Downtown Gresham Walkability Study

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UNIVERSITY OF OREGON

SCI
Sustainable Cities Initiative

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About SCI

The Sustainable Cities Initiative (SCI) is a cross-disciplinary organization at the University of Oregon that promotes education, service, public outreach, and research on the design and development of sustainable cities. We are redefining higher education for the public good and catalyzing community change toward sustainability. Our work addresses sustainability at multiple scales and emerges from the conviction that creating the sustainable city cannot happen within any single discipline. SCI is grounded in cross-disciplinary engagement as the key strategy for improving community sustainability. Our work connects student energy, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations resulting in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future. SCYP 2014-15 includes courses in Architecture; Arts and Administration; Business; Economics; Journalism; Landscape Architecture; Law; and Planning, Public Policy, and Management.

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About Gresham, Oregon

The City of Gresham is located in Multnomah County, east of the City of Portland. The city contains an estimated population of 108,250, according to the 2014 American Community Survey, making Gresham the 4th largest city in the state and second largest in the Portland Metro Area. The city was founded in 1884 and named after the Postmaster General Walter Q. Gresham. In 1904, Gresham elected its first mayor and city council, and became officially incorporated in 1905.

Downtown Gresham is part of the Metro-designated Regional Center that is intended to serve east Multnomah County. The downtown has been the heart of Gresham for the last 100 years, serving as the center for economic and cultural activity. Its authentic Main Street is the center of the district, with its historic architecture, restaurants, shops, and civic buildings that provide a strong community identity. The downtown is flourishing with new residential construction close to transit, new businesses, development projects, and available properties.

Employment in Gresham is led by the educational, health care, and social service industry, which account for 20.9% of jobs in the area. Although Gresham is known to be a suburb of Portland, it is growing its urban center and expanding opportunities for its current manufacturing industry, clean technology companies, and professional services. Subaru of America recently selected the Gresham Vista Business Park for a 600,000 square foot auto parts distribution center, which will bring housing and employment opportunities.

Gresham has a well-connected network of trails for biking and walking including the Gresham-Fairview Trail, Springwater Corridor Trail, and the I-84 path. As of October 2015, the newly completed Wy'East Way path opened and is a two-mile path connecting the Ruby Junction MAX station in Rockwood to the Blue Line's eastern terminus in downtown Gresham. TriMet offers many public transportation options such as the MAX Light Rail, which can travel between Gresham and downtown Portland and Portland International Airport. There are also 12 bus lines throughout the city. Gresham is currently in the project development phase of a bus rapid transit project, which would connect downtown Portland, downtown Gresham, and Mt. Hood Community College via Powell Boulevard and Division Street.

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This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Gresham. Text and images contained in this report may not be used without permission from the University of Oregon.

i. Executive Summary

The City of Gresham seeks to improve the walkability of its downtown to create a vibrant, pedestrian-oriented city center. Through the University of Oregon's Sustainable City Year Program, an Advanced GIS class of undergraduate and graduate students from the Community and Regional Planning program and the Planning, Public Policy, and Management department conducted a walkability study analyzing the built and urban design environment for pedestrians and bicyclists. This report synthesizes the research and analysis conducted by five student teams. It contains a description of the class methods, analysis of each study group, overall findings and recommendations.

Students used Census data and shapefiles provided by the Regional Land Information System to analyze Downtown Gresham's land use, transportation infrastructure, and population density in ArcGIS. Students used a network analyst tool to further analyze the level of street connectivity around 17 locations of interest. After this analysis, five student teams conducted on-site walkability assessments of sub-regions in Downtown Gresham. The walkability assessments measured factors for the built environment and urban design and included gathering surveys of pedestrians and bicyclists along the route.

To analyze this entire region, five study areas were identified:

- Gresham Town Fair
- Downtown Gresham
- East Powell Boulevard
- Main City Park
- NE Burnside Road

Each team provided analysis and recommendations for each region based on the spatial analysis and walkability assessments. Key recommendations that emerged from the findings include:

- Enhance urban design elements with street trees, landscaping, public street art, and outdoor dining to create an interesting and enjoyable pedestrian experience
- Increase accessibility and safety with additional wayfinding signage, pedestrian crosswalks, well-marked and continuous bike lanes, and traffic calming techniques to high traffic streets
- Improve MAX transit station experiences with additional lighting, landscaping, and wayfinding signage
- Encourage mixed land uses/density including additional park or public space in vacant lots

This report addresses the findings of the walkability assessments by study area and provides recommendations for specific street improvements to add to pedestrian and bicyclist accessibility. Suggestions for possible next steps for the City of Gresham are provided, however, further analysis would be needed to identify feasibility and priority for the city.

I. Introduction

Background

The City of Gresham partnered with the University of Oregon's Sustainable City Year Program and students from the Advanced GIS course to analyze walkability and pedestrian behavior in Downtown Gresham. The project also collaborated with TriMet and Metro to understand the regional transportation networks in the study area.

The assessment involved cartographic analysis through ArcGIS, on-site audit analysis of the built environment and urban design, and user intercept surveys to gauge user perspectives regarding pedestrian accessibility. Initial research included becoming more familiar with the study area through reading current city policy documents, examining city websites, and exploring the area through Google maps. With this contextual information, students then began mapping demographic and neighborhood characteristics. Data for mapping characteristics were produced from the U.S. Census and GIS layers from the Regional Land Information System.

For this research, the Downtown Gresham region was analyzed by five study areas and 17 locations of interest. The study areas include: Gresham Town Fair, Downtown Gresham, East Powell Boulevard, Main City Park, and NE Burnside Road as seen in Figure 1. The 17 locations of interest inside those study areas include:

1. Gresham Town Fair
    - 3rd Street
    - Gresham Farmer's Market
    - Gresham Library
    - US Post Office

2. Downtown Gresham
    - Alpha High School
    - Cleveland Avenue MAX Station
    - Gresham Chamber of Commerce
    - Gresham History Museum
    - Gresham Transit Center
    - Multnomah County East Building

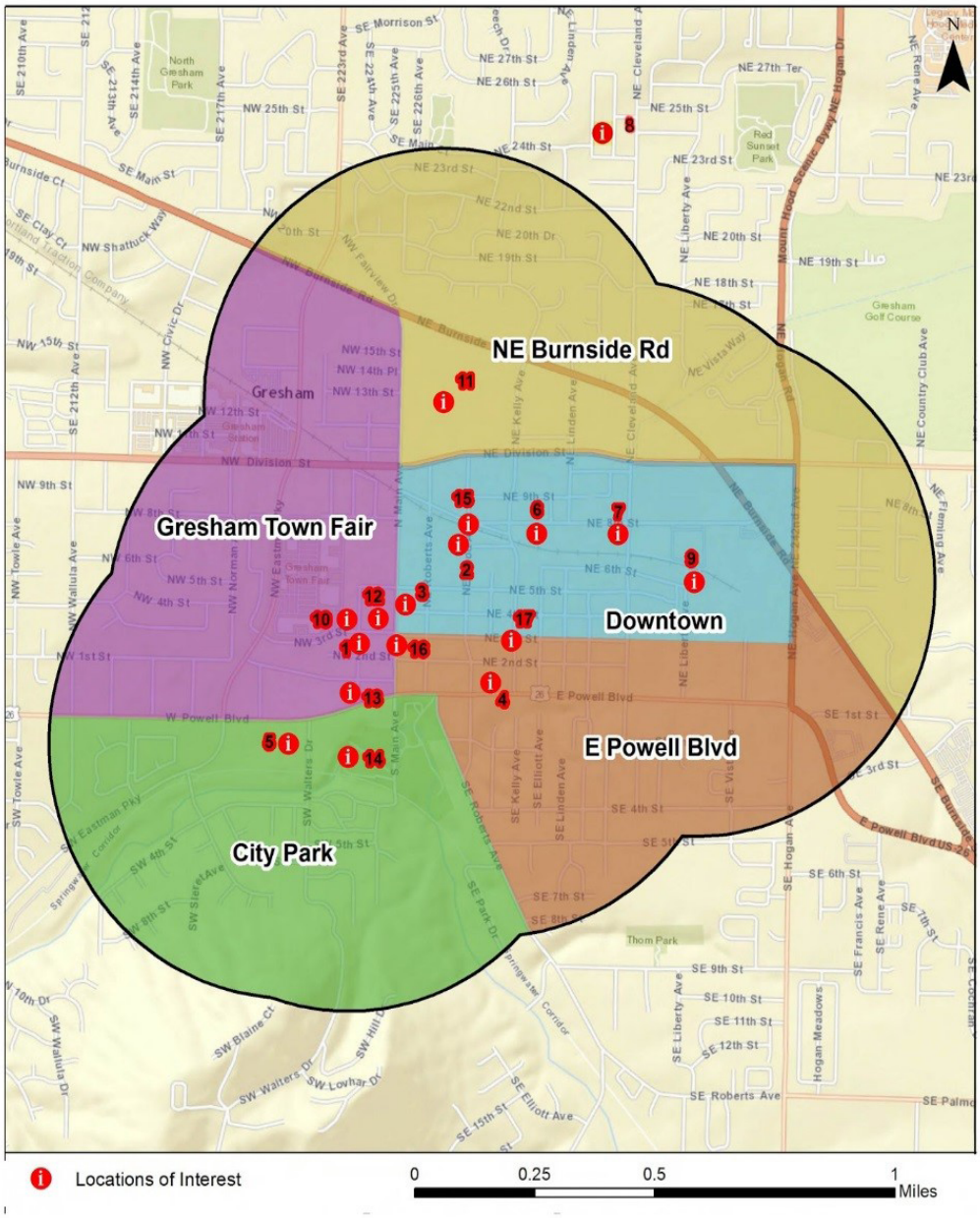
3. East Powell Boulevard
    - Main Avenue
    - Gresham Center for the Arts Plaza
    - Mt. Hood Movie Theater

4. Main City Park
    - West Gresham Elementary School
    - Main City Park, Skate Park, Springwater Corridor Trail

5. NE Burnside Road
    - East Hill Church*
    - Gresham High School

*Location of East Hill Church found to be incorrect on Google Maps following the study and results of this point should be void.

Figure 1: Map of Study Areas and Locations of Interest



Goals and Objectives

The City of Gresham has an objective as part of its 2009 Downtown Plan to improve the walkability of its downtown area through streetscape improvement, strategic placement of significant new civic buildings, and land use/transportation infrastructure upgrades. Downtown Gresham is part of a Regional Center designated by Metro to serve East Multnomah County. It is the city's vision "to create a vibrant, pedestrian friendly center with a mix of land uses that will enable people to live, work, shop, own a business, and access cultural/ entertainment activities," as stated in the Comprehensive Plan. Some of the major themes of the overall vision include:

- Downtown serves as the mixed-use, pedestrian-oriented center or the "focus" for the community
- Downtown is strongly connected to Civic Neighborhood
- The current public-private sector partnership is continued and strengthened to ensure future investment and realization of the vision

The students and faculty of the Advanced GIS class at the University of Oregon assessed Downtown Gresham area's walkability and connectivity and used the outcome to help recommend strategic decisions about streetscape improvements and pedestrian planning. The students and faculty collaborated with city staff as well as staff members of TriMet and Metro to explore and expand the scope of the inquiry and gain insight regarding the locations of interest.

This report provides an overview of the downtown area's research, findings, and recommendations to improve walkability and connectivity. The goal of this report is to provide a tool to help the City of Gresham make decisions about strategic improvements and planning.

Scales of Analysis

Walkability is encouraged by "providing pedestrian comfort and safety" in an area while also providing access to different destinations "within a reasonable amount of time and effort" (Southworth, 2005). This framework requires that a particular development promote multimodal transportation linkages, connectivity to other uses and settings, land use intensity and diversity, design of path (sidewalks), as well as a welcoming and engaging street design. Good walkability will have different characteristics depending on the area of study, and is affected by a variety of factors. These include population density, mixed land use characteristics, accessibility to public transportation modes and adequate infrastructure, street and sidewalk connectivity, and distance of travel. This makes it necessary to analyze walkability on a variety of different scales.

Walkability can be measured using a macro, intermediate, and micro scale analysis. Macro scale analysis focuses on the community as a whole. This

analysis includes measures of population density, bicycle, pedestrian, and transit networks (multi-modal infrastructure), mixed land use, as well as demographic characteristics. Population density and demographic characteristics have an effect on certain attributes and community aesthetics. Densely populated areas will allow for more transit connections and better walkable areas. Demographic characteristics such as race, income levels, and education levels affect the overall livability of a neighborhood. Macro scale analysis is most useful in evaluating overall patterns or trends as they may change over time in a larger area.

Intermediate scale analysis uses a slightly smaller scale. These measurements include street patterns, block size, intersections, land use mix, destinations, or transportation infrastructure integration. Therefore, a grid structure or residential and commercial properties in close vicinity to each other may change the walkability score for an area measured on the intermediate scale. The intermediate scale area would constitute one neighborhood, and this area would generally take less than 10 minutes to walk (Southworth, 2005). This is often an appropriate scale to use for more homogenous areas such as single-family neighborhoods or other mid-sized areas that can be defined in clear boundaries. It is more broad and encompassing than the micro level analysis, but cannot be used for measuring an entire city system as a macro scale analysis.

Micro scale analysis measures the physical features, perceptual qualities, and individual reactions to assess overall walking quality. The measurements of physical features of a very specific area can be the length of the sidewalk or street, building height, or tree canopy ratio. These physical features then determine perceptual qualities such as imageability and complexity which will be described in greater detail under Methodology. The reactions of individuals using the area for their journey, give a measure of safety, comfort, and level of interest. The mode, purpose, convenience, and problems associated with their journey are important micro scale measurements.

II. Methodology

Delineate Study Area

To study the walkability and pedestrian behavior in downtown Gresham, the region was first divided into five study areas and 16 significant locations of interest. Each of the five student groups analyzed each of the study areas. Those five study areas included: Gresham Town Fair, Downtown Gresham, East Powell Boulevard, Main City Park, and NE Burnside Road.

Community Analysis

The first step taken to analyze the conditions of the regions included understanding characteristics such as land use conditions, transportation infrastructure, and population density. This is considered a macro scale analysis, looking at the community as a whole, where data were collected from the U.S. Census Bureau as well as GIS layers from the Regional Land Information System (RLIS).

Pedestrian Catchment Zone Analysis

Next, a pedestrian catchment zone analysis was conducted around the points of interest to analyze the walkability conditions within the quarter-mile and half-mile zones, the standard distance pedestrians are willing to walk. This was an intermediate analysis to determine walkability conditions at the neighborhood level. Pedestrian catchment zones (PCZ) were created in ArcGIS with the Network Analyst tool to analyze the street connectivity, such as the presence of sidewalks, in the quarter-mile and half-mile radius. The PCZ area was compared with the standard quarter-mile and half-mile walkability buffer to find a PCZ ratio. This ratio would determine if there was high or low connectivity in the walkable area. The presence of cul-de-sacs are an indication of low connectivity and walkability, therefore, an analysis of the density of cul-de-sacs within the PCZ was also conducted. For quarter-mile and half-mile PCZ tables, see Appendix A.

On-Site Walkability Assessment

Following the walkability shed analysis, a physical walkability audit was conducted on May 1, 2015 at the site location to analyze the environmental quality and pedestrian perception. An analysis that is conducted using a built environment inventory assessment, urban design quality assessment, and intercept surveys is considered to be a micro scale analysis. The built environment inventory and urban design quality assessments were both recorded on mobile devices using an online tool called Device Magic. This tool allowed the user to geotag the street segment points where data was collected, take a picture, and input the assessment information into the device.

Built Environment Inventory Tool

The built environment inventory assessment followed the procedures from the Irvine-Minnesota Built Environment Inventory form. This form assessed physical environment features that could potentially affect physical activities such as biking and walking. The form is organized into four scales: Accessibility, pleasurability, human needs and comfort, and safety. The audit assessed 63 street segments. For a sample of the Irvine-Minnesota Built Environment Inventory Form, see Appendix B.

Urban Design Quality Assessment Tool

The Urban Design Quality Assessment followed the guidelines given in the Active Living Research Program manual. This assessment measures the urban design qualities as it relates to walkability. Urban design qualities measured include: Imageability, enclosure, human scale, transparency, and complexity. Imageability is the quality of a place that makes it distinct, recognizable, and memorable. Enclosure refers to the degree to which streets and public spaces are visually defined by buildings, walls, trees, and other elements. Human scale refers to size, texture, and articulation of physical elements that match the size and proportions of humans. Transparency refers to the degree to which people can see or perceive what lies beyond the edge of the street. Complexity refers to the visual richness of a place. These qualities have been identified as important for active street life. This audit assessed 57 street segments. For a sample of the Urban Design Quality Assessment Form, see Appendix C.

User Intercept Survey

The intercept surveys collected data from bicyclists and pedestrians regarding their perception and behavior towards biking and walking in the region. The data collected included: Location, time, frequency, and purpose of the trip, reason for taking that route, negative experiences or impediments along the route, and suggestions for improvements. Students recorded 37 surveys from the public. For a sample of the User Intercept Survey questions and results, see Appendix D and E.

Walkability Rating System

Data collected from the environment assessments and surveys combined to create a walkability rating system. The data were downloaded from the Device Magic tool to Excel spreadsheets, given rating scores, and imported into ArcGIS to illustrate the information on a map. The rating system helped to identify street segments that scored low or high for levels of walkability characteristics, and identified areas with strengths and weaknesses. With this analysis and previous research regarding land use, transportation networks, and street connectivity, a summary of the findings and recommendations for increased walkability have been provided for each of the five study areas.

III. Overview of Findings

Prior to conducting an on-site walkability assessment by groups, the class conducted a site analysis of the downtown Gresham region using ArcGIS. The following sections capture various factors that are often associated with walkable neighborhoods: Land use mix, transportation infrastructure, and demographics. For each of the sections, the class analyzed Census Block Group data for all Block groups within one-half mile of the 17 locations of interest.

Land Use Mix

Mixed land use is generally associated with a more pedestrian-friendly environment because it facilitates shorter trips to daily amenities (Ewing, 2010). When land uses are segregated, people are forced to make longer trips to access daily needs, thus lowering the likelihood of trips made by foot or bike.

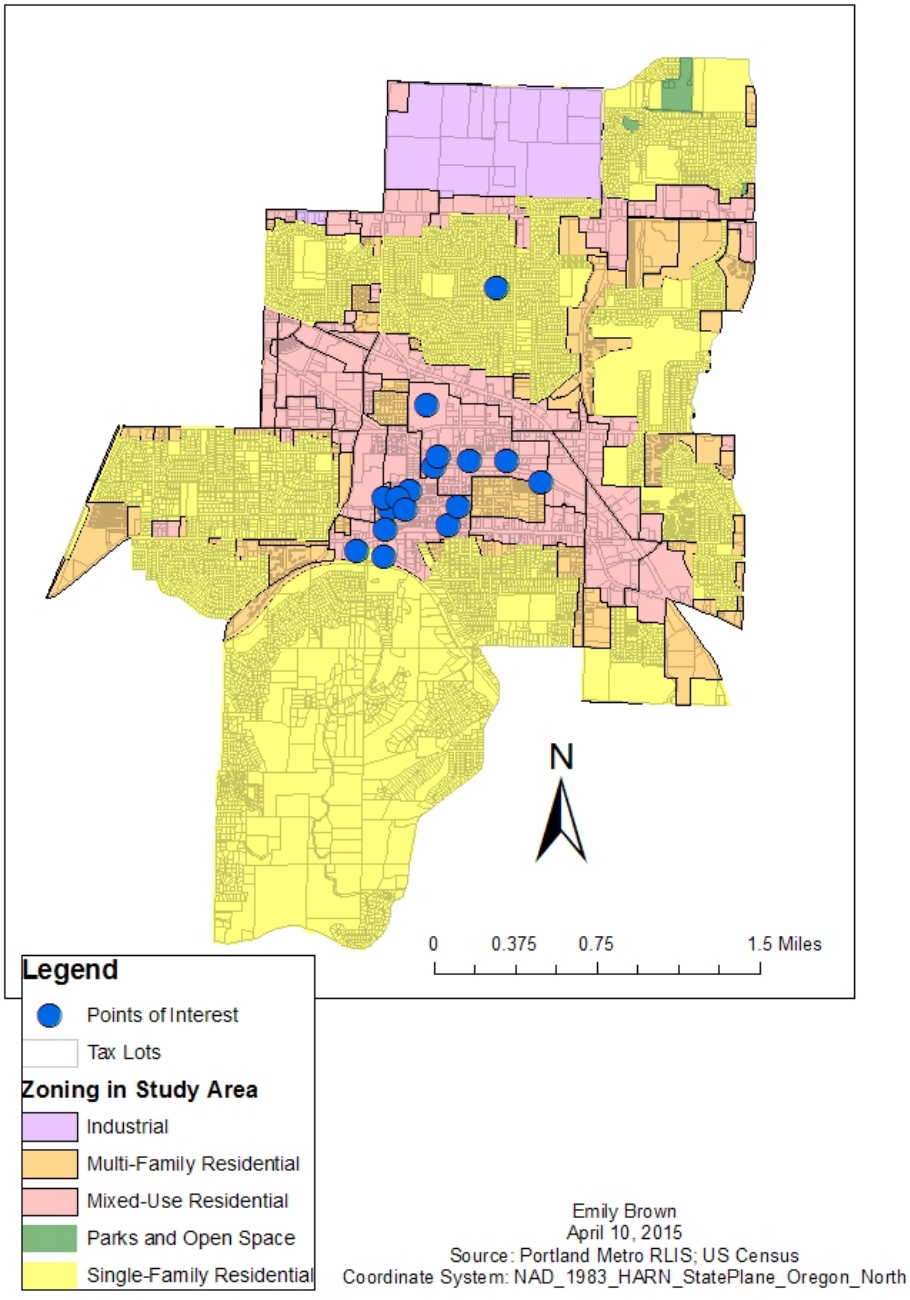
Figure 2 and 3 show that most of the study area is zoned for either mixed-use residential (21%) or single-family residential uses (60%). No land is zoned commercial within the study area, and one small area is zoned for parks and open space. People are more likely to walk or bike in places with beautiful scenery, and walking to the places of interest becomes less appealing when open green space is lacking. Areas zoned mixed-use residential are likely to contain uses that would be considered pedestrian destinations, and because there are residences within these areas, people are likely to be within walking distance of their destination.

Figure 2: Current Land Use Within Study Area

Table 3: Land Use in Acres of Study Area

Zone Classification	Area (Acres)
Commercial	0.0
Industrial	321.3
Multi-Family Residential	565.1
Mixed-Use Residential	1025.6
Parks and Open Space	22.0
Single-Family Residential	2919.7

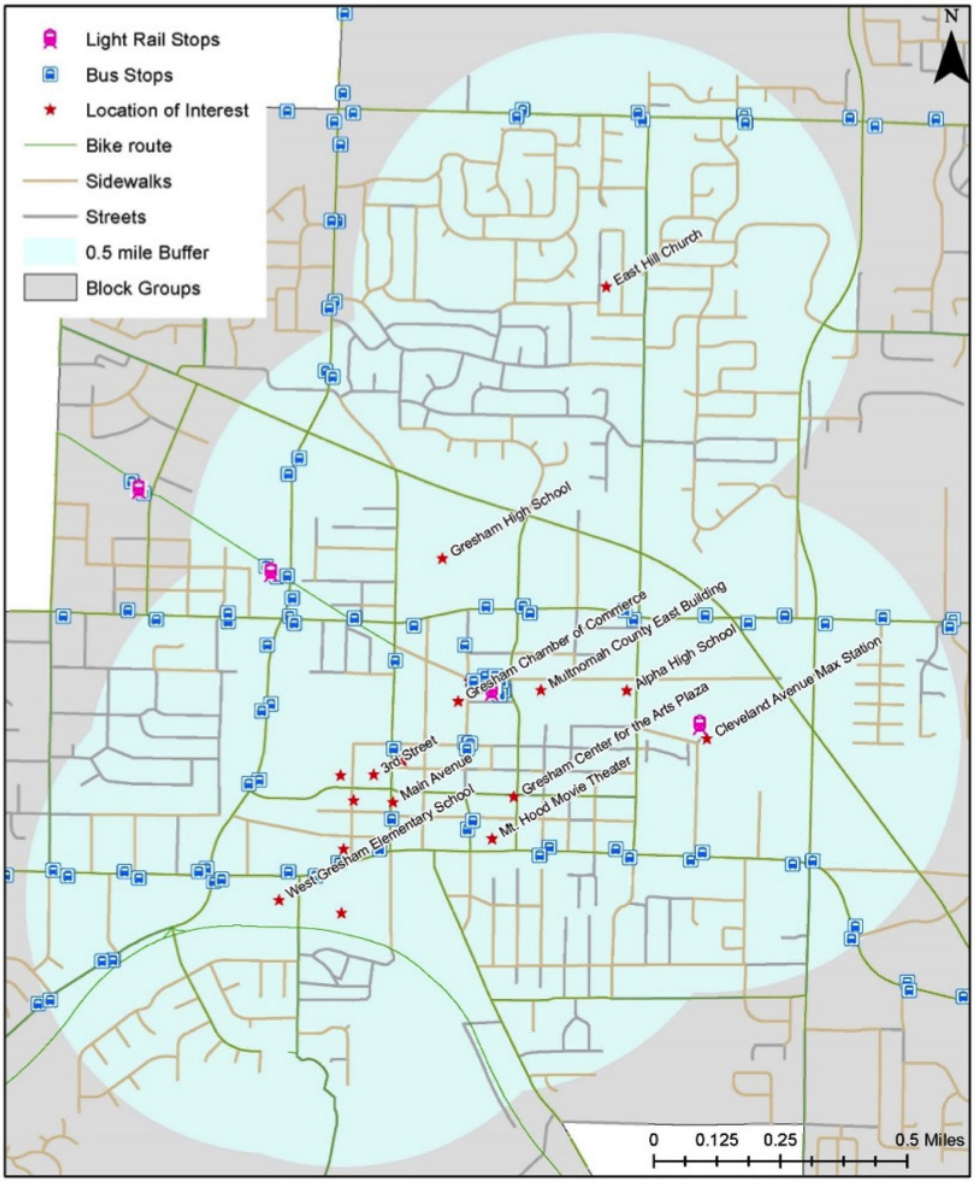
Figure 3: Gresham Land Use Map



Transportation Infrastructure

The map below of current transportation infrastructure highlights the street connectivity, bike infrastructure, bus stops, TriMet MAX stations, and the 17 points of interest (Figure 4). The half-mile downtown Gresham walkshed is served by eight bus lines and one MAX light rail line. One hundred fifty-one total bus stops also exist in the half-mile downtown Gresham walkshed. This level of service provides ample connectivity to other areas of Gresham, as well as all areas in the greater Portland metropolitan area connected by the TriMet regional transit system.

Figure 4: Transportation of Gresham Downtown



Source: GCS North American 1983 HARN

Jungyu Chang 4/13/2015

Sidewalk coverage in the half-mile walkshed is spotty. Most arterial streets have full sidewalks on both sides, but many collector and neighborhood streets have only partial sidewalks or no sidewalks. The collector and neighborhood streets are essential for including complete sidewalks to allow for nearby residential neighborhoods to access the downtown district.

Numerous bicycle paths pass through the half-mile downtown Gresham walkshed. The Springwater Corridor Trail, a regional multi-use path not open to motorized traffic, has a trailhead in the southern portion of the walkshed. Many arterial streets have bike lanes, although the high levels of motorized traffic with only a single painted line as a barrier creates the perception of an unsafe environment for cyclists, especially on thoroughfares like Powell Boulevard. More desirable options for cyclists are bike lanes on moderate and low traffic through streets along with greater barriers between the car and cyclist. Planned additional bike routes in downtown Gresham will help the comfort and ease of cycling in the walkshed.

There are high levels of transportation options in the downtown Gresham region, however, there is little accessibility outside of the immediate region other than the street network. There are three bus routes that run from north-south along Eastman Parkway and three routes in the east-west direction, two being inside the downtown district and one outside to the north along Stark Street. The current transportation network allows visitors convenient accessibility when travelling to downtown Gresham but not as convenient for residential regions outside the downtown district. Increasing the available options for bike lanes and sidewalks in the northern and southern residential regions would help residents access the downtown region without a car. This would also help those residents access the bus and MAX rail lines for commute purposes and reduce automobile usage.

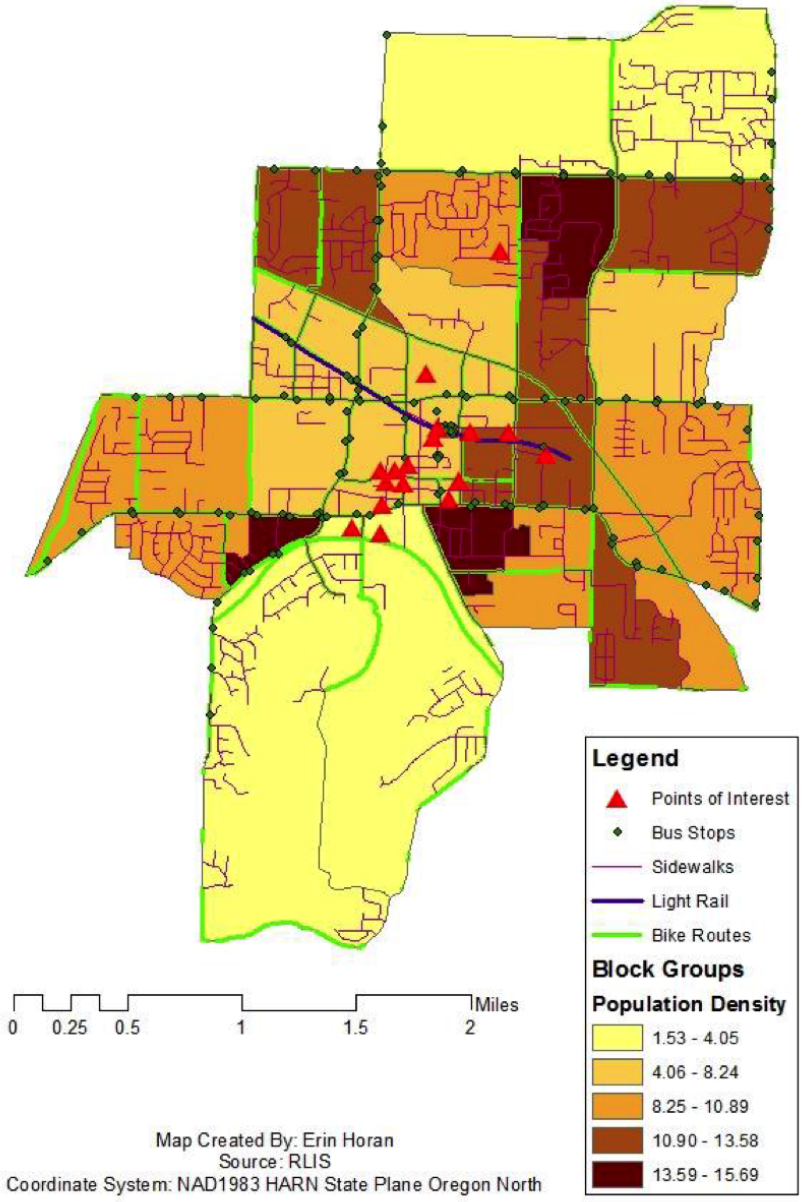
Population Density

The downtown Gresham region within the half-mile walkshed contains a mixture of population densities. The northern and southern regions have the lowest densities comprised mostly of single-family residential housing. The eastern region contains the highest densities comprised of single-family and multi-family residential housing. The locations of interest are found mostly in low-density regions with only four of the locations in high-density areas. This information suggests that the downtown region could seek to increase density with multi-family housing or mixed uses to increase the population's proximity to commercial uses, transportation options, and locations of interest.

An analysis of the transportation options serving these population densities reveals some limitations for those outside the immediate downtown region (Figure 5). As stated previously, most of the transportation options such as bus routes and light rail are in the downtown district. The lowest density populations

in the north and south ends have very little access to transportation options resulting in a reliance on automobiles. This information suggests that residents are most likely commuting to and from the locations of interest rather than using transit to get to them. There are a few bike paths, however there is room to expand this option further.

Figure 5: Transportation Accessibility in Downtown Gresham

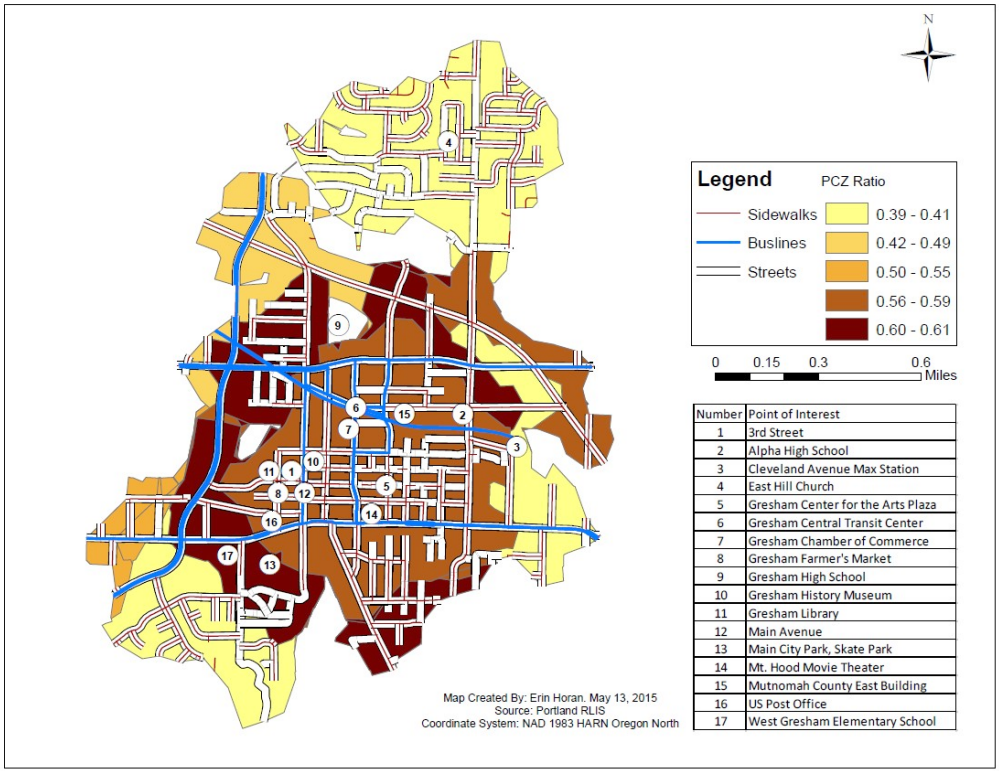


Pedestrian Catchment Zone

This section of the report includes a discussion of pedestrian catchment zone (PCZ) walkability indicators for both the quarter- and half-mile PCZs around the points of interest. These discussions are accompanied by tables found in Appendix A presenting the various data for the 17 locations. The PCZ analysis was determined through the Network Analyst tool in ArcGIS to identify the level of street connectivity within the quarter- and half-mile radius around the locations of interest. This area divided by the area of the entire quarter- or half-mile radius would result in a PCZ ratio. A ratio of 0.50 or higher would indicate good street connectivity and direct route accessibility to the locations of interest. Besides the PCZ ratio, the analysis also included identifying total linear lengths of streets, total street density, average street block length, and cul-de-sac density. Short street lengths, high street density, low average street block length, and no presence of cul-de-sac density will result in more walkable streets.

Within the half-mile radius, most of the locations of interest had PCZ ratios greater than 0.5 except for three locations: Cleveland Avenue MAX station, Gresham High School, and Main City Park. This would indicate that the street connectivity within this half-mile radius is not very accessible or direct to access these locations. This is particularly of concern for the Cleveland Avenue MAX station, which may be a deterrent for pedestrians and public ridership. The lengths of streets ranged from 30,000-60,000 feet (5.5-11.5 miles) with street densities between 140 and 190 feet/acre. The Gresham Chamber of Commerce had the highest street density at 190.8, which suggests a high degree of walkability and accessibility, while the lowest street density of 142 was found from the Main City Park. The lower street density suggests that it is not as easily accessible to reach public green space. The average street block length ranged from 200-250 feet with the shortest block length near the Gresham Library and the largest block length near Gresham High School. With Gresham High School's average block length of 275 feet, this may be a factor in residents deciding to drive rather than walk to school. The highest densities of cul-de-sacs were found near Gresham High School. The presence of cul-de-sacs hinders the pedestrian's access for a direct route to the point of interest (Figure 6).

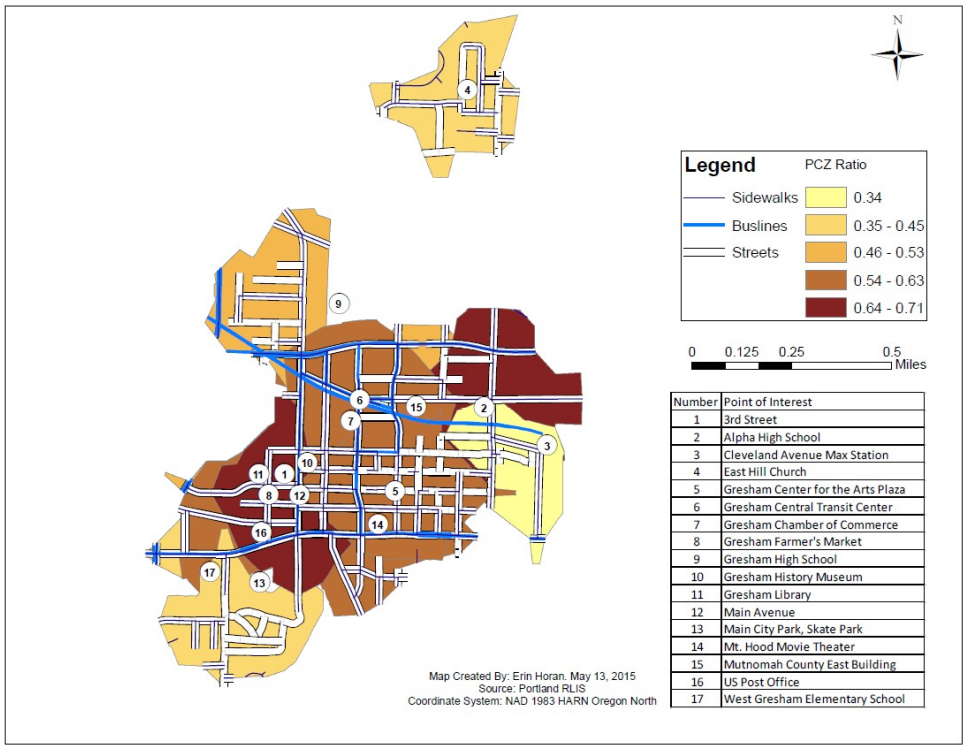
Figure 6: Gresham 1/2 Mile Pedestrian Catchment Zone Area



Number	Point of Interest
1	3rd Street
2	Alpha High School
3	Cleveland Avenue Max Station
4	East Hill Church
5	Gresham Center for the Arts Plaza
6	Gresham Central Transit Center
7	Gresham Chamber of Commerce
8	Gresham Farmer's Market
9	Gresham High School
10	Gresham History Museum
11	Gresham Library
12	Main Avenue
13	Main City Park, Skate Park
14	Mt. Hood Movie Theater
15	Mutnomah County East Building
16	US Post Office
17	West Gresham Elementary School

Within the quarter-mile radius, the PCZ ratios are significantly higher than within the half-mile radius. The highest ratios are found around Main Avenue and Alpha High School while the lowest ratios are found near Cleveland Avenue MAX station and Main City Park. This was similar to the findings in the half-mile radius. The street lengths ranged from 5,000-19,000 feet (1-1.7 miles) with the longest street length being on Main Avenue and the shortest street length near the Cleveland Avenue MAX station. In this case, Main Avenue with a long street length is not necessarily a deterrent for pedestrians and bicyclists as the experience includes pleasant streetscapes, storefronts and restaurants that make the street appealing. The Cleveland Avenue MAX station has the lowest street density which suggests less accessibility for pedestrians and bicyclists. The average block lengths were between 160 and 280 feet, with the longest block length near Alpha High School and the shortest block length near Gresham Center for the Arts Plaza. This suggests that the Gresham Center for the Arts Plaza is highly accessible while the Alpha High School is less accessible for pedestrians and bicyclists. The cul-de-sac densities remained the same as the half-mile radius findings with the highest cul-de-sacs found near Gresham High School (Figure 7).

Figure 7: Gresham 1/4 Mile Pedestrian Catchment Zone Area



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IV. On-Site Walkability Assessment

The following section provides a detailed analysis of the on-site walkability assessments performed by the five teams throughout the Downtown Gresham study area on May 1, 2015. These regions include: Gresham Town Fair, Downtown Gresham, East Powell Boulevard, Main City Park, and NE Burnside Road. The walkability assessments followed the guidelines from the Irvine-Minnesota Built Environment Inventory form (Appendix D), which measured elements of the physical environment. Another assessment followed the manual from the Active Living Research for urban design qualities (Appendix E) that could affect the pedestrian experience. Lastly, students conducted user intercept surveys randomly with participants to capture their perceptions and behaviors regarding the pedestrian and bicycling experience.

Region 1: Gresham Town Fair

The Gresham Town Fair region includes the street segments bordered by Eastman Parkway, Division Street, Main Avenue, and Powell Boulevard. Eastman Parkway, Division Street and Powell Boulevard are main thoroughfares of automobile traffic that create barriers for pedestrians and bicyclists (Figure 8). From the walkability audit, Division Street and Powell Boulevard were determined to be the least walkable streets in this area, though all three streets were clear barriers for pedestrian and bicycle use. The locations of interest in this region include:

- 3rd Street
- Gresham Farmer's Market
- Gresham Library
- US Post Office

Figure 8: Region 1 Study Area

Built Environment

The built environment inventory assessment analyzed pleasurability, accessibility for pedestrians and bicyclists, traffic safety, and environment affecting crime and confirmed that Main Avenue is the most pleasant environment for pedestrians and bicyclists. This assessment also showed that Eastman Parkway, Division Street, and Powell Boulevard lack walkability characteristics (Figure 9). The characteristic of pleasurability measures the presence of street trees, shaded sidewalks, street furniture, and other means by which an outdoor environment can be rendered friendlier to pedestrians and bike riders. An example of an intersection that scored for low pleasurability is the corner of Powell Boulevard and Main Avenue (Figure 10). This is an area of high automobile traffic and not a lot of the pleasurable elements described previously to create a welcoming space for pedestrians and bicyclists.

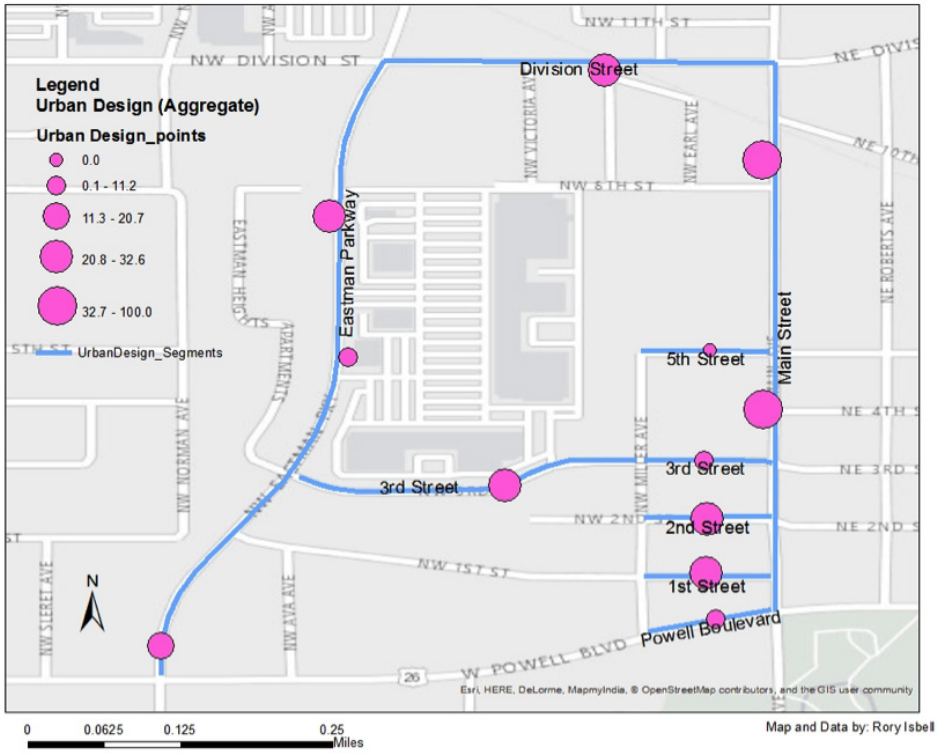
Figure 9: Bad Built Environment Elements Affecting Overall Pleasurability

Figure 10: Image of high traffic volumes at Powell Boulevard and Main Avenue

Urban Design

The urban design assessment included a total urban design score, which combined the aggregate of all five scaled urban design variables (imageability, enclosure, human scale, transparency, and complexity). The scaled scores of each of these variables for each data collection point were summed and then averaged to produce an aggregate urban design score. Both segments of Main Avenue, between Division Street and 5th Street and between 5th Street and Powell Boulevard, exhibit the highest urban design score, displayed in the map below as the largest pink circles (Figure 11). Division Street, northern Eastman Parkway, 3rd Street, 2nd Street, and 1st Street also exhibit relatively high urban design scores. Southern Eastman Parkway, 5th Street, Powell Boulevard, and 3rd Street between Miller Avenue and Main Avenue exhibit the lowest urban design scores.

Figure 11: Urban Design (Aggregate)



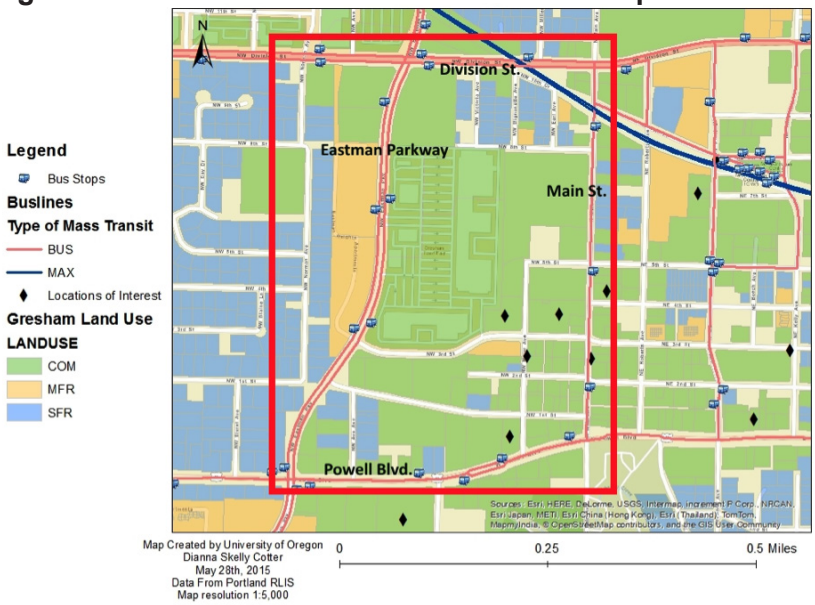
User Survey Findings

The findings from the user intercept surveys came from nine participants. The majority of the participants were out for the purpose of shopping or recreation. All of the participants stated their reason for choosing the route was due to easy accessibility and being direct. Some of the negative experiences mentioned included: Heavy moving traffic, poorly lit roadways, and fear of potential crime. Suggestions for improvement included: Public benches, street trees, and more bike access. See Appendix E.

Overall Conclusions and Recommendations

The Gresham Town Fair region (Figure 12) consists of commercial land uses and few single-family and multi-family residential uses. Most of the residential uses are located across the major arterials of Eastman Parkway, Division Street, and Powell Boulevard, which are dominated by automobile traffic.

Figure 12: Gresham Tax Lots and Public Transportation



To increase and enhance walkability in the Gresham Town Fair region, the recommendations listed below highlight potential improvements to be made along those arterials.

- Powell Boulevard and Main Avenue (Figure 13): This major arterial intersection is a high traffic location connecting Gresham Town Fair and Main City Park. Though pedestrian crosswalks are present, greater visibility to pedestrians could be improved with a pedestrian activated crosswalk as well as caution signs to properly alert drivers of a pedestrian walking as seen in Figure 14.

Figure 13: Powell Boulevard and Main Avenue

Figure 14: Example of Pedestrian Activated Crosswalk with Caution Sign

- Powell Boulevard: With residential areas so close to Gresham's downtown, an objective of the city could be to draw in more residential foot and bike traffic from these areas by increasing the safety and usability of the built environment and the roadway. Some improvements to the pedestrian experience do exist, such as traffic medians and painted crosswalks, but are in general unaccompanied by street lighting or barriers such as trees between pedestrians and the roadway.
- Division Street (Figure 15): Improvements to this major automobile arterial could include: Widening bicycle lanes, sidewalk barriers such as street trees or planting strips, removing storm drains out of bicycle lanes, increasing street lighting, and adding signalized mid-section crosswalks.

Figure 15: Division St. pedestrian crossing at NW Victoria Avenue

- Division Street and Main Avenue gas station (Figures 16, 17): Currently the sidewalk shares the driveway with automobile traffic, which is a safety concern and lacks pleasurability for pedestrians. Adding striped pedestrian crosswalks in the driveway entrance and creating separation of sidewalk space and gas station with landscaping elements such as trees, grass, or plants will improve the pedestrian experience.

Figure 16: Division Street and Main Avenue

Figure 17: Improved Division Street and Main Avenue

- Increase street lighting and illuminate crosswalks: Some pedestrian crosswalks are not clearly visible to drivers at night. Examples of these crosswalks include: Eastman Parkway and NW 1st Street (Figure 18), Division Street towards the MAX line.

Figure 18: Eastman Parkway and NW 1st Street

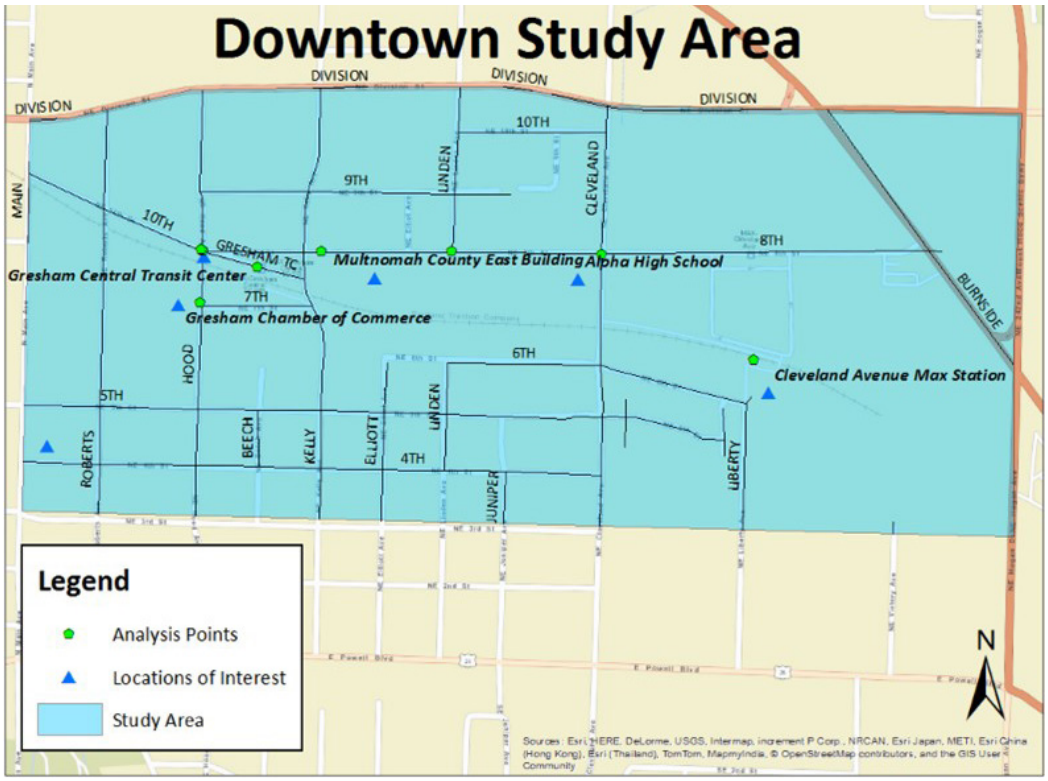
- Enhance urban design elements along Eastman Parkway and Division Street: Continue urban design elements currently found along Main Avenue. Recommendations include: Organizing a public art series to encourage local street art, increase street furniture, promote sidewalk dining, increase street side parking, and consider form-based design code that includes non-rectangular, varied architectural styles with diverse base and accent paint colors.
- Create bike route through Gresham Town Fair Shopping Mall: Currently a bicyclist must travel around the shopping mall to arrive at Downtown Gresham which is very inconvenient and more convenient in a car. Creating a direct bicycle route through the shopping mall could have many advantages such as: Providing a more direct route from the City Hall MAX line stop, more route options for nearby residents to access downtown, and increased bicycle traffic to downtown to patronize the businesses.

Region 2: Downtown Gresham

The Downtown Gresham region (Figure 19) includes the street segments bordered by Division Street, Main Avenue, 3rd Street, and Hogan Drive. The locations of interest in this region include:

- Alpha High School
- Cleveland Avenue Max Station
- Gresham Chamber of Commerce
- Gresham History Museum
- Gresham Transit Center
- Multnomah County East Building

Figure 19: Region 2 Study Area



Built Environment

The built environment inventory assessment found for Downtown Gresham found many high ratings for pleasurability and accessibility mainly in the downtown core. However, the assessment showed that some regions near the MAX rail lines could improve in terms of safety and crime. This assessment looks for the presence of litter, graffiti, and certain land uses that could detract from feelings of safety. Areas that were perceived as lower levels of safety from

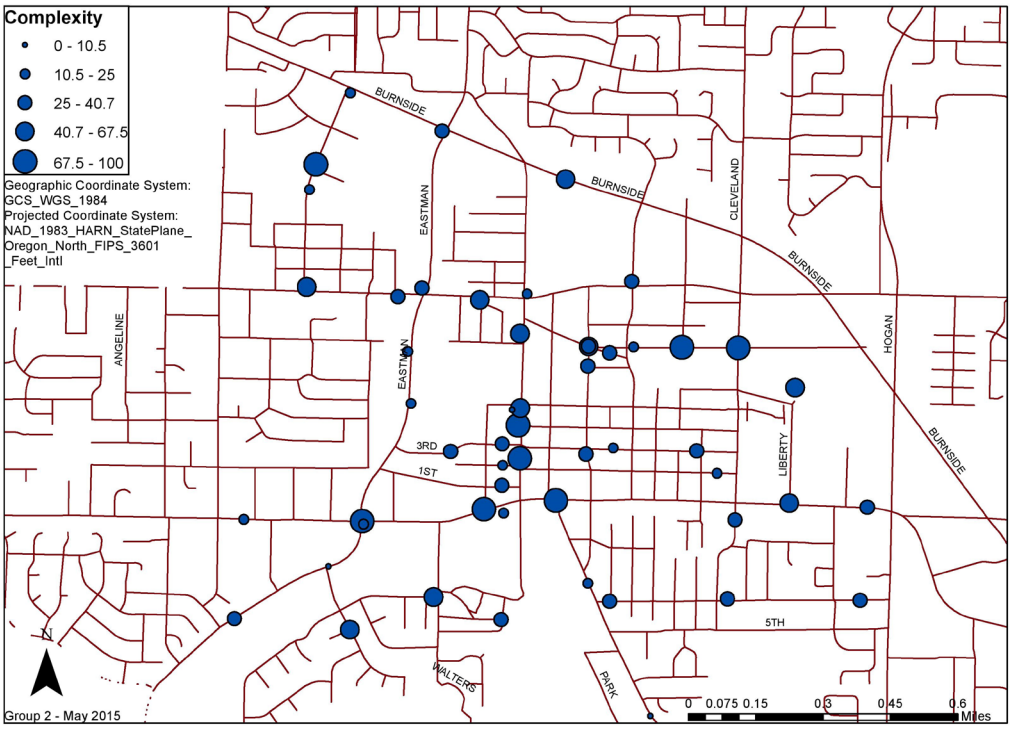
crime included: Just north of downtown, northeast of downtown at the north end of Liberty Avenue, and southeast of downtown and the southern edge of Liberty Avenue. These regions may need some attention to enhance the pedestrian and bicyclist comfort level especially when using the MAX rail line.

Figure 20: Safety Detractors in Gresham's Built Environment

Urban Design

The urban design assessment found many high scores for the downtown region in terms of enclosure, human scale, and transparency; however, the area scored low on complexity. Complexity measures the combination of number of buildings, colors, street art, and outdoor dining. Main Avenue that runs north-south through downtown has a high number of complex elements. This is most likely due to a diversity of businesses operating near the street segment. There is equal complexity just north and south of the downtown core. This could be due to a number of factors, but may be caused by a high number of different or unique buildings. There are less complex street segments scattered throughout the study area with limited street art and few outdoor dining options.

Figure 21: City of Gresham - Urban Complexity



User Survey Findings

The findings from the user intercept surveys came from six participants: Five pedestrians and a bicyclist, at five different locations. The reasons for their trips include shopping, personal business, or work commute. All of the participants found it easy to pick a convenient route to their destination. The comments related to areas for improvement included: Lack of marked bike lanes, potholes and debris, uneven walkways and surfaces, insufficient benches near the Gresham History Museum, and fear of potential crime around the Cleveland Avenue MAX station. Overall the comfort levels ranged from “some problems to “very good.” See Appendix E.

Overall Conclusions and Recommendations

Based on the findings discovered in this walkability audit, the recommendations that could help improve walkability in downtown Gresham include: Wayfinding signs, enhanced urban design, active uses near transit stations, and sidewalks. Specific recommendations are highlighted below:

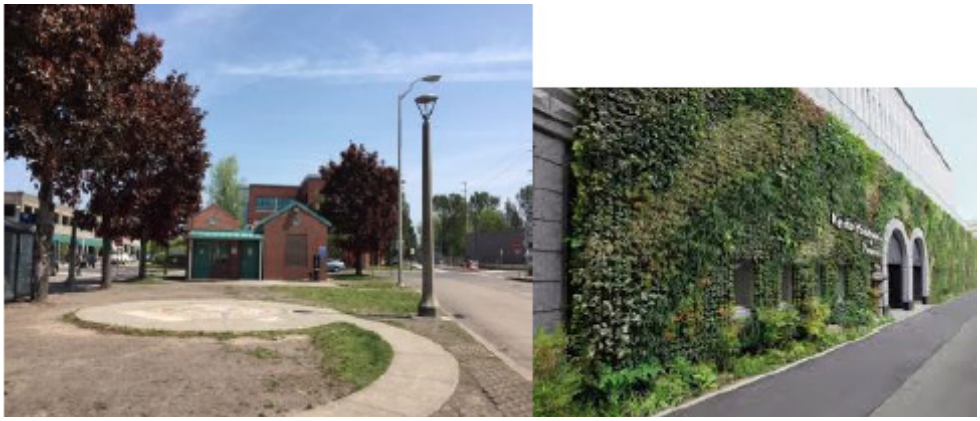
- Wayfinding signs: Downtown Gresham lacks the use of wayfinding signs, which could be useful for pedestrians, bicyclists, and users of the MAX or bus stations find locations of interest (Figure 22, 23).

Figure 22: Example of Wayfinding in Seattle

Figure 23: Example of Wayfinding

- Gresham Central Transit Station: The plot of land between the Gresham Central Transit Station and bus station is lacking urban design qualities and could benefit as an active public space. A recommendation would be to fill the area with grass or other natural ground covering, add planter boxes, a green wall to the side of the brick building, or add a large art sculpture to the center of the area. This would enhance the user's experience and make it a comfortable and enjoyable space for visitors and residents to enjoy (Figure 24).

Figure 24: Gresham Central Transit Station and Proposed Green Wall



- Cleveland Avenue MAX Station: The walkway to the MAX station could benefit from being widened with green space or planter boxes to help define the path better. Wayfinding signs at this location would also help visitors to find the MAX station.
- Increase urban design elements: To enhance the experience for pedestrians and contribute to the area's identity, incorporating the presence of street art such as murals or art pieces would be very aesthetically pleasing. Increasing the presence of more outdoor dining would also utilize more space on the sidewalk as an active space and create more eyes on the street.
- Burnside Road near Division Street and 8th Street: The sidewalk surrounding many destinations including restaurants, shopping centers, and banks could use enhancements that would provide more pleasurability and safety from car traffic. These enhancements include widening the sidewalks and creating a buffer between the sidewalk and the street with trees or bushes (Figure 25).

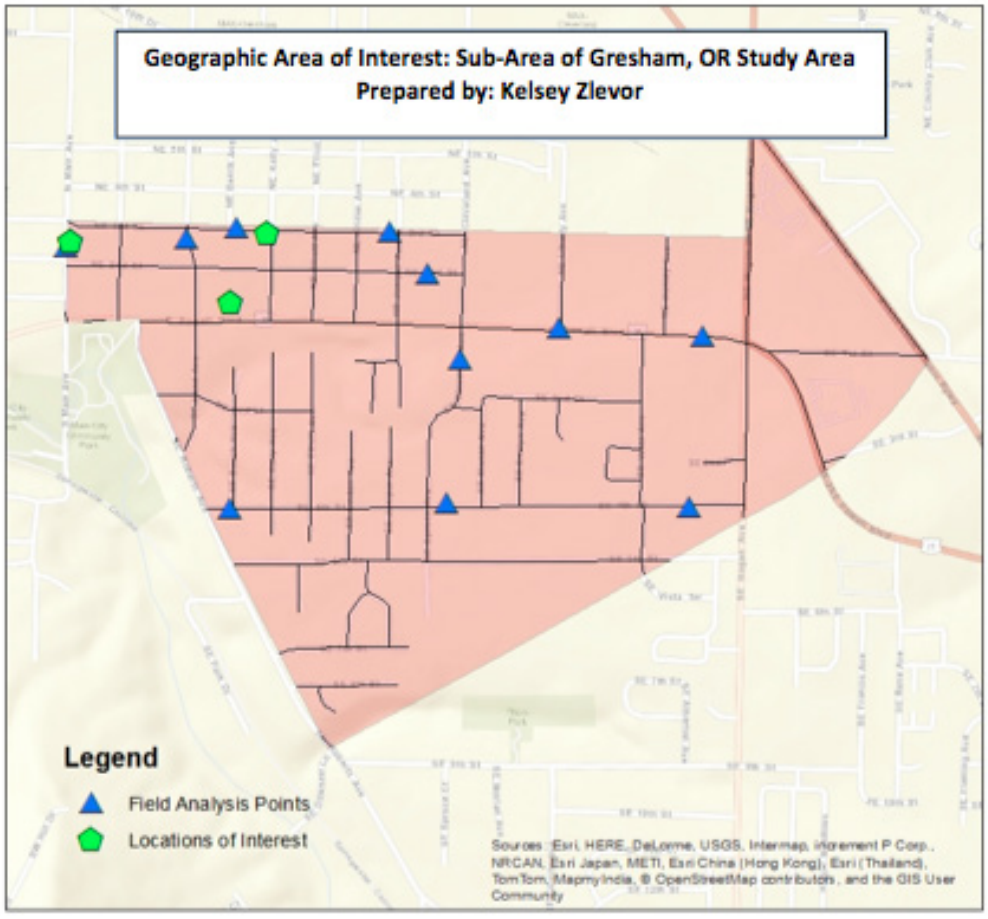
Figure 25: Burnside Road near Division Street and 8th Street

Region 3: East Powell Boulevard

The East Powell Boulevard region (Figure 26) includes the street segments bordered by N Main Avenue, NE 3rd Street, East Powell Boulevard, NE Hogan Street/SE Hogan Road, SE 5th Street, and SE Roberts Avenue. The locations of interest in this region include:

- Main Avenue
- Gresham Center for the Arts Plaza
- Mt. Hood Movie Theater

Figure 26: Region 3 Study Area

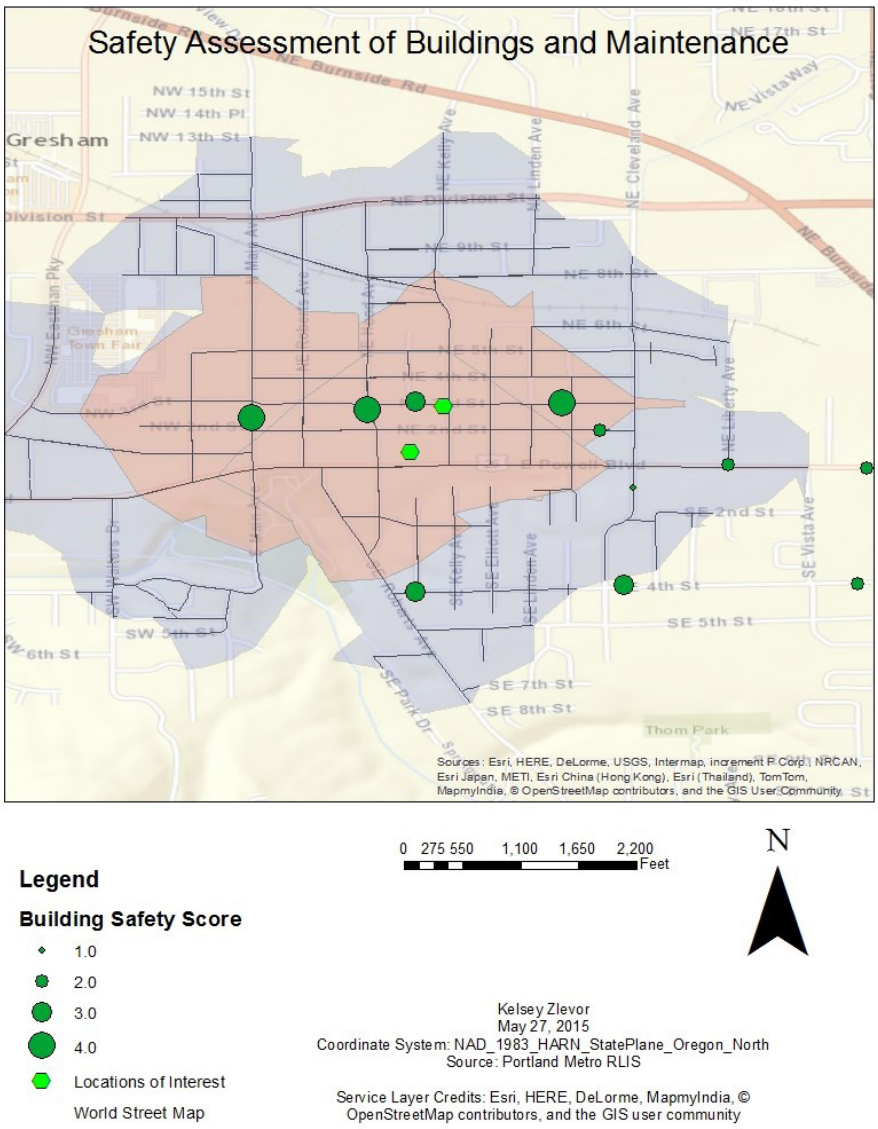


Built Environment

The built environment inventory assessment found high scores throughout the region for accessibility with the presence of bike lanes and sidewalks along most street segments except some residential areas. Main Avenue scores very well for traffic safety, convenience, pleasurability, and safety from crime. In terms of safety from crime, the elements that reduce perceptions of safety from

crime include lack of building maintenance, graffiti, and litter. Street segments along NE 3rd and NE 4th Streets have the most well-maintained buildings, which contributes significantly to a pedestrian's perception of safety. As the team walked through this area, the presence of other pedestrians, slow traffic, and signs of community investment in the area increased the group's perception of safety. Street segments along E Powell Boulevard had the lowest safety scores and street segments near the south end of the study area had average safety scores. In general, several buildings along East Powell Boulevard were in disrepair and the fast traffic makes pedestrians feel less safe in the area (Figure 27).

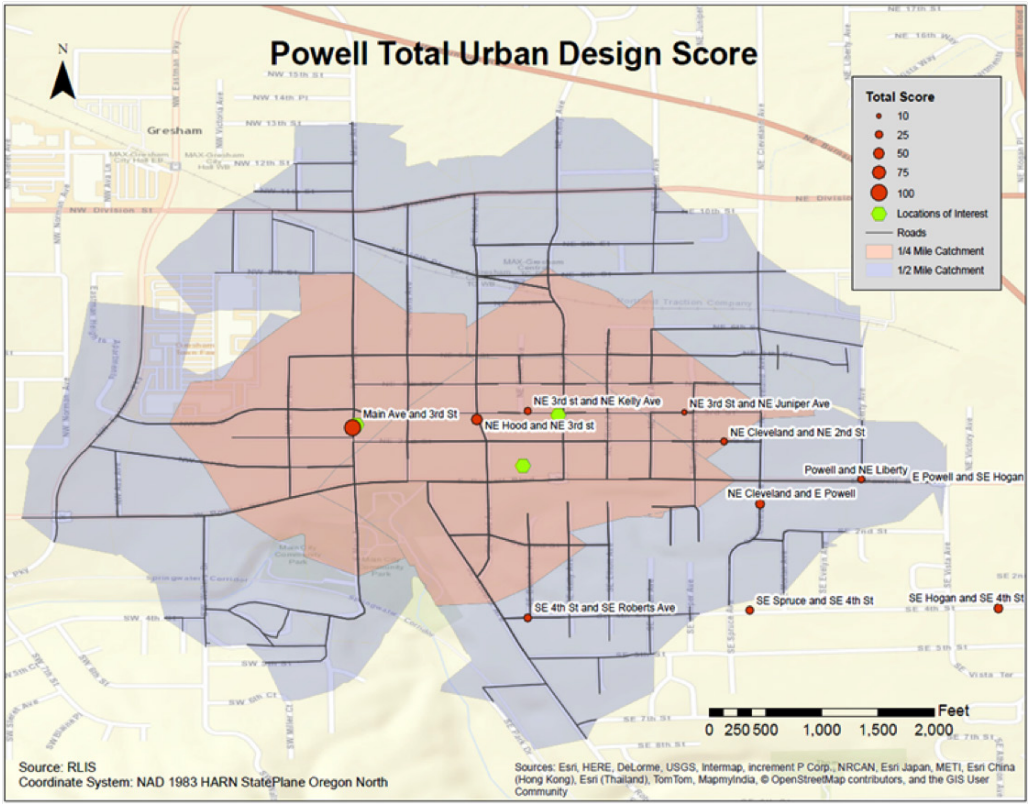
Figure 27: Safety Assessment of Buildings and Maintenance



Urban Design

The urban design quality assessment found the highest total urban design scores to be found near the street segment Main Avenue and NE 3rd Street. The lowest score was found on East Powell Boulevard and NE Hogan Street. Much of the street segments along East Powell Boulevard were not aesthetically pleasing or pedestrian-friendly and lacked a sense of human scale. In general, the team found that as they travelled further away from the locations of interests, many of the studied urban design qualities decrease drastically (Figure 28).

Figure 28: East Powell Boulevard Total Urban Design Score



User Survey Findings

The findings from the user intercept surveys came from eight individuals from three different locations: East Powell Boulevard and Liberty Avenue, NE 2nd Street and Main Avenue, and NE 3rd Street and Hood Avenue. The purpose of travel included personal business, shopping, and recreation. The frequency of the trips for the majority of the users was less than five times, which indicates that the community does not view this area as very walkable or a place where they would want to spend time. The reason for the chosen path for these users ranged from direct routes, to lower traffic levels, to personal safety. These are all great responses that show Gresham has done well in creating accessible routes to the downtown, provided low traffic levels and created a safe environment, which are important to pedestrians. Some elements of the users' experience that were mentioned to be improved included: Either no marked bike lane or disappearing bike lanes, sidewalks or shoulders as a problem, heavy or quick moving traffic while trying to walk, and lack of trees, shade, and benches.

Overall Conclusions and Recommendations

The overall findings from the walkability in the East Powell Boulevard region conclude that there are many attractive elements to the downtown area of Gresham, however, there are significantly less attractive elements as you move towards East Powell Boulevard. Below are recommendations of improvements to enhance the walkability in this region:

- Increase land use for parks and open space: The land use in this area is primarily zoned for multi-family residential and mixed-use residential. Increasing uses for parks and open space will provide attractive green space that would be enjoyable for pedestrians and bicyclists. This land use would be particularly beneficial along East Powell Boulevard where traffic is heavy and is currently unattractive for pedestrians and bicyclists.
- Increase mixed-use, high-density land use along East Powell Boulevard: This street segment currently includes low-density uses with many gaps between buildings. Increasing the density and mixed-uses such as multi-family residential, commercial, recreation, educational, and professional uses would attract more visitors and create an enjoyable destination (Figure 29).

Figure 29: Example of Mixed-Use development at Belmont Street Lofts at SE Belmont Street & SE 35th Avenue in Portland

- Improve bicycle infrastructure: Currently most locations of interest in Gresham are located on streets with bike paths, however, all respondents surveyed mentioned they had bad experiences with the bike lanes either not being marked or disappearing. This infrastructure could be improved by repainting faded lines and/or adding buffers to bike lanes such as on East Powell Boulevard where there is heavy traffic.
- Street and sidewalk improvements: Due to the five lanes of traffic on East Powell Boulevard, it is uncomfortable and perceived as unsafe as a pedestrian on that street. Traffic calming measures such as roundabouts, medians, street trees, bulb-outs at intersections, or extended turn lanes could greatly improve a pedestrian's comfort and safety level. (Figure 30). Many respondents also mentioned desire for wider sidewalks and better street crossings. Some residential areas such as along NE 2nd Street east of Linden Avenue, lacked pedestrian infrastructure completely. Sidewalk improvements to this area would enhance the pedestrian experience.

Figure 30: Roundabout used in Bend, Oregon

- Imageability (the quality of a place that makes it distinct, recognizable, and memorable) and urban design improvements along East Powell Boulevard: East Powell Boulevard scored low in terms of urban design mainly because it is a main thoroughfare for automobiles. Some suggestions for improving the imageability and enjoyment for pedestrians and bicyclists on this street could be: Street trees, benches, streetlights, appealing colors on buildings, shrubs or public art. Any of these elements would enhance a pedestrian or bicyclist's experience and create visual interest to the area (Figure 31).

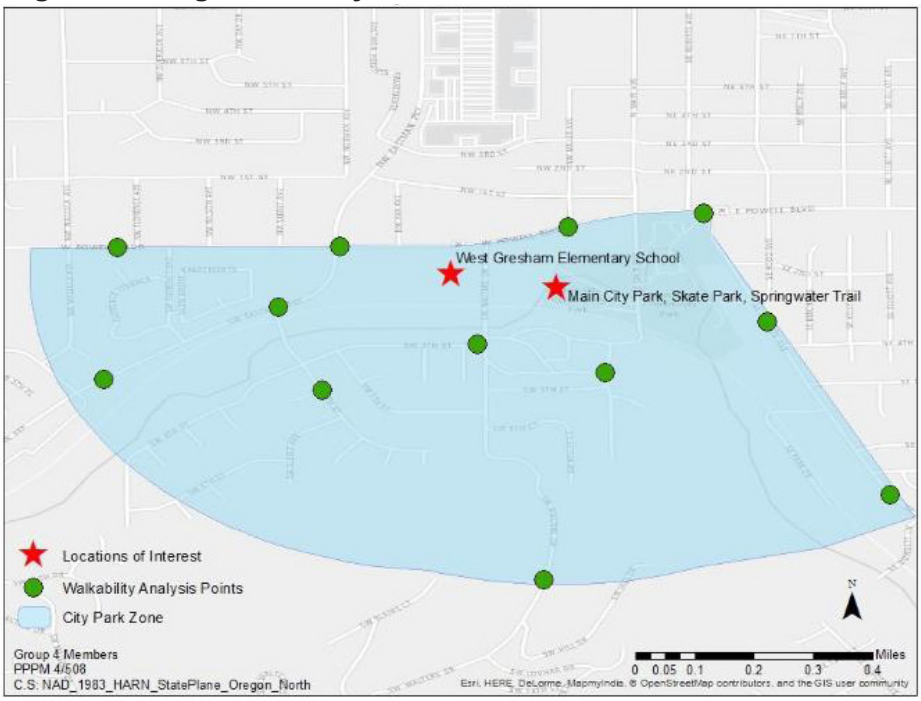
Figure 31: NW 23rd Street, Portland

Region 4: Main City Park

The Main City Park region (Figure 32) includes the street segments bordered by W. Powell Boulevard, SE Roberts Avenue, SW Towle Avenue and Gresham Butte to the south. The locations of interest in this region include:

- West Gresham Elementary School
- Main City Park, Skate Park, SpringWater Trail

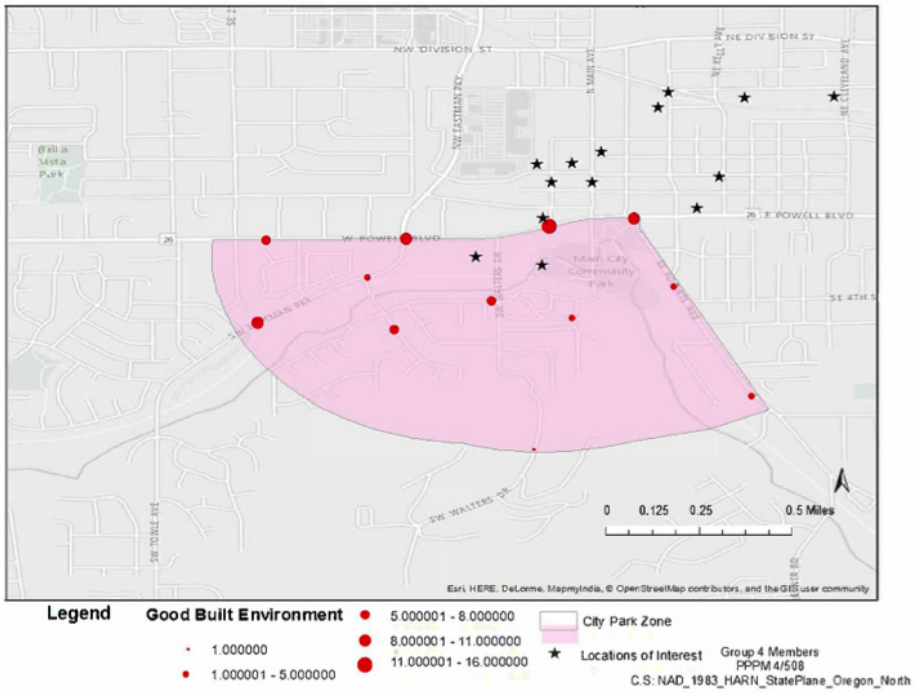
Figure 32: Region 4 Study Area



Built Environment

The built environment inventory assessment found the strongest elements near three intersections. The first was along W. Powell Boulevard at NW Miller Avenue and SE Roberts Avenue. These intersections provided crosswalks and pedestrian access from the park to downtown. Another successful intersection was present at W Powell Boulevard and NE Eastman Parkway. This intersection contained a bus stop and bike lanes with close proximity to the historic Springwater Corridor Trail. Areas within this region that contained weak built environment elements included narrow two-lane roads within the forested areas that offered little or no built environment for pedestrian access (Figure 33).

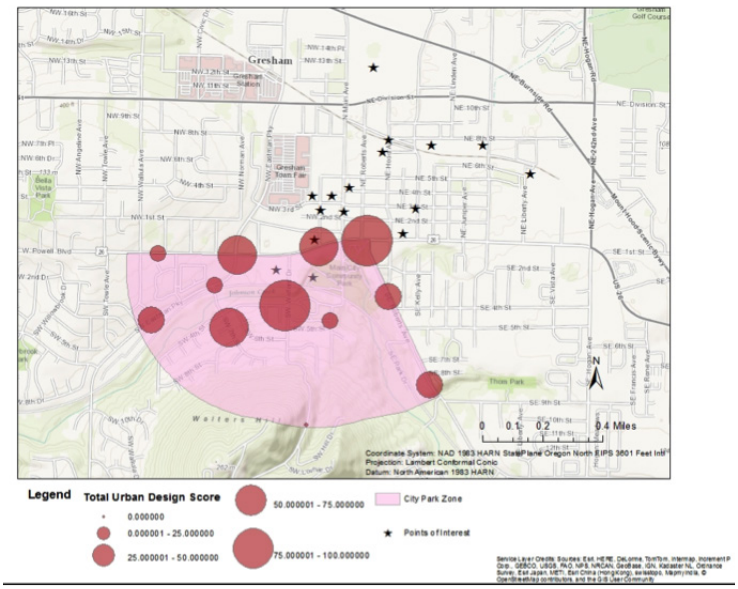
Figure 33: Good Built Environment Elements



Urban Design

The urban design quality assessment found the highest total urban design scores along the main thoroughfare, W Powell Boulevard and the Main City Park entrance (Figure 34). W Powell Boulevard received high scores due to diverse buildings, unique architecture and landscaping, street furniture and mostly human scaled. The Main City Park entrance included successful urban design elements such as: Signage for Gresham's historic downtown, decorative lighting fixtures, street furniture, and decorative brickwork. Intersections that are lacking in urban design elements are along W Powell Boulevard and SW Eastman Parkway. These intersections are high traffic roads prioritized to be auto-centric. Sidewalks are narrow or sometimes end abruptly and intersections are unmarked and do not provide any signage to vehicles that pedestrians or bicyclists may be present.

Figure 34: Total Urban Design Score



Overall Conclusions and Recommendations

The Main City Park area is located southwest of Downtown Gresham and contains primarily a park, single-family and multi-family residential land uses. This is a great location for residential uses near the park and is in close proximity to the downtown region. Based on the walkability analysis conducted, the following recommendations have been provided to improve the Main City Park region:

- Improve pedestrian connection between Main City Park and Downtown Gresham: Replicating an entrance to Main City Park on W Powell Boulevard similar to what was created for the south entrance, which includes a plaza and information gateway, would help provide an inviting and welcoming connection between Main City Park and Downtown Gresham (Figure 35). This would also be an opportunity for the City to promote civic events, recreational opportunities, and community projects. Signage to help direct traffic to the parking area for Main City Park would be helpful as well.

Figure 35: Southerly Park Entrance

- Increase signage and pedestrian amenities for the historic Springwater Corridor Trail: The historic Springwater Trail (Figure 36) lacked signage to attract visitor, and tourists. Adding amenities such as signage, seating, lighting, and trashcans, would all help attract more visitors to the trail and support walkability and safety.

Figure 36: Springwater Corridor Trail

- Improve TriMet transit station infrastructure: Transit stops such as at W Powell Boulevard and Eastman Parkway (Figure 37), would benefit from infrastructure such as shelter covering, benches, lighting, and trash cans. These additions would encourage a safe and enjoyable experience and increase ridership for mass transit and walkability.

Figure 37: W. Powell Boulevard and Eastman Parkway Transit Stop

Region 5: NE Burnside Road

The NE Burnside Road region (Figure 38) includes the street segments bordered by NE Division Street, NW Civic Drive, NE Burnside Road, and NE Kelly Avenue. The location of interest in this region is:

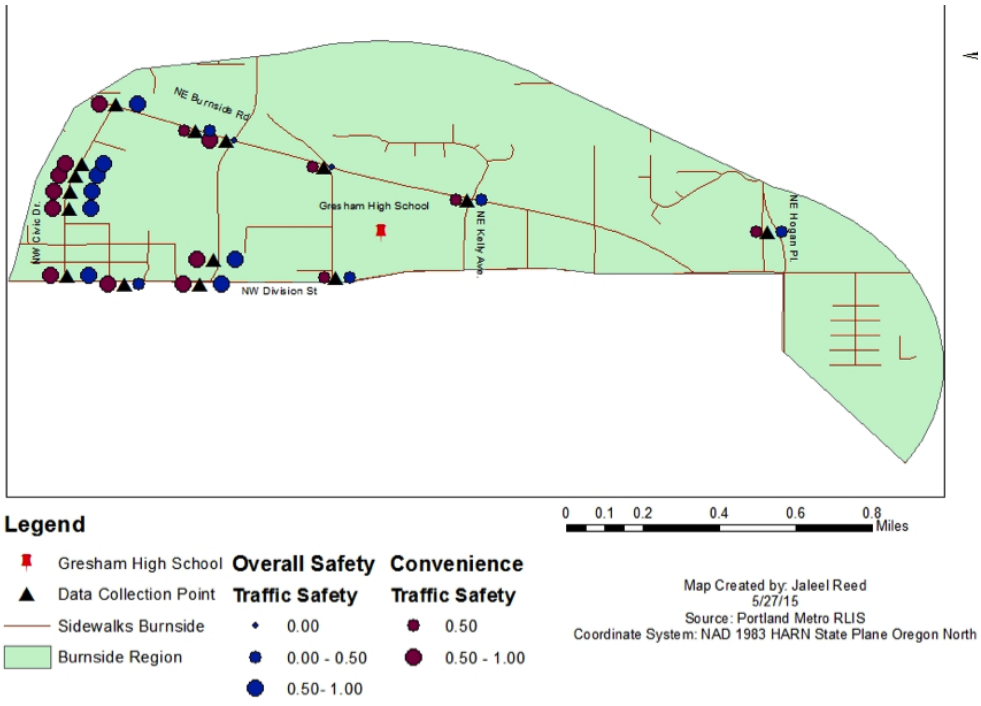
- Gresham High School

Figure 38: Region 5 Study Area

Built Environment

Gresham Station Shopping Center at the Intersection of NW Civic Drive and NW Division street received the highest scores from the built environment inventory related to pleasurability, safety from traffic, crime, and accessibility (Figure 39). This region has various land uses: Commercial, retail, restaurants, services, and multi-family housing. It is attractive and accessible with wide sidewalks, bike lanes, and buildings close to the street. Burnside Drive scored low on the assessment because it is auto centric, high-traffic, and not pedestrian friendly. Traffic safety was the lowest in this region due to lack of crosswalks, high traffic, and numerous car lanes that are inconvenient for pedestrians.

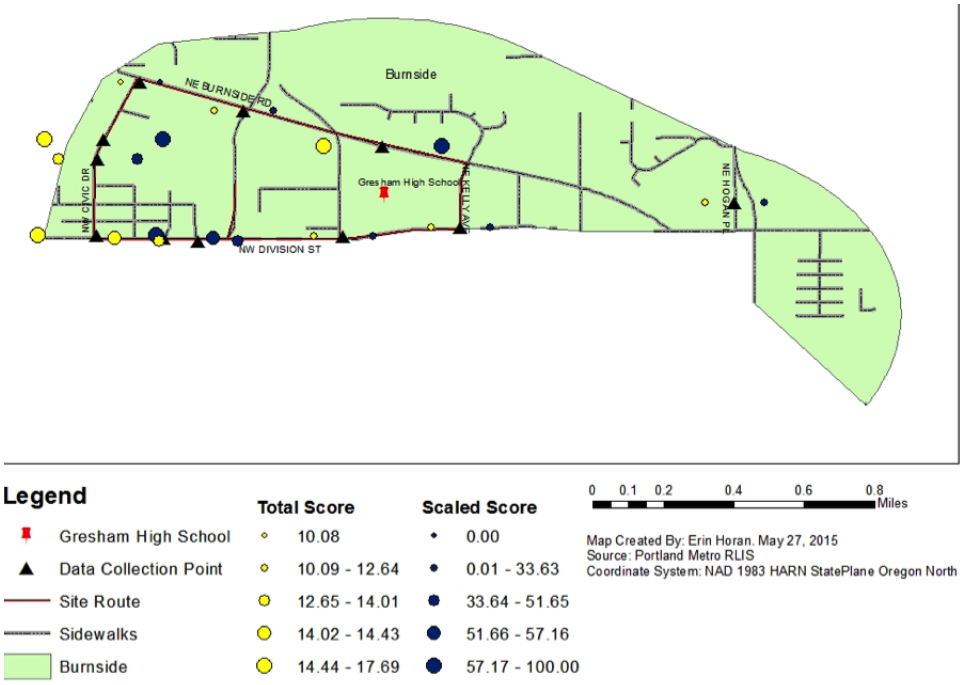
Figure 39: Traffic Safety: Convenience and Overall Safety



Urban Design

The urban design quality assessment found the highest total scores at the intersection of NW Division Street and NW Civic Drive near the Gresham Station Shopping Center (Figure 40). There is high imageability, complexity, human scale, and transparency in this region due to street furniture, buildings close to the sidewalk, and active spaces such as restaurants, shopping centers, and mixed land uses that keep the area interesting and inviting to pedestrians. Points of low total urban design scores were found along NE Burnside Road, NW Division Street near Gresham High School and NE Hogan Place near Safeway. These regions lacked mixed land uses, buildings were very far from the sidewalk, and there was a lack of street furniture, lighting, and safe crosswalks for pedestrians.

Figure 40: Urban Design in Burnside, Gresham



User Survey Findings

The findings from the user intercept surveys came from six individuals throughout the study area. The purpose of their trips were personal business, exercise, shopping, or work/commute. Half of the users frequented the route daily or once a week while the other half had used it less than five times total or was their first time. Only two mentioned they use public transit and the majority mentioned that they chose the route because it was accessible, direct, and close to home. The majority of negative observations mentioned no space for bicyclists or disappearing bike lanes, which have caused bicyclists to ride on the

sidewalks. The suggested improvements included widening bike lanes, adding benches, trees, shelter from the weather, and more sidewalks. See Appendix E.

Overall Conclusions and Recommendations

The NE Burnside region contains a mixture of successful pedestrian environments near Gresham Shopping Center and areas for improvement along NE Burnside Road. It is a region mostly consisting of commercial uses with nearby residential uses and schools. Based on the walkability analysis conducted, the following recommendations have been provided to improve the NE Burnside region:

- NW Civic Drive (Figure 41): This region scored very well in terms of urban design, human scale, enclosure, accessibility, and safety, however could use some improvement to enhance the pedestrian experience. Improvements include: More street trees, continuous markings for bike lanes, public benches, improving streetscape, and imageability from MAX station to NE Burnside Road, and fill empty lots with either mixed use development or park space.

Figure 41: NW Civic Drive and NW 15th Street Rendering with Benches and Park Space

- NE Division Street: NE Division Street scored very well in terms of walkability for the built environment inventory and urban design. However, there is room for improvement between NW Eastman Parkway and NE Kelly Avenue. This region includes large setbacks, and lacks pleasurability and human scale elements to create a pleasant walkable space. This is also the closest street leading to the downtown,

making this connection a priority. Suggestions for improvement include: Reduce setback requirements, increase street trees and buffer between sidewalk and street, and widen bike lanes or add painted buffer for increased visibility.

- NE Burnside Road (Figure 42): This region scored the lowest in terms of walkability factors for the built environment inventory and urban design assessment. There were no pedestrians in this region, which indicated its low desirability as well as safety concerns felt by the rapid car traffic. This area is near many commercial locations as well as the high school so it would be a high priority to improve for reasons of safety as well as to increase foot traffic to the commercial businesses. Suggestions for improvement include: Create a center median of trees along NE Burnside Road in front of Gresham High School, include safe crosswalks along NE Burnside Road (especially in front of Gresham High School), widen sidewalk and increase buffer with street trees, use continuous markings for bike lanes with painted buffer, build storefronts facing the street, implement bus route along NE Burnside Road, and reduce setback requirements.

Figure 42: NE Burnside Road near Gresham High School Rendition with More Street Trees, and Safe Crosswalk

V. Conclusion

The City of Gresham has a goal for its Downtown, the Regional Center of East Multnomah County, to be a lively, diverse, and appealing place to live, work, shop, and play. As part of the 2009 Downtown Plan, goals have been determined regarding mixed land uses, creating urban design that is visually interesting, transportation systems and connections that involve safe movement of pedestrians, bicyclists, automobiles, and emergency vehicles, providing public and private park space, and creating incentives to encourage redevelopment and creation of more businesses and housing. A Design Manual has been adopted into the Development Code to allow for guiding principles in standards and design in the downtown area.

The walkability study conducted by the Advanced GIS class has identified current conditions regarding the state of the pedestrian and bicyclist experience in each of the five study areas of Downtown Gresham, as well as an analysis of the current land uses, transportation infrastructure, population density, and level of street connectivity from pedestrian catchment zones. Based on the analysis and research conducted, the following recommendations are suggested for the city to consider in order of feasibility and priority:

- Enhance urban design elements with street trees, landscaping along sidewalks, public benches, street art, and outdoor dining.
- Increase pedestrian safety and accessibility with additional wayfinding signage and crosswalks.
- Enhance bike lanes by making sure they are well-marked, continuous, and with buffers on high traffic streets.
- Improve pedestrian elements along Springwater Corridor Trail such as wayfinding signage, benches, and lighting.
- Improve MAX transit stop stations with added lighting, landscape, and wayfinding signage.
- Include traffic calming techniques along high traffic streets such as: Powell Boulevard, NW Division Street, and NE Burnside Road in the form of center median planting strips and additional pedestrian crosswalks.
- Encourage mixed land uses/density including public recreational space such as parks or plazas in vacant lots.

Further analysis would need to be conducted to determine the true feasibility and priorities for the City of Gresham. As preliminary suggestions, these recommendations are based first on immediate improvements such as urban design elements, which would enhance the user experience and connectivity around Downtown Gresham. Since conducting this study, TriMet has been working to improve the conditions of the Gresham stations with added lighting, handrails, security cameras, and pedestrian crossing improvements. The City of Gresham could consider enhancing riders' experience at the stations by adding wayfinding signage to help direct riders to areas of interest around downtown. Traffic calming techniques along heavy traffic streets such as center median planting strips, or pedestrian crosswalks would greatly improve the safety, experience, and connectivity of residential neighborhoods to commercial uses. Mixed land uses, higher density, and park space would help increase the appeal and interest in the downtown region and are part of the current goals of the 2009 Downtown Gresham Plan. The next step for the City of Gresham could be to determine the feasibility and priority of the recommendations provided in each study area, particularly related to connecting residential neighborhoods to Downtown Gresham through wayfinding and urban design elements, as well as improving safety of bike lanes and added pedestrian crosswalks.

Appendix A | Pedestrian Catchment Zone Analysis

Half-Mile Pedestrian Catchment Zone

Half-Mile PCZ

Facility ID	Name	PCZ Area (Acres)	1/2 Mile PCZ Ratio	Linear Length of Streets in 1/2 Mile PCZ (Feet)	Number of Street Segments in PCZ	Total Street Density (Feet/Acre)	Average Street Block Length in PC
1	West Gresham Elementary School	268.79	0.53	40450.52	160	150.49	252.82
2	Gresham History Museum	305.61	0.61	53516.49	248	175.11	215.79
3	Gresham Chamber of Commerce	296.23	0.59	56533.63	267	190.84	211.74
4	Gresham Farmers' Market	264.55	0.53	46256.88	217	174.85	213.17
5	Mt. Hood Movie Theater	306.47	0.61	55446.67	253	180.92	219.16
6	Alpha High School	292.70	0.58	45766.55	187	156.36	244.74
7	East Hill Church	205.65	0.41	33047.07	128	160.70	258.18
8	Multnomah County East Building	304.55	0.61	50998.10	230	167.45	221.73
9	Cleveland Avenue Max Station	197.06	0.39	30662.19	130	155.60	235.86
10	Gresham Library	260.43	0.52	45636.75	219	175.24	208.39
11	Gresham High School	247.85	0.49	37805.11	137	152.53	275.95
12	3rd Street	288.11	0.57	50997.61	244	177.01	209.01
13	Main City Park, Skate Park, Springwater Trail	200.42	0.40	28513.45	117	142.27	243.70
14	US Post Office	276.64	0.55	44995.32	197	162.65	228.40
15	Gresham Central Transit Center	308.36	0.61	56717.78	263	183.93	215.66
16	Gresham Center for the Arts Plaza	294.82	0.59	54720.51	253	185.60	216.29
17	Main Avenue	308.27	0.61	55283.58	265	179.33	208.62

Quarter-Mile Pedestrian Catchment Zone

Quarter-Mile PCZ

Facility ID	Name	PCZ Area (Acres)	1/4 Mile PCZ Ratio	Linear Length of Streets in 1/4 Mile PCZ	Number of Street Segments in PCZ	Total Street Density (Feet/Acre)	Average Street Block Length in PCZ
1	West Gresham Elementary School	58.39	0.46	14107.40	405	5521.20	34.83
2	Gresham History Museum	77.89	0.62	20128.44	1564	16440.33	12.87
3	Gresham Chamber of Commerce	79.57	0.63	20419.47	1403	11709.51	14.55
4	Gresham Farmers' Market	72.53	0.58	17632.33	1041	14007.81	16.94
5	Mt. Hood Movie Theater	73.22	0.58	20757.31	1521	10533.49	13.65
6	Alpha High School	84.22	0.67	15745.69	370	1906.48	42.56
7	East Hill Church	52.55	0.42	14240.49	37	137.46	384.88
8	Multnomah County East Building	66.34	0.53	18042.19	837	6684.45	21.56
9	Cleveland Avenue Max Station	38.79	0.31	8593.68	162	1948.37	53.05
10	Gresham Library	68.18	0.54	17605.11	1033	14965.64	17.04
11	Gresham High School	67.72	0.54	17104.81	431	2303.11	39.69
12	3rd Street	75.12	0.60	19529.02	1290	15409.07	15.14
13	Main City Park, Skate Park, Springwater Trail	57.47	0.46	10541.04	273	2057.04	38.61
14	US Post Office	76.82	0.61	14474.93	866	10294.69	16.71
15	Gresham Central Transit Center	79.14	0.63	19191.94	1170	9366.48	16.40
16	Gresham Center for the Arts Plaza	77.79	0.62	25095.81	2049	12086.30	12.25
17	Main Avenue	87.70	0.70	18910.23	1324	13452.44	14.28

Appendix B | Irvine-Minnesota Built Environment Inventory Form

Date			1	2	3	4	5	6	7	8
Observer										
Segment #										
Answer questions 1-6 based on this end of the segment										
Intersection										
Neighborhood Identification										
1. Are there **monuments or markers** including neighborhood entry signs that indicate that one is entering a special district or area?	1	yes = 1; no = 0								
Street Crossing										
2a. Consider the places on the segment that are **intended** for pedestrians to cross the street. Are these places marked for pedestrian crossing?	2	all = 3; some = 2; none = 0; NA = 8								
2b. What type of **marking** do the crosswalks have? Mark all that apply.										
White painted lines	3	yes = 1; no = 0								
Colored painted lines	4	yes = 1; no = 0								
Zebra striping	5	yes = 1; no = 0								
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	6	yes = 1; no = 0								
Other	7	yes = 1; no = 0								
3. Are there **curb cuts** at all places where crossing is expected to occur?	8	all = 3; some = 2; none = 0; NA = 8								
4. What type of **traffic/pedestrian signal(s)/system(s)** is/are provided? Mark all that apply.										
Traffic signal	9	yes = 1; no = 0								
Stop sign	10	yes = 1; no = 0								
Yield sign	11	yes = 1; no = 0								
Pedestrian activated signal	12	yes = 1; no = 0								
Pedestrian crossing sign	13	yes = 1; no = 0								
Pedestrian overpass/underpass/bridge	14	yes = 1; no = 0								
5. For an individual who is on this segment, how **safe (traffic wise)** do you think it is to cross the street from this segment?	15	pretty/very safe = 1; not very safe/ unsafe = 0; cul de sac = 8								
6. For an individual who is on this segment, how **convenient (traffic wise)** do you think it is to cross the street from this segment?	16	pretty/very convenient =1; not very/inconvenient= 0; cul de sac = 8								
Answer questions 7-11 while standing at the beginning of the segment										
Neighborhood Identification										
7. Does the segment have **banners** that identify the neighborhood?	17	some/a lot = 3; few = 2; none = 0								
Street Characteristics										
8a. Is this a **pedestrianized** street?	18	yes = 1; no = 0								
8b. Is the street a …	19	one way = 1; two way = 2								
9. Is this segment an **alley**?	20	yes = 1; no = 0								
10. How many **vehicle lanes** are there for cars? (Include turning lanes).	21	six or more = 6; five = 5; four = 4; three = 3; two = 2; one = 1; NA (no lanes for car travel) = 8								
Views										
11a. Is this segment characterized by having **a significant open view** of an object or scene that is not on the segment? The view must be a prominent one.	22	yes = 1; no = 0								
11b. How attractive is the open view?	23	attractive = 3; neutral = 2; unattractive = 1; NA (no views) = 8								
Begin walking along segment to answer questions 12-68										
12a. What types of land uses are present on this area? Mark all that apply.										
Residential										
Single family home - detached	24	yes = 1; no = 0								
Single family home/duplex - attached (2 units or fewer)	25	yes = 1; no = 0								
Town home/condo/apartment housing (3 units or more)	26	yes = 1; no = 0								
Mobile homes (includes manufactured homes)	27	yes = 1; no = 0								
Residential, other	28	yes = 1; no = 0								
School										
Elementary, middle or junior high school	29	yes = 1; no = 0								
High school	30	yes = 1; no = 0								
University or college (includes all types of building forms)	31	yes = 1; no = 0								

IRVINE MINNESOTA INVENTORY

			1	2	3	4	5	6	7	8
School, other	32	yes = 1; no = 0								
Public space										
Plaza, square, park, playground, landscaped open space, playing fields, garden	33	yes = 1; no = 0								
Public space, other	34	yes = 1; no = 0								
Recreational/leisure/fitness										
Gym/fitness center (also includes yoga/pilates studios, etc.)	35	yes = 1; no = 0								
Movie theater	36	yes = 1; no = 0								
Recreational, other	37	yes = 1; no = 0								
Public/civic building										
Community center or library	38	yes = 1; no = 0								
Museum, auditorium, concert hall, theater	39	yes = 1; no = 0								
Post office, police station, courthouse, Department of Motor Vehicles	40	yes = 1; no = 0								
Public building, other	41	yes = 1; no = 0								
Institutional										
Religious institution (church, temple, mosque, etc.)	42	yes = 1; no = 0								
Hospital, medical facility, health clinic	43	yes = 1; no = 0								
Institutional, other	44	yes = 1; no = 0								
Commercial										
Retail stores/restaurant	45	yes = 1; no = 0								
Bank/financial service	46	yes = 1; no = 0								
Hotel/hospitality	47	yes = 1; no = 0								
Car dealership	48	yes = 1; no = 0								
Gas/service station	49	yes = 1; no = 0								
Commercial, other	50	yes = 1; no = 0								
Office/service										
Offices	51	yes = 1; no = 0								
Service facilities (includes insurance offices, funeral homes, dry cleaning, Laundromats, etc.)	52	yes = 1; no = 0								
Office/service, other	53	yes = 1; no = 0								
Industrial/manufacturing										
Light industrial (e.g., auto paint and auto body repair shops; i.e. clean industries)	54	yes = 1; no = 0								
Medium or heavy industrial (e.g. chemical plants, oil wells, etc.)	55	yes = 1; no = 0								
Industrial, other	56	yes = 1; no = 0								
Transportation center										
Harbor/marina	57	yes = 1; no = 0								
Other										
Undeveloped land	58	yes = 1; no = 0								
Agricultural land, ranch, farming	59	yes = 1; no = 0								
Nature feature	60	yes = 1; no = 0								
Other	61	yes = 1; no = 0								
12b. How many of the buildings in this segment contain **vertical-mixed use**, that is, the building has different land uses on different floors of the building?	62	some/a lot = 3; few = 2; none = 0; NA (no buildings>1 story) = 8								
12c. Determine whether any of these **distinctive retail types** are present (focusing on the form of the building).										
Big box shops (includes super stores or warehouse stores)	63	yes = 1; no = 0								
Shopping mall	64	yes = 1; no = 0								
Strip mall/row of shops	65	yes = 1; no = 0								
Drive-thru	66	yes = 1; no = 0								
13a. Mark off all types of **public space**(s) on this area and how attractive it is										
Park/playground	67	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								
Playing or sport field	68	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								
Plaza /square /courtyard	69	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								

			1	2	3	4	5	6	7	8
Public garden	70	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								
Beach	71	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								
Other	72	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;								
13b. Is it possible for the general public to **use the public space**(s)?	73	unclear = 2; yes = 1; no = 0								
Other Land Uses										
14. How many of these **land uses** are present on this segment?										
Bars/night clubs	74	some/a lot = 3; few = 2; none = 0								
Adult uses	75	some/a lot = 3; few = 2; none = 0								
Check cashing stores/pawn shops/bail bond stores	76	some/a lot = 3; few = 2; none = 0								
Liquor stores	77	some/a lot = 3; few = 2; none = 0								
15. How many of the following **gathering places** are on this segment?										
Restaurants	78	some/a lot = 3; few = 2; none = 0								
Coffee shops	79	some/a lot = 3; few = 2; none = 0								
Libraries/bookstores	80	some/a lot = 3; few = 2; none = 0								
"Corner" store	81	some/a lot = 3; few = 2; none = 0								
Art or craft galleries	82	some/a lot = 3; few = 2; none = 0								
Farmers market	83	yes = 1; no = 0								
16. Are these **nature features** present on this segment?										
Open field/golf course	84	yes = 1; no = 0								
Lake/pond	85	yes = 1; no = 0								
Fountain/reflecting pool	86	yes = 1; no = 0								
Stream/river/canal/creek	87	yes = 1; no = 0								
Forest or woods	88	yes = 1; no = 0								
Ocean	89	yes = 1; no = 0								
Mountain or hills	90	yes = 1; no = 0								
Desert	91	yes = 1; no = 0								
Barriers										
17. Are the following **barriers** present on this segment. Check all that apply, and whether barrier can be overcome e.g. there's a pedestrian bridge.										
Highway (elevated or below ground)	92	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Railroad track	93	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Impassable land use (e.g., gated community, major industrial complex, etc.)	94	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
River	95	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Drainage ditches	96	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Road with 6 or more lanes	97	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Other	98	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3								
Sidewalks										
18a. How many sides of the street have sidewalks?	99	count 1 or 2								
18b. Is the sidewalk **complete** on one or both sides?	100	yes = 1; no = 0; 8 = NA								
18c. What is the **condition** or maintenance of the sidewalk?	101	under repair = 2; moderate or good = 1; poor = 0								
18d. Is there a decorative or unique paving that **covers most or all of the sidewalk** on the segment? (e.g., bricks, tile, etc.)	102	yes = 1; no = 0								

			1	2	3	4	5	6	7	8
18e. Determine how much of the sidewalk is covered by these **features that provide protection** from sun, rain, and/or snow.										
Arcades	103	some/ much of s'walk covered = 1; no/little covered = 0								
Awnings	104	some/ much of s'walk covered = 1; no/little covered = 0								
Other	105	some/ much of s'walk covered = 1; no/little covered = 0								
18f. Is there is a **buffer** (for example, parked cars, landscaped "buffer" strip, etc.) between sidewalk or street.	106	yes = 1; no = 0; NA = 8								
19. Are there **sidewalks/greenbelts/trails/paths** other than sidewalks along street?	107	yes = 1; no = 0								
Bicycle Lanes										
20a. Are there **bicycle lanes** on the segment?	108	yes = 1; no = 0								
20b. How are the bicycle lanes **demarcated**?	109	on road, painted line/reflectors=3; on road physical separation = 2; off road = 1								
Mid Block Crossing										
21a. Is there a **marked mid-block** crosswalk for pedestrians?	110	yes = 1; no = 0								
21b. What type of **marking** does the crosswalk have? Mark all that apply										
White painted lines	111	yes = 1; no = 0								
Colored painted lines	112	yes = 1; no = 0								
Zebra striping	113	yes = 1; no = 0								
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	114	yes = 1; no = 0								
Other	115	yes = 1; no = 0								
Steepness										
22. How **steep** or hilly is this segment? Mark all that apply.	116-118	steep slope = 2; moderate slope = 1; flat or gentle slope = 0								
Sidewalk Amenities										
23. Are there **outdoor dining areas** (e.g. cafes, outdoor tables at coffee shops or plazas, etc) located on the segment?	119	some/a lot = 3; few = 2; none = 0								
24a. Indicate how many of each of the following **street furniture/sidewalk amenities** is/are present on the segment.										
Benches (not a bus stop), chairs and/or ledges for sitting	120	some/a lot = 3; few = 2; none = 0								
Bus stops with seating	121	some/a lot = 3; few = 2; none = 0								
Heat lamps	122	some/a lot = 3; few = 2; none = 0								
Bike racks	123	some/a lot = 3; few = 2; none = 0								
25. Are there obvious **public restrooms** on this segment that are **clearly open to the public**?	124	yes = 1; no = 0								
Street Trees										
26a. How many street trees are on this segment? (Do not include trees that are not on the public right of way; street trees are typically between the sidewalk and the street or if there is no sidewalk, trees usually line the street)	125	some trees/trees along most or entire segment = 1; none/few trees = 0								
26b. Is the **sidewalk shaded** by trees?	126	yes/somewhat = 1; no = 0; NA = 8								
Buildings										
27. How many stories are most buildings on the segment?	127	5 or more = 3; 3-4 stories = 2; 1-2 stories = 1; heights vary, no predominant height = 0; NA (no buildings) = 8								
28. Are there **abandoned buildings or lots** on this segment?	128	some/a lot = 3; few = 2; none = 0; NA=8								
29. Does at least **50% of the segment have buildings**?	129	yes = 1; no = 0								
Windows										
30. How many buildings on this segment have **windows with bars**? (proportion)	130	some/a lot = 3; few = 2; none = 0; NA = 8								
Other features of buildings										
31. How many buildings on this segment have **front porches**? (porches you can sit on)	131	some/a lot = 3; few = 2; none = 0; NA = 8								
32. How much of the segment has **blank walls or buildings with blank walls**?	132	some/a lot = 3; few = 2; none = 0; NA = 8								

			1	2	3	4	5	6	7	8
Garages										
33a. How many buildings have **garage doors** facing the street?	133	some/a lot = 3; few = 2; none = 0; NA = 8								
33b. How **prominent** are most garage doors when looking at the front of the buildings?	134	very = 3; somewhat = 2; not very/not visible = 0								
Parking										
34a. Is there a **parking structure** visible on this segment (do not include parking structures that are completely underground)?	135	yes = 1; no = 0								
34b. Looking at the front of the parking structure on the street level floor, what is the **predominant use** that is visible to you?	136	parking = 2; varied = 1; not parking other uses = 0								
Driveways										
35. How many **driveways** are visible on the segment?	137	some/a lot = 3; few = 2; none = 0								
Maintenance										
36. Describe the general **maintenance of the buildings** on this segment.	138	attractive = 3; neutral = 2; unattractive = 1; NA = 8								
37. How much **graffiti** is apparent on this segment?	139	some/a lot = 3; little = 2; none = 0								
38. How much **litter** is apparent on this segment?	140	some/a lot = 3; little = 2; none = 0								
39. Are there **dumpsters** visible on this segment?	141	some/a lot = 3; few = 2; none = 0								
40. Is there visible **electrical wiring** overhead on the segment?	142	some/a lot = 3; little = 2; none = 0								
Lighting										
41. Is there **outdoor lighting** on the segment? (Include lighting that is intended to light public paths and public spaces)	143	yes = 1; no = 0								
Freeways										
42. Is there a **freeway overpass/underpass** connected to **this segment**?	144	under a freeway overpass =3; next to freeway = 2; IS a freeway overpass = 1; none of the above = 0								
Traffic Features										
43. What is the **posted speed limit** on this segment? Only include those on the segment itself.	145	use number; not posted =8								
44. Are there measures on this segment that could **slow down traffic**? Mark all that apply.										
Speed bump/speed hump/raised crosswalk; or dips (that are intended to slow down traffic)	146	yes = 1; no = 0								
Rumble strips or bumps (includes dots, reflectors, raised concrete strips, etc.)	147	yes = 1; no = 0								
Curb bulb out/curb extension	148	yes = 1; no = 0								
Traffic circle/roundabout	149	yes = 1; no = 0								
Median	150	yes = 1; no = 0								
Angled/ On-street parking (that runs along most or the entire segment - does not have to be on both sides of segment)	151	yes = 1; no = 0								
45a. Is there a **cul-de-sac or permanent street closing** on this segment?	152	yes = 1; no = 0								
45b. Is there a **pedestrian access point** or cut through point that allows pedestrians to go from one segment to another (even though vehicular traffic may not be able to)?	153	yes = 1; no = 0; don't know = 7								
Architecture/Design										
46. Rate the **attractiveness** of the segment (design + maintenance)	154	attractive = 3; neutral = 2; unattractive = 1								
47. Does this segment have buildings that appear to be **historic**? (old + detailed)	155	yes = 1; no = 0; NA = 8								
48. How **interesting** is the architecture/urban design of this segment?	156	interesting = 3; somewhat interesting = 2; uninteresting = 1								
Other features of the segment										
49. How many **street vendors or stalls** are on this segment? (do not count newspaper racks; there must be a person vending)	157	some/a lot = 3; few = 2; none = 0								
50. Is there **public art** that is visible on this segment?	158	yes = 1; no = 0								
51. Are there **billboards** present on this segment?	159	some/a lot = 3; few = 2; none = 0								
People										
52. How safe do you feel walking on this segment?	160	pretty/very safe = 1 not very safe/unsafe = 0								

			1	2	3	4	5	6	7	8
Dogs										
53. Are there **any loose/unsupervised/barking dogs** on this segment that seem menacing?	161	yes = 1; no = 0								
Olfactory Character										
54. Is the dominant smell unpleasant?	162	yes = 1; no = 0								
Neighborhood Identification (OTHER END OF SEGMENT)										
1. Are there **monuments or markers** including neighborhood entry signs that indicate that one is entering a special district or area?	163	yes = 1; no = 0								
Street Crossing										
2a. Consider the places on the segment that are **intended** for pedestrians to cross the street. Are these places marked for pedestrian crossing?	164	all = 3; some = 2; none = 0; NA = 8								
2b. What type of **marking** do the crosswalks have? Mark all that apply.										
White painted lines	165	yes = 1; no = 0								
Colored painted lines	166	yes = 1; no = 0								
Zebra striping	167	yes = 1; no = 0								
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	168	yes = 1; no = 0								
Other	169	yes = 1; no = 0								
3. Are there **curb cuts** at all places where crossing is expected to occur?	170	all = 3; some = 2; none = 0; NA = 8								
4. What type of **traffic/pedestrian signal(s)/system(s)** is/are provided? Mark all that applv.										
Traffic signal	171	yes = 1; no = 0								
Stop sign	172	yes = 1; no = 0								
Yield sign	173	yes = 1; no = 0								
Pedestrian activated signal	174	yes = 1; no = 0								
Pedestrian crossing sign	175	yes = 1; no = 0								
Pedestrian overpass/underpass/bridge	176	yes = 1; no = 0								

5. For an individual who is on this segment, how **safe (traffic wise)** do you think it is to cross the street from this segment?	177	pretty/very safe = 1;
		not very safe/ unsafe = 0;
		cul de sac = 8								

6. For an individual who is on this segment, how **convenient (traffic wise)** do you think it is to cross the street from this segment?	178	pretty/very convenient =1;
		not very/inconvenient= 0;
		cul de sac = 8								

Appendix C | Urban Design Quality Assessment

measuring urban design qualities scoring sheet		auditor	
street from		date & time	
step	**recorded value**	**multiplier**	**(multiplier) x (recorded value)**
imageability			
1. number of courtyards, plazas, and parks (both sides, within study area)		0.41	
2. number of major landscape features (both sides, beyond study area)		0.72	
3. proportion historic building frontage (both sides, within study area)		0.97	
4. number of buildings with identifiers (both sides, within study area)		0.11	
5. number of buildings with non-rectangular shapes (both sides, within study area)		0.08	
6. presence of outdoor dining (your side, within study area)		0.64	
7. number of people (your side, within study area) Walk through 1			
Walk through 2			
Walk through 3			
Walk through 4			
Total			
Total divided by 4		0.02	
8. noise level (both sides, within study area) Walk through 1			
Walk through 2			
Walk through 3			
Walk through 4			
Total			
Total divided by 4		-0.18	
		add constant	+2.44
		imageablity score	
enclosure			
1. number of long sight lines (both sides, beyond study area)		-0.31	
2a. proportion street wall (your side, within study area)		0.72	
2b. proportion street wall (opposite side, within study area)		0.94	
3a. proportion sky (ahead, beyond study area)		-1.42	
3b. proportion sky (across, beyond study area)		-2.19	
		add constant	+2.57
		enlosure score	
human scale			
1. number of long sight lines (both sides, beyond study area) *from above		-0.74	
2. proportion windows at street level (your side, within study area)		1.10	
3. average building height (your side, within study area)		-0.003	
4. number of small planters (your side, within study area)		0.05	
5. number of pieces of street furniture and other street items (your side, within study area)		0.04	
		add constant	+2.61
		human scale score	
transparency			
1. proportion windows at street level (your side, within study area)		1.22	
2. proportion street wall (your side, beyond study area) *from above		0.67	
3. proportion active uses (your side, within study area)		0.53	
		add constant	+1.71
		transparency score	
complexity			
1. number of buildings (both sides, beyond study area)		0.05	
2a. number of basic building colors (both sides, beyond study area)		0.23	
2b. number of basic accent colors (both sides, beyond study area)		0.12	
3. presence of outdoor dining (your side, within study area) *from above		0.42	
4. number of pieces of public art (both sdies, within study area)		0.29	
5. number of walking pedestrians (your side, within study area) Walk through 1			
Walk through 2			
Walk through 3			
Walk through 4			
Total			
Total divided by 4		0.03	
		add constant	+2.61
		complexity score	

Appendix D | User Intercept Surveys

Location: _____ Date: _____ Time: _____

Surveyor: _____ Weather: _____
(sunny, cloudy, rainy, windy, hot, and/or cold)

Read this paragraph before asking questions:
Excuse us, we are ___ . We are students from University of Oregon. We are conducting this survey as part of our class project. We want to know better about pedestrians and cyclists' experiences in this area. We will ask you a few questions, which will only take about 3 to 5 minutes. Would you be willing to talk with us? You can stop at any time if you don't feel comfortable answering the questions.

What best describes the purpose of this trip?

☐ Exercising (a) ☐ Work commute (b) ☐ School (c)

☐ Recreation (d) ☐ Shopping/doing errands (e) ☐ Personal business (medical, visiting friends, etc.) (f)

In the past month, about how often have you walked here? (biked here?)

☐ First time (a) ☐ 0 – 5 times (b) ☐ 6 – 10 times (c) ☐ 11 – 20 times (d) ☐ Daily (e)

Please check the seasons in which you walk. (bike).

☐ All Year (a) ☐ Summer (b) ☐ Fall (c) ☐ Winter (d) ☐ Spring (e)

Will any part of this current trip be taken on public transit?

☐ Yes (a) ☐ No (b)

Why are you using this route as opposed to walking somewhere else? *(please check all that apply)*

☐ Accessible/close (a) ☐ Direct (b) ☐ Lower traffic volumes (c) ☐ Heard about it through friends, media, etc.(d)

☐ Scenic qualities (e) ☐ Level (f) ☐ Personal safety (g) ☐ Connection to transit (h)

Was it easy to pick a safe and convenient route to walk (or bike) in this area? **Yes_____No_____**

Do you experience or observe any of the following situations? (Mark all that apply)

◊ no space for cyclists to ride/ pedestrians to walk
◊ no marked bike lanes or sidewalks
◊ bike lane, paved shoulder or sidewalk disappeared
◊ heavy or quickly moving traffic
◊ poorly lit roadways
◊ potholes or other rough surface
◊ debris or other impediments (utility covers, speed bumps, railroad tracks, etc.)
◊ fear of potential crime
◊ uneven walkways or road surfaces
◊ threatening dogs or other animals
◊ Other _____

Where was the most memorable impediment located? (intersection) _____

What would you like to see improved along this route (mark with an 'X') and community in general (mark with an 'O')? *(please check all that apply)*

☐ Wider sidewalks (a) ☐ Better surface (b) ☐ Better street crossings (c)

☐ More shade trees (d) ☐ Benches (e) ☐ Access to shops, etc. (f)

☐ More sidewalks (g)

How comfortable do you feel walking (or biking) this area? Rate the overall experience of your trip:

1: awful 2: many problems 3: some problems 4: good 5: very good

Any comments about walking or biking in this area? (use the opposite side of the paper to record information).

Appendix E | User Intercept Survey Results

Group 1:

Location	Transit	Purpose of the Trip	Frequency	Time of Year	Reason	Easy to Pick	Bad Experience	Improvements	Comfort Level	Comments
Eastman, Division	no	shopping	first time	All year	accessible/close, connection to transit	yes	heavy or quickly moving traffic, poorly lit roadways, fear of potential crime		very good	Needs more bike access
Powell, Eastman	no	shopping	0-5 times	Summer, Fall, Spring	accessible/close, connection to transit	yes	poorly lit roadways, fear of potential crime		good	More frequent busses needed, never safe at night
3rd, Eastman	yes	recreation	daily	All year	accessible/close, direct, scenic qualities	yes			some problems	walk signals don't work
Main, Second	no	recreation, shopping	first time		accessible/close	yes		benches	very good	
Main, Second	no	recreation, shopping	6-10 times	All year	scenic qualities, direct	yes			very good	more parking
Eastman, Town Fair Center	no	recreation	0-5 times	Summer, Fall, Spring	accessible/close	yes	potholes or other rough surface	more shade trees, access to shops	good	Difficult crossing at Eastman and Town Fair Center
Main, Second	no	work commute	11-20 times	All year	direct	yes		benches	very good	More water fountains, intersection is confusing
Main, Third,	no	shopping	first time	Summer, spring	direct	yes	poorly lit roadways		good	streets too narrow
Main, 1st-2nd		shopping	0-5 times	Summer	direct	yes	fear of potential crime		some problems	adequate ammedities, issues with the homeless in the new park/bridges. Not safe at night.

Group 2:

Location	Transit	Purpose of the trip	Frequency	Time of Year	Reason	Easy to pick	Bad experience	Improvements	Comfort level	Comments
Gresham Chamber of Commerce	yes	shopping	daily	Summer, Fall, Spring	direct	Yes	n/a	n/a	very good	Problems with sidewalks to the north and east. Walk in Summer, Fall, and Spring.
Gresham Chamber of Commerce	no	shopping	daily	all year		Yes	no marked bike lanes or sidewalks, potholes or other rough surface, debris or other impediments	better surface	some problems	Cyclist
Gresham History Museum	no	work commute	0-5 times	Summer, Fall	direct, accessable , close	Yes	uneven walkways or raod surfaces	better surface, benches	very good	Feels safe at station, but not around
Cleveland Avenue Max Station	yes	personal business					fear of potential crime			n/a
Gresham Central Transit Center	yes	personal business	daily	all year	Direct	Yes	n/a	more shade trees, access to shops	good	n/a
Mulnomah County East Building	no	shopping	daily	all year	Direct	Yes	Potholes or other rough surface, fear of potential crime, threatening dogs or other animals	wider sidewalks	good	worried about crime in Rockwood nearby, 180th st.

Group 5:

Location	Transit	Purpose of the trip	Frequency	Time of Year	Reason	Easy to pick?	Bad experience	Improvements	Comfort Level	Comments
Division, Norman	yes	personal business	daily	All Year	accessible, close to home	Yes	none	more trees	5	
11th, Division	no	exercise, recreation	daily	All Year	Likes to walk	Yes	potholes or other rough surfaces, debris	shelter from weather	5	
Civic	yes	shopping	0-5 times	All Year	accesible, direct	Yes	bike lanes, paved shoulder disappeared,		5	
Civic, 15th	no	exercise, recreation	1/week	Spring, Summer	direct	Yes	no space for cyclists, no marked bike lanes, bike lanes	more shade trees, more sidewalks	5	
Council, Civic	no	shopping/errands	0-5	All Year	accesible, direct	Yes	heavy moving traffic, potholes or other	benches	5	
Council, Civic	no	exercise, recreation	first time	All Year	accesible	Yes	no space for cyclists, no marked bike lanes	benches	5	
NE Hood Ave, Division	no	work commute	0-5			No	no space for cyclists, no marked bike lanes, bike lanes	wider bike lanes, overall safety	2	

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