle (~4,000) and the Bend Marathon (~2,500).

Figure 6. BPRD-Supported Tournaments, 2015 & 2016



Source: BPRD.

Numerous sports tournaments are held on District property throughout the year. These include baseball, lacrosse, rugby, soccer, softball, swimming, tennis and ultimate Frisbee. Visitors make up the vast majority of tournament participants (Figure 6). Recent years have seen 12,000 to 14,000 total participants for tournaments. These participant counts do not include spectators who, when from outside of the region, can have a positive economic impact via trip spending. Visiting participants are often responsible for spectators, particularly for youth events.

2.1.5 Total Outdoor Recreation Trips

To estimate the economic value to participants, and the economic impact of participant spending, it is necessary to estimate the total number of trips. In this context a trip is any outing, whether to a trail, park, facility, event, or similar. Where possible, these estimates rely upon use of the District's own data collected for activities at facilities, events, on trails, and on the Deschutes River. Where necessary this information is augmented with SCORP survey data for activities where the District is the primary provider, and there are sufficient Deschutes County and City of Bend respondents to make reasonable estimates.

In general any error in District data sources would be in terms of underestimates, as not all users of facilities, trails, the Deschutes River, and events are counted. SCORP data report standard error percentages at the county level of 3.0 percent on average, meaning that at a 95 percent confidence interval, the actual number should be within a range up to 3 percent higher or lower. This analysis only uses SCORP estimates for Bend when they are reasonably close to the estimates for the county as a whole. To be conservative, the number of trips per participant is based on the SCORP statewide averages, even though the participation rates are generally higher among the sub-sample of Bend residents.

Using participation rates for the resident population identified in Table 4, statewide annual trip averages by activity, and the certified 2016 City of Bend population estimate from Portland State University's Population Research Center, we estimate the annual number of resident trips for outdoor activities for which the District is the primary provider of local opportunities (Table 6). Trail and park-based activities dominate the list. This calculation, which does not include every activity potentially using District resources, estimates nearly 13 million annual resident trips (participation counts). This does not include many other activities that would in part involve District resources including bird and wildlife watching, outdoor photography, nature observation, outdoor relaxation, and outdoor swimming in natural bodies of water. Note that pool swimming is not included because it is already counted under JSFC activity. Also note that some of these activities should not be summed with program activity counts from Table 2 in order to avoid double counting.

Table 6: Estimated Bend-Resident Total Annual Trips for Relevant Outdoor Activities

Activity	Bend Resident Participants	Statewide Annual Trips per Participant	Total Annual Resident Trips
Local trail walking	63,460	50.9	3,230,114
Trail/path running	21,710	45.5	987,805
Trail biking	24,147	26.1	630,227
Biking, paved path	26,645	40.6	1,081,769
Picnicking	35,070	10.4	364,728
Playground use	26,645	33.5	892,593
Dog walking/parks	35,804	102	3,651,969
Flatwater paddling/floating	28,390	10	283,900
Whitewater paddling	14,195	5.8	82,331
Fishing from shore	19,205	14.2	272,711
Fly fishing	17,535	13.8	241,983
Outdoor concerts,fairs, and festivals	55,945	5.4	302,103
Baseball/softball	4,175	23.1	96,443
Soccer and other field games	7,515	26.9	202,154
Tennis	9,185	11.3	103,791
Other court games	5,828	21.7	126,478
Skateboarding	5,010	27.7	138,777
Orienteering	7,494	15.1	113,156
Total			**12,803,031**

Source: Based on 2016 certified Bend population estimate of 83,500, and SCORP data described in text.

2.1.6 Future Demand and Supply of Outdoor Recreation

The District strives to provide all Bend residents access to outdoor recreation activities. Correspondingly, the District set goals for specific Levels of Service (LOS) as defined by the ratio of parks, trails, and natural areas to the District population. In 2012, the District defined those goals as: 1.5 acres of neighborhood parks, 5 acres of community parks, 10 acres of regional parks, and 1 mile of trail all per 1,000 residents.[13, 14] As of early 2017, the District had met three of their four goals: there were 1.5 acres/1000 residents of neighborhood parks, 6.2 acres/1,000 residents of community parks, 12.2 acres/1,000 residents of regional parks, and 0.7 miles of trail/1,000 residents.[15] Future population growth will place the most need on increased trail mileage, given the current level of service is already below goals, followed by neighborhood parks.

[13] "*Parks, Recreation, and Green Spaces: Comprehensive Plan February 2012 Update,*"

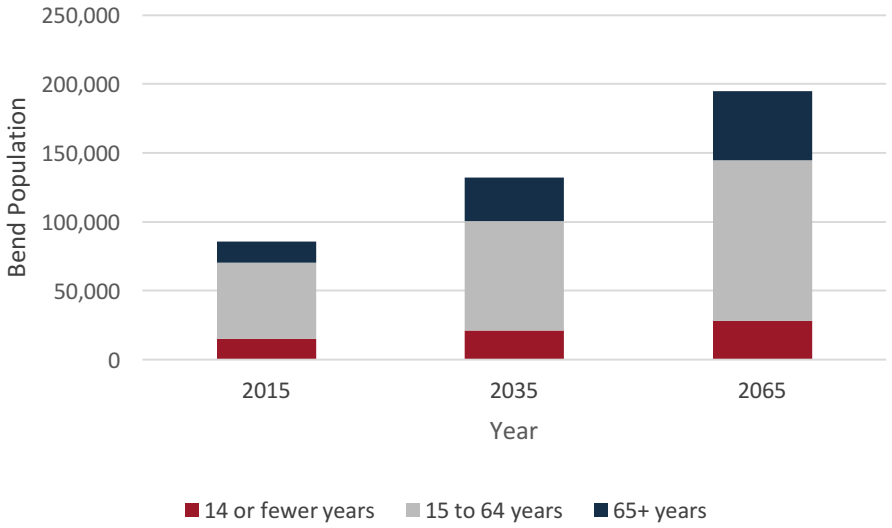
[14] The District defines community parks as those with an influence radius of 1-2 miles; neighborhood parks have an influence of ½ mile.

[15] BPRD Staff data.

The City of Bend's Urban Growth Boundary planning process uses a 2.2 percent annual population growth rate estimate. Given recent trends including expectations of several thousand more residents due solely to growth in the student and staff population with the expansion of the OSU-Cascades campus, Bend's population could grow even faster. At the 2.2 percent growth rate, the required total trail mileage will need to nearly double to 126 miles to maintain the intended level of service. All park categories will need to increase as well , or alternately the community would need to accept a lower level of service from what is provided today.

Since 2004, Bend residents have demanded more accessible District facilities. In 2004, one in five residents said that distance from District facilities prevented them from using District services. By 2011, fewer than one in ten reported that distance was a reason that prevented them from using District facilities.[16]

Figure 7: Forecasted Growth in Bend's Population and Changes in Its Age Demographics Over the Next 50 Years.



Source: Portland State Population Research Center.

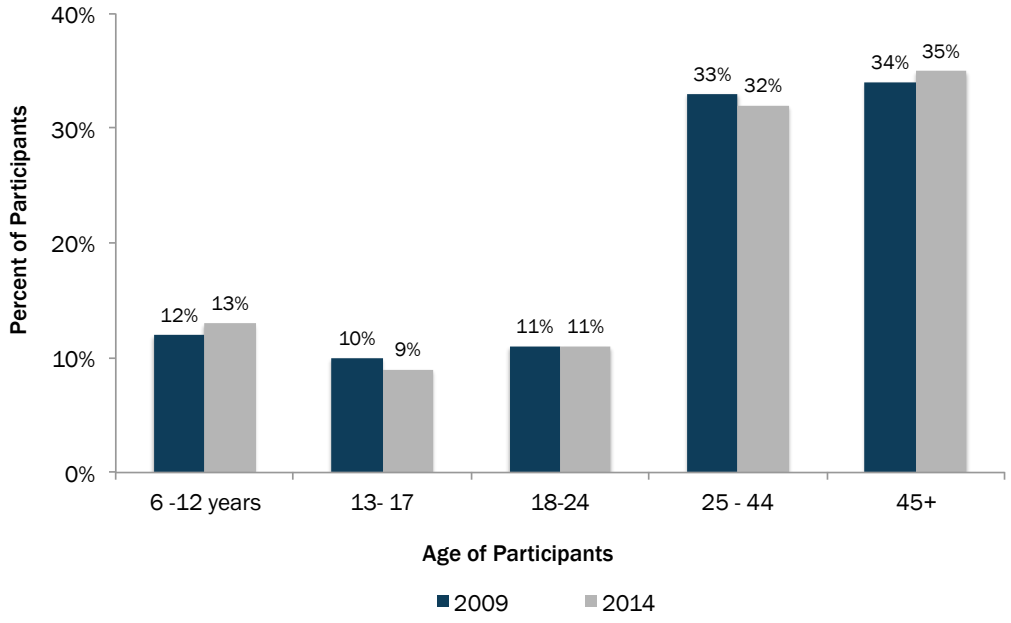
Nationwide, time spent recreating in the outdoors has generally been on an upward trajectory over several decades. Looking back fifty years, the percentage of Americans who regularly go outside for physical activity has increased. From 1965 to 2007, the rate of the US population that actively participated in outdoor recreation on a given day jumped by approximately 10 percent

[16] "*Parks, Recreation, and Green Spaces: Comprehensive Plan February 2012 Update,*" Bend Metro Park and Recreation District, February 5, 2013, available at: http://bendparksandrec.org/wp-content/uploads/2016/03/BPRD-Comp-Plan-2012.pdf.

from 8.9 to 19 percent.[17] Young Americans have dedicated more time to the outdoors as time has passed. As of 2007, Americans under the age of 35 spent three times as much time outside than in 1965. Unsurprisingly, as hours of leisure increase, hours spent outdoors do as well; the same holds true for educational attainment. From these trends, researchers found that "the use of time per capita for outdoor recreation and physically active sports has considerably increased."

More recent national surveys of outdoor recreation participation have shown relatively stable participation rates, with slight declines for 13-17 and 25-44 year olds, with a slight increase for those over 45 (Figure 8). Figure 8 and Figure 9 show the breakdown of all outdoor recreation participants by age and income. There are trends towards more active lifestyles during retirement, although there is concern that younger demographics are recently shifting towards more screen time and away from physical activity, in part contributing to the obesity epidemic (Figure 8).

Figure 8. Outdoor Recreation Participation by Age Nationally, 2009 and 2014

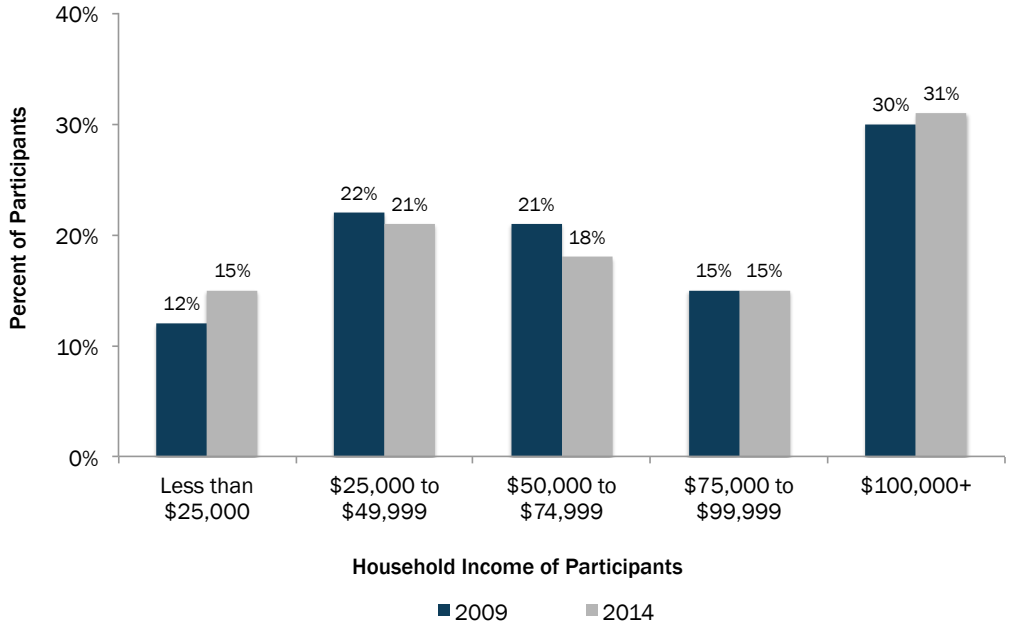


Source: Outdoor Foundation (2010 and 2015). *Outdoor Recreation Participation Report*.

Across income brackets, outdoor recreation participation rates are highest and slightly growing among the wealthiest. Median income households also make up a considerable share of total participation. Outdoor recreation opportunities are needed that appeal across demographics and income levels.

[17] Juha Siikamaki, "*Use of Time for Outdoor Recreation in the United States, 1965-2007*," Resources for the Future, available at: http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-09-18.pdf.

Figure 9. Outdoor Recreation Participation by Income Nationally, 2009 and 2014



Source: Outdoor Foundation (2010 and 2015). *Outdoor Recreation Participation Report*. Current dollars.

Notably, Bend, in comparison to the rest of the state, is home to more educated and more affluent individuals.[18, 19] The city's demographics, combined with residents' high level of outdoor participation, indicate that demand for outdoor opportunities will likely continue to grow. Currently, Bend residents have a favorable opinion of the outdoor recreation opportunities. Nearly a third of residents, as recorded in a community survey, picked the outdoor activities associated with the city as their favorite aspect of living in Bend. Respondents also identified an increasing concern with overcrowded facilities including outdoor opportunities. Nevertheless, on average, surrounded by outdoor opportunities that meet and exceed expectations, residents hold a positive view of the town overall.[20]

Population forecasts envision a more populous, older Bend. By 2028, over 18,500 more residents age 65 or older will reside in Bend.[21] Recreation surveys foretell that older populations prefer

[18] Maes, K. 2015. "*Bendafornia: What's Driving the North California Migration*," November 5, available at: http://www.oregonbusiness.com/article/must-reads/item/15244-bendafornia-what-s-driving-the-northern-california-migration.

[19] Oregonian. 2016. "*Oregon's 10 Smartest Cities*," available at: http://www.oregonlive.com/living/index.ssf/2016/01/lake_oswego_tops_list_of_orego.html#0.

[20] DHM Research. 2015. "*Bend Community Survey*," City of Bend, January, available at: http://www.bendoregon.gov/home/showdocument?id=20387.

[21] ECONorthwest, 2016. "*Housing Needs Analysis*," City of Bend, August 31, available at: https://www.oregon.gov/LCD/docs/planamendments/Bend%202016/Ord.%20Ex%20H_Housing%20Needs%20Analysis%202016.pdf.

walking, picnicking and sightseeing, although those choosing to live in Bend likely are more active than the average. For example, District staff report high participation rates observed in Bend among older groups for pickleball (a court game similar to tennis) and as stated earlier fitness classes are by far the most visited activity at the Bend Senior Center. Economic forecasts suggest older households will on average have lower income levels than average households.[22] If the current older generations are a reliable indicator, an increasing proportion of senior residents will demand outdoor recreation accessibility and proximity in the future. These trends imply that future resources and development will be required to construct and/or expand the trails, picnic areas, and sightseeing facilities.[23] The District may also need to supplement its needs-based assistance funding to account for households unable to cover the full registration and membership fees (although currently older households are not utilizing this resource).

Additional needs-based assistance funds may also help maintain high rates of participation among the youth expected to live in Bend in the coming decades. Past surveys indicate that needs-based assistance funds play a vital role in allowing for greater recreation. Ten percent more residents in 2011 indicated that District fees at least partially limited their use of facilities, when compared to 2004.[24] Over 7,000 more millennials will call Bend home in 2028. On average, these individuals will have lower incomes.[25] Current recreation trends among millennials show that these future residents will demand facilities that enable walking, running, and socializing with others in the outdoors.[26] When people visit recreation facilities and parks the most important reasons reported in national surveys include to spend time with family and friends, to be close to nature, and for physical exercise, with large numbers also reporting interest in excitement and adventure, as well as to learn a new skill or craft.[27] These sources do not fully capture priorities for indoor recreation, although participation rates at District facilities continue to show the importance of swimming, fitness and organized programs.

Walking, bicycling, jogging, bird watching, and day hiking participation rates are expected to increase among Oregonians.[28] To accommodate this predicted increase in demand, the District

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[22] ECONorthwest, "*Housing Needs Analysis*," City of Bend, August 31, 2016, available at: https://www.oregon.gov/LCD/docs/planamendments/Bend%202016/Ord.%20Ex%20H_Housing%20Needs%20Analysis%202016.pdf.

[23] Oregon Parks and Recreation Department, "*Statewide Comprehensive Outdoor Recreation Plan 2013-2017,"* State of Oregon, available at: http://library.state.or.us/repository/2013/201311041434231/2013-2017SCORP.pdf.

[24] "*Parks, Recreation, and Green Spaces: Comprehensive Plan February 2012 Update,*" Bend Park and Recreation District, February 5, 2013, available at: http://bendparksandrec.org/wp-content/uploads/2016/03/BPRD-Comp-Plan-2012.pdf.

[25] ECONorthwest, "*Housing Needs Analysis*," City of Bend, August 31, 2016, available at: https://www.oregon.gov/LCD/docs/planamendments/Bend%202016/Ord.%20Ex%20H_Housing%20Needs%20Analysis%202016.pdf.

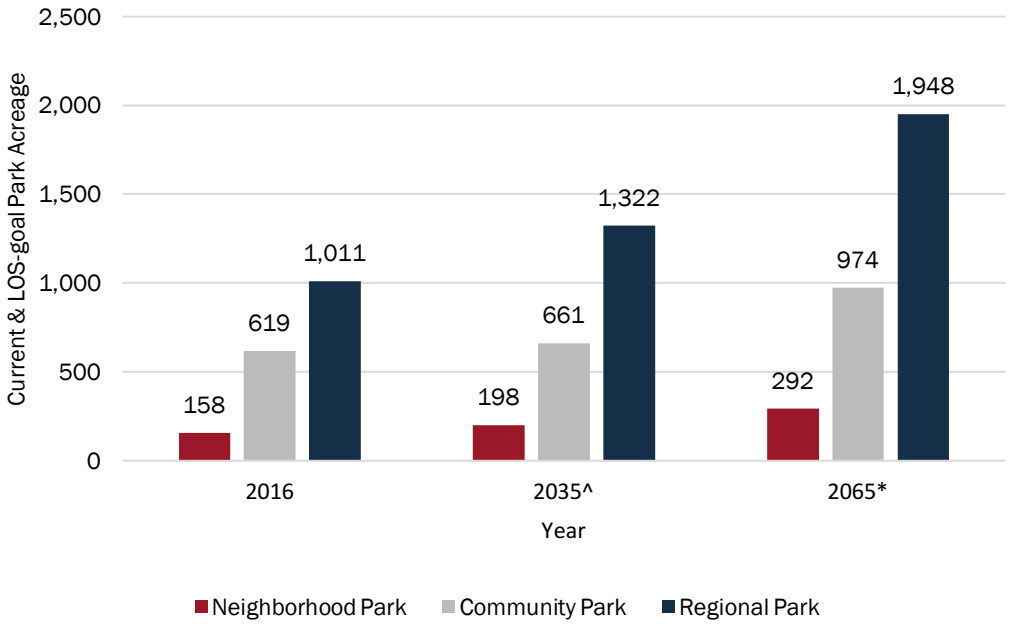
[26] OPRD Ibid.

[27] National Parks and Recreation Association. 2017. 2017 NRPA American's Engagement With Parks Survey. http://www.nrpa.org/contentassets/257fe28053c6420786927fcffc2f9996/engagement-survey-report-2017.pdf.

[28] OPRD Ibid.

may have to reconsider its LOS goals to reflect even greater usage and a higher demand for outdoor recreation near one's home. Reaching the current standards in 2065 obligates the District to maintain a total of nearly 2,000 acres of regional park, 974 acres of community park, and almost 300 acres of neighborhood park across the city (Figure 10). Similarly, 2065 population estimates would require four times the current trail mileage maintained by the District.

Figure 10. Current Acreages by Park Type and Future Requirements to Maintain Level of Service



^2035 & *2065 population based on Portland State University Population Research Center estimates.

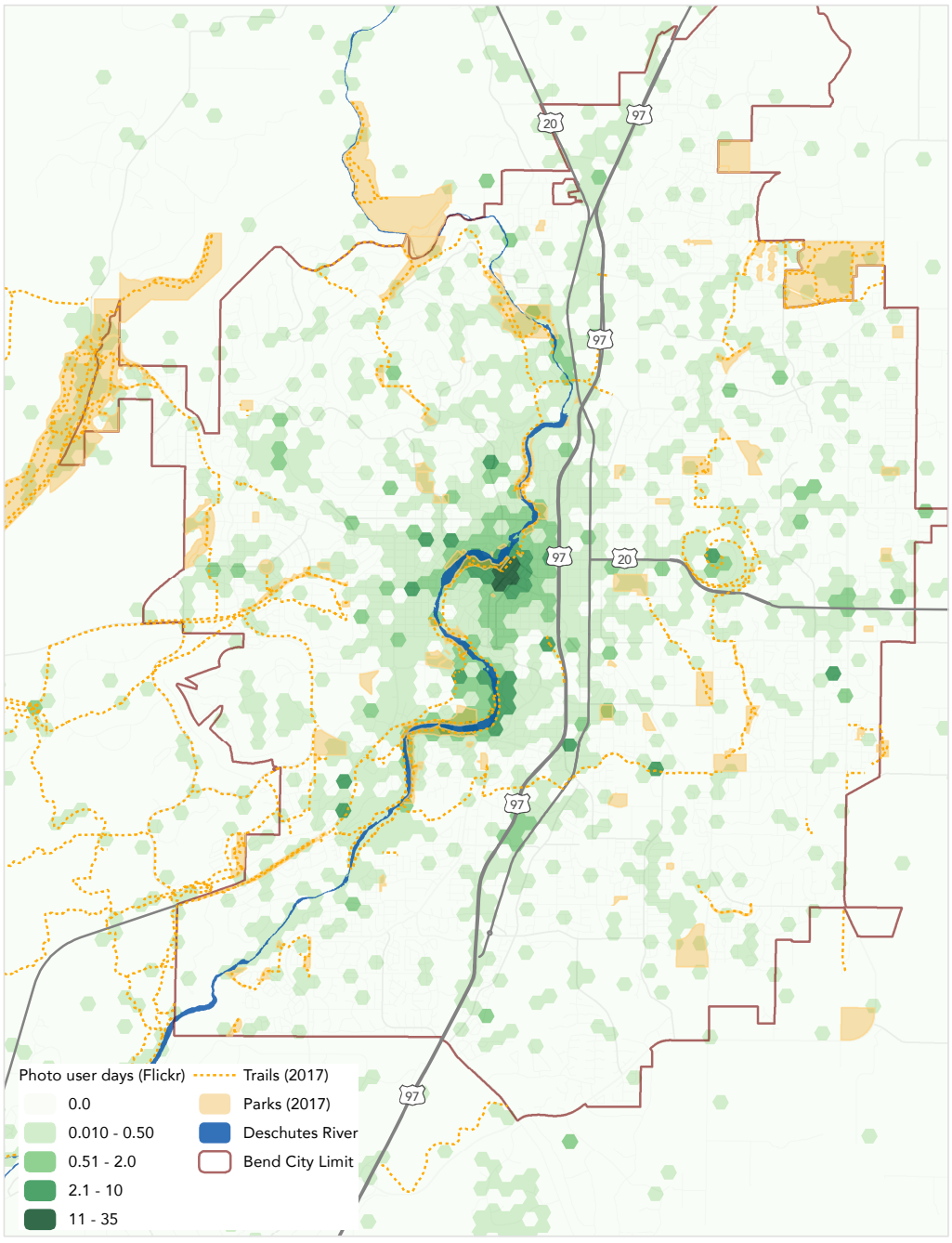
Residents have already made clear that they support an increase in supply. In 2008, 2011 and 2017 over 80 percent of respondents to a District survey revealed their support for new trails. Nearly 70 percent of respondents in all three years likewise supported purchasing new land for future recreational opportunities.[29]

2.1.7 Flickr Data and Demand

Trails in particular, and parks as well, are made more desirable by proximity to naturally beautiful areas. Trails along the Deschutes River and Tumalo Creek see high use levels because of the scenic amenities they access. Photo user days are a way to compare visitation levels across sites based on the number of visitors who took pictures at any particular spot.

[29] 2008, 2011 and 2017 Bend Park and Recreation District Community Needs Surveys.

Figure 11: Distribution of Flickr Photos in the Bend Vicinity



Source: ECONorthwest analysis of Flickr data. Scale shows number of Flickr recorded photo user days per cell from 2005 to 2014.

The photo sharing service Flickr has made the location data for uploaded photos available in aggregate. The Natural Capital Project has developed a tool called InVEST that allows access to

use Flickr data for spatial analysis[30]. The Flickr data show a count of photo user days, which represents one unique photographer per cell per day. The map in Figure 11 shows how many unique photo user days were recorded for each cell between 2005 and 2014. Looking at hot spots for photo taking in Bend helps further understand where people go to recreate. These Flickr data have been used to reliably estimate outdoor recreation use patterns and levels[31]. While not all photos are associated with recreation, there are likely certain strong correlations between specific locations that experience high rates of photos and actual visitation. The darkest hexagons in Figure 11 convey the highest rate of photo uploading to Flickr.

Within city limits, the highest density of darker hexagons occurs along the Deschutes River. The Flickr data shows that rates of photo-sharing dissipate as one moves further from the river. Pockets of photo-sharing line District trails and occur at parks.

2.2 Monetary Value of User Benefits

The standard methodology for estimating the value of recreation activity is to apply an average trip value to the number of trips that occur. Economists focus on the net benefits of a trip, the value after costs, known as consumer surplus. Oregon State University economists maintain a database of all identifiable studies with recreation trip values, to facilitate application of appropriate values[32]. These consumer surplus values, once adjusted for the typical amount of time spent on an activity (hours per day) and multiplied by the number of total participants in that same activity, represent the benefit derived by participants and/or spectators. The per-trip values are considered an average trip value, recognizing that different people experience different levels of benefit, and the same individual can experience varying benefits across trips. Value from recreation can come in many ways; satisfaction, pleasure, fitness, mental health, etc. Later sections of this report discuss some aspects. The concept of value to the participant applied here can include a wide range.

We used the most appropriate recreation trip value from literature and economic guidance for each activity type, scaled for trip length estimates for some activities where the study value and average trip length in the District do not match.

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[30] Sharp, R., Tallis, H.T., Ricketts, T., Guerry, A.D., Wood, S.A., Chaplin-Kramer, R., Nelson, E., Ennaanay, D., Wolny, S., Olwero, N., Vigerstol, K., Pennington, D., Mendoza, G., Aukema, J., Foster, J., Forrest, J., Cameron, D., Arkema, K., Lonsdorf, E., Kennedy, C., Verutes, G., Kim, C.K., Guannel, G., Papenfus, M., Toft, J., Marsik, M., Bernhardt, J., Griffin, R., Glowinski, K., Chaumont, N., Perelman, A., Lacayo, M. Mandle, L., Hamel, P., Vogl, A.L., Rogers, L., Bierbower, W., Denu, D., and Douglass, J. 2016. InVEST +VERSION+ User's Guide. The Natural Capital Project, Stanford University, University of Minnesota, The Nature Conservancy, and World Wildlife Fund.

[31] Wood, S.A., Guerry, A.D., Silver, J.M. and Lacayo, M., 2013. Using social media to quantify nature-based tourism and recreation. *Scientific Reports*, *3*:2976.

[32] College of Forestry, "*Recreation Use Values Database*," Oregon State University, available at: http://recvaluation.forestry.oregonstate.edu/.

Table 7 below, lists the net benefit values associated with District activities for 2016. These analyses result in an estimate of $65 to $95 million in annual net benefit to participants, over 4.8 to 6.6 million total trips or participation-days per year (2016 population). All counts of trips (or participation-days) are based on District data except for trail usage, sports, and other park activities. The range of values for trail usage is based on a calculation using District trail counter data and a calculation using SCORP data. Sports and programs are shown as a range involving program participation counts and SCORP data. Other park activity is based on SCORP data alone. See the table notes for more detail. For competitive events with spectators and participants from out-of-town, spectator per participant and percentage visitor rates were determined from a literature review of past studies of similar events.[33]

The trip values are based on recommended per-trip consumer surplus estimates for recreation activities based on a meta-analysis (review of all available studies) from the Pacific Northwest commissioned by the U.S. Forest Service (USFS)[34]. The trip values in the study represent the net benefit to the participant of the typical amount of a given activity one would participate during one day. All values are converted to 2016 dollars using the consumer price index. Applying a general recreation trip value of $41 to events, we assume competitive events and camps count as a full trip for each participant (full trip value) while non-competitive events and spectators generally count as a half trip experience assuming these close-to-home trips are generally shorter in length (half the trip value). Floating trips use a trip value of $18 (half of the full trip value of the floating trip value from the USFS study). We assume District trail trips are half the trip length and value from the USFS study for hiking, resulting in a per-trip value of $15. For facility trips we assume trips are half the typical general recreation trip duration and associated net benefit ($20). For outdoor sports we assume each trip represents a half trip, and other park activity as a quarter trip in terms of value. This low trip value assumption for park activity assumes frequent and short park trips.

Again these trip values represent averages, so that half of trips are of greater value and half are of less value. Benefits to participants will vary across individuals and even across trips by the same individual to the same site. For comparison, these cited federal sources for recreation trip value estimates have several categories of activity for which the individual day trip value is greater than $100, in some cases substantially greater. To the extent that the close-to-home experience is more satisfying or is equivalent to a full representative trip value (as opposed to a

[33] An examination of running events of various distances and in a multitude of small and large communities found a spectator per participant ratio of 0.75 and visitor percentage of 25 percent as conservative estimates when evaluating the types of events held on BPRD property; these events ranged from runs/walks organized by charities to community festivals and holiday gatherings. The total attendees at an event was reached by multiplying BPRD-provided participation rates by the estimated ratio of spectators, then adding the predicted spectator count to the reported number of participants. Visitor attendance was calculated by multiplying total attendance by 0.25.

[34] Loomis, J. 2005. Updated outdoor recreation use values on national forests and other public lands. Gen. Tech. Rep. PNW-GTR-658. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, p. 26.

half trip), the total values of each activity category would be closer to double those shown. Furthermore, research continues to identify valuable health and productivity benefits of physical activity, as discussed later in this report.

Table 7. Annual Net Benefits by Activity Involving District Resources (2016 Population; Dollars in Thousands)

Event/Activity	Annual Average Net Benefit ($000s)	Resident Share of Benefit ($000s)	Visitor Share of Benefit ($000s)	Total Trips	Visitor Percentage of Total Participants
Event Runs/Walks	$2,937	$2,202	$734	90,930	25%
Other Recreation Competitions	$814	$610	$203	25,198	25%
Art/Entertainment Events	$508	$381	$127	24,741	25%
Religious Events	$35	$35	$0	850	0%
Community/Holiday Events	$727	$545	$182	35,360	25%
Child Events/Camps	$99	$99	$0	2,411	0%
All Trail Usage	$15,131-$23,346	$11,348-$17,510	$3,783-$5,837	1,581,311	25%
Floating River	$4,689	$3,517	$1,172	265,107	25%
Field/Court Tournaments	$716	$86	$630	22,167	88%
JSFC	$9,712	$8,741	$971	472,570	10%
Senior Center	$1,803	$1,623	$180	87,750	10%
Pavilion	$1,489	$1,340	$149	72,441	10%
Sports & Programs	$8,977-$12,076	$8,079-$10,869	$898-$1,208	436,792-587,628	10%
Other Park	$17,291-$34,581	$15,562-$31,123	$1,729-$3,458	1,682,689-3,365,378	10%
Total	**$65,000-$94,000**	**$54,000-$79,000**	**$11,000-$15,000**	**4,800,000-6,600,000**	

Note all dollar values in thousands of dollars and bottom line totals rounded. Source: All activity trip counts based on District data but for other park, and the upper values for trails and sports. Visitors defined as anyone not residing within the District limits and tax assessment area. Resident and visitor shares based on District data, District staff estimates, and review of literature. Trip values based on trip length and net benefit as described in the text. All cross calculations might not sum due to rounding for summary results.

[a] Trail usage estimate based on total District trail traffic estimate as described earlier in the report on low end. On the upper end, estimate is based on summing resident trail trips for trail walking, trail running, trail biking, and path biking, assuming half of the activity occurs on District trails, and that the resident trips represent 75% of all trial trips.

[b] Floating River includes estimates of those using the Whitewater Park's Whitewater Channel (middle of range from text), Passageway Channel, and the portage path.

[c] Sports and programs includes District program participation data as a lower bound and SCORP resident data for field sports as an upper bound.

[d] Other park activity includes SCORP resident data for playground use, picnicking, dog park use and dog walking, and skateboarding. Lower bound uses 25% of resident activity in these categories and upper bound is 50% of resident activity.

These per trip or per experience values are also of comparable magnitude to the value of leisure time as calculated for transportation studies. The U.S. Department of Transportation provides guidance to estimate the value of an hour of personal time at 50 percent the median hourly wage for an area.[35] The median hourly wage for Bend as of May 2016 was $21.70.[36] Applying

[35] Belenky, P. 2011. Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis. U.S. Department of Transportation. September 28.

[36] Bureau of Labor Statistics, 2017. Occupational Employment and Wages in Bend-Redmond —May 2016. https://www.bls.gov/regions/west/news-release/occupationalemploymentandwages_bend.htm.

half this value to a range of 1 to 4 hours equates to a range of $11 to $43, a range that covers the range of values calculated above based on recreation studies.

The trip counts likely omit several categories of recreation associated with District resources. It does not include uncounted visits to facilities. These estimates do not include river trips exclusively upstream or downstream of the Whitewater Park, whitewater and flatwater paddling and floating. Spectators and shoreline users of the Bend Whitewater Park are not included for the floating category, as there would be some double counting with trail and park use estimates.

These estimates also do not include several other specific activities including fishing, orienteering, wildlife viewing, photography, rock climbing or other outdoor activities (described earlier as reported in SCORP), but they are likely at least somewhat captured by trail counts. Furthermore, the disparity between trail trip counts and total trail trips by District residents combined with visitor trips suggests that the trail trip estimates could be a substantial underestimate. And the estimates for number of annual trips per participant using the SCORP data are based on statewide annual participation rates, while the data specific to Bend suggests higher local participation rates. But the local-specific SCORP participation rate data are not based on statistically valid sample sizes.

Table 8: Total Trips and Trip Values over 10 and 20 Years, Upper Estimates.

Activity/Event	Ten Year Total Benefit ($000s)	Ten Year Total Trips (000s)	Twenty Year Total Benefit ($000s)	Twenty Year Total Trips (000s)
Event Runs/Walks	$29,137	1,005	$56,157	2,254
Other Recreation Competitions	$8,074	278	$15,562	625
Art/Entertainment Events	$5,045	273	$9,723	613
Religious Events	$347	9	$668	21
Community/Holiday Events	$7,210	391	$13,897	876
Child Events/Camps	$983	27	$1,895	60
All Trail Usage	$231,647	17,474	$446,460	39,196
Floating River	$46,523	2,930	$89,664	6,571
Field/Court Tournaments	$7,103	245	$13,690	549
Juniper	$96,364	5,222	$185,725	11,714
Senior Center	$17,893	970	$34,487	2,175
Pavilion	$14,772	801	$28,470	1,796
Sports and Programs	$119,826	6,494	$230,943	14,566
Other Park	$343,125	37,189	$661,313	83,418
TOTAL	**$930 million**	**73.4 million**	**$1.8 billion**	**165 million**

Source: Analyses described earlier and Portland State University population projections. Dollar values discounted at 3 percent annually.

Table 8 summarizes the trip and participation estimates and values from Table 7 following population projections over the next ten and twenty years for the upper end of the estimates. Future values are discounted at a 3 percent rate annually. These calculations do not include any potential increase in participation rates. Ten years of activity under these calculations would

result in 73 million trips worth $930 million. Over twenty years, these would be 165 million trips presently worth $1.8 billion.

As population in the District increases and if new residents are primarily drawn by the active and outdoor lifestyle, participation rates are likely to increase. This self-selection for active-minded people likely extends to enrollees and staff for the expanding Oregon State University Cascades campus. Officials anticipate that the school will top 1,500 students in the 2017-18 school year. They forecast eleven percent growth in total enrollment over the next decade, which results in an estimated 3,735 students to start the 2025-2026 school year. By that year, officials also predict that approximately 15 percent of the total student population will be from out of state.[37] These students will likely encourage even more tourism to the Bend area as friends and family visit.[38] District trails and paths will likely be important resources for commuting students and staff, which can also benefit others through reduced traffic congestion.

2.3 Health Benefits

Statewide, Oregonians have made clear that they value the benefits of recreation on community desirability, physical health, and reduced crime.[39] Park and recreation services allow residents and visitors to partake in the types of physical activities associated with better health, lower medical costs, and longer lives on a frequent basis. Public agencies and recreation participants accrue savings in the form of reduced medical expenses and workplace absenteeism. The value of health care savings is determined through comparing medical expenses of active and inactive residents in a community.

A study by the Trust for Public Land calculated the annual medical savings of park-using residents that are regularly physically active under the age of 65 years old as $300; the value climbed to $585 in savings for those over the age of 65 given the higher cost of care.[40] Comparable studies have found much higher values.[41] Participation rates for residents in activities supported by the District reach over 76 percent in individual activity categories, and

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[37] Tyler Leeds, "*OSU-Cascades outlines plans for growth*," The Bend Bulletin, September 12, 2015, available at: http://www.bendbulletin.com/localstate/3500688-151/osu-cascades-outlines-plans-for-growth.

[38] Peter Kenyon, "*Impact on the Humboldt County Economy*," Humboldt State University, 1998, available at: http://www2.humboldt.edu/impact/tourism.html.

[39] Randall Rosenberger and Kreg Lindberg, "*Oregon Resident Outdoor Recreation Demand Analysis*," Oregon State University, November 12, 2012, available at: http://www.oregon.gov/oprd/PLANS/docs/scorp/2013-2018_SCORP/Demand_Analysis.pdf

[40] Peter Hanik and Ben Welle. 2009. "*Measuring the Economic Value of a City Park System*." Trust for Public Land. Note that values are standardized to 2016 dollars.

[41] One study used annual health saving rates of between $500 and $750 for residents over 65 years old and between $3,843 and $5,765 for younger demographic of users. "*Proposed recreation center to infuse money in economy, create other benefits in High Country*," Appalachian State University, July 15, 2016, available at: https://business.appstate.edu/news/proposed-recreation-center-infuse-money-economy-create-other-benefits-high-country.

SCORP data suggest this climbs when considering participation in any activity. A range of 50 to 75 percent participation across all age groups would at these values equate to medical savings in 2016 of $15 to $22 million.

From 2000 to 2010, the percentage of Bend's population between the ages of 65 and 74 years old increased by 62 percent; the size of the age bracket of 85-year-olds and over jumped by 69 percent in the same window. By 2020, the District predicts three in ten Bend residents will be over 55 years old.[42] Based on these trends and data, constructing District offerings for a higher percentage and absolute number of older adults in Bend could save its residents a substantial amount of money over time through less investment in expensive services for unhealthy populations and lower health care costs.

Younger Bend residents also receive health benefits from District services. Previous studies conducted on the health of teenagers in communities with robust and accessible recreational facilities indicate that recreation can serve as a gateway to more physically active lifestyles, particularly given obesity trends.[43] Similarly, research suggests that recreation can diminish juvenile crime rates. Some studies suggest a relationship between more numerous recreational offerings and progressively smaller rates of criminal activity among youth.[44]

General recreation opportunities likewise assist in the development of physically and mentally healthy young people. Participation in out-of-school recreation opportunities provided by a park and recreation agency can lead to the following:[45]

- Reduced juvenile delinquency
- Increased positive and reduced negative behaviors
- Less exposure to violence
- Increased educational performance
- Diminished health costs related to childhood obesity
- Increased future economic contributions
- Greater self-confidence, optimism, and initiative

Proximity to a park is tied to a myriad of positive outcomes for young residents. According to the National Recreation and Park Association, "children who live within two-thirds of a mile

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[42] "*Recreation Programming Plan 2015-2019,"* Bend Park and Recreation District, February 2015, available at: http://bendparksandrec.org/wp-content/uploads/2015/10/2015.10.6_Board-Report_2015.10.5.pdf.

[43] Gordan-Larsen, P., McMurray, R., & Popkin, B. (2000). Determinants of adolescent physical activity and inactivity patterns. Pediatrics, 105(6), 424-430.

[44] Trust for Public Land (TPL). (2001). A land legacy for Texas: An assessment of the park and recreational needs of local governments in Texas. Texas: The Trust for Public Land and Texas Recreation and Parks Society.

[45] Peter Witt and Linda Caldwell, "*The Rational for Recreation Services for Youth: An Evidenced Based Approach*," National Recreation and Park Association, 2010, available at: http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/Witt-Caldwell-Full-Research-Paper.pdf.

from a park are five times more likely to be a healthy weight." Moreover, youth with a range of recreational opportunities have a higher likelihood of meeting the threshold of five active days a week, compared to those with few or no facilities.[46]

2.4 Diversity, Equity, and Inclusion

The District has prioritized making recreation opportunities accessible to residents of all backgrounds and experiences. The District provides a comprehensive Needs-Based Assistance Program that includes scholarships, fee waivers and free and low-cost activities to individuals and families experiencing financial hardships. Nearly $240,000 in scholarships was provided in 2016-17 to over 800 individuals. The District also initiated a Latino Outreach program in 2014 that has facilitated the participation of over 250 Latino families. The District also provides inclusion support so that individuals with special needs can participate along with others in recreation programs. In 2016-17, the District provided $237,000 in inclusion support and an additional $77,000 to subsidize therapeutic recreation programs. The process of supporting these underserved populations contributes to community cohesion.

Beyond providing recreational activities at a reduced cost for low income and underserved communities, literature suggests that the District improves physical activity rates among all residents simply by having so many parks and recreation activities within walking distance of neighborhoods. Analysis of the distribution of single family households in Bend shows that 98 percent have a park within a mile, 85 percent can access a park in under half a mile, and 52 percent are less than a quarter of a mile from a park.[47] As stated by the National Recreation and Park Association, "Easy access to parks is associated with increased park use. Park visitation is much more frequent and physical activity levels are much higher for those who live within walking distance to a park."[48]

2.5 Ecosystem Services

Native vegetation and associated ecological processes supported by District resources and maintenance in parks and riparian areas provide additional benefits to Bend residents. Trees and other vegetation, along with soils and related biophysical processes provide benefits contributing to water quality including stormwater management and treatment, air quality, carbon sequestration, micro-climate buffering of weather and temperature extremes, and habitat support for terrestrial, avian, and aquatic species. The Bend Whitewater Park provides important fish passage at a site previously blocking migration. These benefits can contribute to

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[46] "*Parks and Healthy Kids*," National Recreation and Park Association, NA, available at: http://www.nrpa.org/our-work/three-pillars/health-wellness/parksandhealth/fact-sheets/parks-healthy-kids/.

[47] ECONorthwest staff analysis.

[48] National Recreation and Park Association, "*Parks and Recreation in Underserved Areas: A Public Health Perspective*," NA, available at: http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/Parks-Rec-Underserved-Areas.pdf.

improvements in public health, reduced stormwater treatment costs, reduced energy costs, and more resilient local ecosystems.

Ecosystem service benefits are not quantified in this study, but other studies have reported values from the thousands to over one hundred thousand dollars of value per acre per year from these types of services for functional natural areas.[49] At a conservative range from $1,000 to $10,000 per acre per year, the 2,712 acres of park and natural area operated by the District would provide an additional $2.7 million to $27 million in annual ecosystem service values.

2.6 Property Value Benefits

One way to understand the value of natural and recreational amenities is to observe how much people are willing to pay to live near them. People pay more for homes that provide desirable amenities. Proximity to parks and other green spaces can improve access to recreation and increase the quality of life for homeowners. Empirical research has shown that park development can have positive effects on home values and the tax base which increases property tax revenues. For example, researchers found that in Portland, OR proximity to urban parks accounted for 2 to 3 percent of a home's price when located within 800 feet of a park[50]. Assessment of the premium paid to live closer to District parks and trails provides an estimate of the relative value residents and other homeowners are willing to pay. This can be done by comparing prices for homes, all else equal, but for proximity to a particular type of amenity. It does not capture any premium paid to live in Bend in general over other communities with fewer amenities.

2.6.1 Property Value Methodology

Understanding variation in home prices can help measure any potential price premiums associated with an attribute or nearby amenities, such as parks and trails. The statistical tool for performing this type of analysis is hedonic analysis. Environmental amenities typically do not have a known "market" value in the same way we consider other goods and services. Hedonic methods are analytical tools that are helpful for isolating the implicit value of small changes in nonmarket goods, such as environmental and community amenities, using home prices as a proxy for value.

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[49] Baur, et al. 2014. Urban Parks and Attitudes about Ecosystem Services: Does Park Use Matter? *Journal of Park and Recreation Administration*. Vol 32-4, pp 19-34; Donovan, Geoff. 2008. The Value of Street Trees in Portland, Oregon. USDA Forest Service; PNW Research Station; University of Washington, Urban Forestry/Urban Greening Research. 2013. *Green Cities: Good Health*. http://depts.washington.edu/hhwb/; De Groot, R., Brander, L., Van Der Ploeg, S., Costanza, R., Bernard, F., Braat, L., Christie, M., Crossman, N., Ghermandi, A., Hein, L. and Hussain, S., 2012. Global estimates of the value of ecosystems and their services in monetary units. *Ecosystem Services*, *1*(1), pp.50-61.

[50] Lutzenhiser, M. and Netusil, N.R., 2001. The effect of open spaces on a home's sale price. Contemporary Economic Policy, 19(3), pp.291-298.

Homes represent a bundle of attributes, which are valued by the homebuyer. To capture the implicit values associated with nonmarket goods, it is important to first account for the primary drivers of home value. These attributes typically include square footage, number of bedrooms, and age of the home, among others. Accounting for these similarities across characteristics, space, and time, researchers can isolate the differences in home values which are attributable to other underlying characteristics of the property.

2.6.2 Modeling the Impact of Bend Parks on Home Prices

For this analysis, we gathered data on home transactions of single family residences in Bend from 2013 to 2015 using data from PropertyRadar, a website that collects home sales and property information. The transaction data we used includes information on home characteristics to account for variation across properties. We then included information about distances to parks, Bend's central business district, and school district information. School districts can capture neighborhood effects, including differences between Eastside and Westside Bend.

Approximately 87 percent of transactions occurred within 1 mile of a park. Homes greater than 1 mile away from parks were removed from analysis, due to interaction effects associated with being closer to other green spaces, which might confound the results. Additionally, we removed homes that were above or below two standard deviations from the mean sale price to ensure the homes in the sample were comparable. Finally, we dropped homes in the dataset that did not contain information about structural characteristics, which are important attributes of transactions. This resulted in a sample size of 3,618 homes. Table 9 below displays the variables used for this analysis.

Table 9: Descriptive Statistics of Variables Used in Property Value Model

Variable	Description	Mean	Std. Dev.	Min	Max
Dependent variable					
Price	Sales price of house	369,382	140,360	22,500	800,000
Sqft_price	Price of house in square feet	207	69	16	809
Ln_price	Natural logarithm of sales price	13	0	10	14
Structural characteristics					
Sqft	Square footage of house	1,844	597	288	4,620
Lotsize	Square footage of lot on which house is built	11,491	25,041	0	864,230
Ln_lotsize	Natural logarithm of lot size	9	1	7	14
Age	Age of house	1,993	51	0	2,014
Age_sq	Age of house squared	3,975,011	123,870	0	4,056,196
Bedrooms	Number of bedrooms	3.1	1	0	10
Bathrooms	Number of bathrooms	2.5	1	0	7
Spatial and neighborhood variables					
CBD_mi	Distance to central business district in miles	2.1	1	0	7
School_district	Elementary school's district	NA	NA	NA	NA
Distance Variables					
Park_mi	Distance (in miles) to nearest park	0.2	0	0	1
Ln_parkmi	Natural logarithm of Park_mi	-1.8	1	-6	0
Park_band1	Dummy: Residence within 0.2 miles of park	NA	NA	NA	NA
Park_band2	Dummy: Residence between 0.2 and 1.0 miles of park	NA	NA	NA	NA

Source: ECO analysis using data from PropertyRadar, BPRD, and U.S. Census. Note sales are from 2013-2015.

To capture the effect of parks on home prices, we grouped transactions into two bands, based on when the difference in distances were statistically significant from each other. The two bands we used for this analysis were:

- Band 1: <= 0.2 miles away from a park
- Band 2: > 0.2 to 1.0 mile away from park

The analysis concentrated on this subset of homes because we believed that prices are more likely to be sensitive to urban parks if they are geographically close to these areas. Homes in these two bands were generally similar in their characteristics across both bands, with variation in prices. The exception was lot size, which increased as homes moved further away from parks; however, the standard deviation for lot size also increased in band 2. Table 10 compares the characteristics of homes across the two bands used in this analysis.

Table 10: Characteristics of Homes Used in Property Value Analysis, by Distance Band

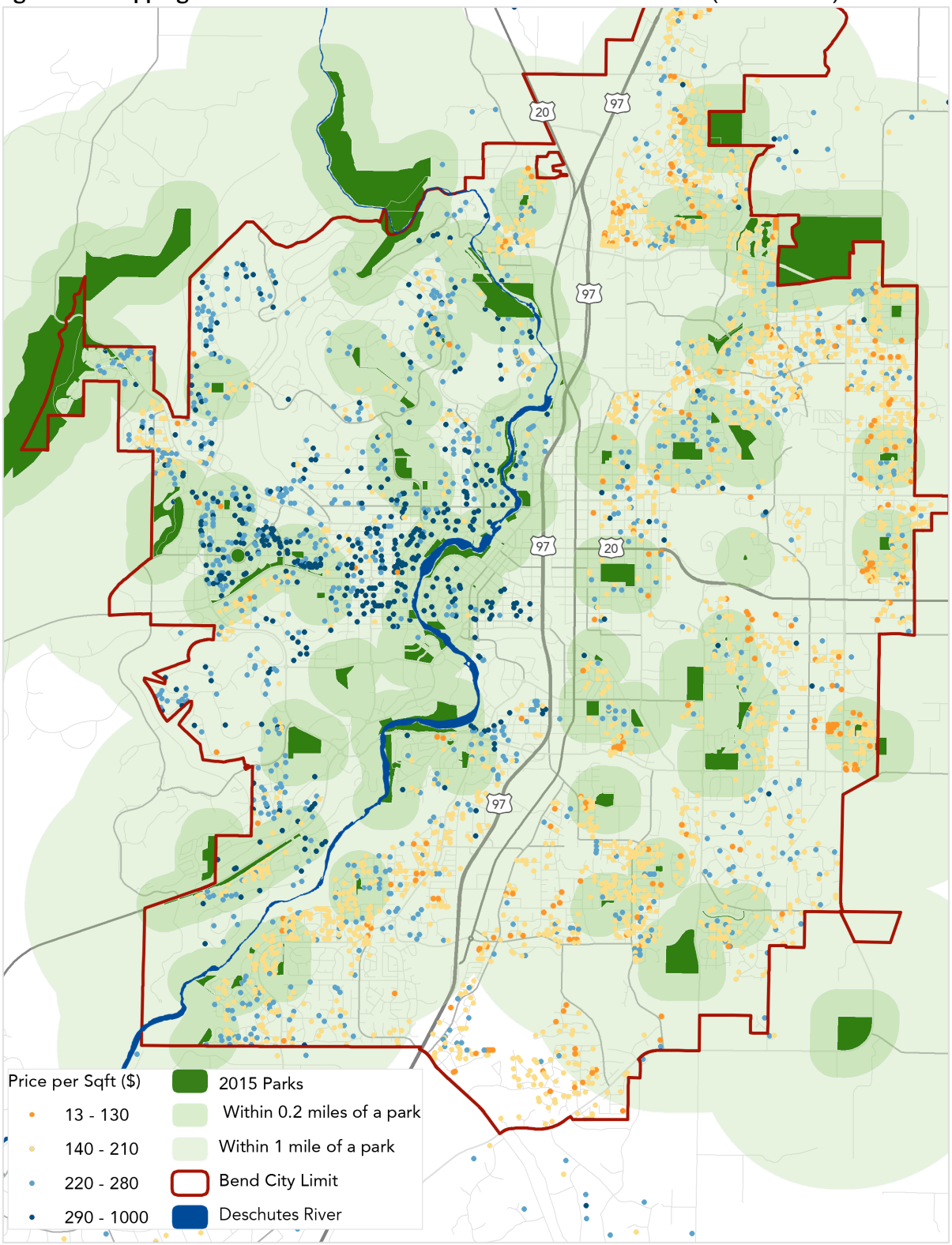
Variable	Band 1	Band 2
Observations	1,780	1,838
Avg. distance to Park (in ft)	555.4	1,985.5
Avg. Sale Price	383,088	356,108
Avg. Year Built	1993	1993
Avg. Square Feet	1,875	1,813
Avg. Lot Size	8,859	14,039
Avg. No. of Bedrooms	3.1	3.1
Avg. No. of Bathrooms	2.5	2.5

Source: ECO analysis using data from PropertyRadar, BPRD, and U.S. Census.

In addition to using transaction data obtained from PropertyRadar, we also obtained Geographic Information Systems (GIS) data about District parks, along with U.S. Census data about neighborhood characteristics. Using these data, we identified how transactions varied by park type and distance to urban parks and trails. Figure 12 below illustrates the combined transaction and District park data used for the analysis.

In our model, we account for variations in neighborhood characteristics across the District using census tracts as fixed effects. We then cluster our errors around park type to correct for any spatial correlation associated with variation across park type (neighborhood, community and regional). For instance, there may be specific characteristics of a certain park type that affects the price of the home. Any of these characteristics, which are not captured in the model, then fall into the error term.

Figure 12: Mapping Transactions Within 1 and 0.2 mile of District Parks (2013-2015)



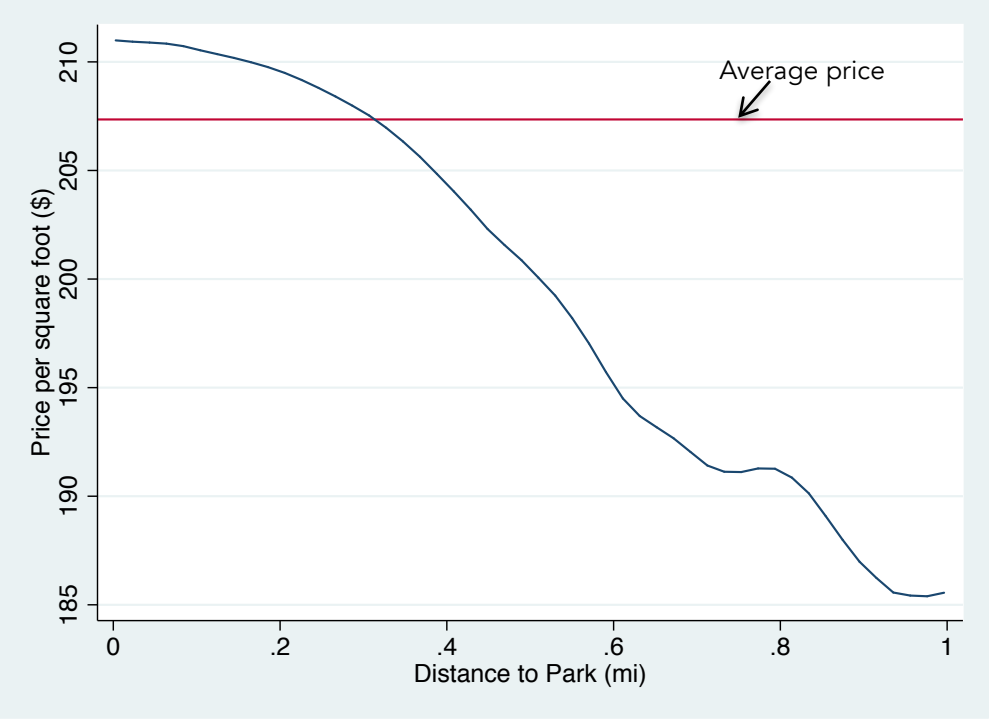
Source: ECO analysis with data from PropertyRadar.

2.6.3 Results

An initial exploration of the data appeared to show a spatial relationship between increased sales prices and distance to District parks. After accounting for other home characteristics, the relationship of price per square foot in relation to park distance yielded relatively consistent results. Figure 13 below displays the unadjusted relationship between sales price (per square foot) and park distance. The mean price per square foot was $207 within the dataset, but prices drop to around $185 - $190 per square foot as transactions move further away from District parks.

We expect that if an attribute such as park proximity is an important consideration for a homeowner's willingness to pay for a home that the price premium would be consistently higher than a similar home located further away from a park. Figure 13 shows that the relationship between sales price and park distance is nonlinear and consistent within one-mile of urban parks in Bend.

Figure 13: Average Transaction Price per Square Foot within 1 Mile of BPRD Parks (2013-2015)



Source: ECO analysis using data from PropertyRadar and BPRD. Note: horizontal line at $207 represents average price in Bend.

The relationship between sales price and distance to urban park remains relatively unchanged even after accounting for home and neighborhood attributes. The results of this analysis suggest that there is a statistically significant relationship (at the 1 percent level) between sales price and proximity to District parks in Bend (Table 11). Additionally, both bands used in the analysis were statistically significant at the 1 percent level.

Table 11: Relationship of Home Prices and Distance to Nearest Park in Bend, 2013-2015

Impact by distance	Coefficient
Continuous distance	
Residence within 1.0 mile of park	-0.115***
Distance by bin	
Band 1: Residence within 0.2 miles of park	10.507***
Band 2: Residence between 0.2 and 1.0 miles of park	10.476***
Price premium	
Difference between Band 1 and Band 2	0.030***

Source: ECO analysis using data from PropertyRadar and BPRD.
*** indicates statistically significant at the 1% level.

Table 11 shows the results of two versions of the model. The first set of results presents the average impact of sales price for homes within one mile of urban parks. The coefficient from this continuous model suggests that, all else being equal, living 1 mile away from an urban park in Bend can result in an 11.5 percent lower sales price. While this premium is in line with the literature, the average effect is too broad a measure to apply across all homes given the nonlinear relationship between price and distance. Additionally, the availability of nearby outdoor recreation substitutes such as federal land and state parks may also have an unobserved effect on home prices.

In the second version of the model to account for the availability of substitutes, we compare the price premium between the two distance bands described earlier. The rationale is that if higher sales prices derive from access to parks, then the difference between the two bands should reveal the higher premium that homeowners pay to live closer to parks. The narrow bands help identify the price differential near parks while accounting for substitution effects of other green spaces. Our analysis shows that the price differential between the two bands is approximately 3 percent. Using the average sales price of $369,382, the average price premium for homes located within 0.2 miles of urban parks in Bend is about $11,080. There are 13,764 homes within 0.2 miles of District parks in Bend. This equates to $152.5 million in amenity value for nearby homes at 2013-2015 home prices. This does not count the amenity value of District parks to homes and residents greater than 0.2 miles from the nearest park, and does not capture any benefit included in the price for the overall accessibility of parks to all homes in Bend.

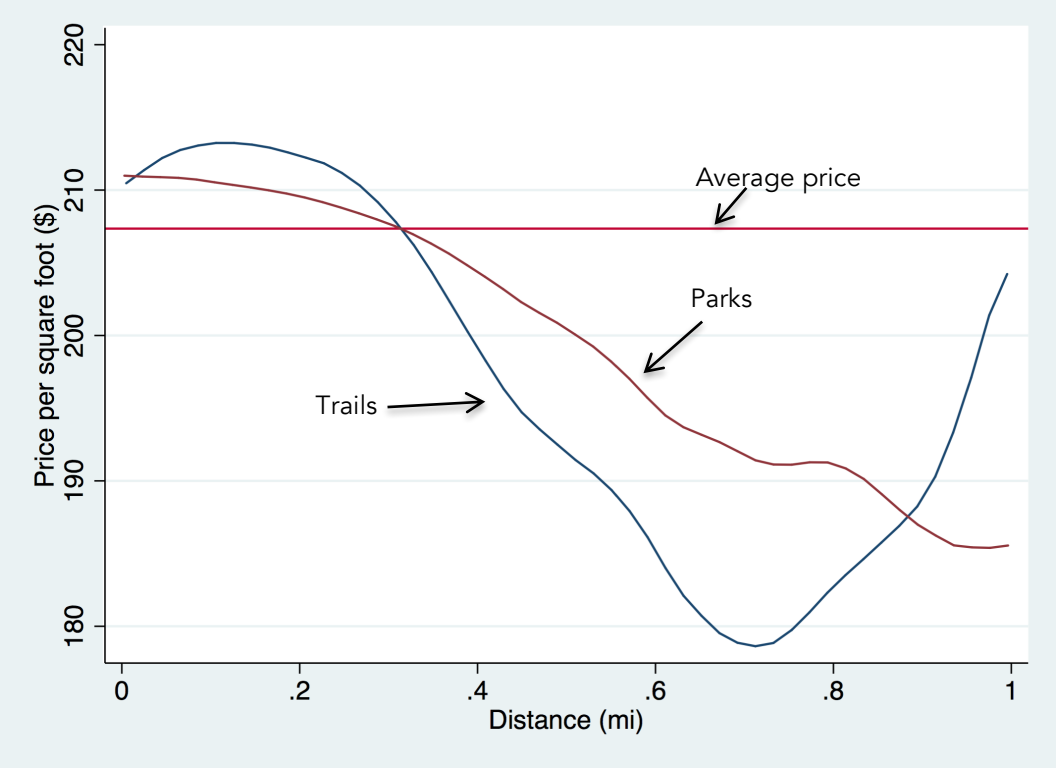
2.6.4 Measuring the Value of Trails on Home Prices

In addition to measuring the premium associated with homes located near parks, we also tested the value of nearby trails to home prices in Bend. Similar to our park model above, we incorporated information about census tract and home attributes to account for variations in neighborhood characteristics across Bend. After accounting for missing characteristics, the data showed that 94.5 percent of transactions in our sample occurred within one mile of a trail.

Similar to parks, we expect that if proximity to trails is a driver for bidding up a homeowner's willingness to pay for a new home, that the price would be consistently higher, relative to a

home located further away from trails. Figure 14 compares the transaction price per square foot relative to park and trail distance. The figure shows that relative to parks, the relationship of price per square foot to trail distance is less consistent over distance.

Figure 14: Transaction Price per Square Foot, within 1 Mile of Parks and Trails (2013-2015)



Source: ECO analysis using data from PropertyRadar and BPRD. Note: horizontal line at $207 represents average price in Bend.

Using a similar analysis for trails as we did for parks, our results suggest that the relationship between proximity to trails and transaction prices are not statistically significant at a meaningful level. The coefficient from the continuous model suggests that, all else being equal, living between 0.2 mile and 1 mile away from a trail in Bend results in a 0.7 percent decline in transaction value, but not at a meaningful level of statistical significance. The data show that with distance from trails, the average price tends to climb back towards the market average. This suggests that other amenities likely become important, possibly even other natural areas on the periphery of Bend managed by state or federal agencies.

Table 12: Relationship of Home Prices and Distance to Nearest Trail in Bend, 2013-2015

Impact by distance	Coefficient
Continuous distance	
Residence within 1.0 mile of trail	-0.007
Distance by bin	
Band 1: Residence within 0.2 miles of trail	10.67***
Band 2: Residence between 0.2 and 1.0 miles of trail	10.69***
Price premium	
Difference between Band 1 and Band 2	0.006

Source: ECO analysis using data from PropertyRadar and BPRD.
*** indicates statistically significant at the 1% level.

We also compare transaction prices by distance bins. The price premium for homes located within 0.2 miles of trails relative to homes located within 1.0 mile of trails results in a price premium of 0.6 percent (Table 12). As with the results from the continuous model, the comparison of the two bins does not yield a price premium that is different than zero at a meaningful level of statistical significance.

These results do not imply that trails have no meaningful effect on home prices in Bend. The results suggest that the implicit value of trails is more difficult to isolate than for parks, likely because of the co-location with other amenities (e.g. the Deschutes River). It's also possible that because of the wide availability of trails in Bend, the price premium between homes is small. Rather, trails fit into a bundle of amenities that improve the overall quality of life in Bend. It is likely that the appropriate measurement is to compare the value of similar homes between Bend and a similarly sized city, rather than within Bend. This would better capture the value associated with homes in Bend compared to a city where those amenities are scarce. But a comparable city to Bend, all else equal but for the availability of trails close-to-home, is not readily available.

The most popular parks and trails are associated with other important amenities including scenic sections of the Deschutes River. In many cases these amenities wouldn't be accessible or usable without the trails and parks. So while the District doesn't necessarily own or control these assets, they are the only option for the majority of people to enjoy the amenities. Without the access provided by the District to Bend's natural amenities, their benefit wouldn't be realized. But a statistical model might not be able to separate out the individual contributions of the bundle of amenities that support recreation experiences in Bend.

3 Economic Impact of District-provided Services to Visitors

The region's natural amenities and activities attract visitors to the Bend-area across a wide range of recreation priorities. RRC Associates, Inc. estimated an average of 1,170,000 and 1,430,000 visitor trips to the Bend-area every summer[51]. During the winter season, visitor trips range between 630,000 and 770,000. On average, visitors spend 2.35 nights in the area.[52] Research completed by Visit Bend shows that 67 percent of Bend visitors stay directly in the city; 20 percent of visitors opt to stay in Sunriver; and about five percent of visitors stay in Redmond.[53] Although visitors do not have to recreate and spend money only in their overnight destination, this analysis will confine its calculations of the economic value of District goods and services to the visitors staying directly in Bend. Bend proper, then, attracts between 1,197,000 and 1,463,000 visitors annually.

Visitors benefit from District services. Visit Bend classifies visitors into three categories: overnight visitors, day visitors, and seasonal residents. Based on recent surveys, 90 percent of visitors to Bend are overnight visitors; day visitors and seasonal residents account for the remaining 10 percent.[54] As described earlier, our analyses suggest that visitors to Bend received $11 million to $15 million in benefits from almost a million visitor participations in District-supported activities in 2016.

In both peak visitor seasons of summer and winter, the majority of visitors come from outside of Oregon. Californians and Washingtonians form the largest cohorts of out-of-state visitors, representing around 18 and 16 percent of total visitors, respectively. Visitors from Washington tend to come to the area at a higher rate in the summer than in the winter. Comparatively, rates of travel from California stay consistent throughout the year.[55]

Visitors are important and in many cases likely necessary participants in events from competitions to festivals held on District properties. In the case of running and walking events, the majority of the organizers charge an entrance fee. These fees range from donation

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[51] RRC Associates defines the summer season as May to October. They define the winter season as November to April.

[52] RRC Associates, Inc., "*Estimation of Bend, Oregon Visitor-Trips and Visitor-Days.*" 2015. http://www.visitbend.com/RRC-estimate-Bend-visitor-days-visitor-trips-2015.pdf.

[53] RRC Associates, Inc., "*Bend Area Visitor Survey Summer 2016 Final Results*." October. http://www.visitbend.com/Bend-Summer-2016-Report-FINAL.pdf.

[54] RRC Associates, Inc., "*Bend Area Visitor Survey Winter 2015/16 Final Results,*" Visit Bend, May 2016, http://www.visitbend.com/2015-16-Bend-Oregon-Winter-Survey-Report.pdf.

[55] RRC Associates, Inc., "*Bend Area Visitor Survey Summer 2016 Final Results*," Visit Bend, October 2016, available at: http://www.visitbend.com/Bend-Summer-2016-Report-FINAL.pdf.

suggestions to formal registration charges that can range from as low as $10 to over $100, depending upon the type of event.[56] Event organizers report that often without the participation of visitors, these events would not make financial sense to host.

The total spending by visitor figures include the impact of youth and adult sport tournaments. The District provides space for swimming, softball, ultimate and disc golf, baseball, lacrosse, and rugby tournaments. These competitions feature local and visitor teams; however, the overwhelming majority of participants, on average, came from out-of-town in 2015 and 2016. Visiting participants accounted for 88.5 percent of all entrants. These competitors typically travel with other family and friends as well.

Tourism studies provide county-level measurements of direct travel impacts. These estimates quantify the magnitude of economic impacts related to tourism dollars in the local economy and how that spending supports earnings, employment, and tax revenue. In 2015, tourists to Deschutes County spent $73 per day on average.[57] This rate, when applied to the high and low estimates for visitor days spent explicitly in Bend, equates to a range of $205 to $251 million in visitor spending.

Most of these visitors cite Bend's outdoor recreational offerings as the main purpose of their visit. Surveys conducted in the summers of 2012, 2013, and 2016 reveal that upwards of seven in ten tourists listed recreation as the primary reason behind their trip. In fact, in 2016, the number of tourists with that viewpoint reached a high of 86 percent.[58, 59] For these visitors, the District provides services enjoyed as either the primary purpose for the trip (e.g. events, walking along the river from town) or potentially as complementary to amenities outside the city limits. Visitors appreciate the availability of trails and parks or a float on the river after a day in the mountains. John McLeod, the general manager of Mt. Bachelor, reported that the quality of the visitor experience in Bend is an important part of their business success.[60] In contrast, the general manager of Mission Ridge Ski Resort, Josh Jorgensen, recognizes that the visitor experience in Wenatchee is limited and likely inhibits non-local skiing visits. Mr. Jorgensen is focused on improving the visitor experience in Wenatchee to better attract visitors from further away and for longer trips.

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[56] According to data supplied by BPRD staff.

[57] Dean Runyan Associates, "*Oregon Travel Impacts 1992-2015p*," Oregon Tourism Commission, May 2016, available at: http://www.deanrunyan.com/doc_library/ORImp.pdf.

[58] RRC Associates, Inc., "*Bend Area Visitor Survey Summer 2016 Final Results*."

[59] Economic impacts on earnings accounts for wages and salaries, earned benefits, and proprietor income; employment figures include all full- and part-time employment of payroll employees and proprietors; local tax revenue sums visitor contributions to lodging and motor fuel taxes, and income tax payments attributable to travel industry businesses and employees.

[60] Personal communication. March 8, 2017.

Bend residents do recognize the costs imposed by visitors, including congestion on roads and at recreation sites. Not all visitors are respectful of Bend's resources, as occasional visitors might be less likely to serve as stewards. Littering and public intoxication are often reported complaints. Visitors also contribute to increasing costs of housing, presenting particular challenges for low and middle-income resident households.

Using the estimates of visitor participation by activity type described earlier and summarized in Table 7 we estimate visitor spending associated with District services in Table 13. The lower end of the range includes only event visitor participation, which uses the most reliable visitor participation rate estimates and is most likely that the District-associated activity is the primary purpose for the trip. The upper end includes all trips across the quantified activities estimated to be based on visitors. It is best to interpret the associated spending with the upper end as strongly influenced by District services but not necessarily attributable solely to District offerings. That said, non-recreation trips to Bend, such as for meetings and conferences, are not necessarily captured in these estimates. Event hosts often choose Bend as a venue because of its appeal, and much of that appeal is based on nearby opportunities such as a walk to downtown on the Deschutes River Trail.

Table 13: Visitor Spending Associated with Users of District Services, 2016

	District Event Visitors	All Visitors Using District Services
Total Visitor Days	44,057	961,778
Total Spending	$3,216,179	$70,209,773

Source: ECONorthwest analysis and Dean Runyan Associates data.

Visitor spending can propel job creation in the community. Dean Runyan Associates found that $86,400 of tourism spending supports one job in Deschutes County.[61] Using this ratio, the spending in Table 13 equates to a range of 37 to 813 jobs per year associated with visits to Bend using District services.

Tourism spending can also increase employee earnings. Every $100 in visitor spending in Deschutes County generated $29 in employee earnings in 2015;[62] tourists drawn to Bend for District-activities, then, sparked between $900,000 and 20 million in employee earnings in 2016, based on the above estimates.

Tourists to the area also pay taxes. In fiscal year 2014-15, total Transient Room Taxes (TRTs) amounted to $6.5 million. If that pace continues, that total could rise above $7.5 million, of which 65 percent of those funds go to the City's general fund, with the remainder provided to

[61] Dean Runyan Associates, "*Oregon Travel Impacts, 1992-2015p*," May 2016, Oregon Tourism Commission, available at: http://www.deanrunyan.com/doc_library/ORImp.pdf.

[62] Ibid.

Visit Bend, the City's visitor's bureau.[63] The District (as a separate entity from the city) does not receive any of the transient room tax funding.

4 Quality of Life Contributions

The District's purpose is fundamentally to improve the quality of life for Bend residents. Quality of life (QOL) studies assist in revealing why people move to or opt to stay in a community. These assessments analyze a broad range of factors that could impact how someone feels about their community and its attributes. As more and more studies point to the importance of knowledge and creativity-based economies, quality of life studies have increased in frequency. This research outlines what draws people, especially those with Bachelor's degrees or higher, to their place of residence. Additionally, this work helps planners and administrators determine the value of services that had previously gone unmeasured or unreported. QOL indexes give a more comprehensive sense of someone's welfare than looking only at their health metrics or earnings reports.

Quality of life accounts for the multitude of variables that can impact one's wellbeing in the broadest sense. Measurements that are objective, such as per capita gross domestic product, and subjective, like answers to survey questions about your level of happiness, influence QOL assessments. Measured factors vary in scale and domain. For instance, national economic measures as well as one's perception of their mental health can alter someone's QOL. Health considerations, social needs, economic security, and cultural comfort represent just a few of the domains compiled within QOL tools. There is no single agreed upon QOL definition among academics.[64, 65] The District supports the quality and accessibility of many of these desirable attributes that are typically part of QOL calculations through facilities and programs.

Bend, as reported by the city's tourism bureau, Visit Bend, possesses many of the positive QOL attributes that define the Pacific Northwest. Visit Bend's ten reasons for moving to the city include: less time spent in congestion, an educated, young workforce, a tolerant culture that celebrates outdoor enthusiasm, support for entrepreneurial activity and creativity in general,

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[63] Trejbal, C. 2016. "*Too Many Tourists*," Bend Source, July 20, available at: http://www.bendsource.com/bend/too-many-tourists/Content?oid=2740281.

[64] *The Economist*'s QOL Measurement: This metric considers survey responses of residents in addition to the sum of material wellbeing (GDP per person), health (life expectancy), political stability and security (*The Economist's* own metric), family life (divorce rates), community life (union and church membership rates), climate and geography (warm or cold climate), job security (unemployment rate), political freedom (Freedom House analysis), and gender quality (ratio of average and female earnings).

[65] *Costanza et al.:* "QOL as a general term is meant to represent either how well human needs are met or the extent to which individuals or groups perceive satisfaction or dissatisfaction in various life domains." Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., Danigelis, N.L., Dickinson, J., Elliott, C., Farley, J. and Gayer, D.E., 2007. Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecological economics*, *61*(2), pp.267-276.

great beer, access to large commercial markets and metro areas, and, of course, outdoor recreation opportunities.

These factors, paired with a strong economic forecast, earned the city Forbes' number one ranking in the 2016 Best Small Places for Business and Careers rankings.[66] Residents tend to agree with Forbes. A survey conducted in 2015 by DHM research showed that 90 percent of Bend residents had a good (28 percent) or excellent (62 percent) opinion of the city's QOL.[67]

Housing prices continue to impede quality of life in Bend. Rent has increased and supply has diminished. Data from the American Community Survey reveals that median rent in the city spiked by 9 percent from 2010 to 2015. 55 percent of Deschutes County residents spent over 30 percent of their income on rent – the threshold for identifying who the US Department of Housing and Urban Development refers to as a cost burdened renter. As of 2015, Deschutes County had a lower median rent than the city, $939 versus $955.[68]

At a time of higher prices, available units have dropped, too. Vacancy rates for rental units barely top 1 percent in Bend.[69] Some attribute these trends to the same population growth that's introducing new ideas, businesses, and opportunities into the region.

Demographic trends, in addition to squeezing the housing market, may hinder the vibrancy associated with the youth of Deschutes County. Research by the Oregon Employment Department evidences the aging of the county. In the last five years, the population over the age of 65 years old has swelled by a 43 percent increase. In contrast, the overall population of Deschutes County expanded by just 11 percent.[70] The increase in older citizens may place a strain on civic services as providers try to meet a broader set of needs.[71] These demographic trends will likely be balanced to some extent by expansion of the OSU-Cascades campus. The tax base support provided by older residents will continue to likely outpace that of younger residents. The District is focused on addressing the specific needs of senior residents, as evidenced by ongoing investments in the Senior Center.

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[66] Badenhausen, K. 2016. "*Bend, Ore., Heads The Best Small Cities For Business And Careers 2016*," Forbes, October 19, available at: http://www.forbes.com/sites/kurtbadenhausen/2016/10/19/bend-ore-heads-the-best-small-cities-for-business-and-careers-2016/#132c9f4052ff.

[67] Rook, E. 2015. "*Survey: Bendites Like the Outdoors, Worry About Transportation*," Source Weekly, January 22, available at: http://www.bendsource.com/Bent/archives/2015/01/22/survey-bendites-like-the-outdoors-worry-about-transportation.

[68] Hamway, S. 2016. "*Census shows heavy rent burden on Bend, Deschutes County*," The Bend Bulletin, December 19, available at: http://www.bendbulletin.com/localstate/4906516-151/rent-burdened-in-bend.

[69] Ibid.

[70] Hammers, S. 2016. "*Deschutes and Crook counties lead the state in growth*," The Bend Bulletin, November 22, available at: http://www.bendbulletin.com/localstate/4836744-151/deschutes-and-crook-counties-lead-the-state-in.

[71] Knickman, J and E. Snell, 2002. "*The 2030 Problem: Caring for Aging Baby Boomers.*" Health Services Research 37.4: 849–884, available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1464018/.

5 Business Decisions and Regional Attraction

A popular theme in recent years across publication types is businesses moving headquarters or offices to Bend for a higher quality of life and lower cost of living relative to other parts of the United States. The District plays a role in attracting these businesses, their owners and managers, and their skilled workforce. Recreational opportunities and a more green, quiet environment draw knowledge-based companies and their employees to Bend. Dan Smithey, co-founder of Agere Pharmaceuticals, moved the company to the area from Silicon Valley. When prompted to explain the decision, he talked about the beauty of the environment and then stated, "It's the kind of place people come to just because they want to be there. And now [with the addition of several more businesses] there's a network of talented people who've done exactly that."[72]

Businesses and workers both benefit from the "second paycheck" received from living and working in an attractive location. Workers enjoy the benefits and businesses don't need to pay for them. So, overall welfare of the workforce and perceived compensation increases at no impact to a firm's expenses.

From a strictly business standpoint, employers echo Smithey's praise for the area's burgeoning stock of human capital. A writer in *Entrepreneur Magazine* reported the town is "humming with new ideas, businesses, and capital."[73] The launch of Oregon State University-Cascades will increase the steady supply of trained workers needed by new and growing businesses.[74]

Quality of life considerations evidence how the District influences business moves to the Bend-area. A study of firms' decision to move asserts, "areas offering cultural and recreational amenities (e.g., theaters and bike trails) could have a comparative advantage over places that do not."[75] The trend of businesses moving to where their staff likes to live and play seems likely to

[72] Schoenfeld, B. 2012. "*Why Bend, Ore., Is the Next Big City for Entrepreneurship,*" Entrepreneur, August 25, available at: https://www.entrepreneur.com/article/223997.

[73] Ibid.

[74] Cook, J. 2014. "Can Bend become the next Boulder? This venture capitalist thinks so, and here's why," Geek Wire, October 17, available at: http://www.geekwire.com/2014/qa-venture-capitalist-dino-vendetti/.

[75] Salvesen, D. and H. Rensi, 2003. "*The importance of quality of life in the location decision of new economy firms,*" University of North Carolina at Chapel Hill, January, available at: https://curs.unc.edu/files/2013/04/neweconomyreport.pdf.

continue, as firms compete for employees and prioritize lifestyle themselves. Knowledge-based industries have experienced tremendous growth that is forecasted to continue.[76]

5.1 Empirical Evidence of the District's Impact on the Local Economy

Through breaking Bend's economy into industries, it is possible to assess how outdoor recreation boosts employment and the total number of establishments in the area. More specifically, observing economic indicators associated with industries influenced by recreation and lifestyle, one can assess the economic importance of Bend's quality of life, to which the District is an important contributor. This includes businesses providing outdoor and recreation goods and services, but also non-store retailers and professional, scientific, and technical services that have flexibility in their choice of geographic location. Damon Runberg, Regional Economist for the Oregon Employment Department has defined and tracked the "Lifestyle" industrial category in this way and provided the data in this section. Lifestyle industries for this analysis include the industrial categories for professional, scientific and technical services, electronics, data and computing services, nonstore retailers, and other similar services and products that offer business owners and employees flexibility in location decisions.

Table 14. Five-Year Average Annual Change in Total Employment by Industry Category

Industry	2005-10	2010-15
Recreation & Tourism Industries	1.60%	6.32%
"Lifestyle" Industries	4.18%	6.23%
All Other	-1.93%	5.54%

Source: Oregon Employment Department; Quarterly Census of Employment and Wages (2005, 2010, 2015).

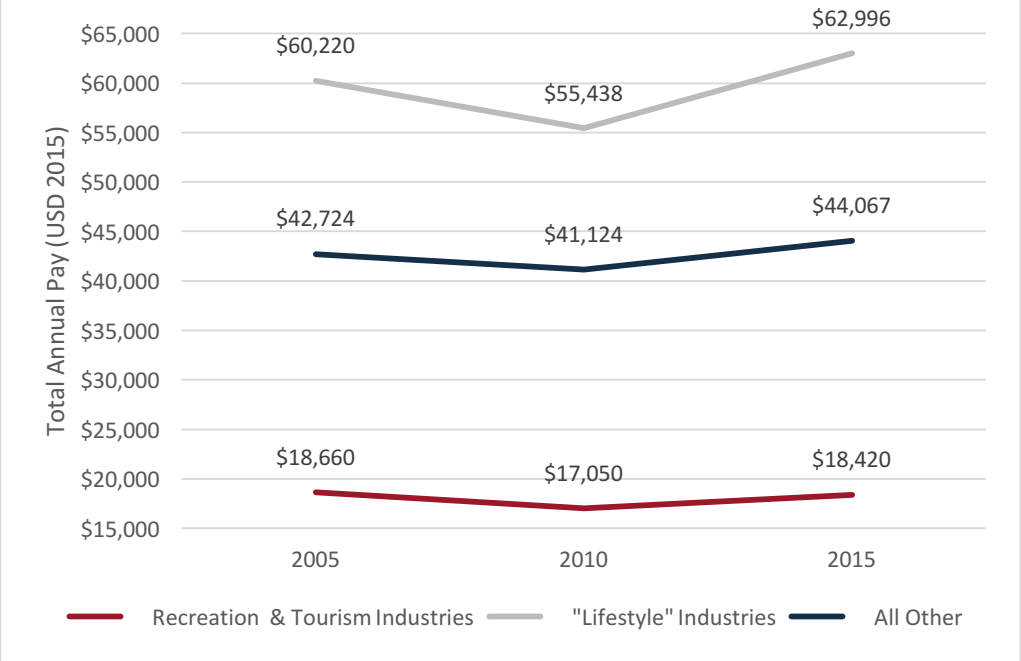
Over the past decade, annual employment growth in recreation-affiliated industries has outpaced the average of remaining industries in town (Table 14). Recreation and Tourism industries attained the highest percentage of growth in comparison to the others. Over the past five years, 356 jobs on average annually were added to the sector. Total employment increased from 5,630 in 2010 to 7,409 in 2015. Recreation and Tourism added new establishments at a clip of three and four percent, respectively, annually between 2005-10 and 2010-15. The corresponding rates in the Lifestyle sector were seven and nine percent annual growth, on average. These employment trends extended to the number of firms by industry as well (Figure 15).

[76] Headwaters Economics, 2009. "*The Economic Benefits of the Land and Water Conservation Fund,*" Land and Water Conservation Fund, November, available at: https://headwaterseconomics.org/pubs/protected-lands/LWCF_Economic_Benefits.pdf.

Figure 15: Establishments by Recreation and Lifestyle Industries in Bend, 2005, 2010, 2015

Source: Oregon Employment Department Quarterly Census of Employment and Wages (2005, 2010, 2015). Note that corresponding total business establishments in Bend for 2005, 2010 and 2015 were 3615, 3751, and 4617.

Figure 16: Annual Average Pay Across Industries in Bend, 2005 through 2015



Source: Oregon Employment Department, Quarterly Census of Employment and Wages (2005, 2010, 2015).

Whereas all other industries, on average, have topped their pre-Great Recession annual average pay level, as measured in 2005, by around $1,300, pay in the lifestyle industries eclipsed its 2005 total by over $2,700 in 2015 (Figure 16). Wages in the recreation and tourism industries have yet to fully recover from the low recorded in 2010.

Table 15: Change in Total Payroll in Select Bend Industries from 2005 to 2015

	2005-2010 Change	Percent Change	2010-2015 Change	Percent Change
Recreation & Tourism Industries	-$1,303,796	-1.34%	$40,481,117	42.17%
"Lifestyle" Industries	$17,128,453	11.30%	$82,710,650	49.05%
All Other	-$154,732,385	-13.02%	$381,130,696	36.86%

Source: Oregon Employment Department, Quarterly Census of Employment and Wages (2005, 2010, 2015).

Total payroll in the lifestyle and recreation industries has spiked in the years from 2010 to 2015 (Table 15). Both rates of total payroll growth for the industries outpaced the performance of all remaining sectors. Lifestyle industries, even in the downturn from 2005 to 2010, increased total payroll. The payroll drops experienced in the rest of the economy significantly outnumbered the losses found in the recreation and tourism industries, decreases of 13 percent and less than 2 percent, respectively.

From employment to establishments, the recreation and tourism and lifestyle industries have evidenced greater resiliency and higher rates of growth when compared to other industries in Bend over the most recent ten years of available data, from 2005 to 2015.

5.1.1 District Impact on Personal Decisions to Move to the Area

As urban areas grow in concentration of total population and economic importance, rural areas across the United States struggle to maintain basic services and economic vitality. Quality of life can be an important countervailing force to maintain and grow economies outside of major metropolitan areas. Publications that discuss a potential move to the Bend area share several commonalities. They mention the area's wide range of outdoor recreation opportunities:

> *"Whether it's paddle boarding, skiing, rafting, hiking, fishing, camping, rock climbing, or simply floating on an inner tube down the Deschutes, Bend is a great place to try out all sorts of outdoor activities."*[77]

> *"For Bend, tourism is like a gateway drug. People come here and visit, and then they want a little more, and the next thing you know they are moving here and figuring out how to make a living."*[78]

> *"Eugene Kim, when asked about why he and his wife moved, said, "We loved the nature aspect of this place. Being able to hike, kayak, backpack – all of these things – it felt like the right place to be able to work and unwind in nature on the weekends.*[79]*"*

[77] Metcalf, T. "*10 Reasons to Drop Everything and Move to this One Oregon City,*" onlyinyourstate.com, available at: http://www.onlyinyourstate.com/oregon/move-to-bend-or/.

[78] Bend city manager Jon Skidmore, available at: http://livability.com/or/bend/why-bend-or-is-a-best-place-to-live.

[79] West, A. 2016. "*The Californication of Bend,*" The Bend Bulletin, September 19, available at: http://www.bendbulletin.com/localstate/4667847-151/the-californication-of-bend.

Positive reviews of the region's outdoors cannot be solely tied to the District. As stated previously, many visitors and prospective residents opt to spend time in the area to enjoy recreational opportunities beyond city limits. However, research indicates that urban green space can be a critical component when considering where to move. For the majority of those making a relocation decision, but especially for older people looking for a new home, the quality of the surrounding natural environment and the opportunity to be close to green space contributed to the final decision.[80]

The District's capacity to meet or exceed its Level of Service (LOS) targets will help Bend continue to attract new residents. By virtue of natural and built recreational opportunities, Bend already mitigates a significant concern potential residents have with cities in general: that there's a trade-off between proximity to work and cultural opportunities and access to the outdoors and urban spaces.[81] The District's adherence to its target LOS ratios will perpetuate the city's ability to distinguish itself from other jurisdictions with fewer green spaces.

Housing is the predominant factor in motivating a move. Of those that moved in the United States between 2012 -2013, 48 percent listed housing as their primary justification for heading to a new community. [82] As evidenced above, District facilities can improve the attractiveness of a housing market. The green space provided by District property, at a minimum, through its contribution to property values and housing quality, has a role in soliciting outsiders to the area. At some level housing costs can rise to the point that new residents cannot afford to move given the available wages, infringing on the competitive position for local businesses.

Job opportunities propel people to move as well. Younger movers, those between the ages of 25 and 29 years, were the least motivated by housing reasons to move when compared to other age cohorts. They, instead, had a higher percentage of moves spurred by job opportunities; 23.6 percent of them identified employment considerations as their top reason for moving. Movers from outside of the destination's county, that is intercounty movers, shared the young's insistence on finding a place suited for their career aims.[83, 84] It follows that for Bend to entice younger, new residents it must continue to draw in new businesses.

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[80] Florida, R. 2015. "*Why People Live Where They Do,*" City Lab, November 9, available at: http://www.citylab.com/housing/2015/11/why-people-live-where-they-do/414873/.

[81] Thomas, E., I. Serwicka, and P. Swinney, 2015. "*Urban Demographics: Why People Live Where They Do,*" Centre for Cities, November available at: http://www.centreforcities.org/wp-content/uploads/2015/11/15-11-02-Urban-Demographics.pdf.

[82] Ihrke, D. 2014. "*Reason for Moving: 2012 to 2013,*" Census Bureau, June available at: http://www.census.gov/prod/2014pubs/p20-574.pdf.

[83] Ibid.

[84] Just as a high percentage of visitors come from Washington and California, many new residents to the area come from these two states as well. Between 2007 and 2011, Washington sent 681 and California accounted for 1,694 new residents, per the Bend Bulletin. Available at: http://www.bendbulletin.com/business/2301544-151/they-visited-they-saw-they-moved-to-bend.

The importance of attracting businesses to bringing in new residents may decline in the future, though. As recorded by the American Community Survey (ACS) in 2015, 9.3 percent of workers in the Bend-Redmond metropolitan area opt to work from home.[85] If this trend continues, then the quality and availability of housing will be even more imperative to the city's growth.[86] This means the District's relevance to growth prospects seems likely to increase over time as housing considerations steer an even higher percentage of location choices.

6 Case Study Examples

This section briefly describes two sites in order to consider returns on investments by the District, and describes the site-specific values calculated in this report.

6.1 Bend Whitewater Park

The Bend Whitewater Park opened in 2016 at the site of the Colorado Dam, underneath the Colorado Avenue Bridge. The Bend Whitewater Park cost $10.8 million to build, with $9.7 million from bond measure and general tax revenue, and $1.1 million contributed by the Bend Paddle Trail Alliance. Prior to the whitewater park, the Colorado Dam was an impediment necessitating a lengthy portage in the middle of a popular floating section of the Deschutes River between the Old Mill District and Drake Park. The dam was also a hazard, contributing to one death and a number of life-threatening rescues. The Bend Whitewater Park now contains three channels, providing wildlife habitat, a passageway for fish as well as people in inner tubes and other craft that can navigate class 1 water, and a whitewater channel with four whitewater features including a wave designed for board surfing.

During its first full summer season of operation in 2017, counters estimated 181,000 trips in the passageway channel. This does not include users of the whitewater channel, which typically has several kayakers and surfers recreating when water level and weather conditions allow. As described in calculations earlier, the whitewater channel will likely host 17,000 to 33,000 annual visits, and several times this number of spectators. These calculations, based on observed usage levels from existing parks, include events and competitions which are not yet fully established at the whitewater park.

The Bend Whitewater Park is conveniently located between downtown and the Old Mill District, with trails on both sides of the river and a footbridge at the upstream end. The location's accessibility has been greatly improved by the Colorado Avenue underpass tunnel to connect the trail near the whitewater park. It has become a focal area, a common visitor

[85] McLaughlin, K. 2017. *"Bend is Work-From-Home Capital of Oregon,"* The Bend Bulletin, January 3, available at: http://www.bendbulletin.com/business/4940408-151/bend-is-work-from-home-capitol-of-oregon.

[86] The ACS reveals that not only was the work-from-home rate highest in the Bend area, it also grew at the fastest clip across the state – 28 percent since 2013.

attraction and convenient area for locals to walk, gather, play with children or sunbathe at the sand beach at the downstream end of the whitewater park. Waterfowl gather in the Habitat Channel, adding wildlife viewing to the site's features. And fish have been observed successfully navigating the Passageway Channel as it was designed to support in a dual purpose as a fish ladder.

In terms of the economic value of direct water use of the Bend Whitewater Park (not including those who use the portage path) the annual value for 2017 is $3.6 million annually, based on calculations described earlier (and the midpoint of estimated Whitewater Channel users). Some portion of trail and park users also benefit from the amenities of the Bend Whitewater Park in terms of spectating, wildlife viewing, and park use including the beach. When including population growth this equates to 2.3 million water users over ten years and 5.1 million over 20 years. The values for this usage are $36 million and $70 million respectively, with 3 percent discounting. These benefits are not uniformly distributed, as the whitewater park experiences heavy use from a subset of residents, and also high levels of use by visitors.

These values do not include the habitat benefits, likely in the hundreds of thousands of dollars annually based on ecosystem services described earlier.

Based on our study of spending at whitewater parks as documented in our feasibility study for Willamette Falls, a whitewater park of this magnitude can expect $1 to $2 million in annual expenditures associated with use of the whitewater park. This level of spending could generate in total 19 local jobs (in sum across all industries) and $1.3 million in local economic output annually.

Considering only the public costs of establishing the Bend Whitewater Park as well as including $200,000 annually in staffing and maintenance costs equates to a return on investment of 250 percent over 10 years and 580 percent over 20 years. Including other benefits such as habitat, reduced injury/mortality risk, and spectator/onshore benefits would further increase this return. Clearly, the return on the Bend Whitewater Park investment is very high.

6.2 The Pavilion

The Pavilion opened December 2015 offering an ice rink for skating and related sports from November through mid-April, with other activities including sports, kids day-camps and events during the non-ice season. The total cost for development of the Pavilion was $11.7 million. As shown in Table 7 the Pavilion is currently hosting 72,000 annual visits worth $1.5 million. This suggests 800,000 visits over the first 10 years and 1.8 million over the first 20 years, worth $15 million and $28 million respectively (Table 8). It isn't clear that there are other beneficiaries or secondary benefits beyond those accruing to users of the Pavilion.

These benefit estimates equate to a return on investment of 9 percent over the first ten years and 110% over the first twenty years. Generally, the fees collected for use of the Pavilion cover annual direct operation and maintenance costs, so other adjustments to these calculations are

not necessary. While these calculations suggest a lower return on investment for the Pavilion than the Bend Whitewater Park, a higher percentage of local residents report use of the Pavilion in the 2017 Needs Survey, at 33 percent, than the whitewater park at 28 percent. So a larger share of the benefit likely accrues to local residents.

7 Conclusions

The Bend Park and Recreation District provides a wide range of services essential to the lifestyle and health of the majority of Bend residents. Residents annually make millions of trips to use District facilities, programs, trails, parks, and events. Visitors do so as well, to a lesser extent. Visitor participation generates millions of dollars annually in local spending, which generates millions of dollars of local income and hundreds of jobs, as well as important contributions to the regional tax base.

Some of the key numbers to take from this report:

- Over 1 million annual recreation facility and program visits
- Nearly all homes in Bend are within 1 mile of a park and/or a trail provided by the District, with half of homes within a quarter mile
- Over 1 million annual trips on District trails
- 130,000 annual attendees of events on District properties
- Over $65 million in annual total user benefits across all District offerings
- 4.8 to 6.6 million total annual user visits and experiences across all District offerings
- Long term benefits of $930 million (10 years) to $1.8 billion (20 years) for all District offerings
- Over $150 million contributed to resident property value
- $3.2 million in annual visitor spending associated with events on District properties
- $70 million in annual visitor spending associated with visitor use of District offerings
- 235,000 people visited the Bend Whitewater Park in its first full summer of operations, not counting those who came to watch

The importance of these District services is evidenced by the premiums people pay to live near the amenities. The $150 million contributed to the value of resident home assets in Bend captures only differences in value within Bend, as opposed to contributions to the appeal of Bend as a whole for all residents. Home value contributions and visitor spending support the regional tax base as well. The amenities improve the overall quality of life in Bend in ways that are important for attracting businesses and a skilled workforce. The industries influenced by Bend's quality of life and regional amenities have been more resilient than other industries, and

seen greater strides in employment and wages. The overall regional attraction is an important force supporting, maintaining and growing Bend's economy while other communities lose businesses and people to the major metropolitan areas.