RICHFIELD PEDESTRIAN PLAN

Final Report

August 2018

Note to reviewer: Graphics and formatting will be updated for consistency and style for the final draft.

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Introduction

The Richfield Pedestrian Plan is a tool to create safer, more convenient, and enjoyable places to walk in the City of Richfield.

This plan includes a systematic approach for evaluating pedestrian demand based on proximity to land uses that generate pedestrian trips, social and economic factors that generate a higher demand for pedestrian mobility, and the physical context of a given location. The plan also establishes measures to evaluate the pedestrian network to determine its ability to meet the specific demand and priority. Finally, the plan includes guidance on new and emerging pedestrian design tools and recommendations for implementation of a city-wide pedestrian improvement program. Figure 1 shows the sections of the plan.

Figure 1: Richfield Pedestrian Plan Overview

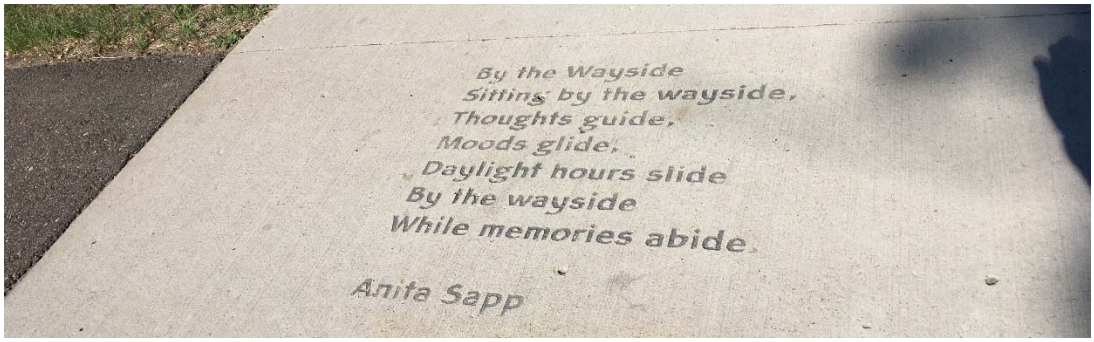
Walking is fundamental to all aspects of transportation. *People walk… for exercise, to the bus stop, from their bike to their house, from a car to a restaurant, just for the fun of it*. Regardless of the nature of the trip, all pedestrians have the right to a safe pedestrian trip and it should also be efficient and enjoyable (see Figure 2).

Figure 2: Existing Conditions and Benefits of Walking

There are many examples of great places to walk in Richfield—trails around parks and lakes provide a serene walking environment; newly constructed streets such as Portland Avenue provide a pleasant and efficient walking experience, and there are mid-block crossings city-wide in strategic locations providing much needed connectivity to high activity locations.

The *vehicle-centric* transportation planning of Richfield's past has resulted in an efficient street grid for automobiles, it has also led to a disconnected and inefficient pedestrian system – the existing transportation system has created negative impacts on walking. High vehicle speeds create unsafe crossing conditions for pedestrians, narrow and uneven sidewalks make for an uncomfortable walking experience along the busiest streets, and there are gaps in pedestrian connectivity at many high activity locations. And these negative impacts are disproportionately born by disadvantaged populations who rely on walking for their everyday needs – children, older adults, people with disabilities, and people with low income.

For the purposes of this plan, WALKING is defined as moving on foot or a wheel chair.



Sidewalk poetry on Portland Avenue in Richfield

Figure 3: Great Places to Walk in Richfield

Top left, newly constructed sidewalk and cycletrack on 66th St. Middle left, meandering multiuse path at Monroe Field. Bottom left: Quiet neighborhood street. Top right, temporary multiuse trail on 69th St. Middle right, median refuge on Portland Ave.

Figure 4: Challenging Pedestrian Environments

Top left, uncomfortable sidewalk at the back of the curb on Penn Ave. Middle Left, uneven driveway crossing on Lyndale Ave. Bottom left, dead end sidewalk on 64th St. Top right, poorly maintained sidewalk and curb ramp on 66th St.

Chapter 1: Planning Context

Richfield – at-a-Glance

Source: Census Bureau, ACS 5 – year Estimate, 2012 – 2016).

Richfield has a population of about 35,900 people with a median age of 36 and a median household income of $54,640. Between 2015 and 2016 the population of Richfield declined from 36,060 to 35,910, a 0.40% decrease and its median household income grew from $52,950 to $54,640, a 3.2% increase.

The ethnic composition of the population of Richfield is 22,275 White residents (62%), 5,899 Hispanic residents (16.4%), 3,521 Black residents (9.8%), 2,721 Asian residents (7.58%), and 1,342 two or more ethnicity residents (3.74%). 8,790 (25%) of Richfield citizens are speakers of a non-English language. The most common foreign languages in Richfield are Spanish (5,189 speakers), African Languages (655 speakers), and Other Asian (528 speakers).

Richfield is a fully developed suburban/urban area. The majority of land in Richfield is single-family residential, but there are also strong multifamily residential communities throughout the city. In addition, there are multiple commercial nodes, employment hubs, regional and neighborhood parks, and other strong activity centers within the city.

The median property value in Richfield in 2016 was $188,100, a 3% increase over 2015. People in Richfield have an average commute time of about 20 minutes, and most report driving along (75%). Car ownership in Richfield is approximately the same as the national average, with an average of 2 cars per household. Nearly 5% of households in Richfield do not have access to a car

Community Vision and Goals

There is growing momentum around improving multimodal transportation options in Richfield, and walking is a critical component of this trend.

- The city developed the Bicycle Master Plan in 2009, which identified primary and secondary bicycle routes within the city, as well as important activity centers.
- The city developed it's guiding principles for transportation and land use in 2010 (Figure 5), which call for more multimodal design, connectivity and public realm, and design for people, among other things.
- In 2012, the city launched its Sweet Streets program, which seeks to organize the public works department around multimodal transportation in an easy to understand and family friendly way.
- As part of the development process for this Pedestrian Plan (2017-2018), residents commented that walking is a critical component of everyday life and should be a priority in the city.

Residents provide input on walking in Richfield at Penn Fest 2017

Figure 5: Guiding Principles for Land Use and Transportation

I. Multimodal Design

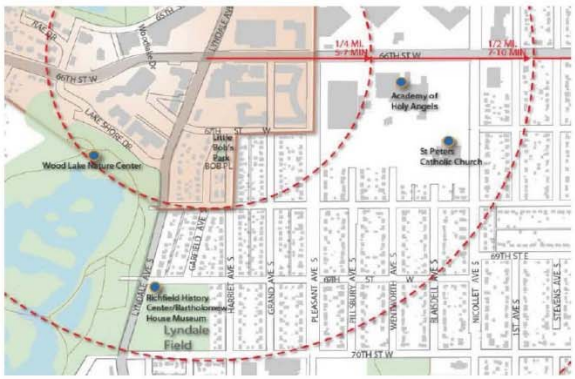
Multimodal Design *of public rights of way will be consistent with the City's Complete Streets policy and will utilize innovative and non-traditional design standards in a way that is equitable for all modes/ users, inter-modal activities, and is respectful of the surrounding community.*

- Provide pedestrian facilities and amenities within the right of way
- Provide bike lanes at least 5 feet wide
- Include transit facilities, plan for intermodal transfers, and provide bike lockers & racks
- Add bike rentals and Nice Ride stations

II. Connectivity and Public Realm

The street and public right-of-way network will be used to connect various **Public Realm** *amenities so that a range of inter-modal activities (walking, biking, driving, etc.) support how neighborhood residents travel to and from destinations such as schools, parks/open space, shops and businesses.*

- Provide a well-connected network of streets, paths & transit
- Accomodate multimodal connections to local destinations
- Enhance connections to the regional transit and bicycle networks
- Implement signage and way-finding



III. Local Economy

Community improvements and reinvestment will reinforce and support all businesses in the **Local Economy** *and provide a safe and more convenient way to access and connect for neighbors, residents, pedestrians, cyclists and motorists.*

- Maintain/improve visibility and convenient access to businesses
- Employ parking strategies that provide safe access for all users and modes of movement
- Provide wider retail sidewalks that support a variety of users and uses
- Promote building use and type that reinforces street enclosure and defines the public realm

IV. Design for People

How people use community amenities and facilities is the most important criteria regarding the planning, engineering, implementation and maintenance of any improvement. **Design for People** *will address universal accessibility as well as comfort, safety, and convenience for all users.*

- Provide comfortable places to sit and walk
- Employ Complete Streets design that emphasizes all users
- Design streets that are a human scale with narrower lane widths, bump-outs, etc.
- Plant boulevard and shade trees

Guiding Principles for Land Use and Transportation Continued

V. Community Character and Identity

The design and implementation of community facilities and improvements will recognize the **Community Character** *of single family residential scale and pattern and will also respond to local features such as natural resources, public art, aesthetics and gateways.*

- Respond to residential neighborhood use and scale with appropriate street size and speeds
- Design wayfinding that represents local character
- Maintain a mature tree canopy
- Incorporate opportunities for public art

VI. Sustainable Solutions

New improvements, growth and development will utilize **Sustainable Solutions** *that are adaptable, flexible, built to last and that consider implications of long term maintenance to ensure the future economic, environmental and social health of the community.*

- Understand the environmental setting and context of the area
- Incorporate green stormwater practices such as rain gardens, tree trenches and pervious pavers
- Bury utilities where possible
- Accommodate future maintenance and operations with dedicated funding sources

VII. Healthy and Active Lifestyles

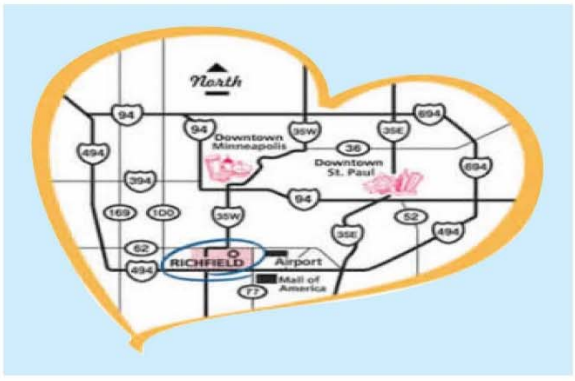
Elements will be incorporated into planning and design efforts to encourage comfortable corridors and places to walk and bike to, safe and well-landscaped routes that inter-connect the community, and promote **Healthy and Active Lifestyles.**

- Create safe, convenient, and fun non-motorized travel opportunities
- Design a safe, well-defined network of routes to walk and bike to school
- Provide well-marked, designed, and visible street crossings
- Implement signage and way-finding

VIII. Unique Location

Community and transportation improvements will support a well-designed and functional regional system which complements local land uses, and capitalizes on Richfield's **Unique Location** *through enhanced access to the regional multimodal transportation system to improve livability and convenience.*

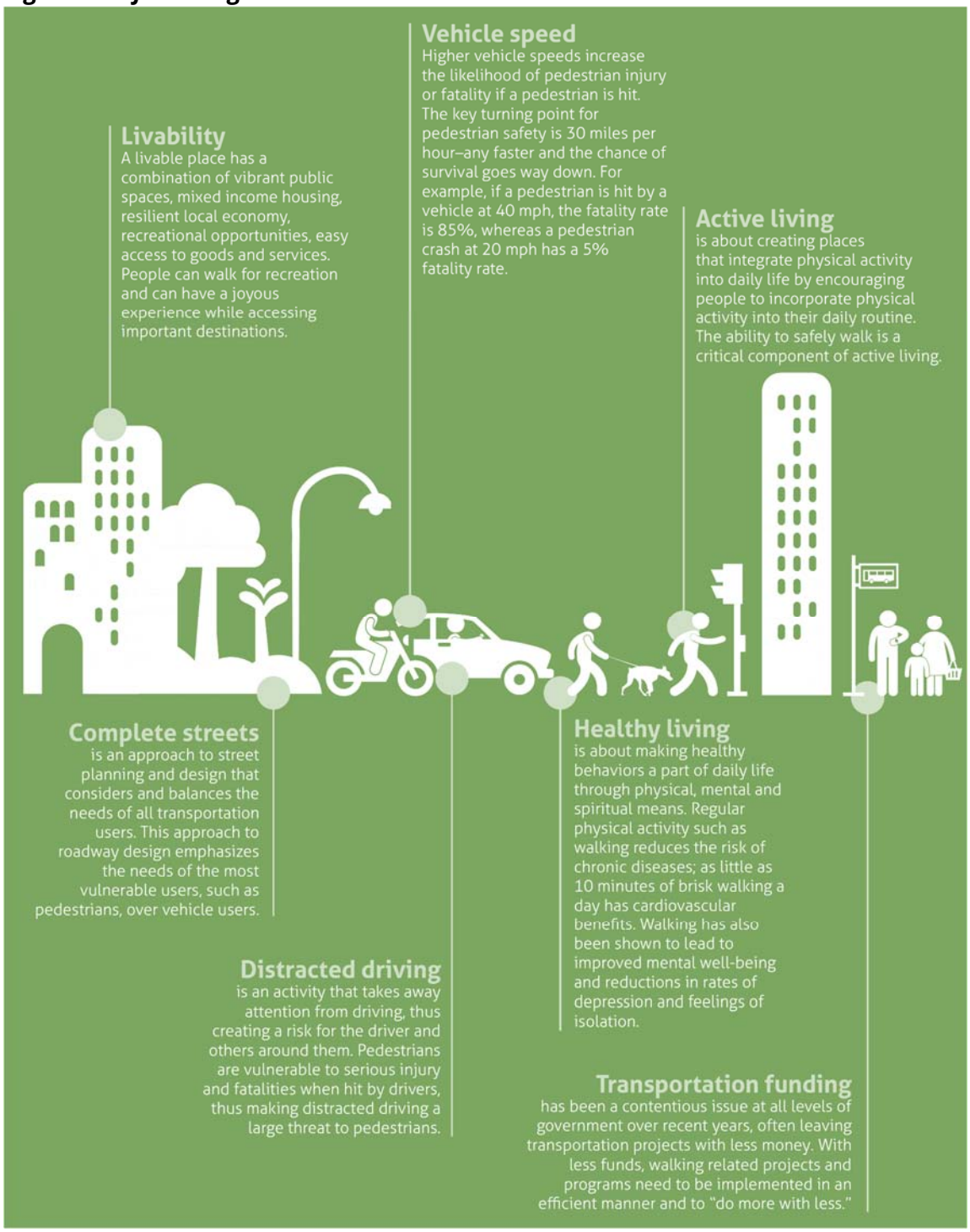
- Emphasize design that accommodates local traffic over through traffic
- Enhance regional transit and trail connections
- Maintain convenient freeway access



Trends Influencing the Pedestrian Network

Cities and the way people move within them are changing. Many people want walkable urban areas, robust multimodal transportation options, and the ability to lead healthy and active lives. Figure 6 highlights just some of the trends driving this change.

Figure 6: Influencing Themes and Trends



Richfield Pedestrian Plan Goals

The goal of the Richfield Pedestrian is to make walking the easy choice. This means that walking for transportation and recreation is integrated into the culture of Richfield and the benefits of making walking safe, convenient and desirable for all should be widely publicized and promoted. This goal reflects the values of the community based on the Guiding Principles and public comments received as part of the planning process and responds to current themes and trends. This goal should be used as a "north arrow" for the project planning process to ensure that walking is prioritized in an equitable and balanced way. The city will do this by:

1. **Making design for pedestrians the first priority when planning roadways and streets.** The means actively address pedestrian safety through design and creating public spaces which are convenient and enjoyable for walking. Often times, this can lead to focusing on pedestrian crossings at high activity locations and designing roadways and streets to encourage people driving cars to slow down and pay attention.

2. **Coordinating multimodal transportation networks and land use decisions to improve characteristics of the built environment that impact walking.** Such as design and the location of destinations, orientation of buildings to the street, and parking lots that are designed for people to walk in. Streets should be vital public spaces that not only serve travel but also foster social and economic activity.

3. **Make public realm improvements a standard, rather than an option, in high activity locations**. This includes elements such as pedestrian lighting, decorative concrete, seating, and public art, all of which foster a more inviting pedestrian experience.

Community input collected at an open house in 2018

Chapter 2: Pedestrian Demand

The performance of a pedestrian route should be measured in terms of user experience – does it feel safe? Do people want to walk there? Does it seem like the fastest route?

This section outlines of a process that can be used to understand relative demand for pedestrian movement and example applications of how this process can be applied at the project level. All routes should provide a safe and enjoyable experience, but the treatment needed to provide that experience will vary and should be evaluated based on contextual factors such as nearby land uses (i.e., demand) and the physical attributes of the route.

Pedestrian demand has historically been measured largely by the number of pedestrians already walking in a certain location. However, experience has shown that this does not always reflect actual demand. People avoid walking when they feel unsafe or uncomfortable. This means that *both* existing and *latent* demand must be considered when evaluating corridors for pedestrian improvements. It also means that corridors must be evaluated on a segment-by-segment or even block-by-block basis, with the goal of answering the question of "how important is THIS location in the pedestrian system?" as well as "what improvements are needed HERE for people to feel safe and comfortable while walking?"

AN EXAMPLE OF LATENT DEMAND

Two competing shoe salesmen visited an isolated community. One sent a message back saying, "I'm returning to the office tomorrow. Nobody here wears shoes!" The other sent a message saying, "Send more product! Everybody here needs shoes!"

Pedestrian Demand Factors

Factors such as adjacent land uses and nearby activity centers, proximity to parks and schools, the presence of transit service, population density and demographic makeup, and the role of the corridor within the larger transportation network all influence how many people will want to walk in a given location (see Figure 7). To understand pedestrian demand at a given location, all of the relevant factors must be considered in concert. The following sections include an overview of these factors.

Figure 7: Pedestrian Demand Influencers

Land and Activity Centers

Activity centers are a group of destinations where people want to go for a variety of goods and services. Figure 8 shows popular activity centers in Richfield and adjacent to Richfield, based on data collected in 2012 as part of the Bicycle Master Plan. The following are common activity centers that were considered:

- Businesses and commercial areas such as shopping centers, restaurants, retail stores, large offices and industrial parks
- Schools, recreation facilities and parks
- Community buildings such as the community center, libraries, and city offices

Transit Stops

Bus service inherently creates demand for walking as people usually walk to their bus stop. A typical bus rider will have to cross the street at least once for each two-way trip. Both the frequency of the bus service—how often the bus comes—and the ridership—how many people get on or off the bus) —and the existing physical attributes of the street and bus stop should be considered when evaluating pedestrian improvements at bus stops. Figure 8 shows daily boardings for bus stops in Richfield (fall 2015).

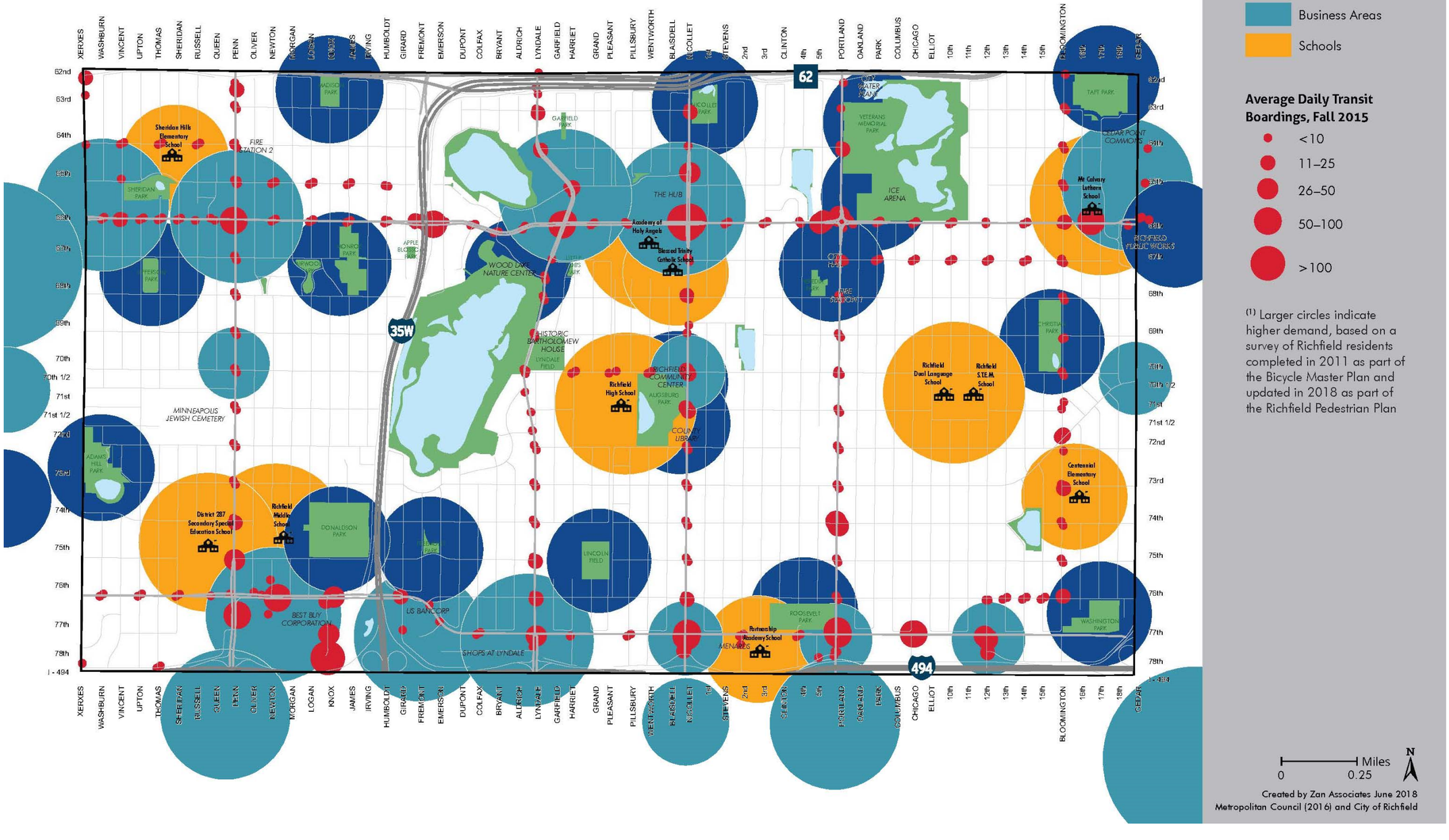
Population Density

Where people live, or population density, is an important factor in understanding latent pedestrian demand. Proximity to higher population density is an indicator of potential demand for walking. Likewise, concentrations of older adults, people living in poverty, minority populations, and young people are all indicators of potential pedestrian demand. These populations may rely on walking as their primary mode of transportation due to lack of an automobile or may simply have a stronger preference for walking for health, exercise, recreation, or transportation.

Citywide Pedestrian Demand

Figure 8 illustrates destinations and activity centers within the city, based on a survey completed as part of the development of the Richfield Bicycle Master Plan in 2010, and updated to reflect current conditions. Figure 9 shows population density and figures 10 – 13 show densities of people living in poverty, minority populations, older adults, and households with children, respectively. Figure 14 is a “heat map” which shows pedestrian demand. More intense shading means higher pedestrian demand and the lighter shading means lower pedestrian demand.

Figure 8: Richfield Pedestrian Destinations and Activity Centers and Transit Stops



Destinations [1]

- Public Areas
- Business Areas
- Schools

Average Daily Transit Boardings, Fall 2015

- <10
- 11–25
- 26–50
- 50–100
- >100

[1] Larger circles indicate higher demand, based on a survey of Richfield residents completed in 2011 as part of the Bicycle Master Plan and updated in 2018 as part of the Richfield Pedestrian Plan

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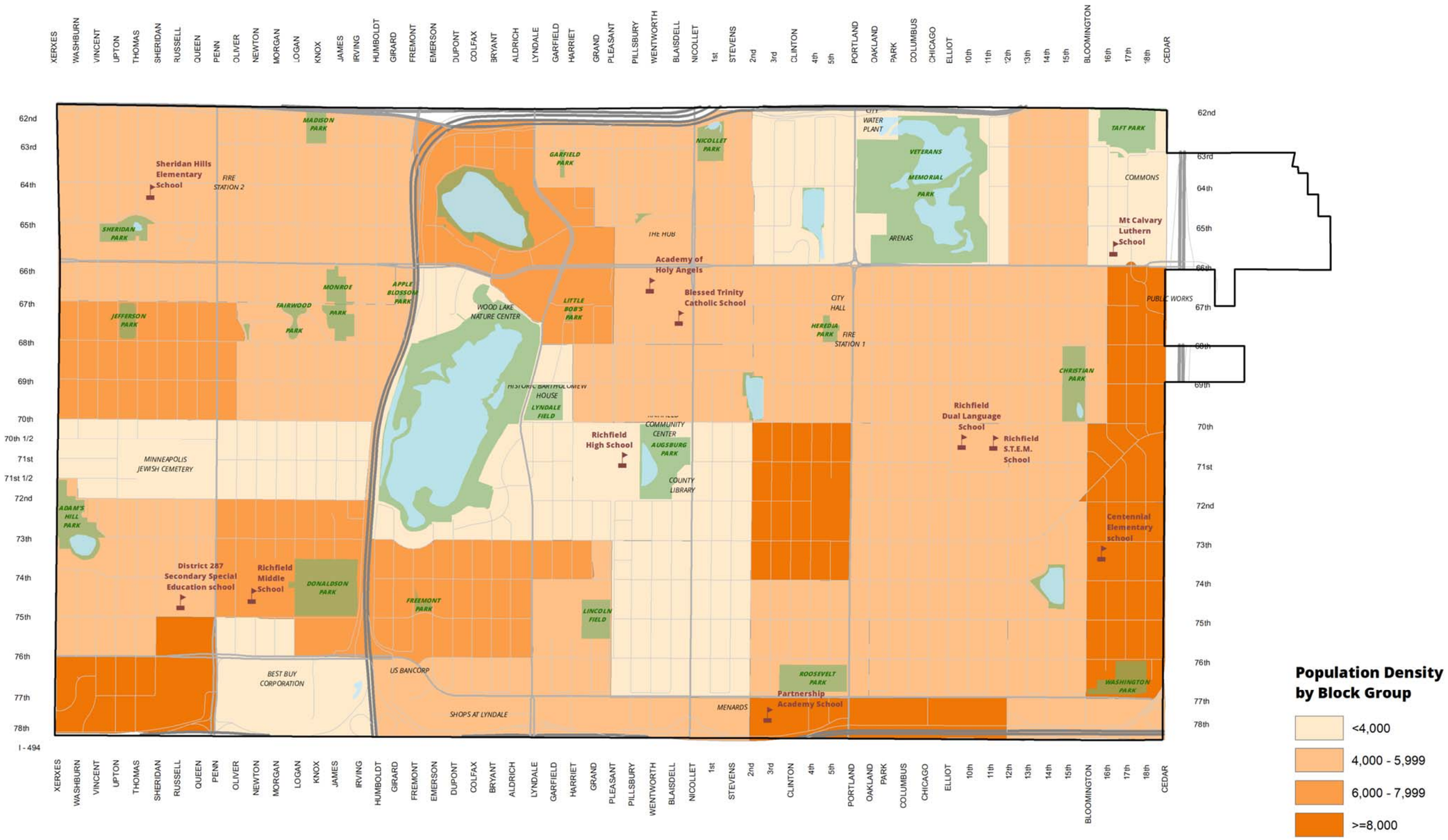
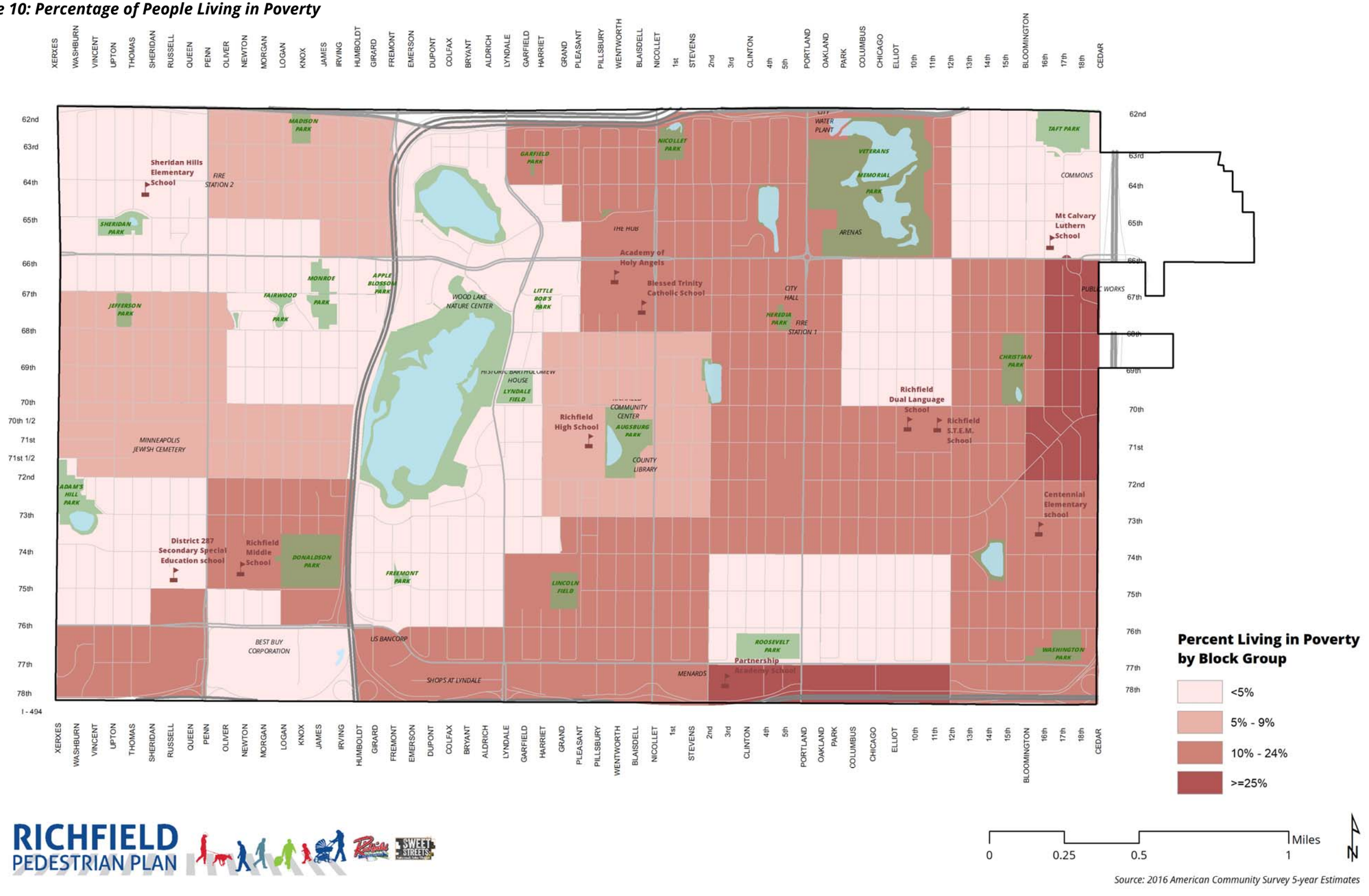
Created by Zan Associates June 2018
Metropolitan Council (2016) and City of Richfield

Figure 9: Population Density



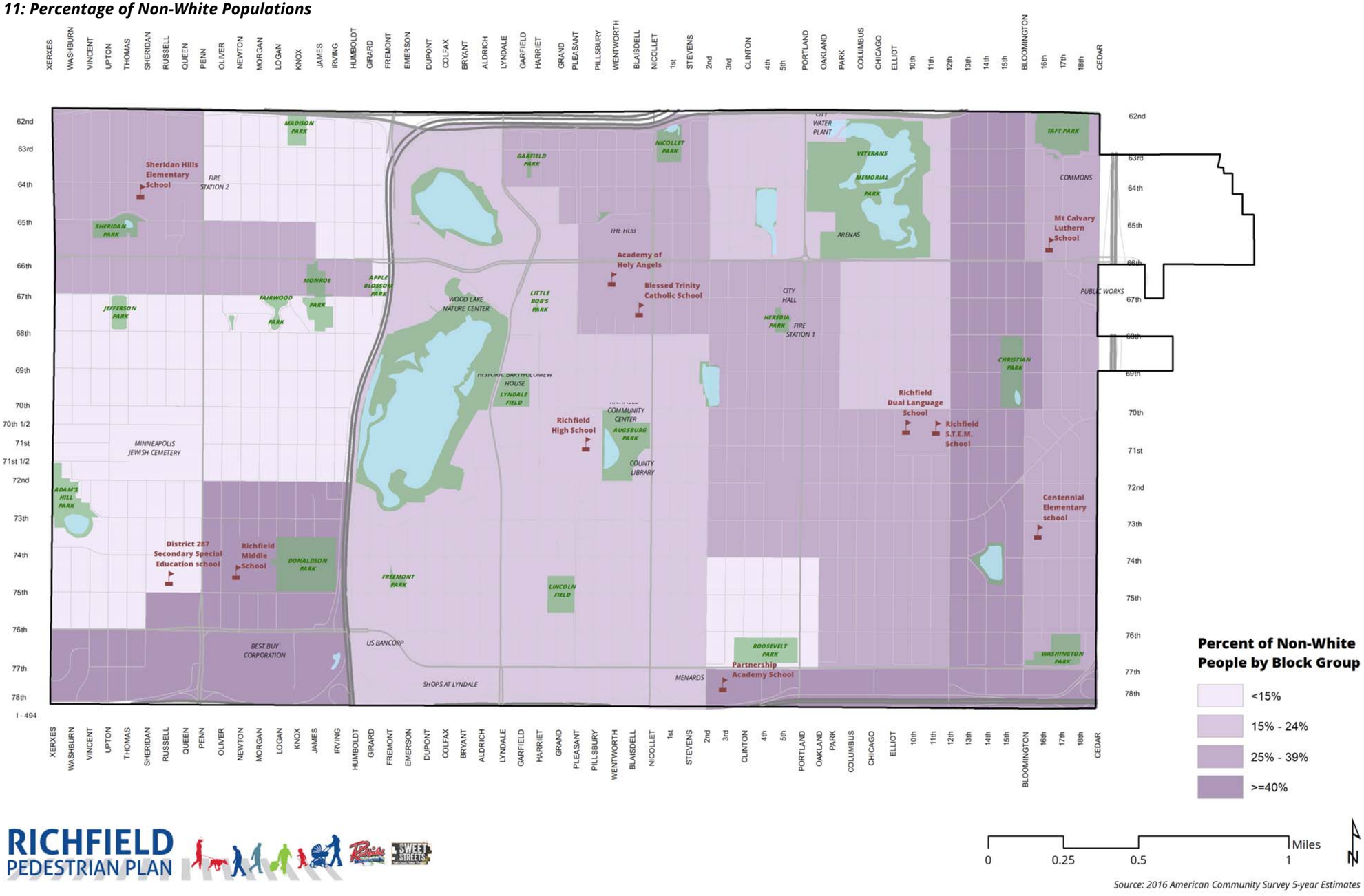
Source: 2016 American Community Survey 5-year Estimates, MnDOT, and City of Richfield

Figure 10: Percentage of People Living in Poverty



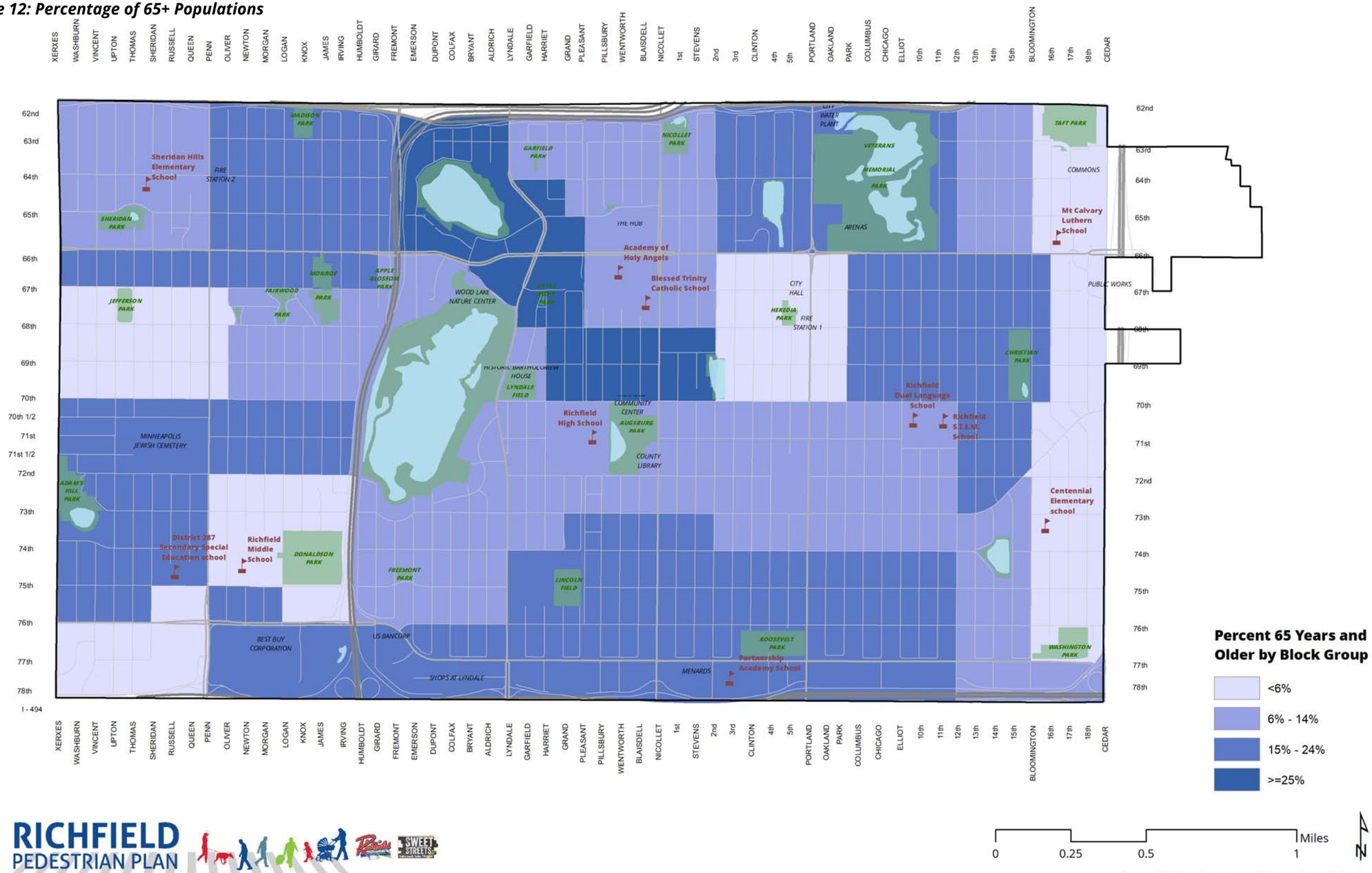
Source: 2016 American Community Survey 5-year Estimates

Figure 11: Percentage of Non-White Populations



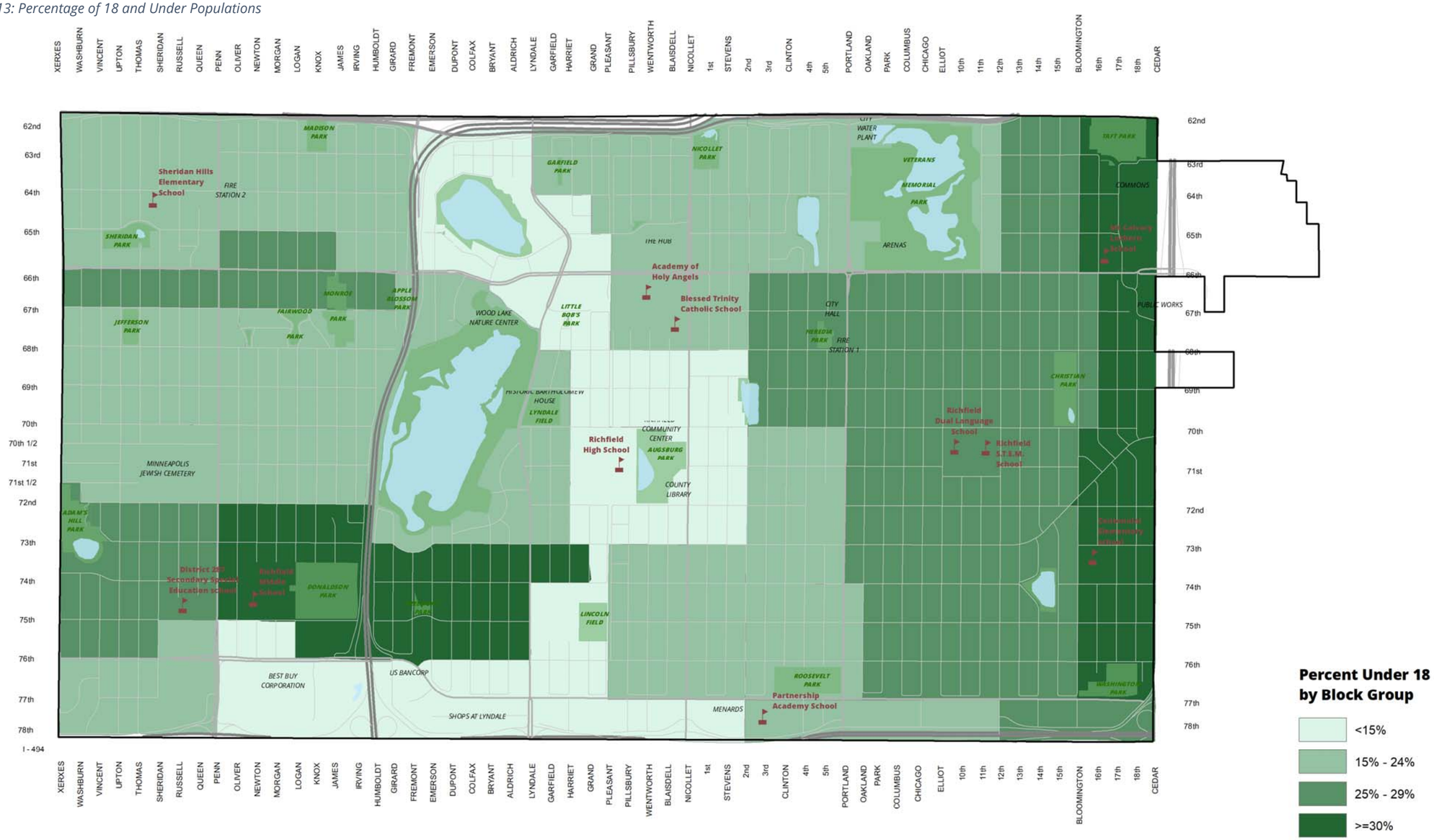
Source: 2016 American Community Survey 5-year Estimates

Figure 12: Percentage of 65+ Populations



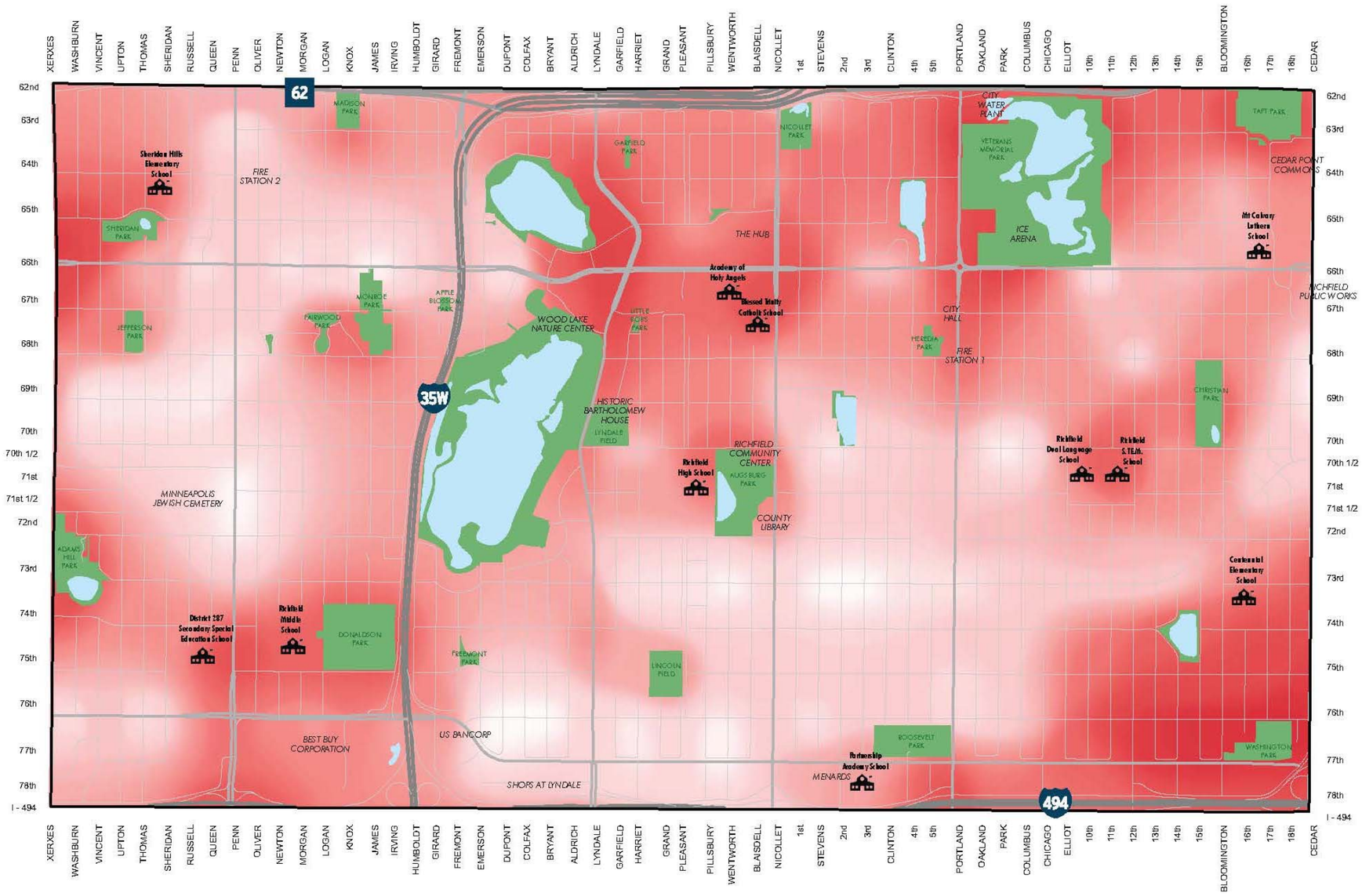
Source: 2016 American Community Survey 5-year Estimates

Figure 13: Percentage of 18 and Under Populations



Source: 2016 American Community Survey 5-year Estimates, MnDOT, and City of Richfield

Figure 14: Citywide Pedestrian Demand



Pedestrian Demand

High

Low

Pedestrian Demand Methodology

Pedestrian demand was determined based on a review of arterial, collector, and connector roadways and their relative proximity to activity centers and population density. A higher concentration of, or closer proximity to activity centers, means higher demand. Activity centers considered include:

- Businesses and commercial areas such as shopping centers, restaurants, retail stores, large offices and industrial parks
- Schools, recreation facilities and parks
- Community buildings such as the community center, libraries, and city offices

Likewise, closer proximity to higher population density means higher demand, as well as proximity to concentrations of older adults, people living in poverty, minority populations, and young people.

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Created by Zan Associates June 2018
City of Richfield

Pedestrian Demand Evaluation Framework

The following are criteria for the evaluation of pedestrian demand on a citywide basis or for an individual project.

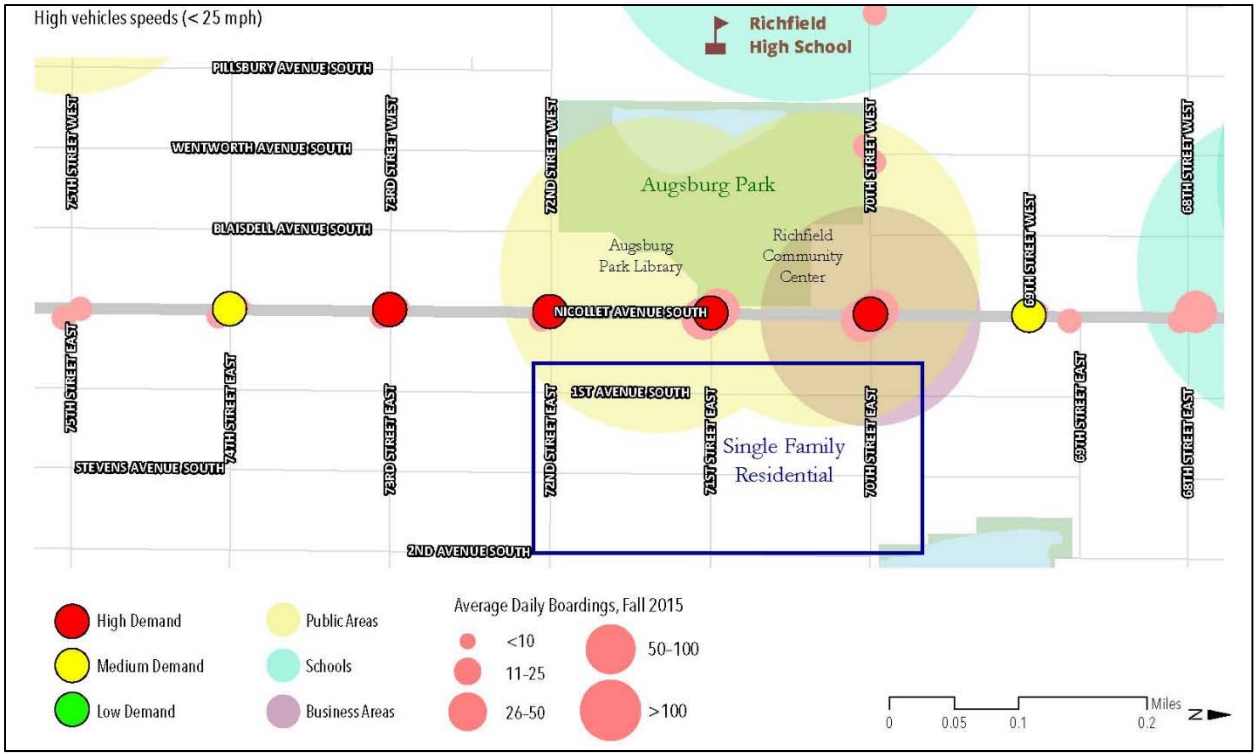
- **Magnitude of Activity**: Places with a larger *draw* will likely generate more pedestrian demand.
- **Proximity**: Places within ½-mile will have more impact on walking than places further away.
- **Time of Day:** Some activity centers such as schools or transit stops may have higher pedestrian activity during certain times of the day.
- **Network Relation**: A route that connects activity or population centers may be important even though there are no activity or population centers immediately adjacent to the project corridor.

Figure 8 shows pedestrian demand citywide based on these factors. Figure 15 shows an example of a corridor pedestrian demand evaluation for Nicollet Avenue South (75th Street to 68th Street), based on a general rating system:

- High demand: Locations within one half-mile of one of more activity or population centers and has a high level of connectivity within the pedestrian network.
- Medium demand: Location is within one half-mile of at least one activity center and connects to the wider pedestrian network on at least one end.
- Low demand: Location is not close to any activity or population centers and is not an important link in the wider pedestrian network.

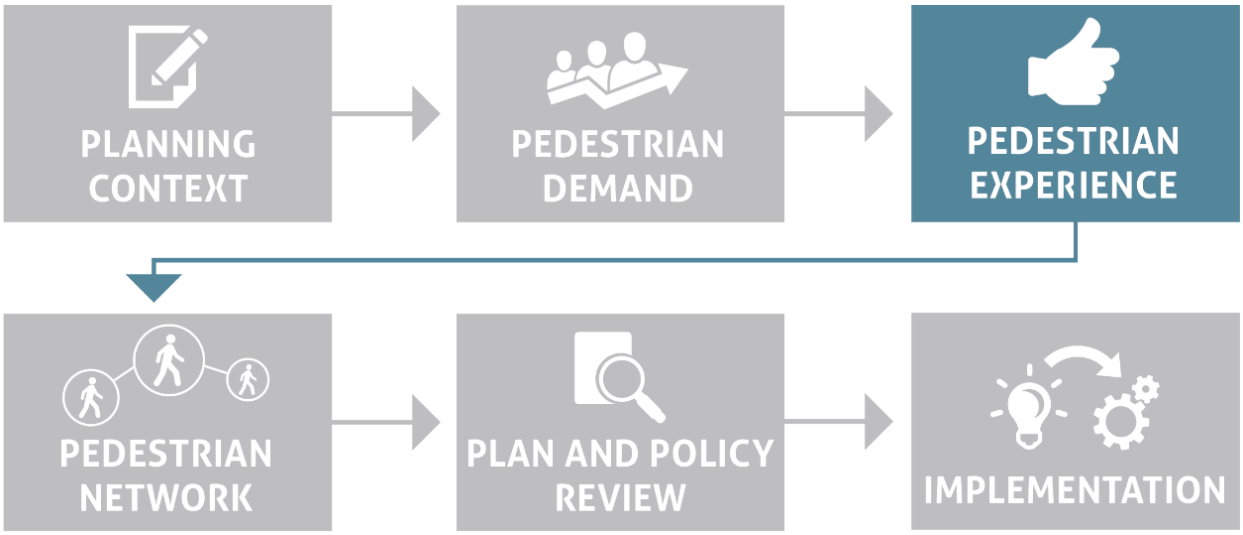
High visibility crosswalk with median refuge island

Figure 15: Example Pedestrian Demand Evaluation, Nicollet Avenue



Demand Category	***Influencing Factors***
Activity Centers and Destinations	• Augsburg Park Complex - Augsburg Library and Richfield Community Center - is on west side of road (top of the map) • Park has popular green space, playground, and a skate park • Richfield High School is just beyond the park to west. • Existing residential neighborhood on east side of road.
Transit Service	• Transit ridership is relatively high along the Nicollet Avenue corridor. • Busses have regular service all day, with 15 – 20-minute headways during peak periods. • High volume bus stops at 71st, 70th and 68th Streets.
Population Density and Equity	• Neighborhood east of Nicollet Avenue has a relatively high population density, including high proportions of people living in poverty, non-white older adults (65+), and children (under 18) populations. • Augsburg Park west of Nicollet Avenue is home to a range of regularly programmed activities, including community concerts, children's events, and a free lunch program in the summer.
Transportation Characteristics	• Speed on Nicollet Avenue is higher than 25 mph • High traffic volumes – 12,000+ vpd • Nicollet Avenue is direct connection to and between many different destinations and activity center • Nicollet Avenue is key part of existing sidewalk network

Chapter 3: Pedestrian Experience

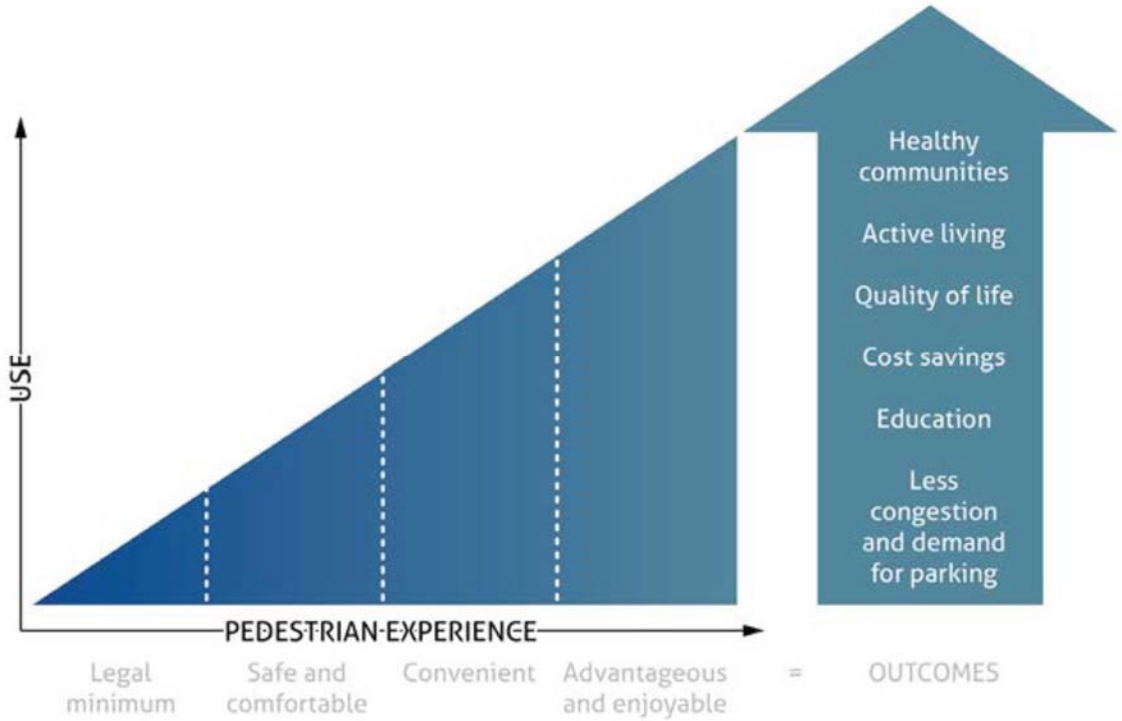


Experience in many communities, including Richfield, has shown that people walk more and are drawn to locations where they feel safe, the route is convenient, and the experience is enjoyable. This concept is illustrated in Figure 16. Walking participation and the related benefits increase as the level of pedestrian improvements moves past the basic legal requirements, toward safe and convenient facilities such as high-visibility crosswalks and median refuges, to an advantageous and even more enjoyable facility that includes landscaping and public art.

The directness of a route to key destinations or activity centers may influence its attractiveness to pedestrians. However, often the most direct routes have characteristics that discourage walking such as high traffic speeds, busy intersections, long crossing distances or an environment that generally feels unsafe or uncomfortable. These attributes may result in low existing pedestrian use but high latent demand. Both the value of connectivity and the safety and comfort for walkers must be considered when evaluating these routes for pedestrian improvements and latent demand.

To achieve the city's goal of encouraging walking, the city will need to move beyond a minimum level of pedestrian accommodation - sidewalks at some locations, curb ramps, crosswalk striping at major intersections- toward a higher level of pedestrian improvements at high demand locations throughout the city. With a higher level of accommodation, it becomes more advantageous, or even enjoyable, to choose walking over other modes of transportation (see Figure 16).

Figure 16: Level of Accommodation/Use Relationship



Existing Pedestrian System

Strengths of the Richfield Pedestrian Network

- Richfield's existing pedestrian system includes sidewalks along all major roadways (minor arterials), see **Error! Not a valid bookmark self-reference.**.
- There is a robust and well-loved network of trails within city parks throughout the city.
- There are existing mid-block crossings at some major activity centers.
- There is strong transit ridership (bus routes) along the arterial routes within the city.
- The city actively clears snow along all sidewalks and trail within the city, at no additional cost to residents.
- There is strong community support for continued investment in pedestrian and bicycle improvements.
- The city's "Sweet Streets" program is a strong advocate for multimodal transportation.
- Actively implementing the ADA Transition Plan to better accommodate people with disabilities

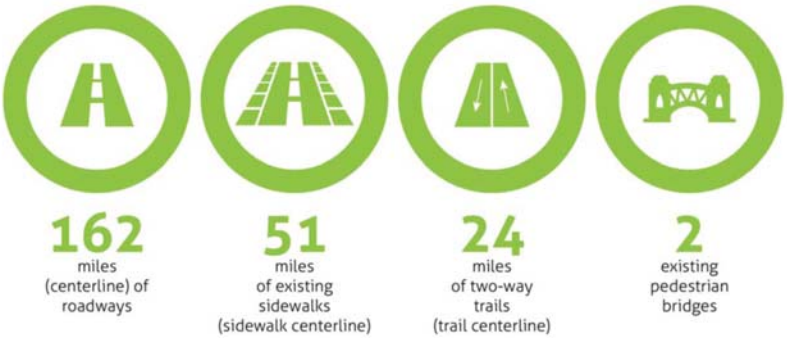


Figure 17: Richfield Pedestrian Facilities

Challenges of the Richfield Pedestrian Network

- Crossing many streets, particularly higher volume arterials, is uncomfortable and unsafe for many pedestrians and some places have a history of pedestrian crashes.
- Many of the older sidewalks in the city are built at the back of the curb and don't provide adequate separation from traffic for a comfortable or safe pedestrian experience.
- The city has a long history of no pedestrian infrastructure along neighborhood streets, which means no sidewalks in most residential neighborhoods.

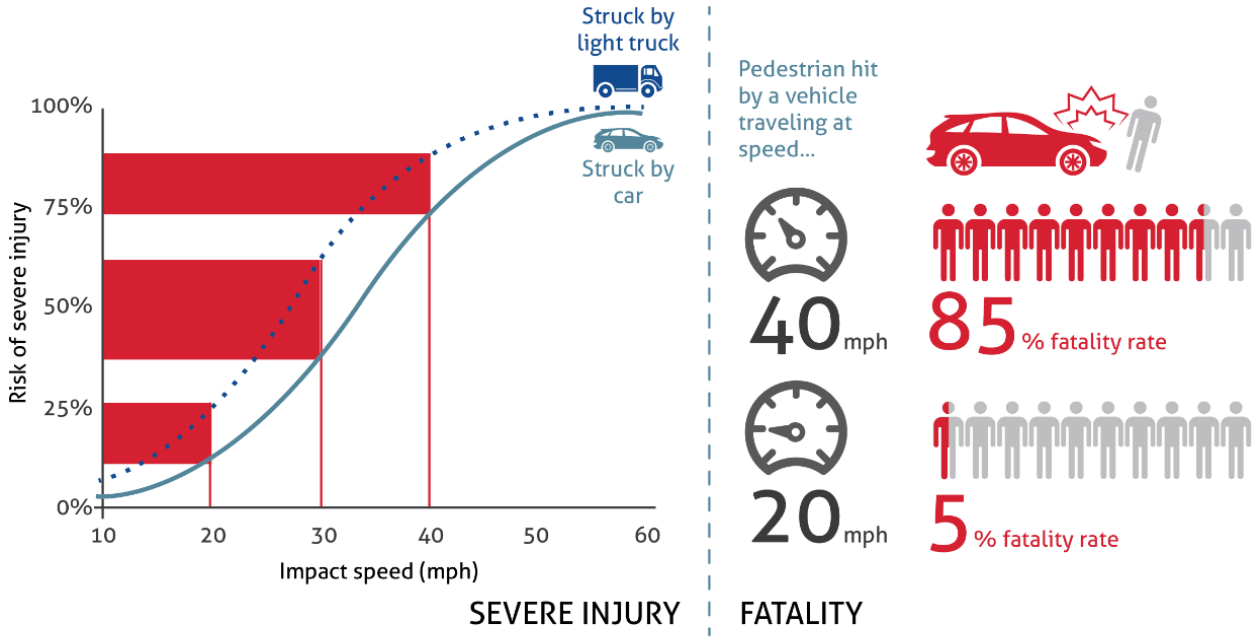
Pedestrian Safety

Safety is the primary concern when planning and designing pedestrian facilities. Safety includes consideration for both people in motorized vehicles (e.g., cars, buses, trucks, etc.) and people using non-motorized transportation modes (e.g., walking, biking, rolling, etc.). There are a number of ways to measure safety, including objective safety (i.e., number and severity of crashes) and subjective safety (i.e., the users perception of safety). For the purposes of this plan, safety generally refers to the risk of a crash, both objectively and subjectively.

Motorized vehicle speeds are the most important factor in the severity of pedestrian crashes

The data is clear – pedestrian safety is enhanced by slower traffic speeds and shorter crossing distances (less crash exposure). As shown in Figure 18, at 30 miles per hour the risk for severe injury to the pedestrian in a crash is about 50% —any faster and the risk of injury goes way up and the chance of survival goes way down.

Figure 18: Vehicle Speed and Pedestrian Injury Relationship



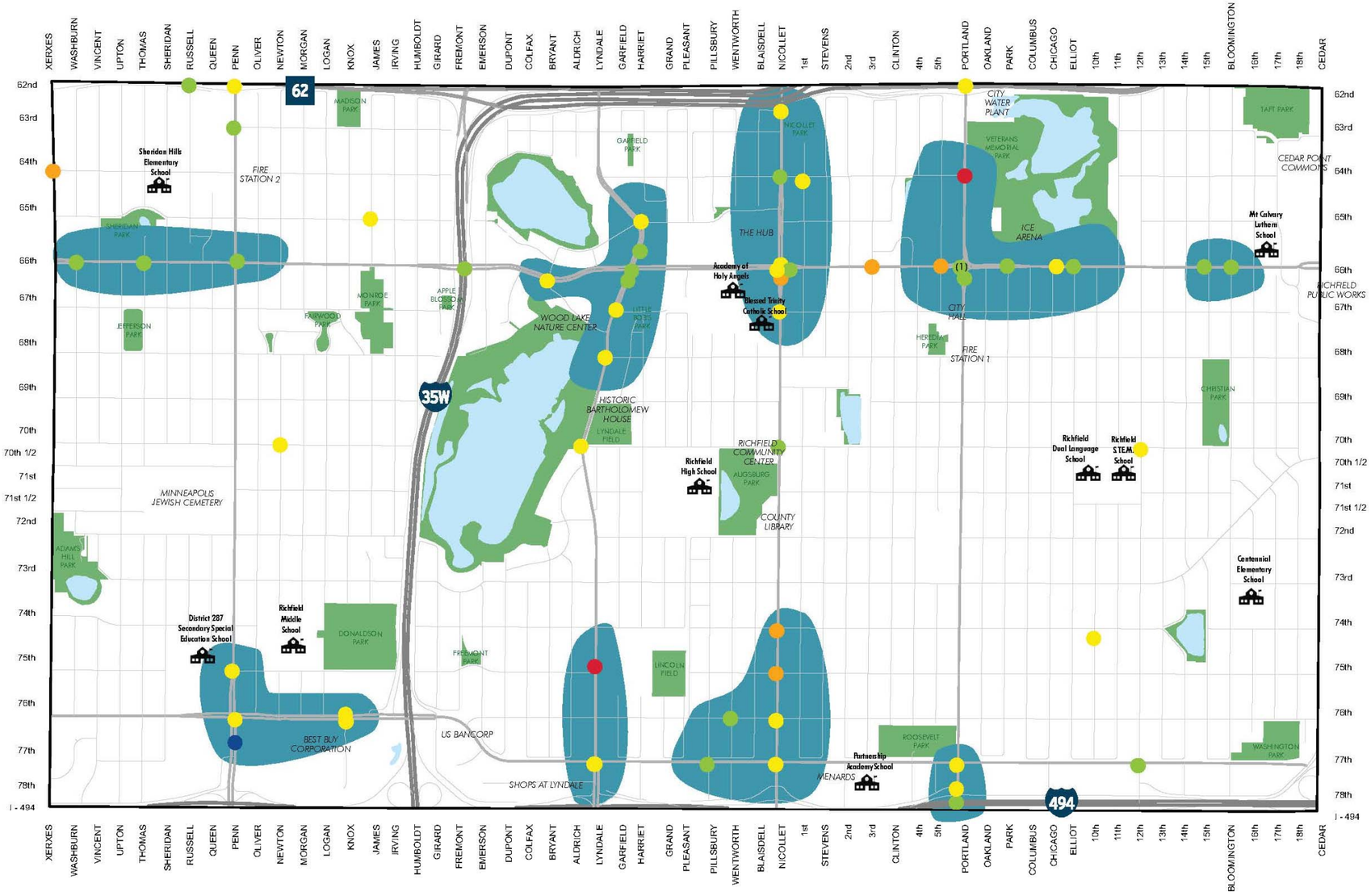
Source: *Impact Speed and a Pedestrian's Risk of Injury or Death. AAA Foundation for Traffic Safety. September 2011.*

Pedestrian Crash Data

Based on a review of reported crashes in the 10-year period from 2006 to 2015, pedestrian crashes in Richfield have historically occurred at a rate of about 10 per year and about one crash per year results in a fatality or a serious/incapacitating injury. Figure 19 shows key trends related to this data and Figure 20 shows the location and severity of reported pedestrian crashes in Richfield. Figure 21and Figure 22 show pedestrian crashes by intersection type and activity center, respectively.

Figure 19: Richfield Crash Trends

Figure 20: Location and Severity of Crashes in Richfield (2006 – 2015)



Pedestrian Areas of Concern

Severity of Pedestrian Crash

- Fatal *(2 Total)*
- Incapacitating Injury *(9 Total)*
- Possible Injury *(32 Total)*
- Non-incapacitating Injury *(29 Total)*
- Property Damage *(1 Total)*

(1) There have been zero reported crashes at the Portland Avenue and 66th Street roundabout since it was first installed in 2009.

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Created by Zan Associates June 2018
MnCMAT (2017) and City of Richfield

Figure 21: Crashes by Intersection Type

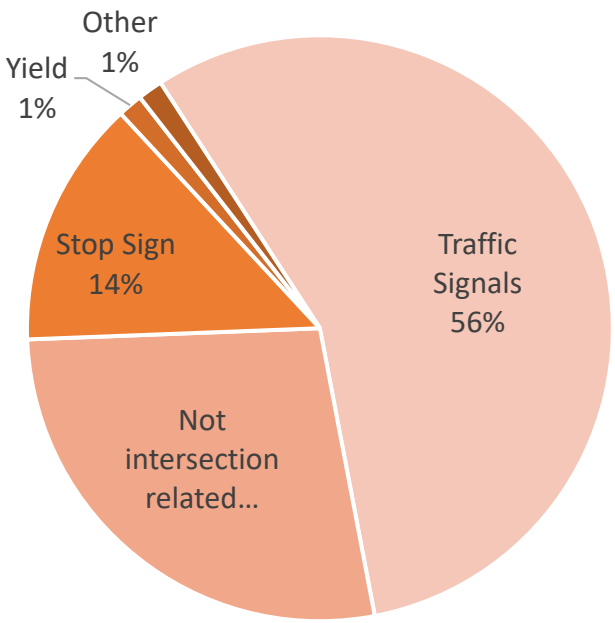
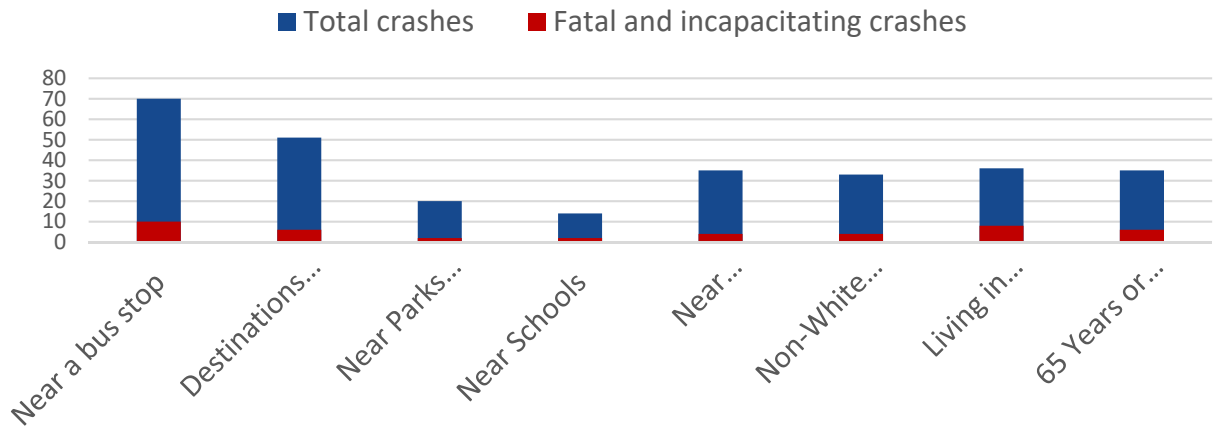


Figure 22: Pedestrian Crashes by Activity Center



Pedestrian Experience

Pedestrian experience should be evaluated on a block-by-block, segment-by-segment, and crossing-by-crossing experience. Crossings are critical as these are places where the greatest safety risks occur. Figure 23 includes an overview of typical criteria for the evaluation of pedestrian experience, for both crossings and linear facilities (i.e., segments). For each criterion, there are a range of potential improvement options that could be considered, based on context (e.g., such as demand and/or crashes). Figure 24 shows examples of these criteria applied to Nicollet Avenue, in Richfield.

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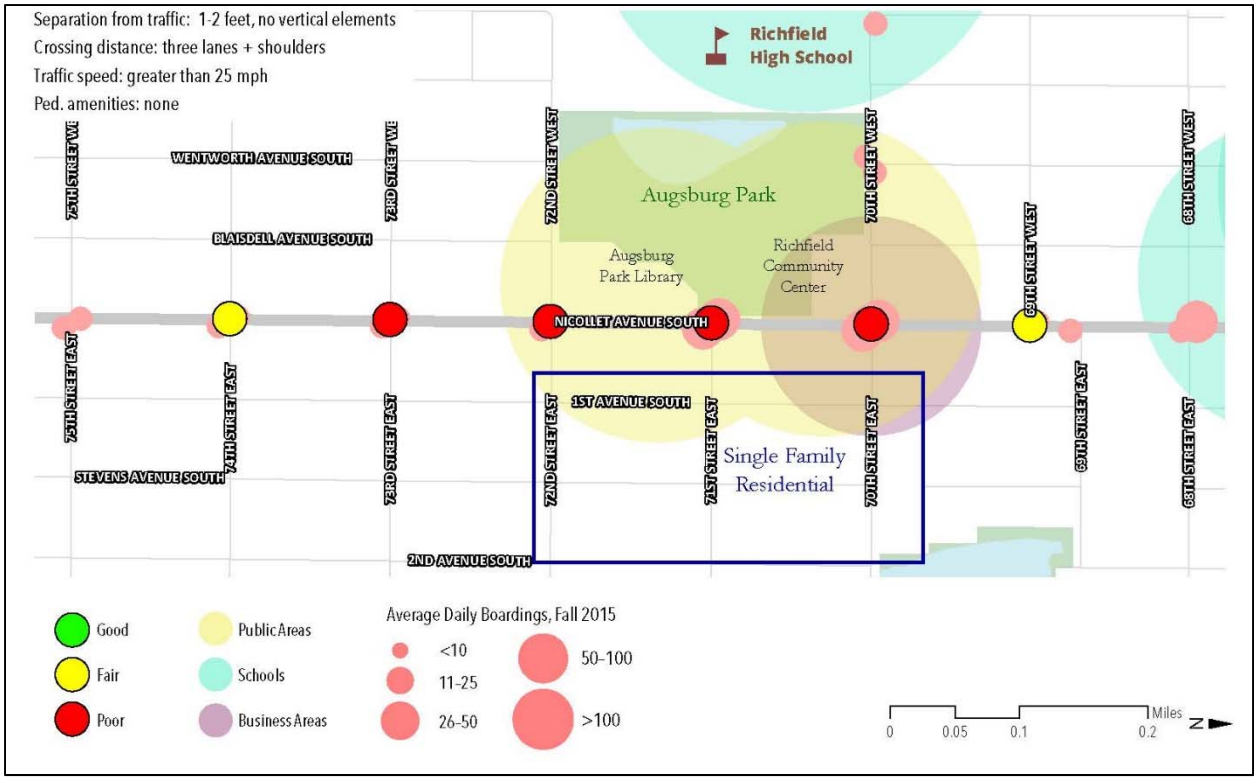
Figure 23: Typical Pedestrian Experience Measures and Considerations

Crossings	**Linear Facilities**

Physical condition
This refers to the overall *state of repair* of a crossing. A well maintained and designed crossing contributes to a feeling of safety, comfort, and convenience for people who need to walk across the road.
• What type of facility is present to help pedestrians cross: traffic signal (APS and ADA compliant), pedestrian push button, striped crosswalk, other
• What's the condition of the pedestrian facilities?
  o Curb ramps
  o Concrete/asphalt surfaces
  o Crosswalk striping and stop bars
  o Pedestrian pushbutton and countdown timers
• Are there clearly defined edges to delineate the pedestrian zone?
	Physical condition
	This refers to the overall *state of repair* of a sidewalk or multiuse trail. A well-maintained facility contributes to a feeling of safety, comfort, and joy for people walking.
	• What type of facility is present - sidewalk, trail, etc.?
	• Is the surface free of cracks, heaves and obstructions?
	• Are the edges clearly defined to delineate the pedestrian zone?
	• Are the lights and other pedestrian facilities in good repair and functioning?
	• Is the area clean and free of trash?
	• Is the sidewalk or trail clear of ice and snow?
	• Are slopes and grades appropriate?

Pedestrian Delay Pedestrian delay is the time a person spends waiting prior to being able to cross the street. This can be the length of time at a signal before the walk phase or the time it takes for an adequate gap in traffic at a non-signalized location. Longer crossing delay leads to higher risk behavior such as crossing at a signal during an opposing red light, or mid-block crossings, whereas shorter crossing delay is more likely to yield positive behavior – pedestrians crossing at controlled crossing locations. • What type of pedestrian signal is present at signalized crossings (pedestrian activated, automatic, count-down)? • What is the pedestrian delay? • Do adequate gaps in vehicle traffic regularly occur (non-signalized crossings)?	*Width of the Pedestrian Access Route (PAR)* The PAR is the area on a sidewalk or trail used for walking. This can be less that the total width of the pedestrian realm which may include other areas such as boulevards, furnishing zones, and building frontage areas. An adequately sized PAR promotes a sense of safety, security, and convenience for pedestrians. The PAR should be a minimum of 5 – 8 feet, depending on the surrounding land uses and roadway characteristics. The PAR will need to be even wider in areas with high pedestrian demand. • Is the PAR at least 5 feet wide in residential areas and at least 8 in commercial areas? • Do adjacent land uses or other contextual factors necessitate a wider PAR? • Is there adequate clearance to buildings, walls, fences or other vertical obstructions? • Are slopes and grades appropriate?
Crossing distance and crash exposure Crossing distance refers to the distance from the place a person steps off of the curb, to the place the person steps back on a curb on the opposite side of the street. Shorter crossing distances minimize the time it takes a person to cross the street and the number of vehicle conflict points a pedestrian is exposed to, thereby improving pedestrian safety. • How many vehicle and bicycle lanes is the pedestrian required to cross (including turn lanes and shoulders)? • Are there safe and protected median refuge or mid-crossing waiting areas? • Does the signal timing allow enough time for pedestrians to cross the entire street at a reasonable walking speed?	*Separation from traffic – boulevard, furnishing zone, sign zone* Separation from traffic refers to the space between vehicle traffic lanes and the PAR. Greater separation, both horizontal and vertical, with boulevards, trees or bollards, physically separate pedestrians from moving vehicle traffic, thereby contributing to a sense of safety and comfort. • Is the sidewalk or trail physically separated from the roadway or is it next to the curb? • Are vertical separation features such as trees or bollards present?
Speed of opposing vehicle traffic Research has shown that, at a speed of 30 mph, the risk of severe injury to a pedestrian is 50 percent. At lower speeds, this risk significantly decreases (see Figure 11), and at higher speeds, the risk significantly increases. • Are vehicle operating speeds 30 mph or greater?	*Pedestrian features* This criterion refers to the additional features, such as benches, trash receptacles, and water. The presence of these features helps enhance the sense that a location is safe, convenient, comfortable and pleasant to walk. • What pedestrian features are present?
Visibility This refers to the visibility of a crossing, both in terms of lighting and the physical characteristics of the location. Good visibility will contribute to the safety of a crossing and foster a sense of security for pedestrians. • Is the crossing well lit (does it illuminate the pedestrian)? • Is the crossing free from sight line obstructions? • Are there horizontal or vertical curvature issues?	*Visual quality* An attractive appearance will help to make a sidewalk a place where people want to be, thereby contributing to a positive and pleasant pedestrian experience • Are elements such as trees and planting present? • Are physical features such as colored/textured concrete, banners, and public art included?
Land use connectivity It is human nature for people to walk the shortest route possible. Thus, it is not realistic to ask people to walk even minimum distances in the "wrong direction" or "out of the way" to get to their desired destination. Pedestrian crossings should provide the most direct connection possible to adjacent land uses and activity centers. • Are there marked crosswalks at all intersection legs? • Does the crossing provide a direct connection to nearby activity centers?	*Land use connectivity* This criterion measures the ability of a route to connect people to the places they want to go as efficiently as possible. It is human nature for people to walk the shortest route possible; thus, it is not realistic to ask people to walk even minimum distances in the "wrong direction" or "out of the way". • Are there pedestrian facilities on both sides of the roadway? • Does the route provide direct connectivity to key destinations or activity centers? • Does the route provide connectivity to the overall pedestrian network or to other trails or sidewalks?

Figure 24: Example Pedestrian Experience Evaluation, Nicollet Avenue



Demand Category	***Influencing Factors***
Physical Condition	• No marked crosswalks at 71st or 72nd Street • Existing crosswalk markings at 70th Street are worn and faded
Visibility	Lighting illuminates the roadway mid-block, but does not light the sidewalks or crosswalks
Crossing Distance and Crash Exposure	Pedestrians are required to cross three traffic lanes and bike-able shoulders.
Pedestrian Delay	• There is a traffic signal at 70th Street, but it does not have pedestrian prioritized phasing. • There is no crossing control at 71st or 72nd Street and the nearest controlled crossings are at least one block away.
Land Use and Connectivity	• The only controlled crossing is at 70th Street, which is two – three blocks out of the way for pedestrians trying to access activity centers such as the 71st Street bus stop and Augsburg Library.

Chapter 4: Pedestrian Network

Richfield has a robust transportation system which includes 162 miles (centerline) of roadways, 36.5 miles of existing sidewalks, seven miles of two-way trails, and two existing pedestrian bridges crossing major highways (i.e., I-35W and I-494). There are sidewalks along all minor arterial roadways within Richfield and the city is working to build out the sidewalk network on select collector and sub collector roadways, based on proximity to activity centers (i.e., demand). In total, 10.5 miles of potential sidewalk additions within the city have been identified and the city is committed to improving pedestrian crossings commensurate with demand (see Figure 25).

Figure 25: Planned Pedestrian Network Map

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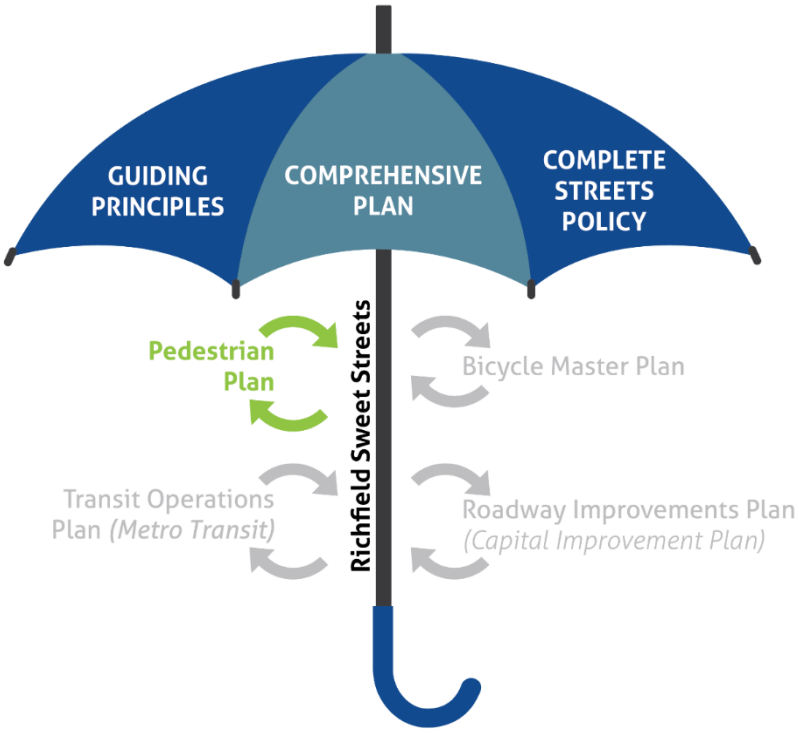
Map Under Revision

Chapter 5: Plan and Policy Review

Richfield is working to provide pedestrians with safe, convenient, and enjoyable walking environments through its planning and policy efforts and related local, regional, and state plans and policies provide a foundation for this pedestrian plan. At the local level, efforts are governed by the City's Comprehensive Plan, Guiding Principles for Transportation, and Complete Streets Policy, all of which set the framework for transportation planning in Richfield (see Figure 26).

Figure 26: Transportation Planning in Richfield



At a policy level, the core pedestrian related documents in Richfield are the Sidewalks Standards Policy, the Crosswalk Policy, the Sidewalk Snow Plowing Policy, and the Complete Streets Policy. Together, these plans define the criteria for installation of pedestrian infrastructure (sidewalks and crosswalks), the circumstances for when and how they will be build, and the standards for winter maintenance.

Existing plans and policies show a strong desire at every level of government to make walking a safe and convenient transportation and recreation option.

These plans should be updated to allow for greater flexibility in the siting of pedestrian facilities and to include consideration for people-based factors, such as activity generating land uses and concentrated populations of who often rely on walking as a primary source of transportation (e.g., older adults, children and young adults, and people with low incomes). Figure 27 summarizes the plans and policies reviewed as part of the planning process and includes recommendations to make walking safer and more inviting for pedestrians.

Figure 27: Plan and Policy Review

Policy	Overview	Recommendations
Richfield Sidewalk Standards Policy (2016)	• Sidewalks on both sides of arterial streets • Sidewalks on one side of collector streets • Sidewalks in one side of roadways on major school routes • No sidewalks on local streets • Minimum width for sidewalks is six feet	Amend this policy to: • Allow for greater flexibility in pedestrian facilities on local streets • Include guidance for other pedestrian facilities, such as temporary treatments on streets and multiuse trails
Richfield Pedestrian Crosswalk Pavement Markings Policy (2006)	Pedestrian crosswalk pavement markings or special treatments at: • Signalized intersections • Intersections designated as safe routes to schools and parks • Other locations deemed warranted through engineering studies	Rewrite policy to provide guidance on the types of crossing treatments that should be considered at all intersections. Should include consideration for: • Vehicle traffic volumes and speeds • Nearby land uses and activity centers • Demographics
Richfield Sidewalk Snow Plowing Policy (2011)	Requires that the city plow all public sidewalks within the city. Prioritizes starting with commercial areas, then arterial roads, then collector streets, followed lastly by residential neighborhoods.	Revise to include a more detailed hierarchy for snow clearance priorities. Major activity centers and arterial roadways should be prioritized (including transit stops), with a lower priority (or none) given to pedestrian facilities on sub-collector and residential streets.

Policy	Overview	Recommendations
Richfield Complete Streets Policy (2015)	Policy for accommodation of multimodal transportation, city-wide.	• Evaluate each project against the complete streets policy • Consider the desired user experience of multimodal users • Seek opportunities to implement standalone pedestrian improvement projects
Guiding Principles for Transportation (2013)	Framework for how the City will develop its transportation network, land uses, public realm, and open spaces.	Evaluate each project against the principles to foster accepted community design principles, enhanced public realm amenities, and desired user experiences.
ADA Transition Plan (2014)	Evaluation of roadway facilities to ensure that all roads in the City are accessible to all individuals.	Revise the *Sidewalk Standards Policy* and *Crosswalk Policy* to explicitly reference the ADA Transition Plan as added support for local policies to improve pedestrian safety and experience.
Richfield Safe Routes to School Comprehensive Plan (2014)	Identifies opportunities and priorities to increase walking and biking to schools and strategies for making improvements in the areas surrounding the school.	Seek opportunities to implement standalone pedestrian improvement projects to address safe routes to school.
Hennepin County Pedestrian Plan (2013)	Addresses the county's role in making walking a safe and easy choice for residents.	Revise the *Sidewalk Standards Policy* and *Crosswalk Policy* to explicitly reference external policies as added support for local policies aimed at improving pedestrian safety and experience.
Hennepin County Transportation Systems Plan (2011)	Seeks to articulate a transportation vision, update previous planning work, and provide guidance for future transportation decisions.	
Hennepin County Complete Streets Policy (2009)	Policy for accommodation of multimodal transportation, county-wide.	
MnDOT Complete Streets Policy (2016)	Policy for accommodation of multimodal transportation, statewide.	

Chapter 6: Implementation

This section provides a framework for the implementation of the pedestrian plan, including action steps for implementation (Figure 28), a listing of reference material for design guidance, a discussion of best practices for pedestrian facilities, and guidance on the project development process.

Figure 28: Implementation Framework

Timeframe	Action
Near-term *(1 – 4 years)*	Revise sidewalk, crosswalk, and snow clearance policies to make it clear that safe and convenient pedestrian crossings and sidewalks are needed in high demand locations.
	Include evaluation of the appropriate pedestrian crossings and linear facilities on all capital and maintenance projects in the future, considering pedestrians as the priority mode.
	Look for opportunities to implement standalone pedestrian projects in high demand areas and in areas with high crash frequency and severity. Consider the use of temporary installations.
	Evaluate opportunities for non-infrastructure pedestrian programming to educate the community and build awareness for pedestrians. For example: • Walk! Bike! Fun! Education programs at schools • Community walking maps • Walk to school and work days • Mileage and/or step counting programs • Safety campaigns (e.g., stop for me)
	Strategically pursue funding sources for pedestrian infrastructure. At a minimum, this should include consideration for the following: • Federal Transportation Funding allocated through the Regional Solicitation process

Timeframe	Action
	• U.S. Dept. of Transportation: BUILD (formerly TIGER) Discretionary Grants • DNR Local Trail Connections Program • State Funds for Safe Routes to School (SRTS) • MN Department of Health Statewide Health Improvement Program • Blue Cross Blue Shield Center for Prevention funds
Mid-term *(5 – 9 years)*	Install modern pedestrian facilities on all minor arterial roadways. This includes protected crossings in high demand areas and sidewalks or trails, separated from the roadway with a boulevard or other vertical screening.
	Install modern pedestrian facilities to provide a safe and convenient pedestrian environment with all full reconstruction street projects. This includes modern sidewalks and crosswalks where appropriate, and design elements to lower vehicle speeds (e.g., narrower roadway) on neighborhood streets. A safe vehicle speed for pedestrians on neighborhood streets is 15 – 25 mph.
	Implement solutions to address high crash frequency and severity locations, citywide.
	Implement and expand non-infrastructure programs and campaigns to change user behavior.
	Pursue a dedicated and ongoing funding source for standalone pedestrian projects.
Long-term *(10+ years)*	Work toward buildout of the citywide pedestrian network, including pedestrian facilities on all minor arterial, collector, and select local roadways.
	Pursue legislative policy changes to allow for reduced speed limits on residential streets.
	Look for opportunities to create signature places to walk within Richfield, such as pedestrian plazas, greenways, etc.

Pedestrian Facility Design Guidance

This document is not intended to be a thorough evaluation of location specific facilities or treatments, and it is not a design guidance source. The following are common standards and design guidelines for reference during the facility design process.

Design References

- 2015 Minnesota Manual on Uniform Traffic Control Devices (MMUTCD). http://www.dot.state.mn.us/trafficeng/publ/mutcd/
- 2013 NACTO Urban Streets Design Guide. https://nacto.org/publication/urban-street-design-guide/

- 2009 Manual on Uniform Traffic Control Devices (MUTCD). https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1r2edition.pdf.
- 2011 AASHTO A Policy on Geometric Design of Highways & Streets (Greenbook) https://bookstore.transportation.org/collection_detail.aspx?ID=110&gclid=EAIaIQobChMIv_2HxbXI1gIVBgxpCh35bQ7IEAQYASABEgI_rPD_BwE
- 2014 NCHRP 783: Evaluation of the 13 Controlling Criteria for Geometric Design. http://www.trb.org/Publications/Blurbs/171358.aspx
- FHWA Interim Approvals. https://mutcd.fhwa.dot.gov/res-interim_approvals.htm
- 2005 Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations. https://www.fhwa.dot.gov/publications/research/safety/04100/ref.cfm
- 2004 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities. https://bookstore.transportation.org/item_details.aspx?id=119

Pedestrian Facility Best Practices: Designing for People

There are a wide variety of pedestrian types with a varying range of characteristics and needs. For example, a recreational jogger may have different needs than someone waiting for the bus, a father pushing a stroller, or an older adult using a walker. Therefore, the pedestrian network and individual pedestrian facilities should consider the ease of use for a range of ages, abilities, and mobility levels.

High visibility crosswalk with median refuge island connecting high activity locations

Pedestrians want a safe and comfortable walking experience this means short and well-marked crossings, slower rather than faster vehicle traffic, separation from traffic lanes, shade and periodic rest areas, and visual interesting environments (e.g., landscaping, art, etc.). Figure 29 illustrates common "best practice" treatments for pedestrians and Figure 30 provides additional description. Refer to the references above for specific design guidance.

The goal of the pedestrian network is to provide for safe, secure and efficient movement along and across the roadways

Figure 29: Best Practice Pedestrian Treatments

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Figure 30: Best Practice Pedestrian Treatments – Walkways

Crossing Treatments	
High visibility crosswalk markings 	Description: Reflective markings which clearly define the crossing area and set pedestrian and driver expectations. Often paired with a stop bar and advanced warning signs. Applicability: Minor arterial, collector, and higher volume local roadway crossings with medium to high pedestrian demand. Should be paired with other crossing control on high volume/high speed streets.
Median refuge islands (2 stage crossing) 	Description: Curb cut and walkway through a raised center median. Shortens crossing distance, simplifies decision making, and provides a safe resting area for pedestrians. Applicability: Minor arterials with medium to high pedestrian demand.
Bumbouts or cub extensions 	Description: Extension of the sidewalk into the roadway to shorten pedestrian crossing distance and slow vehicle traffic. Applicability: Minor arterial, collector, and higher volume local roadway crossings with medium to high pedestrian demand. Ideal for locations with on street parking. Should be paired with other crossing control on high volume/high speed streets.

Pedestrian activated flashing lights (RRFBs)

Description:
Flashing lights that alert the driver to the presence of a pedestrian at a crossing.

Applicability:
Minor arterials with high traffic volumes/speeds and high pedestrian demand. Ideal for mid-block crossings and roundabouts.

Midblock crossings

Ped

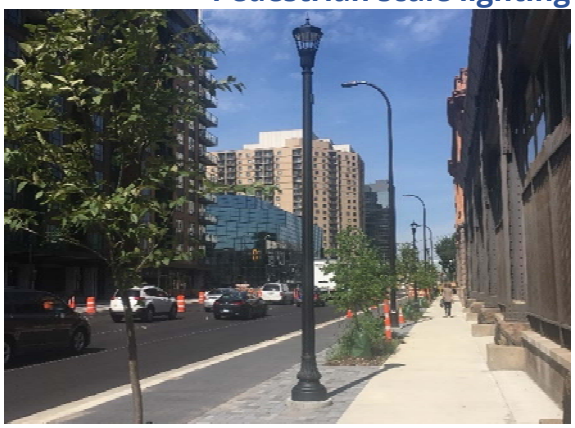
Description:
Crossings in the middle of a block (i.e., not at an intersection) to provide a direct route between high activity locations.

Applicability:
Minor arterials with high traffic volumes/speeds and medium to high pedestrian demand.

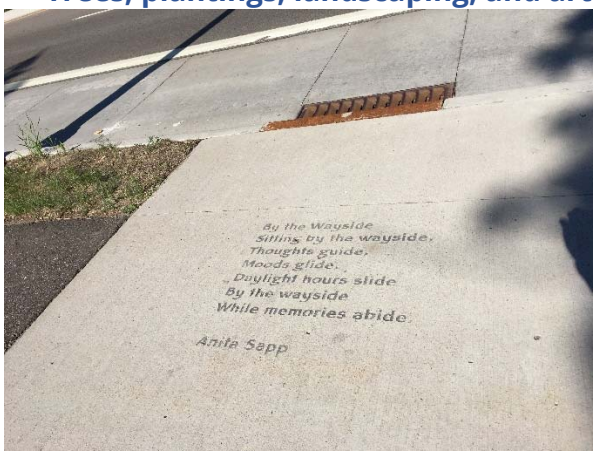
Raised crossing or speed table

Description:
Raised concrete crossing at or near the same elevation as the adjacent sidewalks. Defines the crossing area and forces vehicle traffic to slow down.

Applicability:
Any location with high pedestrian demand. Should be coupled with other crossing control for higher traffic/speed roadways.

Linear Treatments	
Sidewalks and multiuse paths 	Description: Pedestrian walkway, usually adjacent to a roadway or through a park. Provides a connection between nearby activity centers. Applicability: Both sides of all minor arterials and on select collectors and local streets with medium to high pedestrian demand. Should be separated from the roadway.
Boulevard or vertical separation 	Description: Improves safety and comfort for pedestrians by providing physical separation between roadway travel lanes and the walkway. Applicability: All sidewalks and multiuse paths adjacent to a roadway.
Pedestrian scale lighting 	Description: Lighting which illuminates the pedestrian realm to improve visibility of sidewalks and crosswalks. Includes lighting at the near side of intersections to make crossings pedestrians visible. Applicability: All sidewalks, multiuse paths, and marked crosswalks.

Trees, plantings, landscaping, and art



Description:
Plantings and art improve safety and comfort by providing physical separation from vehicle lanes, creating shade, and visual interest.

Applicability:
All sidewalks and multiuse paths.

Benches, waste receptacles, and other furnishings

Description:
Benches, garbage, and other furnishings that support walking.

Applicability:
Periodic placement along medium and high demand pedestrian areas. Coordinate with bus stop facilities.

Temporary Pedestrian Facilities

Description:
Temporarily striped, painted, and/or delineated walkways along roadways where there is a need for improved pedestrian facilities, but the underlying roadway infrastructure is not due for replacement.

Applicability:
Roadways and crossings with high vehicle traffic volumes and speed and medium to high pedestrian demand.

Project Development Process

The following checklist is a checklist intended for use as part of the project development process to foster safe, secure and efficient pedestrian movement along and across roadways. This checklist should by used to evaluate the success of any design alternative, from a design perspective and should be coupled with an evaluation of pedestrian demand.

Crossing treatments

- ❑ Crosswalk visibility (high visibility striping, stop bar, and signage)
- ❑ Pedestrian activated flashing lights
- ❑ Vehicle control (e.g., stop signs, traffic signal, etc.)
- ❑ Minimal or mitigated conflict points with vehicles and bicycle
- ❑ Direct connection to activity centers (i.e., minimize wrong direction travel for pedestrians)
- ❑ ADA compliance (e.g., pedestrian countdown times and push buttons, appropriately placed curb ramps, minimal cross slopes, etc.)
- ❑ Minimize crossings distance
- ❑ Minimize pedestrian delay at intersections (and circuitous routing)
- ❑ Pedestrian refuge island
- ❑ Pedestrian oriented lighting
- ❑ Appropriate intersection sight lines

Linear facilities

- ❑ Separation from traffic (buffer zone)
- ❑ Width commensurate with pedestrian demand (6’ min, 8-10’ preferred)
- ❑ Pedestrian scale lighting
- ❑ Minimize circuitous routing
- ❑ Shade, plantings, and art
- ❑ Resting areas (benches, short walls, drinking fountains)