# Active Transportation Connections to Transit: How to Prioritize and Get Something Done

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## INTRODUCTION

Successful transit relies on many factors that are not fully under the control of a transit operator – especially how people can actually get to the train or bus. Most cities in the US have large, typically suburban areas with spotty or non-existent pedestrian infrastructure, insufficient sidewalk connectivity and a lack of safe crossings, in addition to few or no bicycle pathways to transit. No transit operator can take on the responsibility to construct all these facilities to access transit. Transit operators must prioritize and seek partners for these improvements which make transit more effective, more efficient, and safer.

TriMet's Pedestrian Network Analysis and subsequent work with local, regional and state jurisdictions provides a template that other agencies and regions can follow to understand needs and opportunities for access to transit and identify potential projects that improve access to transit. This information, together with strong partnering and sound project definition is leading to success in substantially improving access to transit in the Portland Metropolitan region. This success can be a template for other regions as well.

## PURPOSE

The intent of this paper is to help illustrate how a transit agency can take a lead role in encouraging and building improvements for access to transit. It is our hope that counties, cities and towns will find ways to make streets easier and safe to cross, and create better walking environments by adding or widening sidewalks, adding landscaping or planting street trees, calming traffic and/or adding street lighting. Likewise, TriMet will continue to make investments in transit service and transit stops.


***Figure 1: Before and After access improvements: TriMet bus stop ID 4119 at WinCo Foods, Highway 8, Hillsboro, Oregon***

Every transit rider is a pedestrian[1]. Whether walking or using a mobility device, all TriMet customers depend on being able to get to and from a stop safely and comfortably. Providing safe, convenient and attractive sidewalks, pedestrian crossings and transit stops is imperative to ensuring riders have a positive experience. As a result, TriMet and its regional partners have worked collaboratively as part of the Pedestrian Network Analysis project to develop an objective, data-driven system for prioritizing places around the region where pedestrian infrastructure investments will provide safer and more comfortable access to transit. This effort is designed to:

- **Prioritize safety:** Arterials are the most suitable type of roadway for transit service and often the only choice. There are usually many destinations along arterials and the roads are designed to handle large vehicles, like buses, and the arterials are often the only straight path connecting many origins and destinations the way all successful transit must do. However, from a pedestrian perspective arterials can be difficult and threatening to cross and uncomfortable, or even dangerous to walk along. This is particularly true when there are missing sidewalks, unprotected crossings, and/or very little buffer provided between fast moving traffic and pedestrians. This study first and foremost examines how to improve pedestrian safety.

[1] When the term "walk" or "pedestrian" is used it should be read with an understanding that it encompasses people who are both walking on foot and rolling using mobility devices.

- **Cost-effectively provide service:** In FY 2012, it costs an average of $29 per ride to provide TriMet LIFT paratransit service to people who are unable to use more cost effective bus or rail service due to a lack of pedestrian access. Investments in sidewalks, curb ramps, protected crossings, traffic-calming and streetscaping are long-term fiscally prudent investments that help people maintain their independence by being able to access fixed route transit even as their mobility lessens over the years.
- **Foster environmental stewardship:** Improving access to transit enables people to meet more of their needs without driving and helps the region meet a multitude of environmental and economic sustainability goals, including reducing its greenhouse emissions.
- **Create great places:** People like to walk. Creating engaging, accessible, desirable places where people want to walk helps communities stay vibrant and attract private investment.

### Benefits of a more pedestrian accessible transit system

An accessible transit system has many benefits:

- **Keeping people healthy:** The U.S. Centers for Disease Control and Prevention recommends adults get 150 minutes of moderate-intensity activity, such as walking, every week[2]. Walking to transit helps people stay active and healthy.
- **Saving families money:** Transportation costs are often the second biggest expense in a family's budget. According to the American Automobile Association (AAA), the average annual cost of driving a car 15,000 miles in 2012 was $8,946[3]. By comparison, a TriMet annual pass costs $1,100, about 13 percent of the cost of owning a car.
- **Maintaining independence:** Public transportation provides travel options to people who do not want to, cannot afford to, or are unable to drive, like the very young and very old.

[2] CDC website: http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html

[3] AAA findings of the 2012 'Your Driving Costs' study: http://newsroom.aaa.com

## WHAT MAKES TRANSIT WORK FOR PEDESTRIANS

While there are many complex factors that help transit succeed, it is especially important to consider what makes transit work for pedestrians. It is the pedestrian realm that this project hopes to influence. The project is designed to identify places which already exhibit factors that are working well, in terms of number of people and jobs nearby, street layout, and mix of uses, but are not working so well from the standpoint of the pedestrian. Parking management and site design are also very important, but are outside the purview of this project. There are a number of factors that make transit feasible and well used in an area, for example ensuring:

- There are people living and working in the area and there is a mix of activities;
- Streets are laid out in a manner where connections are easy and frequent;
- The pedestrian environment is inviting (e.g. safe, easy to use, and comfortable);
- Buildings are oriented toward the street and designed for pedestrian access; and
- There is not an oversupply of parking, and parking is managed.

**What Makes Transit Work**

| Factor | Works | Doesn't Work |
|---|---|---|
| Number of People and Jobs Nearby | • Moderate to High | • Low |
| Street Layout | • Small blocks<br>• Grid system | • Long, winding streets<br>• Dead-end roads, cul de sacs |
| Mix of Uses | • Mix (commercial, residential, and office uses) | • Single use (e.g. all residential or all industrial within walking distance) |
| **Pedestrian Environment** | • **Wide sidewalks buffered by trees and/or on-street parking**<br>• **Low volume streets, slow traffic speeds**<br>• **Good lighting**<br>• **Pedestrian street treatments (benches, tree canopy, etc.)**<br>• **Frequent crossings**<br>• **Well-marked intersections with signalized crossings** | • **Narrow, or no sidewalks**<br>• **High volume streets, fast moving traffic**<br>• **Poor lighting**<br>• **No intersection marking and long pedestrian wait times.** |
| Site Design | • Buildings front the street and entrances are near the sidewalk | • Building set back from street and surrounded by surface parking |
| Parking | • Limited<br>• Managed parking | • Abundant<br>• Free |

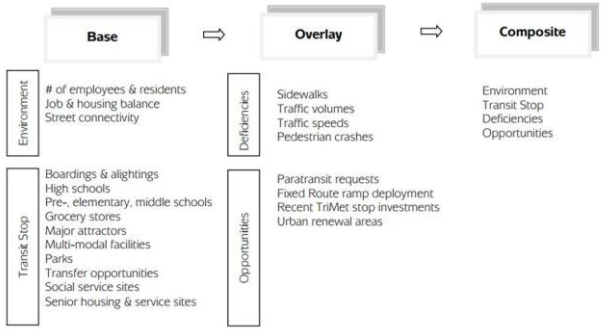
## METHODOLOGY

The Pedestrian Network Analysis project identifies key locations within the Portland region where pedestrian investments will provide better access to transit stops and have the strongest potential to improve pedestrian safety, both actual and perceived, and increase the number of people walking and using transit.

TriMet serves a 570 square mile area and has nearly 7,000 transit stops in its system, many of which could benefit from improved pedestrian access. It is unlikely communities can fix every pedestrian problem at once. Given the size of TriMet's system and the breadth of pedestrian needs in the region, it was imperative the pedestrian network analysis be data-driven, objective as possible, and able to communicate priorities. To accomplish this, the project analyzed each of TriMet's nearly 7,000 transit stops from a variety of perspectives, using Geographic Information Systems (GIS) to understand how transit stops fit into their surroundings and perform relative to each other.

The steps involved in the GIS analysis are shown below. Each transit stop receives a score of zero, one, or two for every stop listed in the base and overlay analysis sections.

**Pedestrian Network Analysis Methodology**




***Step 1: Base analysis***

The base analysis evaluated the overall transit supportiveness of an area, including density, mix of uses, street connectivity, stop level ridership, transfer opportunities, and the proximity of TriMet's transit stops to a variety of essential destinations like grocery stores, schools, senior housing and services, social services, major employers, colleges, hospitals etc. This step allowed the project to identify areas where pedestrian improvements would likely have the highest impact on the largest number of existing or potential transit users.

***Step 2: Overlay Analysis***

The overlay analysis identified deficiencies and opportunities near TriMet's transit stops. Deficiencies were defined as characteristics that make a place unpleasant or unsafe to walk like high auto traffic speeds, missing sidewalks, etc. Opportunities included potential resources such as urban renewal and providing more access to fixed route transit service, thereby reducing the need for TriMet's paratransit LIFT service.

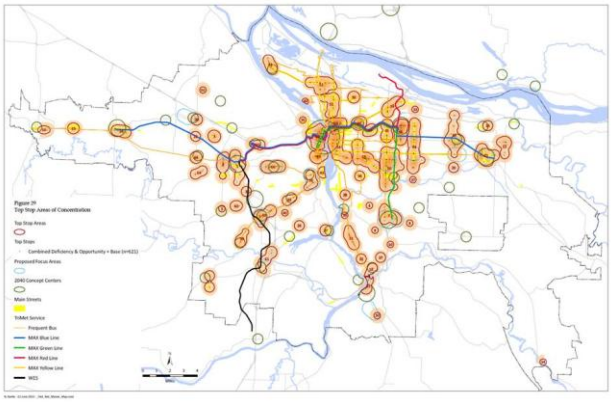
***Step 3: Composite scores***

Combining scores generated from the base and overlay analysis steps provided the composite scores. Based on the composite scores, clusters of high scoring stops were identified and compared to census tract maps that illustrates where there are above average concentrations of low-income households and communities of color. This comparison was done to help identify areas for more in-depth, on-the-ground assessment work, recognizing that areas with a higher percentage of low-income households will also likely be more dependent on public transportation and in need of high quality pedestrian infrastructure to access it.

## FINDINGS

Using regionally available data TriMet and its jurisdictional partners located areas near transit stops that exhibited the highest amount of opportunity and need. Transit stops that scored best in all of the analysis sections hold the most potential for achieving the project's desired outcomes: to increase actual and perceived safety, increase local pedestrian activity, and increase transit ridership. Of TriMet's nearly 7,000 transit stops, a smaller number of stops came out of the analysis as locations to really focus on. A total of 621 stops scored high in terms of activity near the transit stop, deficiencies, and opportunities. The 621 stops fall into sixty-six clusters, referenced in the map below.

**Top Stop Areas of Concentration**

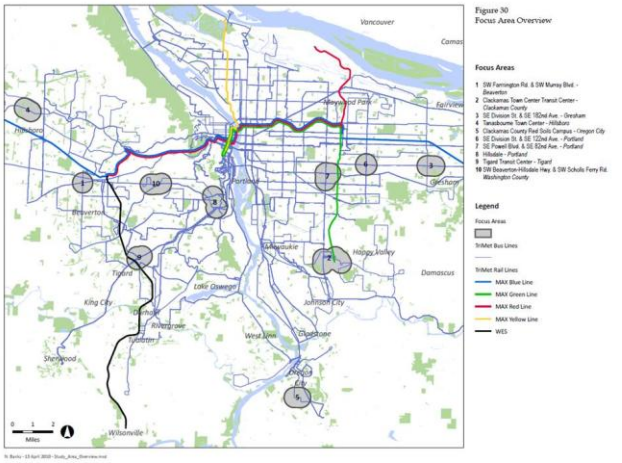


Using the clusters, TriMet worked with the staff from jurisdictions around the region to establish criteria, selecting ten sites to focus on first. The role of and

representation from the TAC was instrumental in gaining insight and support from partner agencies, jurisdictions, and advocates in order to select focus areas that had geographic coverage, aligned with jurisdictional plans and goals, and included areas that advocates also agreed were of top concern from their work in the community.

The ten focus areas do not encompass all the stops with high scores, but they each have at least one high scoring stop within the area and they provide a strong place to begin. The full report, available at trimet.org/walk, goes into further detail about each focus area. For each of the ten focus areas, these elements were covered in detail: places to access locally by foot; places to access regionally by transit; 15 minute walk-shed; 15 minute transit-shed; top 5 intersections with TriMet customer ons and offs; observed behavior; mapping of conditions within a half-mile radius; and five key actions that can be taken to make the area safer, easier, and more comfortable to walk.

**Focus Area Concentration**




## NEXT STEPS

Cities, counties, and peer transit agencies can use the results of this study and this paper and the information available at trimet.org/walk provide enough information for peers nationwide to integrate similar types of information, like transit ridership, public transit transfer points, locations of grocery stores, senior centers, etc into local planning efforts to prioritize investments in pedestrian improvements. For more detailed information on the methodology and findings of this report, visit trimet.org/walk.

TriMet continues to work both internally and externally with regional partners to plan for improvements in access to transit across the transit district. Internal goals include aligning investment priorities throughout the agency, developing model sections for Transportation System Plans (TSPs), enhancing agency performance data availability to regional partners, maintaining and enhancing lines of communications with jurisdictional partners, going to greater lengths to understand TriMet's current and potential customers and their accessibility needs, finding willing partners for showcase projects, and field trips to highlight both opportunities and successes.

TriMet is also currently working to integrate both the intent and the actual findings within Service Enhancement Plans (SEPs): multi-year efforts to plan for new and improved service in the region. The SEP process will look at growth and engage local communities to determine where new service should be located and how to improve existing services for future growth.

Finally, the Pedestrian Network Analysis serves as a strong base for working together with jurisdictional partners to advance grant opportunities and improve access to transit.

TriMet has recently worked with several jurisdictions around the region to develop grant applications to pursue flexible federal funds coming to the region. For each of several corridors, TriMet spearheaded an effort to develop a concept around improvements for safety and access to transit, identified and recruited jurisdictional partners and collaboratively developed the scope of proposed improvements. Both the information developed as part of the Pedestrian Network Analysis and communication channels opened in development of the Analysis made this grant-writing effort possible.

Armed with the information and priorities developed in such a process, transit agencies can seek partners who also have interest in improving pedestrian facilities. Across the nation, there is growing interest in completing or improving sidewalks and making safe crossings. But the need is so great, that it is easy to lose momentum. Because the Pedestrian Network Analysis narrows down to the highest potential and highest need locations, it sharpens the focus and allows TriMet and its partners to move forward proactively with much clearer scope, and therefore with greater potential for success.

Fundamentally, the scoring elements of the Pedestrian Network Analysis are not just indicators of transit demand and need for access to transit. Because they focus on factors such as the mix of uses and the proximity of many potential transit riders, as well as factors that hinder general pedestrian use, not just transit riders, this approach is highly applicable and of high interest for those interested in pedestrian improvements

for local walking access, supporting economic development and public health. Everyone benefits.

## WALKING IS GETTING BETTER

Renewed focus on walking has meant substantial improvements in sidewalks in the Portland metropolitan region. A partial list of improvements includes:

- Sidewalk completion efforts on several arterials around the region
- Sidewalks and ramps in more than a dozen different cities
- Washington County, as it rebuilds or widens roads includes sidewalks, such that this suburban area much of which was developed at a time when sidewalks were not included with road construction, now has a more complete and growing network of sidewalks on arterials and collectors throughout the urbanized portions of the county.

More work needs to be done, especially on crossings, where not just financial commitments are necessary, but it calls for the hard work of balancing the number and widths of through lanes and turning lanes with the need to minimize crossing distances.

## REPLICATION

Combining data from available sources, a transit agency or local or regional governmental body can perform similar analyses to help highlight areas of pedestrian need, especially with regards to accessing transit. It is our hope that this project serves as inspiration for others to perform analyses and improve conditions for those on foot.

More detailed information about the Pedestrian Network Analysis, including final report, fact sheet, and technical memos can be found online at: trimet.org/walk. TriMet is happy to provide information to assist with these efforts. Jeff Owen, Active Transportation Planner at TriMet, can be reached at owenj@trimet.org. Alan Lehto, Director of Planning & Policy at TriMet, can be reached at lehtoa@trimet.org.