



**3. WHAT IS THE
STATE OF WALKING
IN PORTLAND?**

“Walkability” can be a difficult quality to measure. Although current data collection opportunities are somewhat limited, planners have a variety of tools for understanding what it is like to walk in Portland today. This existing conditions analysis is a starting place for making recommendations to improve walking in the city.

The Portland Walking Story

Portland has a reputation for walkability. The City crafted one of the country's first Pedestrian Master Plans in 1998 and has set national precedent with its "pedestrian first" transportation strategy for people movement. The design of the Central City and inner eastside neighborhoods, with small blocks oriented on a grid, are friendly to walking.

However, challenges have persisted and the experience of walking varies widely across the city, partially due to significant network gaps in East and Southwest Portland.

Despite consistent investment in the pedestrian network, significant gaps and shortcomings remain. These challenges limit the City's ability to welcome new residents and meet the livability needs of current residents, including safe walking routes to public transit and essential services.

The 1998 Pedestrian Master Plan has served inner Portland well, but has often struggled to provide adequate guidance for areas such as East Portland and Southwest Portland that present environmental challenges and right-of-way constraints.

Role of Property Owners to Construct and Repair Sidewalks

Per City charter and City code, property owners are responsible for constructing, maintaining, and repairing the sidewalks abutting their property. This applies to home owners, business owners, schools and other large institutions, and to homeowners' associations. Traditionally the requirement to construct sidewalks where they are missing or deficient is triggered when development or redevelopment projects are proposed. As part of the development, property owners must construct or improve the sidewalks fronting their property in accordance with City standards. This is how the vast majority of sidewalks have **historically** been built in the City of Portland. The mature sidewalk system in inner Portland that was constructed with development (often over 100 years ago) still serves residents today.

City charter and City code also grants the City the authority to require the construction and maintenance of sidewalks outside of the development process. The City can require the construction of

new sidewalks, if “in the opinion of the City Engineer a sidewalk or curb or both are needed” (Portland City Code, Title 17.28.030). Traditionally the City has not used this authority to require construction of sidewalks where they are missing in already developed areas. **However, while not enforced, City code stipulates that sidewalk construction is legally the obligation of private property owners.**

Local Improvement Districts (LIDs) are a common means by which property owners construct sidewalks in Portland. An LID is a means by which the City can assist a group of property owners with constructing streets, sidewalks, and stormwater management systems. With LIDs, property owners are responsible for paying for the cost of the street and sidewalk improvements, typically on streets not prioritized for public investment. Because City investment priorities are often on busy arterial and collector streets, LIDs can be a good option for property owners who would like to improve streets and sidewalks on local residential

What I find also is important to a good community and livability is understanding how those things function best, and not trying to have them all function in the exact same space.

Peggy
PedPDX Walking Stories

streets. With an LID, the City assists by setting up financing and payment structures, and by assisting with project design, engineering, and delivery. LIDs must be approved by City Council.

In the past 15 years, 35 LIDs have built sidewalks on both sides of approximately 7 miles of new and improved roadways.

In addition to constructing new sidewalks where they are lacking or substandard, property owners are also responsible for maintaining the sidewalks fronting their property when they are cracked, broken, or uplifted by tree roots. Historically, this authority has been referred to as “posting,” because a notice requiring the repair of the sidewalk is posted on the property. When a City sidewalk inspector finds a safety hazard attributable to cracked or broken sidewalks, the owner of the adjacent property is notified and is required to repair the sidewalk.

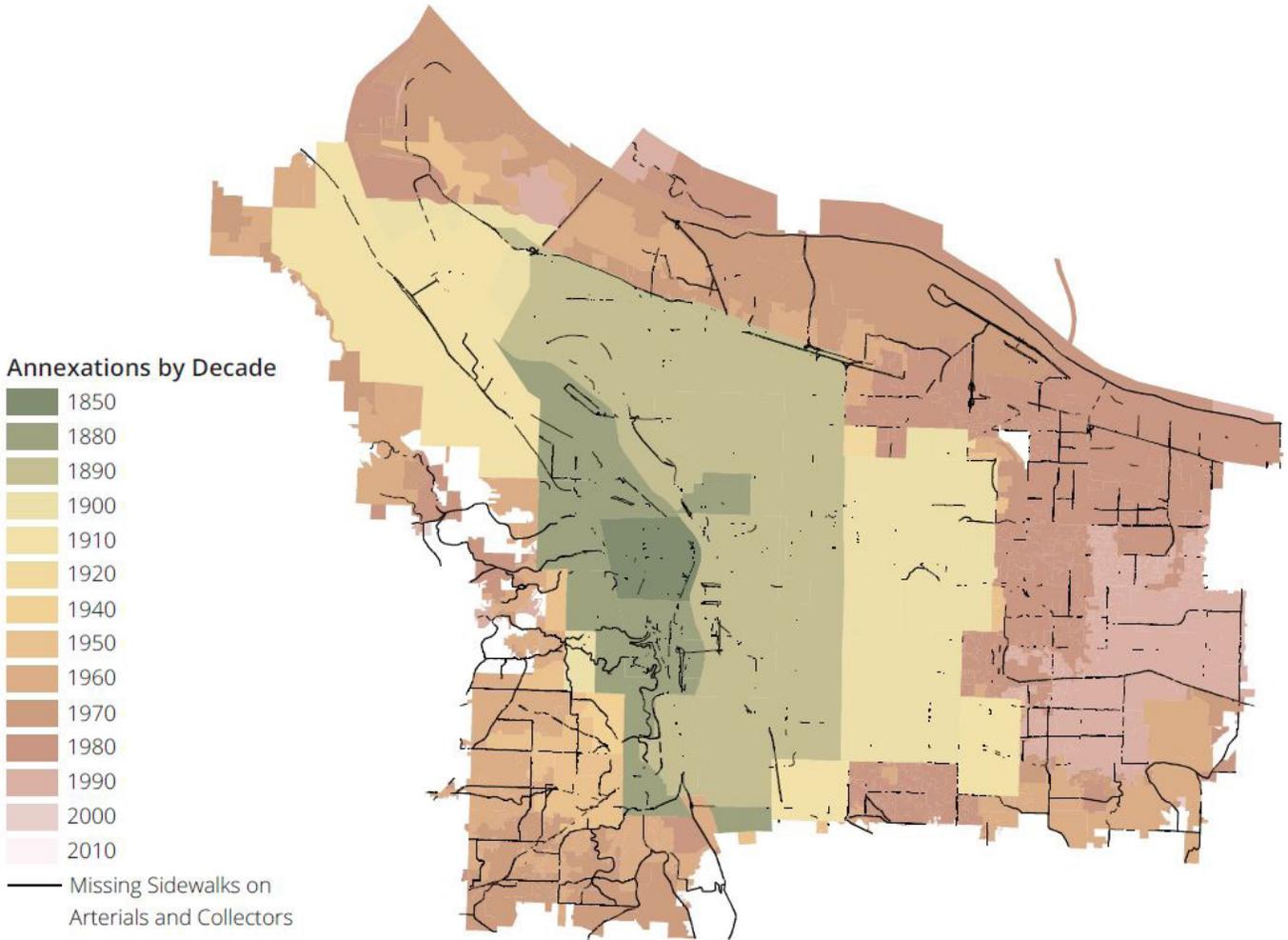
History of Private Sidewalk Development

As Portland’s boundaries have expanded over the years, missing sidewalks have become an increasingly prevalent problem.

Historically, the Portland city limits ended at 82nd Avenue. It wasn’t until the late 1970s and 1980s that Portland began annexing parts of unincorporated Multnomah County, much of which was already developed without sidewalks. Neighborhoods in outer East Portland and Southwest Portland that were annexed into the City typically did not have complete sidewalk networks. In locations where sidewalks were constructed they were often “curb-tight,” lacking furnishing zones or street trees to buffer people walking from roadway traffic. Many of these annexed areas still retain some of their rural character, and they continue to have insufficient infrastructure to meet the needs of people walking.

Figure 11 shows that the vast majority of Portland’s missing sidewalks on busy streets lie within neighborhoods that were originally developed under County regulations

Figure 11: The majority of streets with missing sidewalks lie within already developed neighborhoods that were annexed to the City of Portland in the 1960's, 1970's, and 1980's



that were annexed to the City of Portland in the latter half of the 20th century. In contrast, areas of inner Portland that were developed under City regulations requiring sidewalk construction in conjunction with private development provides a much more complete sidewalk network.

Role of the City

While building and maintaining sidewalks remains a private obligation, the City does invest in sidewalk construction frequently, particularly on busy streets that are deficient and could serve a larger number of people walking. The next section describes the pedestrian infrastructure activity led by the City of Portland over the last 20 years.

What We've Built

The 1998 Pedestrian Master Plan has successfully led pedestrian improvements. The 1998 Pedestrian Master Plan recommended 146 pedestrian projects. Of these:

- 99 projects have been constructed or are currently in progress
- 33 have not yet been constructed but are identified in our TSP as priority projects
- 14 are identified as TSP program priorities (spot improvements under \$500k)

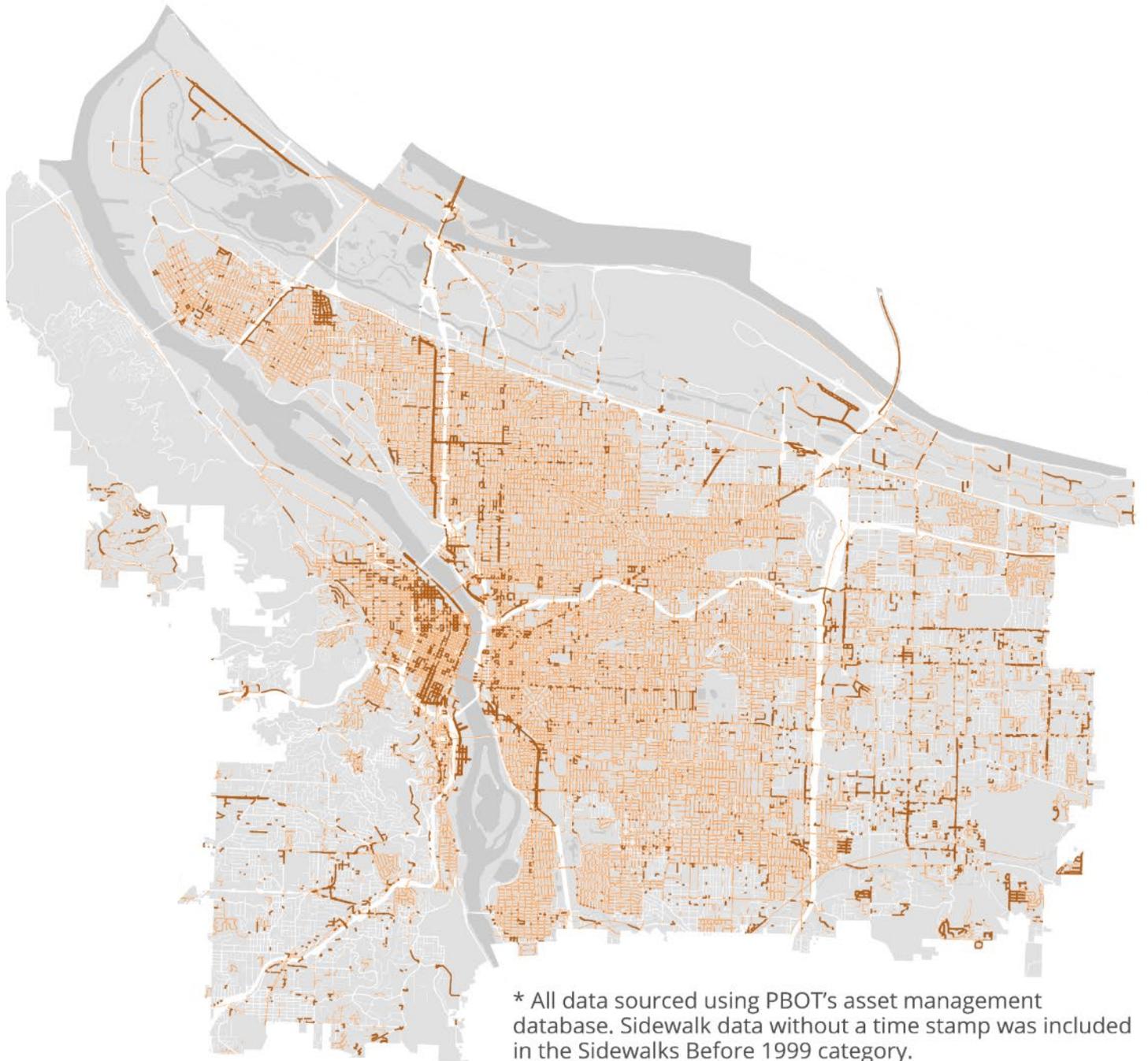
According to PBOT's asset management database, Portland currently has approximately 2,462 total miles of sidewalk. Of this total, approximately **232 miles of new sidewalk** have been built, repaired, or reconstructed since 1998 (Figure 12).

Much of this new sidewalk infrastructure was built as part of private frontage improvements required in conjunction with new development or redevelopment, as guided by the Portland Pedestrian Design Guide. Historically, this is how most sidewalk infrastructure has been provided in Portland. PBOT capital projects providing sidewalk infill have also contributed significantly to filling priority sidewalk gaps over the last 20 years.

In addition, PBOT has significantly increased the number of marked crossings over the last two decades. According to PBOT's asset management database, **approximately 2,150 crosswalks** have been painted or repainted since 1998, for a total of 4,914 marked crossings across the city (Figure 13).

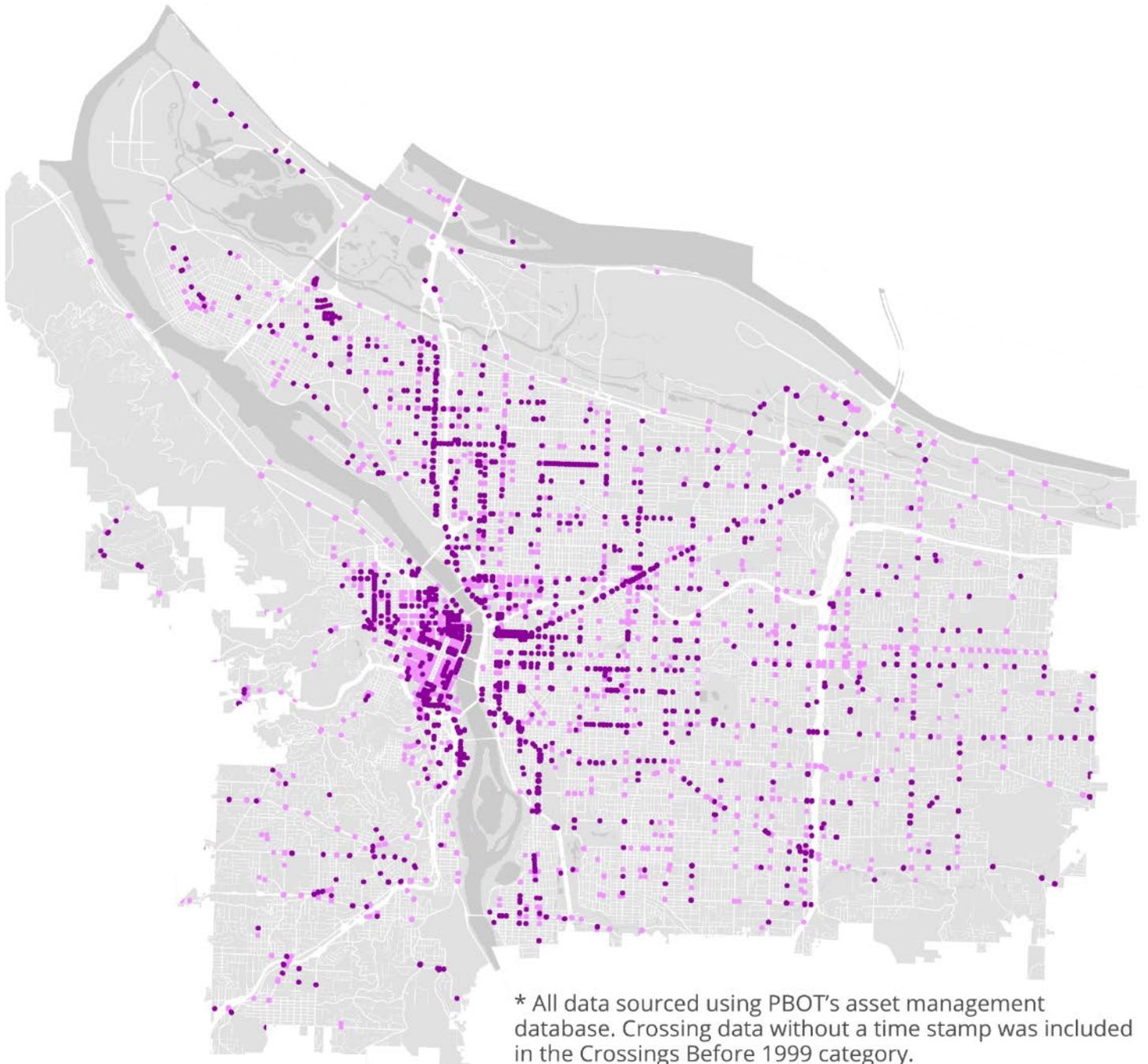
Despite this activity, many sidewalk and crossing gaps remain. Chapter 4 identifies and quantifies remaining sidewalk and crossing needs within the Pedestrian Priority Network.

Figure 12: Sidewalks Constructed, Reconstructed, or Repaired After Adoption of the 1998 Pedestrian Master Plan (1999-2017)



- Sidewalks Before 1999
- Sidewalks from 1999 to Present

Figure 13: Marked Crossings Painted, Repainted, or Repaired After Adoption of the 1998 Pedestrian Master Plan (1999-2017)



- Crossings Before 1999
- Crossings from 1999 to Present

* All data sourced using PBOT's asset management database. Crossing data without a time stamp was included in the Crossings Before 1999 category.

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Measuring Portland's "Walkability"

While "walkability" can be a difficult quality to measure, we can use available data to provide a snapshot of what it is like to walk in Portland. We can measure walking and walkability in three ways:

- Pedestrian activity data tells us how many people in Portland walk to work and to other destinations. The number of people walking on Portland sidewalks over time helps tell us if our land use and transportation policies and actions are encouraging more walking. It also indicates to some extent whether Portlanders feel comfortable and safe choosing walking over other modes.
- Safety data tells us the number of pedestrians involved in crashes over time and is an indication of how safe Portland streets are for walking.

- Pedestrian network completion data tells us how complete (or incomplete) our sidewalk and crossing infrastructure is across the city. An incomplete pedestrian network can prohibit pedestrian activity. Addressing gaps in sidewalk and crossing infrastructure is critical to providing Portlanders a safe and comfortable place to walk.

The current state of Portland's pedestrian network gaps and needs, including an assessment of all of the city's sidewalk and crossing gaps, is provided in Chapter 4. This section provides an assessment of existing walking activity and pedestrian safety trends to better understand the state of walking in Portland today.

Table 1: Portland Commute Mode Share Targets and Current Activity

	DRIVE ALONE	CARPOOL	WALK	BIKE	TRANSIT	WORK AT HOME
City mode split target	30%	10%	7.5%	25%	25%	2.5
2015 Census (American Community Survey)	57.8%	8.9%	6%	6.5%	12.1%	7.5%

PEDESTRIAN ACTIVITY

Pedestrian activity data are collected over time to show changes to the number of people walking to work and to other destinations. Walking commute data are easily collected from national sources such as the US Census. However, walk to work trips are only a small percentage of all trips taken. Local sources, such as counts of pedestrians at key locations, add to national sources. These data sets help planners establish goals for the percentage of workers who commute by various forms of transportation. They also help evaluate whether the City reaches these goals.

While the City's goal for commute "walk to work" mode share is 7.5%, Portland's current "walk to work" rate is 6.0% (Table 1).

Compared to other large cities, Portland's "walk to work" rate is low, as seen in Table 2. Evaluating

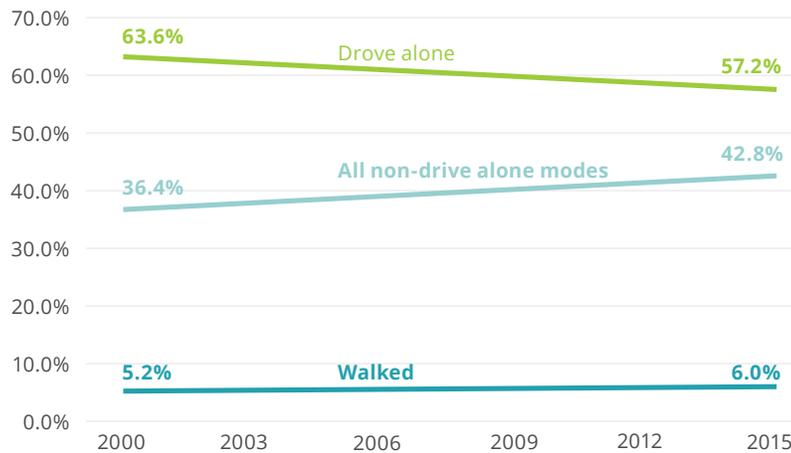
Portland's walking rate against other cities helps our understanding of how the city is performing, and shows there is clearly room for improvement in Portland.

Table 2: Top 10 Cities for Walk to Work Rates

MOST POPULOUS U.S. CITIES		
1	Boston	14.8
2	Washington D.C.	13.3
3	San Francisco	10.6
4	Seattle	10.1
5	New York	10.0
6	Philadelphia	8.2
7	Minneapolis	7.2
8	Baltimore	6.7
9	Chicago	6.7
10	Portland, OR	6.0

Source: League of American Bicyclists "Bicycling and Walking in the United States Benchmarking Report" 2018

Figure 14: Portland Commute Mode Splits 2000-2015



Across the United States, walk to work rates have generally been increasing over time, particularly among commuters in populous cities. In 2005, the average walk to work rate across the most populous cities was 4.4% and in 2013 it grew to 5.0%.

The increasing percent of trips made by walking is consistent with national generational trends in travel choices. The percentage of various age groups that commute to work by car are¹:

- Baby boomers (born 1947-1965): 90%
- Generation X (born 1966-1978): 92%
- Millennials (born 1979-1995): 77%

Generally, nationwide, younger populations are choosing to commute by means other than by car.²

These nationwide commute trends are happening in Portland, too. Between 2000 and 2015, the percent of Portlanders driving alone to work decreased from approximately 64%

to 57%. At the same time, the percent of Portlanders commuting by other modes, known as the non-drive alone rate (people who use transit, bike, foot, carpool, and/or work at home), increased from 36% to 43%. Walking to work in Portland grew from approximately 5% in 2000 to 6% in 2015 (Figure 14).

However, it is important to note that walking commute trips provide a very limited picture of actual pedestrian activity. People tend to walk outside of peak times of day (rush hour) and days of the week, and much walking activity occurs outside of commute trips. US Census commute data captures only a very small proportion of all trips taken. Furthermore, people responding to the Census are only asked their *primary* mode of travel to and from work. Because walking tends to be only a piece of the commute trip (e.g., walking to transit stops), actual pedestrian activity in the city may be higher than what is currently recorded.

In recognition of the limitations of Census commute trip data, many communities engage in local surveys,

¹ Source: Urban Land Institute, 2013

² Source: League of American Bicyclists "Bicycling and Walking in the United States Benchmarking Report" 2018.

In order to make it a great walking city, you've got to definitely be aware of a lot of the other people that are driving and riding bicycles and everything, and even other walkers, because they'll run into you.

George
PedPDX Walking Stories

which ask respondents to self-record data on how they get around for all trips taken during a given reporting period. However, these surveys can be expensive and cumbersome. This means they are not conducted frequently or regularly. The Oregon Household Activity Survey was last conducted in Portland in 2011. Before that, the most recent survey of comparable depth and quality was conducted in 1994. Furthermore, active transportation activity is highly influenced by seasonal changes. Point-in-time surveys do not always account for these changes in travel behavior over time.

We need better pedestrian data to make decisions about transportation infrastructure. We need a better understanding of how people are traveling on our sidewalks and roadways. Better data on how and where people are traveling is important to inform:

- How we design limited rights-of-way (the sidewalk and street space between buildings)
- Infrastructure needs and investment decisions (based on

usage, demand, and mode share targets)

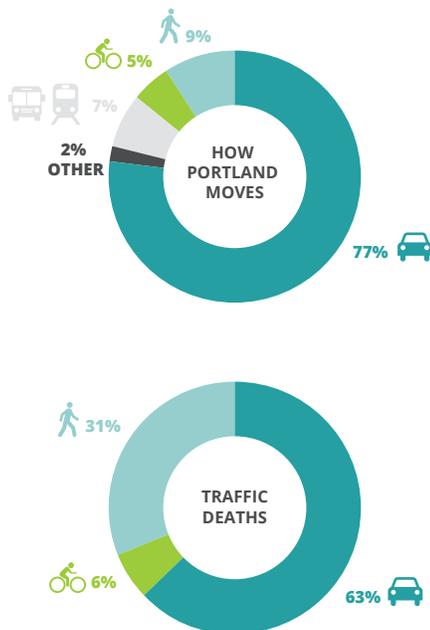
- The effectiveness of infrastructure investments in impacting how people travel
- The effectiveness of strategies to encourage commute travel by ways other than one person driving alone (called Transportation Demand Management or TDM), and potential need for policies and incentives to support commuters' transportation choices

PedPDX recognizes the need for better "all trips" pedestrian data in Portland. New data collection technologies and methodologies are emerging. They could help fill the gap in pedestrian activity data and also provide a broader understanding of how and where people travel across the city.

The PedPDX toolbox includes strategies and action items to pursue better pedestrian data in Portland.

Vision Zero is the goal to eliminate traffic deaths and serious injuries on Portland streets.

Figure 15: Portland Traffic Deaths vs. Travel Mode ³



PEDESTRIAN SAFETY

Portland is a **Vision Zero City**. We are committed to ending all traffic-related deaths and serious injuries on Portland streets by 2035. More than half of deadly crashes occur on just 8% of Portland's streets. These streets make up the High Crash Network.

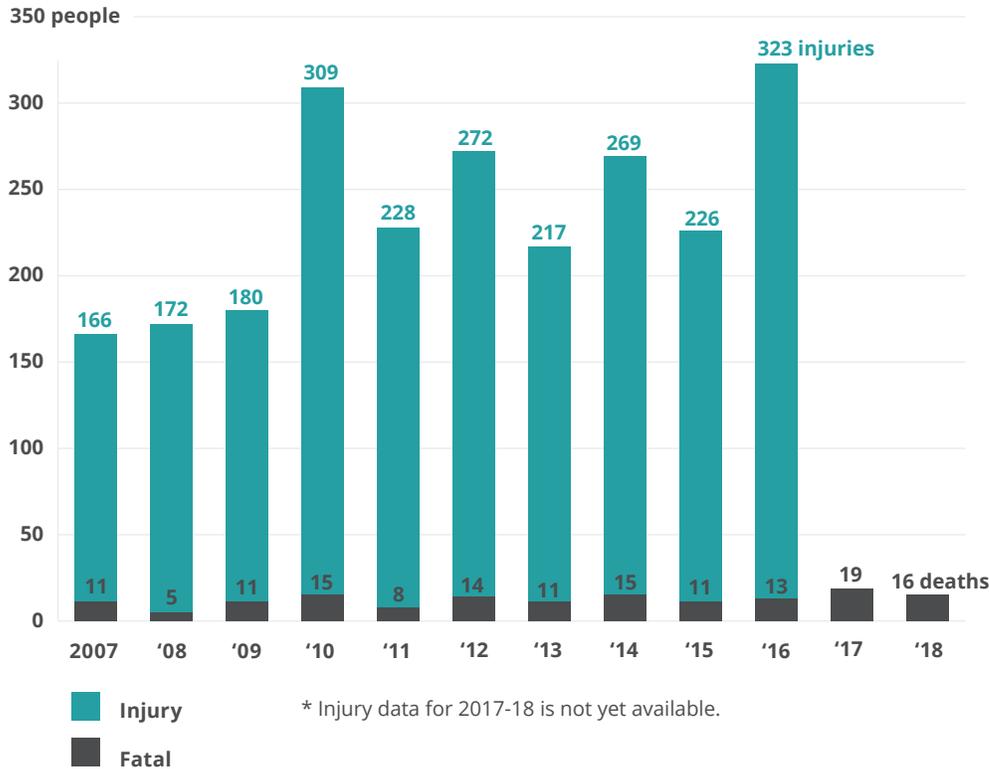
Generally, Portland experiences approximately five to nineteen pedestrian fatalities on our streets in a given year (Figure 16). Even one is too many. Pedestrians suffer a disproportionate number of traffic deaths in Portland. While pedestrian trips account for approximately 9% of all trips taken citywide³, 31% of all traffic fatalities in Portland involve people walking (Figure 15).

Portland's Vision Zero Action Plan notes that **people walking in Portland are ten times more likely than people driving to sustain a serious or fatal injury**. Nearly 20% of pedestrian crashes in Portland result

³ Source: 2015 City of Portland Community Survey <https://www.portlandoregon.gov/auditservices/article/551383>; 2004-2013 ODOT Crash Data

Note: The American Community Survey (ACS) only asks about commute trips. In contrast, the City of Portland Community Survey asks about all trips (a separate question also asks about commute trips).

Figure 16: Traffic Deaths and Injuries to People Walking



Source: The City of Portland provided the crash data for this analysis, which it received from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit.

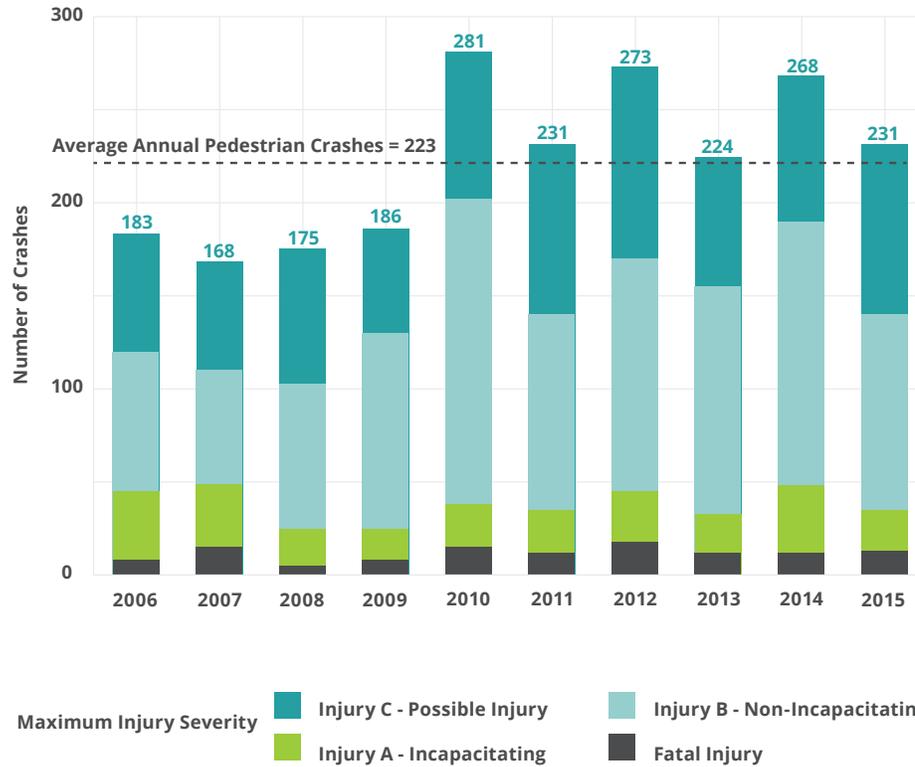
in a fatality or serious injury (almost one in five). Portlanders who have to walk (including those who rely on transit) are most exposed to these systemic safety issues.

PedPDX seeks to better understand the roadway and behavioral characteristics potentially correlated with pedestrian crashes in Portland. Understanding these relationships could help address these factors to prevent pedestrian crashes.

As part of this work, PedPDX analyzed all reported pedestrian crashes in Portland since 2005 to identify potential patterns. According

to that analysis, there are a variety of factors that may negatively influence pedestrian safety on any given street in Portland. Looking at seasons, time of day, presence of street lighting, crash locations, and crash types gives a picture of what contributes to killed or serious injury (KSI) pedestrian crashes. Appendix F: “Pedestrian Safety Existing Conditions Memo” provides more information about the study and methodology. The following sections provide key takeaways from the analysis that directly inform the PedPDX prioritization and toolbox.

Figure 17: Total Pedestrian Crashes vs Severity



Source: The City of Portland provided the crash data for this analysis, which it received from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit.

General Trends

Pedestrian crashes are on the rise in Portland. Injury crashes increased by 25% between 2006 and 2015 (Figure 17). Even considering Portland’s 17% population growth over this time period, the number of pedestrian crashes per 100,000 residents (a common way of comparing safety across cities) has been trending up. The need to address pedestrian safety on Portland roadways is urgent.

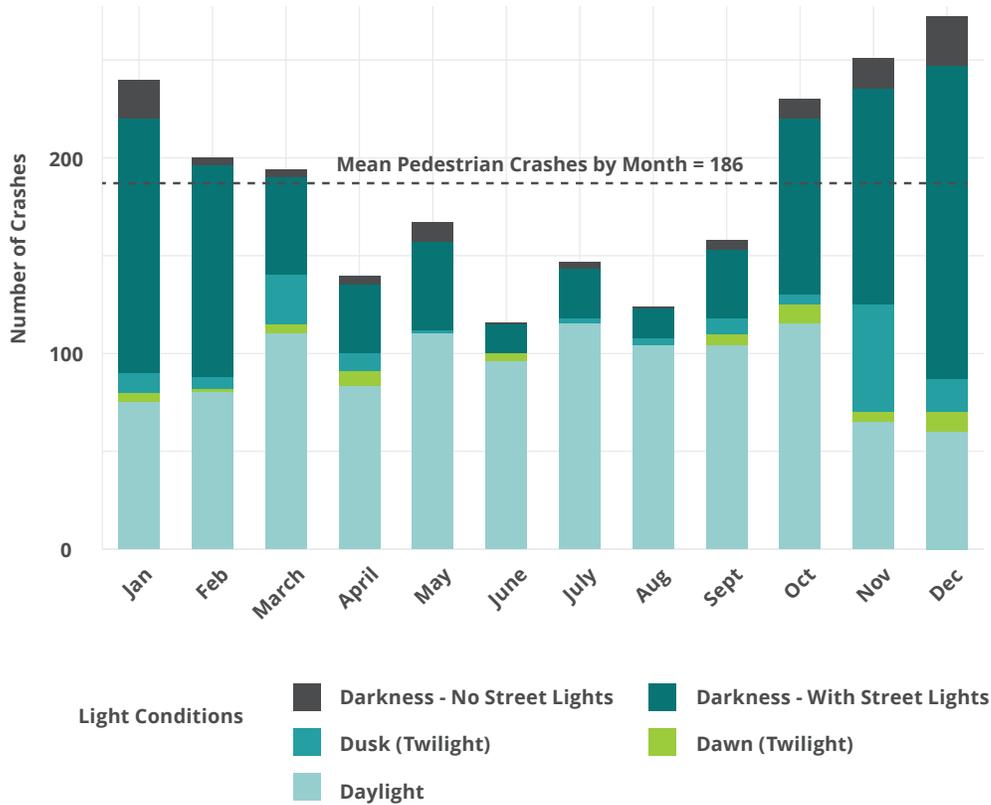
While the roadway and behavioral trends reported below are correlated with crashes, we know that the number of traffic crashes is largely a function of the number of people driving. A large part of improving pedestrian safety outcomes in Portland will lie with reducing the

number of people driving, and facilitating and encouraging more Portlanders to walk, bike, and take transit. However, we cannot simply wait for mode shift to occur. While drive alone mode split has dropped from 64% to 57% in Portland over the last fifteen years, the number and rate of pedestrian crashes has increased. Addressing the factors potentially correlated with fatal and serious injury pedestrian crashes can help to improve pedestrian safety in Portland.

Temporal Trends

The fall and winter months see an increase in pedestrian crashes as compared to the spring and summer (Figure 18). This is despite the likelihood that there are more people walking in the warmer months. The number of crashes occurring

Figure 18: Crashes by Month and Lighting Conditions



Source: The City of Portland provided the crash data for this analysis, which it received from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit.

in daylight is relatively constant throughout the year, while crashes in dark conditions increase dramatically in fall and winter, when there are fewer daylight hours. Pedestrian crashes after dark commonly occur in the presence of streetlights, suggesting that current street lighting conditions are not sufficient to ensure motorists and pedestrians see each other.

More pedestrian crashes occur in the late afternoon and early evening than any other time of day, particularly between 5 pm and 7 pm. While there are fewer pedestrian crashes during the nighttime and early morning hours, crashes

during these periods are more likely to result in a serious or fatal injury and are more likely to involve impairment.

To help address pedestrian safety in dark conditions, the PedPDX Toolbox in Chapter 6 seeks to address lighting conditions to improve visibility of people walking in dark conditions in Portland.

Location Trends

The PedPDX safety analysis evaluated the location of all reported pedestrian crashes between 2006-2015 in Portland in an effort to identify location trends.



OVER
40% of pedestrian
 crashes
 AND
30% of severe/fatal
 crashes citywide
**OCCUR AT SIGNALIZED
 INTERSECTIONS**

The analysis showed that two-thirds of all pedestrian collisions (71%) occurred at intersections (Table 3). The remainder (29%) occurred on roadway segments at either driveway or mid-block locations (places between traffic signals). The majority of intersection collisions occurred at locations with traffic signals and when the pedestrian had the “WALK” indication.

Mid-block collisions were the most likely to result in a severe injury or fatality at 26.1% – this is 9 percentage points more likely than for all collisions.

While intersections with traffic signals have the highest frequency of crashes, unsignalized and mid-

block intersections have a higher probability of serious injury or fatality.

This analysis shows a need for PedPDX recommendations to address:

- Crossing spacing: to address mid-block crashes where crossing treatments are non-existent or inadequate.
- Signal phasing: to address pedestrian crashes at intersections- separating vehicle turning movements from pedestrian crossing movements.

The PedPDX Toolbox provides strategies and actions for increasing the number of marked crossing

Table 3: Pedestrian Crash Location Type Summary (2006-2015)

LOCATION TYPE	NUMBER OF CRASHES	PERCENT OF CRASHES	NUMBER OF KSI* CRASHES	PERCENT OF KSI* CRASHES	PROBABILITY OF A KSI* CRASH
Signalized Intersections	971	43.5%	97	33.4%	13.1%
Unsignalized Intersections	614	27.5%	127	25.5%	15.8%
Mid-block	567	25.4%	148	38.9%	26.1%
Driveway	78	3.5%	8	2.1%	10.3%
Total	2,230	100%	380	100%	17.0%

* KSI = Killed or Serious Injury Crash

Source: The City of Portland provided the crash data for this analysis, which it received from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit.

Table 4: Non-Intersection Pedestrian Crash Summary by Roadway Size (2006-2015)

ROADWAY SIZE	CENTERLINE MILES		CRASHES		CRASH OCCURRENCE RISK FACTOR*	KSI* CRASHES		PROBABILITY OF KSI* CRASH	KSI CRASH RISK FACTOR*
	#	%	#	%		#	%		
2-Lanes (Local)	1,877	71.6%	93	14.4%	0.20	14	9.0%	15.1%	0.62
2 Lanes (Non-local)	386	14.7%	192	28.8%	2.02	45	28.8%	23.4%	0.97
3-4 Lanes	141	5.4%	150	23.3%	4.32	28	17.9%	18.7%	0.77
5 or More Lanes	73	2.8%	189	29.3%	10.54	60	38.5%	31.7%	1.31
Freeway	144	5.5%	21	3.3%	0.54	9	5.8%	42.9%	1.77
Total	2,621	100%	645	100%	1.00	156	100%	24.2%	1.00

* KSI = Killed or Serious Injury Crash; Crash Occurrence Risk Factor = % Crashes / % Centerline Miles; KSI Crash Risk Factor = % KSI Crashes / % All Crashes

Source: The City of Portland provided the crash data for this analysis, which it received from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit.

opportunities, making intersection operations safer for pedestrians, and increasing visibility of pedestrians at intersections.

The PedPDX Toolbox also includes strategies and actions to expand educational efforts to help improve drivers’ yielding rates at these locations. These programs could help remind drivers about legal crossing and yielding laws, and help empower people walking by educating Portlanders about how to keep themselves safe while walking.

Roadway Size

Pedestrian crashes are more likely to occur on larger roadways. They are over four times more likely to occur on three- and four-lane roadways, and over 10 times more likely on roads with five or more lanes.

The differences in representation of pedestrian crashes on larger roads is illustrated in Table 4. Roadways with five lanes or more are disproportionately represented in the crash data and pose the highest risk for serious injury or fatality crashes.

Prioritizing improvements on some of Portland’s widest roadways could help reduce crash risk factors at these locations. These findings are directly incorporated into the PedPDX prioritization.

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