2008 - 2015

Intertwine Trail Snapshot

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Each year, volunteers from throughout the region gather along trails to count and survey people biking and walking on The Intertwine – the Portland metropolitan area's system of trails, parks and natural areas. What have we learned from the last five years of counts and surveys? This report is a summary of our findings.

Data Collection

More than 4,355 volunteer hours were spent counting and surveying bicyclists and pedestrians in the past eight years. Volunteers collected 3,538 surveys and counted 226,336 trail users. Eighteen separate agencies have participated in the coordinated effort, following a standardized data collection process known as the National Bicycle and Pedestrian Documentation Project (NBPD).

Data is collected at the same week, day and time every year. Collection sites along trail corridors around the region were identified at locations known to have high levels of use. Two-hour counts are conducted twice at each site: once during the midweek evening rush-hour, and again on a weekend morning. An intercept survey of trail users is administered during the same periods. More information about the NBPD is available at www.bikepeddocumentation.org.

How is this information used?

- Secure grant funding
- Measure the return on investment for new facilities
- Decide where and when to build new trails
- Gather suggestions from trail users
- Agency budgeting
- Traffic modeling
- Understand trail user behavior

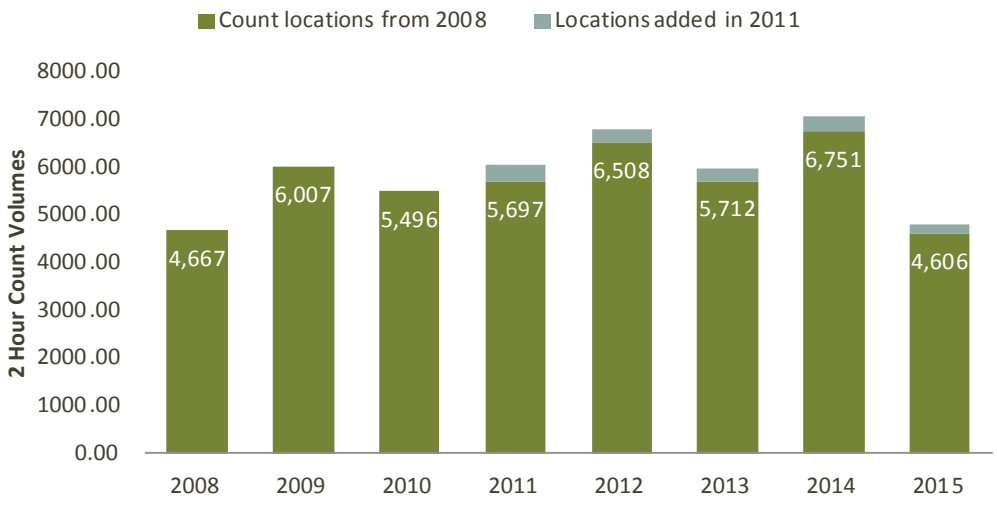
BACKGROUND

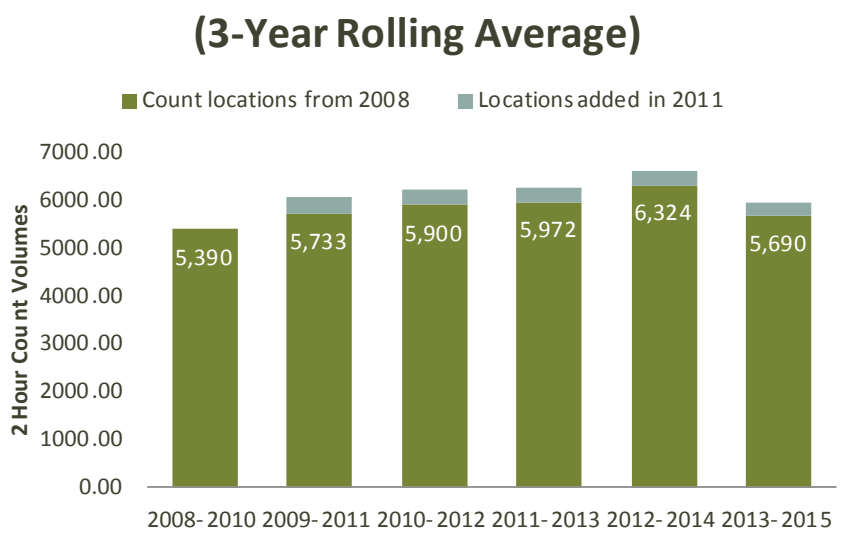
Data Analysis

Eight years of trail count data and trail user intercept survey data were analyzed to produce the tables and charts contained in this report. Based on the availability of data, 30 priority trail corridors were selected for analysis. Some corridors are represented by a single count site; other corridors are composed of data from multiple sites. See Appendix A for more detail. Extrapolation factors were used to convert the two-hour count data into estimated daily and annual totals.

Activity levels of bicyclists and pedestrians at a given location can vary day to day, including for reasons related to weather. To address this inherent variability in non-motorized activity, the results on the right side of Figure 1 present activity as a three-year rolling average. For example, the 2010-2012 count is the average of the 2010, 2011 and 2012 count. This method is used in other count programs to mitigate year-to-year variability. For reference, the left side of Figure 1 also includes actual count volumes recorded in each year.

Figure 1: Growth in Intertwine use





1 2011 National Bicycle and Pedestrian Documentation Project (NBPD) methodology. http://bikepeddocumentation.org/

2 Based on counts at core locations on 32 trail corridors. This chart differs from the 2008-2010 Intertwine Trail Use Snapshot Figure 1 due to changes in methodology (see Appendix A).

BACKGROUND

Figure 2: Data collection numbers at a glance

Year	Participating agencies	Volunteer hours[4]	Count Sessions conducted	Surveys collected	Individuals Counted
2008	6	207	69	696	11,461
2009	9	384	128	1,119	22,011
2010	12	510	170	1,97	19,277
2011	13	591	197	420	25,229
2012	18	588	196	204	34,569
2013	16	690	230	183	33,103
2014		618	206	0	39,965
2015		767	256	916	35,504
total	**18**	**4,355**	**1,452**	**3,538**	**226,336**

Like the count analysis, trail user intercept surveys were considered in aggregate across an entire trail corridor and responses from multiple years were combined[5]. Results were analyzed by user type and a corridor total was created by weighting responses to reflect the relative proportions of pedestrians and bicyclists based on the count data for the same sites. To create the survey figures for the entire Intertwine system, results from individual corridors were combined and weighted relative to the observed volumes of users on each trail.

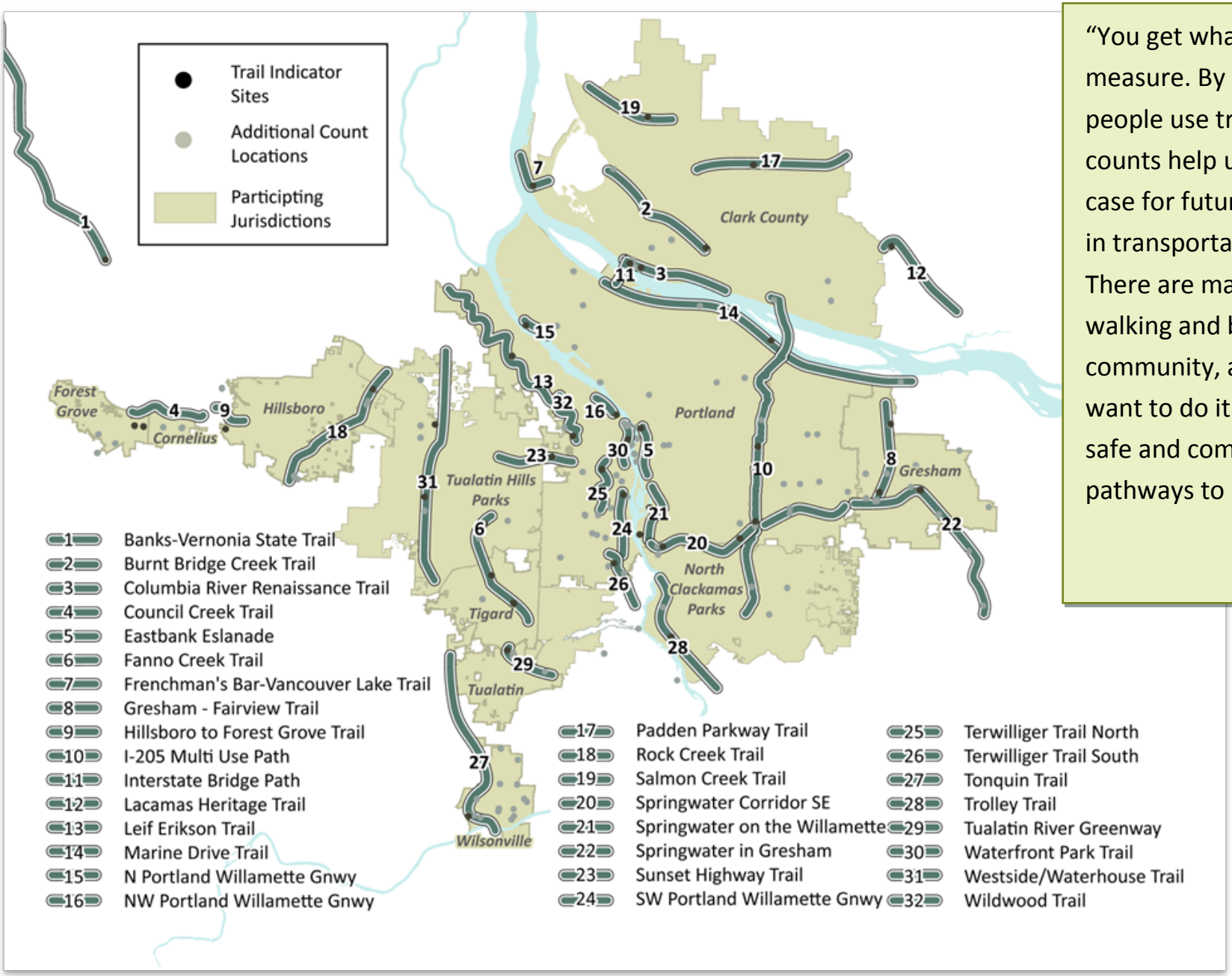
2010-2015 trail use findings at a glance

- There were an estimated 15.7 million annual user trips at the 34 priority trail corridor locations[6] (see Figures 5 and 6).
- Trail use varies year-to-year. Across 27 sites tracked since 2008, the 2010-2015 count seasons show a 2 percent increase over counts from 2008-2010 (see Figure 1).
- Trail count data indicates that trail use is split evenly between bicyclists and pedestrians (see Figure 4).
- 70 percent of Intertwine bicyclists are male, but pedestrians are evenly split between the two genders.
- Most bicycle trips on The Intertwine were reported to be for transportation (see Figure 13).
- Nearly all pedestrian trips on The Intertwine were reported to be for recreation (see Figure 13).

4 Volunteer hours are estimated by multiplying 'sessions conducted' by 3. Many sessions are staffed by more than one volunteer.
5 Some trails lacked adequate intercept survey response rates and were not included in the survey analysis.
6 This total is a conservative estimate calculated from 2-hour peak counts averaged across multiple years for each trail corridor between 2010 and 2015.

BACKGROUND

Figure 3: Trail corridors and count sites



"You get what you measure. By showing that people use trails, these counts help us make the case for future investments in transportation choices. There are many people walking and bicycling in our community, and more who want to do it if they have safe and comfortable pathways to use."

–Metro Councilor Kathryn Harrington

TRAIL COUNT FINDINGS

Across the region, the share of bicycle and pedestrian users on The Intertwine is nearly even, with pedestrians representing forty-five percent and bicyclists representing fifty-four percent of total trips. Other modes such as wheelchairs, horses, roller blades, and skateboards make up the remaining one percent of users, as shown in Figure 4.

However, the relative share of bicyclists and pedestrians does vary depending on the trail, as shown in Figures 5 and 6. For example, Portland's Waterfront Park and Southwest Willamette River Greenway and Vancouver's Burnt Bridge Creek Trail show an even split between bicyclists and pedestrians, while trails like the Columbia River Renaissance Trail and the Tonquin Trail show a significantly higher rate of pedestrian usage.

Each of the trails next to busy roads or freeways, for example, tends to experience higher numbers of people on bikes than people on foot. These trails include the Eastbank Esplanade, I-205 Multi Use Path, Sunset Highway Path, Padden Parkway and the I-5 Bridge Path. This is not surprising since bicyclists reported using trails for transportation, and these trails are adjacent to major transportation corridors connecting them to popular destinations.

Figure 4: Average mode share on the Intertwine

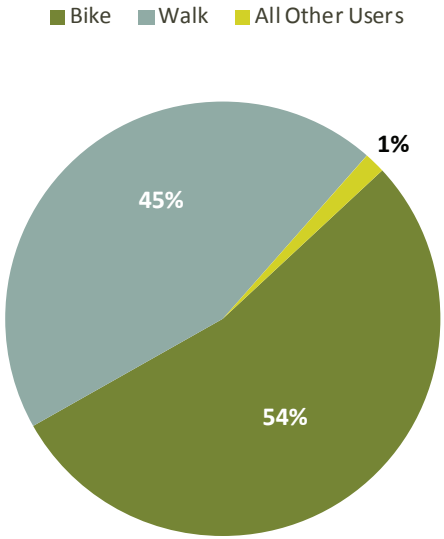
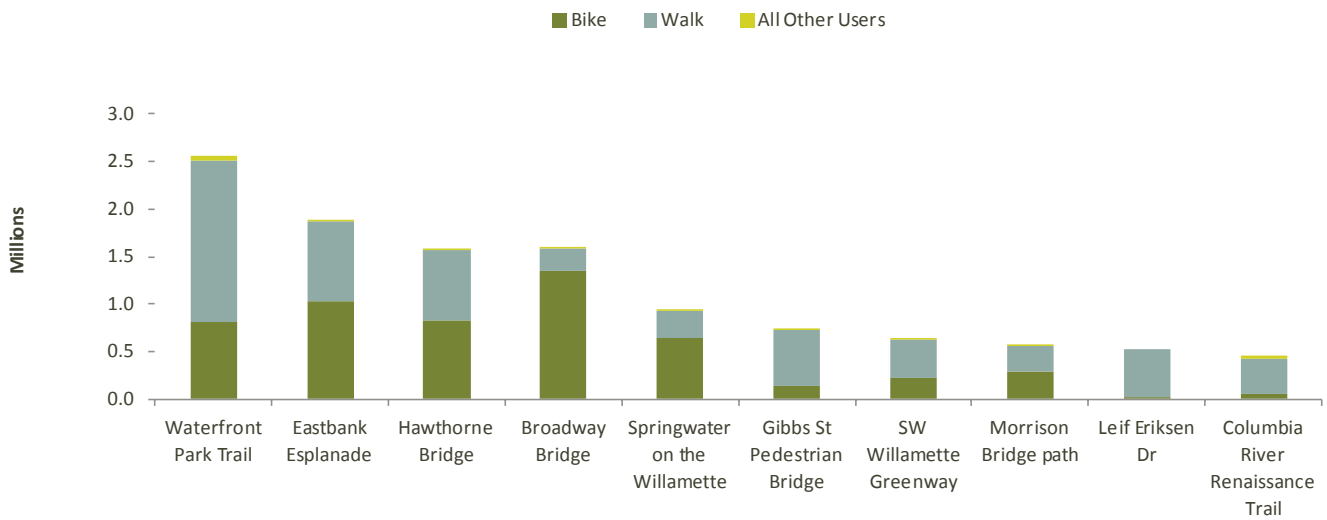
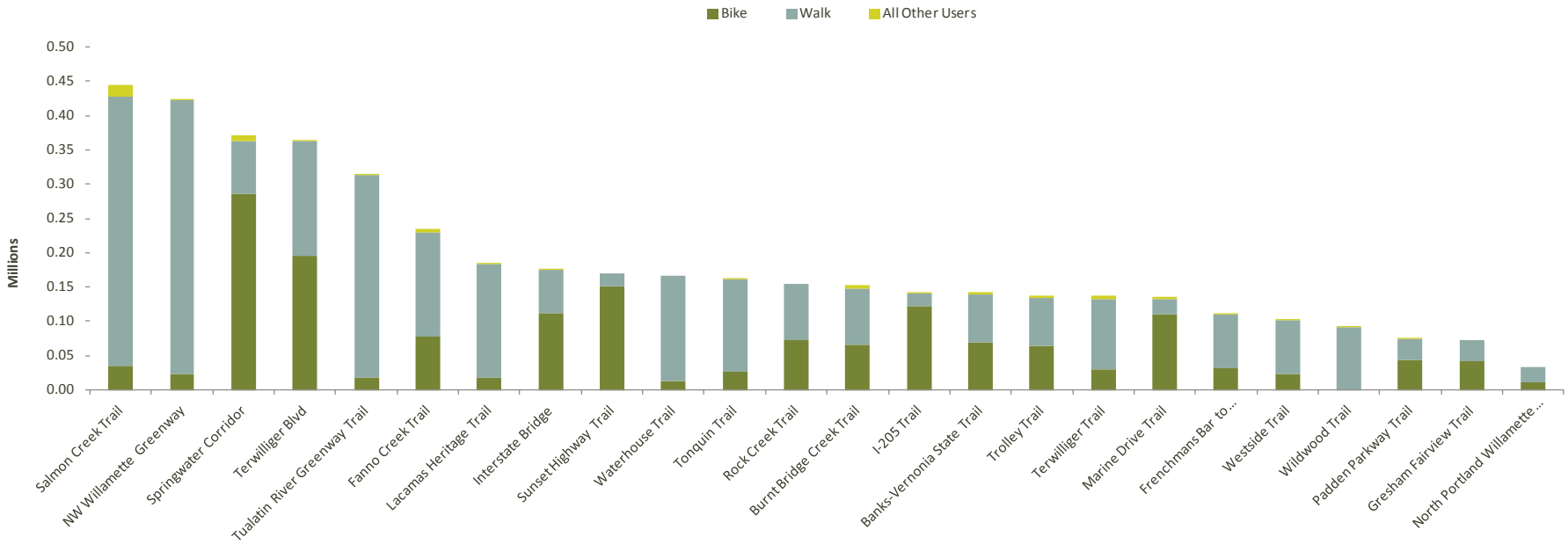


Figure 5: 2010 to 2015 estimated average annual volumes at key indicator locations along the top ten Intertwine trail corridors



TRAIL COUNT FINDINGS

Figure 6: 2010 to 2015 estimated average annual volumes at key indicator locations along other Intertwine trail corridors[7]



Another characteristic shared by trails with high percentages of people on bikes is that they tend to be part of longer, connected corridors, allowing bicyclists to travel farther and faster. The two sections of the Springwater Corridor featured in this report – Springwater on the Willamette and the Gresham Springwater Trail – are two good examples.

Conversely, trails with higher percentages of people on foot tend to be shorter or less direct, but they are more likely to feature scenic experiences of creeks, rivers and other natural features. For example, the Columbia River Renaissance Trail, Tonquin Trail, and Tualatin River Greenway Trail each have high pedestrian volumes in spite of being short and incomplete. The survey results presented in Figure 14 support this, showing that pedestrians' choice of where to walk is influenced far more by a trail's scenic qualities than its directness or connectivity.

7 Annual count volume estimates for each corridor differ from those published in the 2008-2010 count report due to a change in methodology designed to allow for more consistent reporting. See Appendix A for more details of the methodology.

TRAIL COUNT FINDINGS

Trends Over Time on Individual Trail Corridors

As more and more trail count data is collected over time, it may be possible to infer changes in the use of individual trail corridors. In the short term, variation in observed count volumes from year to year is expected due to normal fluctuations in use.

In some cases, annual observations change dramatically. Figure 7 shows the change in two-hour counts along the Trolley Trail.

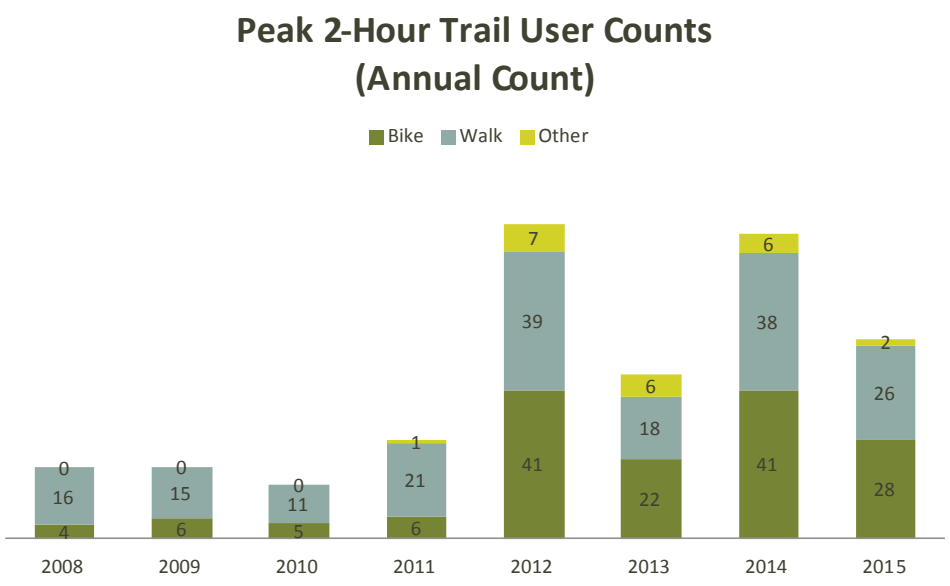
There is a very good reason for the large increase in count observations in 2012: this was the first year counts were performed after the completion of the Trolley Trail.

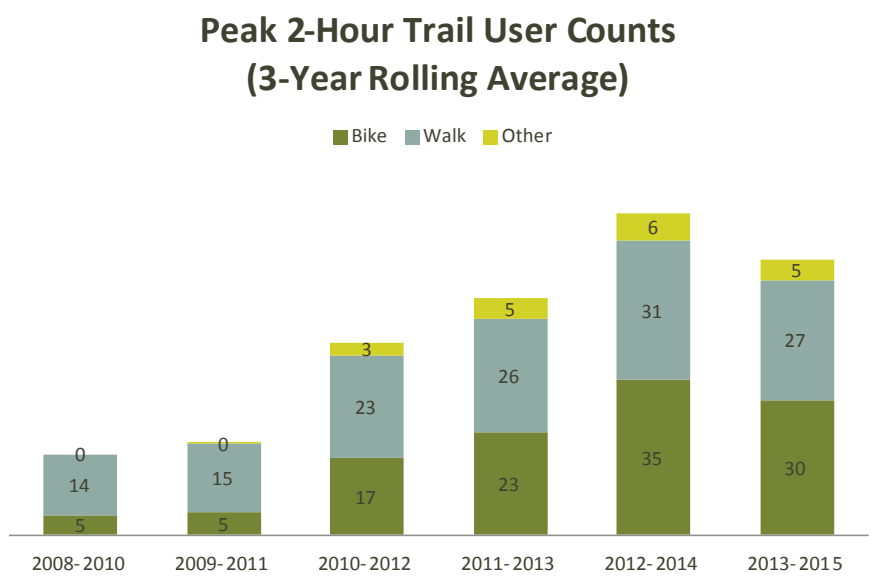
Until 2012, the so-called Trolley Trail was an overgrown pathway along an abandoned trolley line. The Trolley Trail had been a popular route for neighborhood pedestrians for decades, ever since the trolley stopped running in the late 1950s.

Because the surface was muddy most months of the year and the corridor was overgrown with blackberries and other weeds, it failed to live up to its potential as a transportation and recreation corridor.

In 2012, the Trolley Trail was developed to AASHTO[8] standards as a fully paved shared-use path. As of 2015, the counts indicate that usage of this trail has increased dramatically. We look forward to seeing what future counts reveal as more of the community discovers and enjoys this fantastic new resource.

Figure 7: 2-hour counts on the Trolley Trail

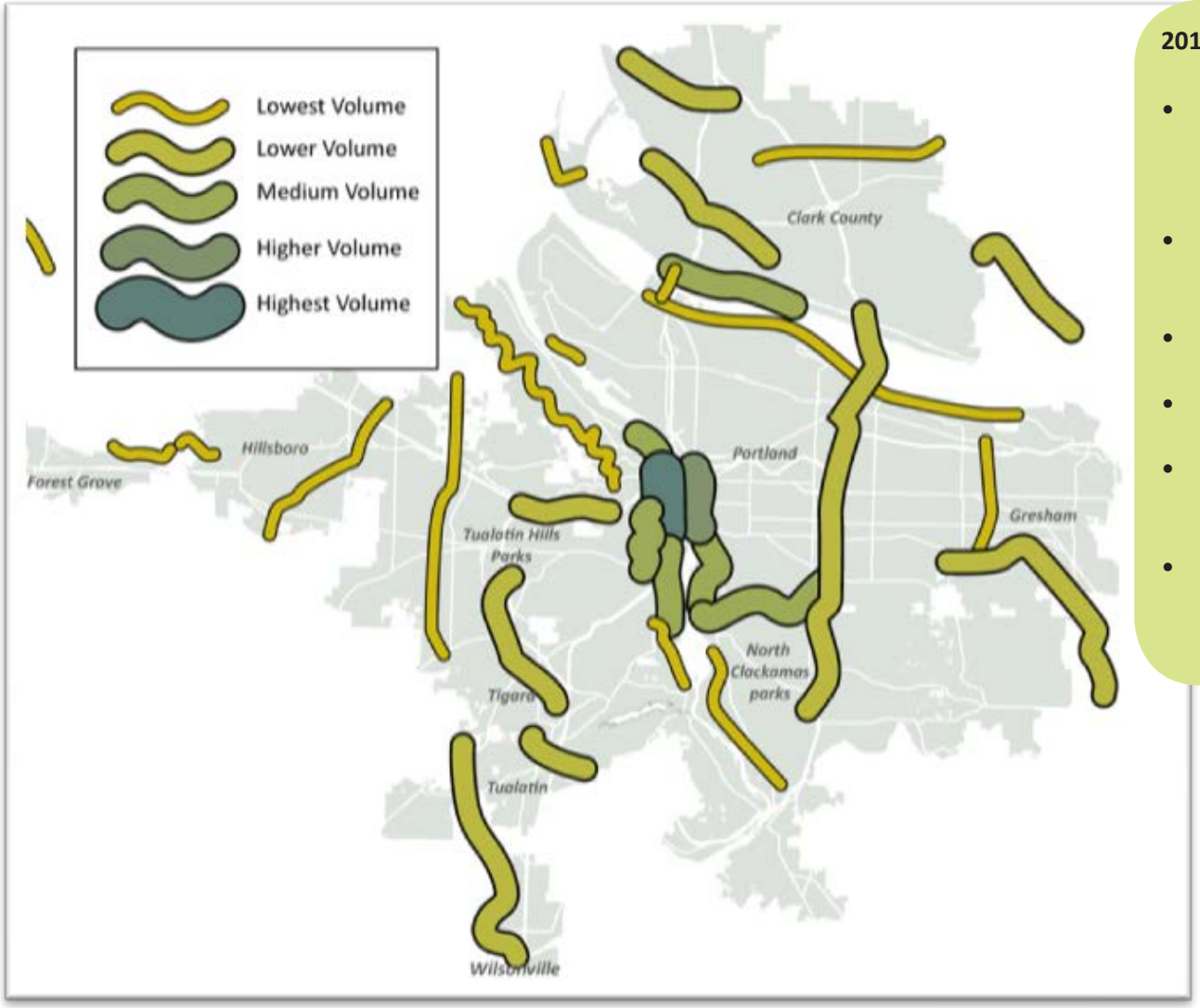




8 American Association of State Highway and Transportation Officials

TRAIL COUNT FINDINGS

Figure 8: Average annual trip volumes on the Intertwine



2010-2015 trail use findings at a glance, cont.

- With an estimated volume of 4.8 million trips per year, the Willamette River Greenway in Portland's Tom McCall Waterfront Park is The Intertwine's most popular trail (see Figure 5).
- Trails next to freeways and busy roadways draw significantly more bicyclists than pedestrians.
- Longer, better connected trails tend to have a higher proportion of bicyclists.
- Shorter, less connected trails tend to have a higher proportion of pedestrians.
- 92 percent of survey respondents were repeat users of the trail they were surveyed on (see Figure 12).
- 22 percent of survey respondents are daily users of the trail they were surveyed on (see Figure 12).

Figure 8 shows that trails in Portland's central city experience the highest use. The two trails with the highest volume of users – Waterfront Park and the Eastbank Esplanade – form a continuous two and a half-mile long loop around the river. This makes them immediately accessible to jobs and shopping destinations and ideal for lunchtime jogs or strolls.

TRAIL COUNT FINDINGS

In addition to knowing which trails are most used and by how many people, it is also valuable to know who uses them. Demographic information is useful for targeting audiences in public engagement efforts. Trail users were asked their age in the intercept survey[9]. Their gender was observed by the volunteers and recorded on the count forms.

The average age of trail users surveyed was 44 years-old, which is considerably older than the median age of 36 for metro area residents[10]. Reaffirming the findings of Portland's annual bike counts, the Intertwine NBPD found that 71 percent of cyclists are male. In light of this finding, trail managing agencies may wish to consider strategies for making trails more appealing to women.

Figure 9: Gender balance on the Intertwine

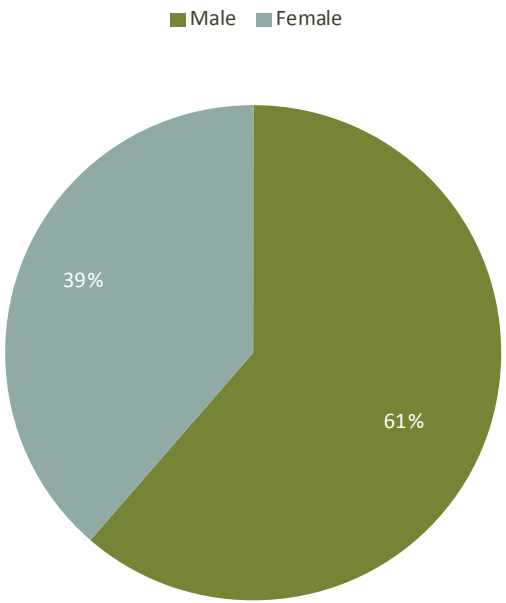
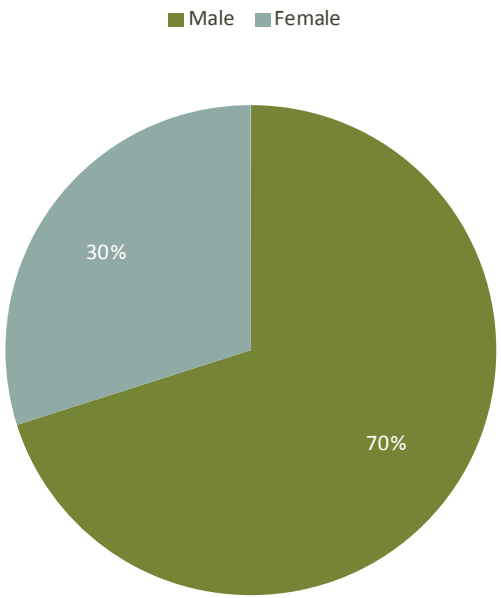


Figure 10: Gender of Intertwine users on bikes



9 A question pertaining to race and ethnicity was included in the 2009 and 2010 surveys, but the data has not been analyzed.
10 Portland Regional Fact Book, 2007. Portland Development Commission.
11 Summary information for individual trail corridors can be found in Appendix C.

TRAIL COUNT FINDINGS

Figure 11: Gender of Intertwine users on foot

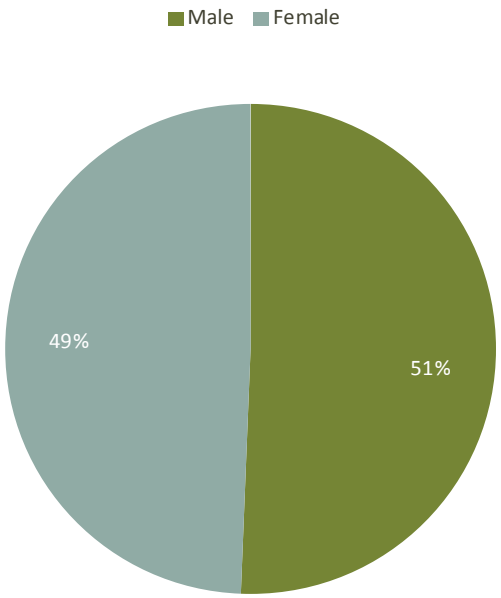


Figure 12: How often people use the Intertwine per month

Trail Survey Findings[12]

Over 90 percent of trail users responded that they had used the trail at least once in the previous month and 22 percent reported that they use the same trail daily. These numbers, displayed in Figure 12, show the importance of trails as part of people's daily lives.

Trail users were asked if the purpose of their trip was for pleasure/exercise, going to/from work or school, or for shopping or doing errands. Looking at all Intertwine users as a whole, 60 percent use trails for recreation while 40 percent use trails for transportation. These findings support the belief that trails are transportation facilities, equal in importance to roads or highways. But attention must also be given to their dual role as recreational amenities.

12 Survey findings presented here are from 2008-2010 surveys and do not include trail corridors surveyed in 2011 or 2012.

TRAIL COUNT FINDINGS

Figure 13: Intertwine trip purpose

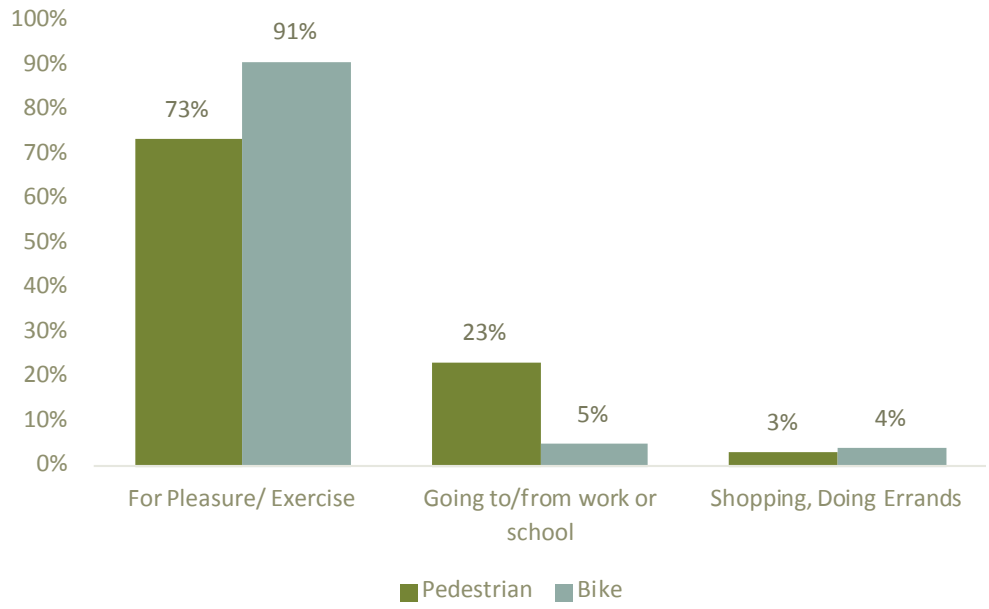


Figure 14: Percent using the Intertwine to commute by gender

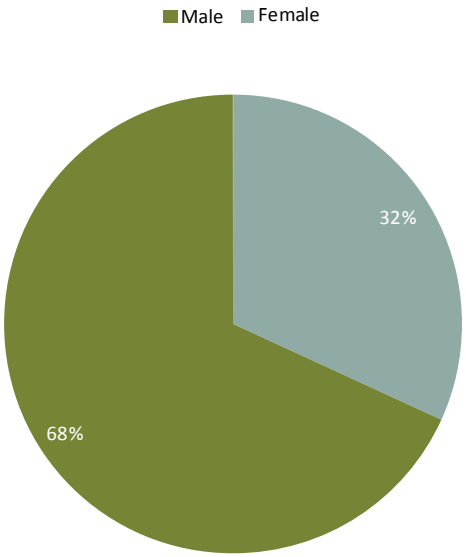


Figure 13 breaks down the trip purpose question further by separating the survey responses by bicyclists and pedestrians. While 78 percent of bike trips were reported to be for transportation, 97 percent of pedestrian trips were reported to be for recreation, showing a strong relationship between mode and trip purpose. Pedestrians probably account for so few transportation trips on trails because most trips to work or school are too far to walk.

While we know that bicyclists are much more likely to use the Intertwine to commute than pedestrians, there continues to be a gender divide in this area. Figure 14 shows that between 2008-2015, roughly 68% of cyclists who were using the Intertwine to commute to work or school were male and 32% were female. This trend shows up in cyclists using the trail over all, however, there is a small difference in the overall use. When commuting to work, it appears that women are a little more likely to use the trail system.

13 Survey findings presented here are from 2008-2010 surveys and do not include trail corridors surveyed in 2011 or 2012.

TRAIL COUNT FINDINGS

Figure 15: Factors influencing route choice

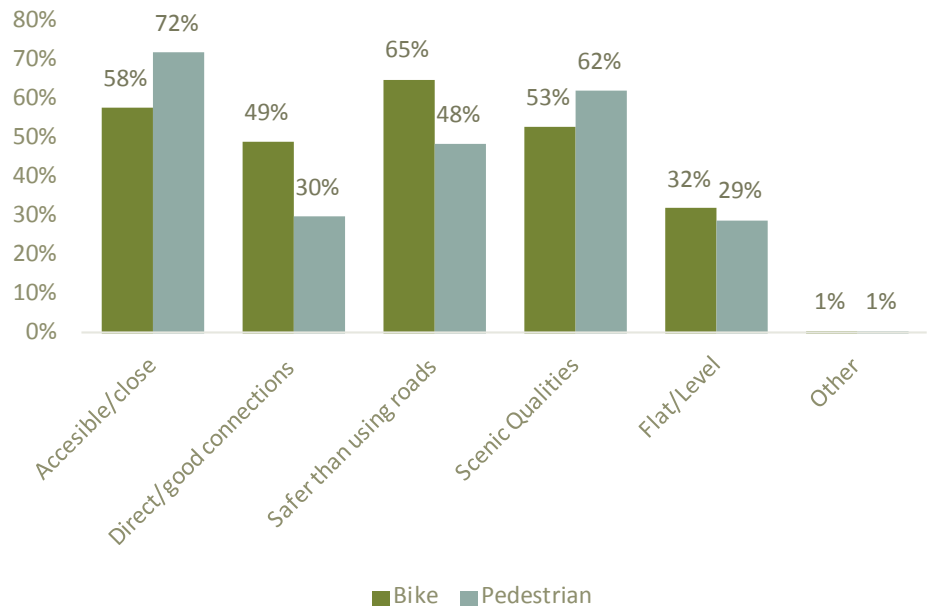
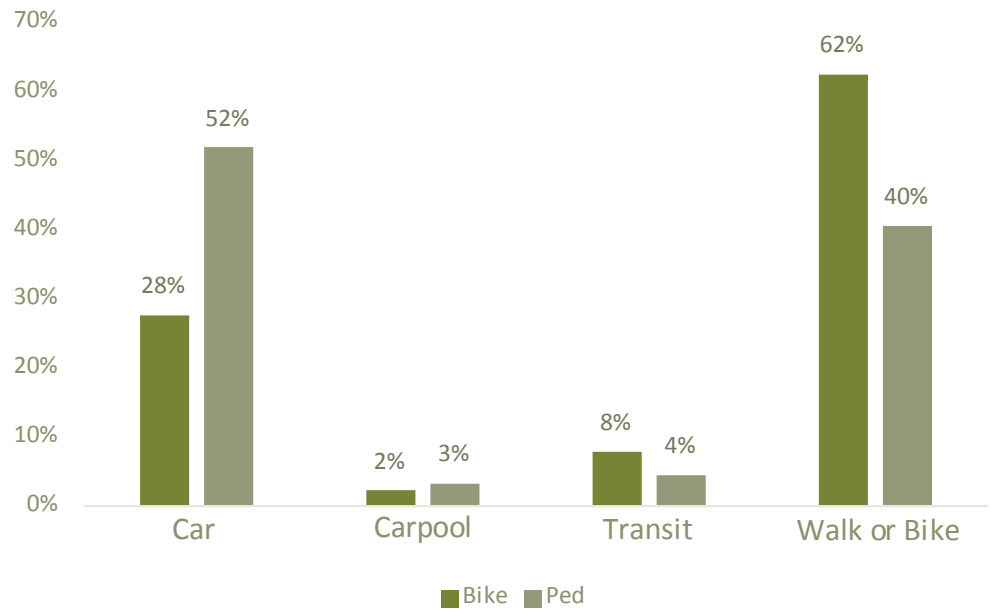


Figure 16: How Intertwine users gets to the trail[14]



Since we now know that most bicyclists have different trip purposes than pedestrians, it seems likely that the two types of users would choose their routes for different reasons. Figure 15 shows that pedestrians' route choices are overwhelmingly influenced by a trail's scenic qualities. Because of their non-utilitarian nature, it makes sense that most pedestrian route choices would be more influenced by scenic qualities than directness.

Bicyclists' responses to the question are more evenly distributed than pedestrians', but vary depending on which trail they are riding on. The top two responses by bicyclists – direct/good connections and safer than roads – are the two responses that one would expect to be most closely associated with transportation trips. Also to be expected is that the responses show bicyclists are more sensitive to steep slopes than pedestrians.

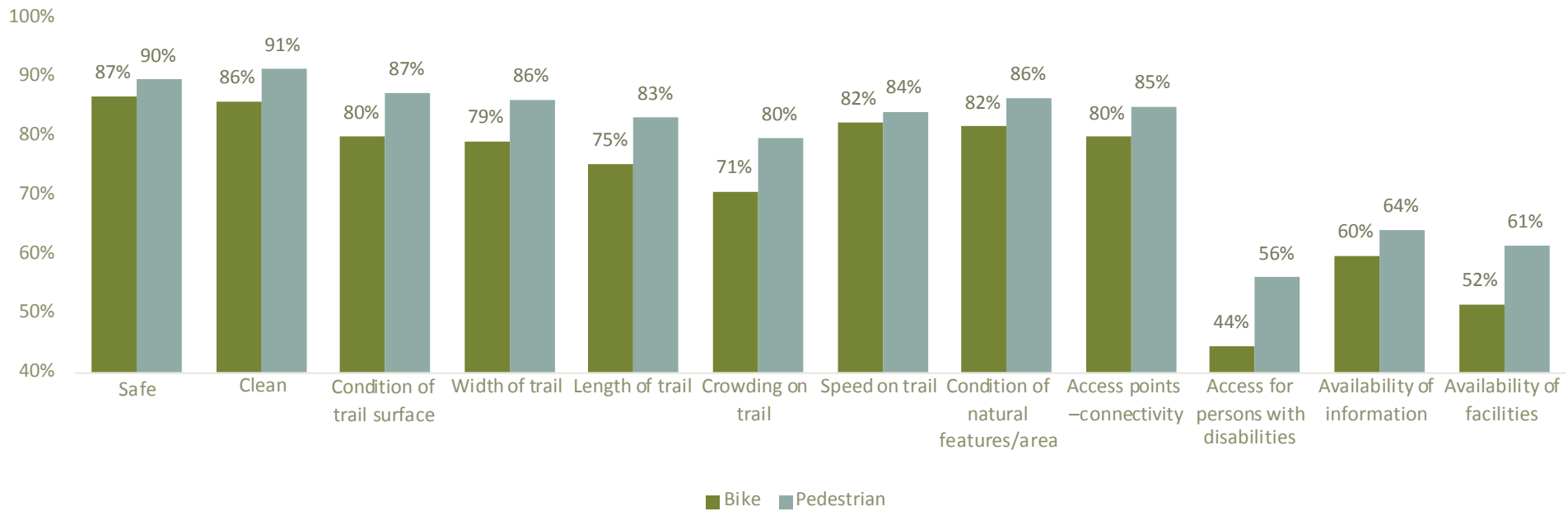
It is useful to understand what other modes of travel people use to get from home to the trail. Figure 16 shows that bicyclists overwhelmingly arrive at the trail by bike. Pedestrians are more likely than bicyclists to use other modes, such as transit or carpool, and are four times as likely to drive to the trail. Bicyclists' tendency to bike to trails could explain why closeness is a more important route choice factor than for pedestrians, whose preference of driving to the trail gives them access to more distant trails.

Trail users were asked to rate the trail on the quality of several conditions. Figure 17 represents the aggregate of all trails surveyed and paints a generally positive picture of the public's perception of trail conditions. Overall, people are generally satisfied with trail conditions such as trail width, length, surface, cleanliness, and surrounding natural areas.

14 The survey asked trail users, "What other modes of travel were used in your trip today?"

TRAIL COUNT FINDINGS

Figure 17: Perceptions of Intertwine trail quality[15]



Weather Makes a Difference

Survey respondents reported that they do not to use trails as much in the winter. Figure 18 shows a similar trend for bicyclists and pedestrians. It appears that bicycling may be slightly steadier throughout the year than walking. This could be because the recreational trips made by pedestrians are more discretionary than the transportation trips made by most bicyclists.

Figure 18 shows count data from a site on the Fanno Creek Trail at North Dakota Street in Tigard. The graph clearly shows that trail use is higher when the weather is dry and lower when it is raining. The 2010 count season was rainier, windier, and had lower temperatures than the previous two years. Although overall trail use grew from 2009 to 2010, several individual count sites saw drops in trail use due to poor weather. For example, trail use on the Eastbank Esplanade at OMSI dropped 36 percent, from 5,200 daily trips on a sunny day in 2009 to 3,300 trips on a rainy day in 2010. Trail users are clearly influenced by the weather.

15 Survey respondents gave a 1 through 5 (Poor to Excellent) rating to each of the above trail conditions.
Figure 16 shows the percentage of responses that were either “excellent” or “good”.

TRAIL COUNT FINDINGS

Future recommendations

Over the past five years we've learned a lot about The Intertwine's regional trail system. Trails are a part of people's everyday lives… especially when the weather is nice! Whether they are on their way to work or just out for a weekend stroll, bicyclists and pedestrians alike choose trails as the scenic and safe alternative to roads. Overall, they are very satisfied with the quality of the trails.

We have seen steady growth in trail use since 2008. We are optimistic that these trends will continue into the future.

Ongoing, annual counts and surveys will be vital to show our success and to continue to provide the public with the trail experience they love.

Trail use findings at a glance, continued:

- Most bicycle trips on The Intertwine were reported to be for transportation (see Figure 13).
- Nearly all pedestrian trips on The Intertwine were reported to be for recreation (see Figure 13).
- Bicyclist report more consistent use across seasons than pedestrians (see Figure 17).
- Pedestrians typically drive to and from the trail (see Figure 15).
- Bicyclists typically bike to and from the trail (see Figure 15).

Figure 18: Intertwine trail use across the seasons

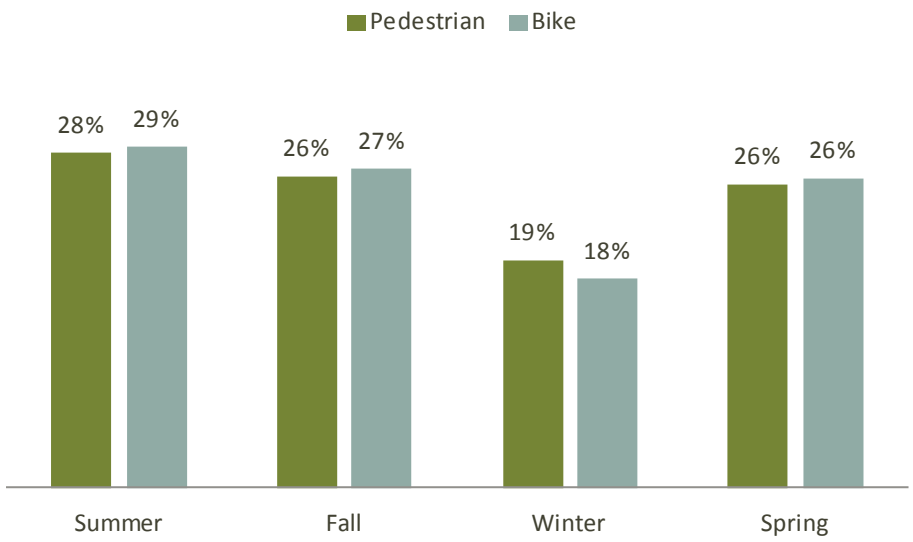
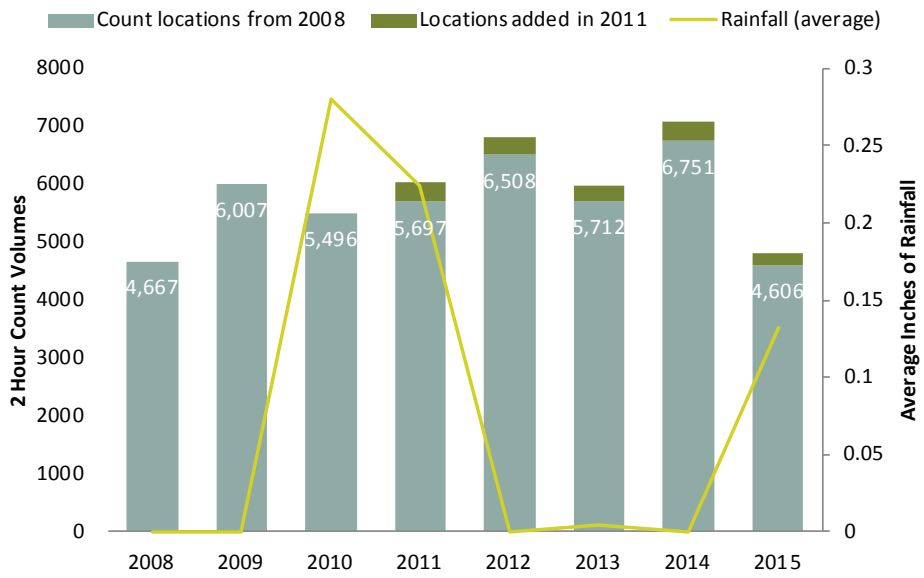


Figure 19: Intertwine users prefer dry weather



APPENDIX A

Methodology change from the 2008-2012 Intertwine trail use snapshot

This report updates the *2008-2012* Intertwine trail use snapshot and uses a revised analytical approach due to the large amount of data now available and lessons learned from five years of the count program. This appendix describes the count location selection strategy and recommendations for future count efforts.

The *2008-12* Intertwine trail use snapshot calculated average trail corridor volumes based on data from multiple count sites, across different days (weekend and weekday) and count times. A review of the five years of count data now available indicated that while the number of counts and locations has continued to grow, the same locations are not always counted each year. This makes comparisons from year to year difficult.

Use core count locations as the primary source of data

The current report addresses this challenge by identifying a set of core count locations that should be counted each and every year. For each of the 32 trail corridors identified in Figure A-1, one to three count locations and count times were identified to serve as core count locations. These locations were identified based on geographic location, the presence of historic data, and high-count volume sites indicating peak trail use volumes. Note that Metro will still work with local agencies to continue to count a larger number of locations as it has in previous year. However, when assisting agencies to assign volunteers to count locations, Metro will aim to ensure that the core count locations are covered first to provide consistent data reporting in future count reports.

Trail usage over time based on the actual count volumes at the 32 trail corridors (core locations) is presented in Figure 1. Estimates for individual trails are presented as annual extrapolations of these counts in Figures 5 and 6. The general trends in activity remain the same, but the revised methodology results in annual trail use volume estimates that are higher than in the previous report, because the previous methodology averaged higher and lower volume locations together. The revised methodology instead averages counts from the same core locations (typically a higher activity location along the trail) over multiple years. Elimination of lower volume locations increases the annualized totals. However, these estimates may still be conservative as a single count location along a lengthy trail will miss many users from other parts of the trail who don't pass that point.

The result of the methodology change is a simplification of the counting, analysis and tracking process that should provide data that are easier to compare over time because they are based on a consistent set of locations.

Consider developing local extrapolation factors

Because activity patterns vary on different types of trails throughout the region, a set of automatic counters placed on a subset of trails around the region to document bicycle and pedestrian activity throughout the year would allow for a more refined method of developing annual estimates. In the absence of such data, the revised methodology provides annual estimates of trail use that are based on a consistent set of locations and allow for a comparison of relative activity patterns on trails throughout the region.

APPENDIX A

Figure A-1: Intertwine key indicator sites, days, times

Intertwine Trail Corridor	Key Indicator Sites
Banks-Vernonia StateTrail	Site 950, Weekdays 4-6 pm
Burnt Bridge Creek Trail	Site 447, Weekdays 4-6 pm
Columbia River Renaissance Trail	Site 462, Weekdays 4-6 pm
Eastbank Esplanade	Site 40, Weekdays 4-6 pm
Fanno Creek Trail	Site 607, 701, 755, Weekdays 4-6 pm
Frenchman's Bar-Vancouver Lake Trail	Site 420, Weekdays 4-6 pm
Gresham-Fairview Trail	Site 517, Weekdays 4-6 pm
I-205 Multi Use Path	Site 106,109, Weekdays 4-6 pm
Interstate Bridge Path	Site 461, Weekdays 4-6 pm
Lacamas Heritage Trail	Site 450, Weekdays 4-6 pm
Leif Erikson	Site 121, Weekdays 4-6 pm
Marine Drive Trail	Site 76, Weekdays 4-6 pm
N Portland Willamette Greenway	Site 32, Weekdays 4-6 pm
NW Portland Willamette Greenway	Site 7, Weekdays 4-6 pm
Padden Parkway Trail	Site 434, Weekdays 4-6 pm
Rock Creek Trail	Site 305, Weekdays 4-6 pm
Salmon Creek Trail	Site 418, Weekdays 4-6 pm
Springwater Corridor SE	Site 65, 61, Weekdays 4-6 pm
Springwater on the Willamette	Site 52, 54, Weekdays 4-6 pm
Springwater Trail in Gresham	Site 505, Weekdays 4-6 pm
Sunset Highway Trail	Site 131, Weekdays 4-6 pm
SW Portland Willamette Greenway	Site 25, Weekdays 4-6 pm
Terwilliger Blvd Path	Site 144, Weekdays 4-6 pm
Terwilliger Trail	Site 952, Weekdays 4-6 pm
Tonquin Trail	Site 812, Weekdays 4-6 pm
Trolley Trail	Site 218, Weekdays 4-6 pm
Tualatin River Greenway	Site 724, Weekdays 4-6 pm
Waterfront Park Trail	Site 13, Weekdays 4-6 pm
Westside/Waterhouse Trail	Site 623, 647, Weekdays 4-6 pm
Wildwood Trail	Site 125, Weekdays 4-6 pm

Consider conducting multiple counts at each core location

This report presents results in several figures as a three-year rolling average. This method aims to minimize the natural fluctuation present in short-duration count data. One way to further minimize the variability in the data would be to conduct two counts at each location specified in Figure A-1 (e.g., count Site 950 twice each year on a weekday between 4 and 6 p.m. during the NBPD count week). This would effectively double the number of count observations included in the three-year rolling average (from three to six in the case of the individual corridor results in Appendix C) and would further minimize the susceptibility of the average to a single high or low count.