INNER LOOP NORTH
Envision. Invest. Transform.

Rochester Inner Loop North Transformation Planning Study

Multimodal Accessibility Report

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Introduction

Study and Report Overview

Following the recent completion of the Inner Loop East project, the City of Rochester is now moving forward with evaluation and planning to convert some or all of the northern segment of the Inner Loop. Transformation of the Inner Loop North would reconnect Downtown Rochester with diverse Rochester neighborhoods as well as the Public Market, High Falls, and other destinations. The Inner Loop North Transformation Planning Study seeks to explore alternatives and advance recommendations for redesign. Successful transformation of the Inner Loop North will create new active and passive green spaces that promote multimodal connectivity and accessibility, while also fostering opportunities for economic and community development. These multimodal improvements will synergize with the ROC the Riverway vision, further enhancing the Genesee Riverfront and, if feasible, provide a direct trail connection from Downtown to High Falls along the river. The study team will work with the community throughout the study process to develop solutions that promote equitable access.

Inner Loop North Transformation Planning Study Goals

- Provide multiple opportunities for diverse public engagement
- Reconnect neighborhoods through multimodal accessibility
- Restore a human scale street grid
- Create engaging open spaces, recreation areas, and streetscapes
- Integrate with ROC the Riverway vision

Assessing the existing conditions, needs, challenges, and opportunities of transportation and mobility in the planning study area is an important early step of the study. This Multimodal Accessibility Report is a culmination of this assessment and provides an analysis of the state of transportation in and around the Inner Loop North area.

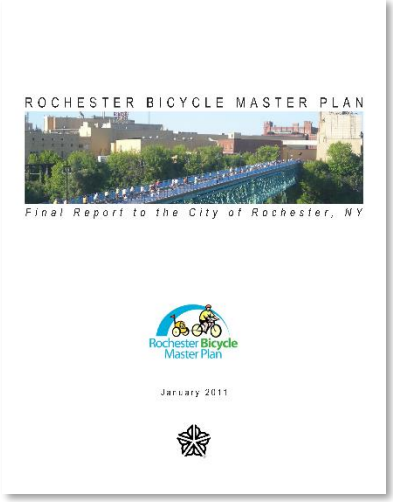
- The **Overview section** provides a snapshot at the study area—its configuration within the local and regional transportation network as well as an introduction of the more refined Multimodal Analysis Area, within which evaluations of key modes of transportation were conducted (pedestrian, bicycle, transit). Additional components of the transportation network were also assessed, including parking, urban design, and open space.
- The **Multimodal Travel Patterns and Trends section** seeks to answer several key questions: Where are people traveling to and from? How are they getting there? What impact are travel patterns having on our environment? Providing and understanding the answers to these questions allows us to shed light on the need for multimodal changes and the broader opportunities that exist for the Inner Loop North area.
- The **Analysis Framework section** describes the set of performance measures that were established to evaluate existing conditions as well as to evaluate eventual future scenarios that will be developed through this study.

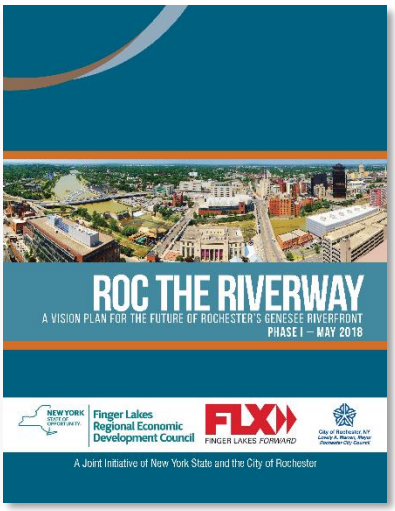
The sections that follow are organized by mode (transit, pedestrian, bicycle) or other focus areas (i.e. parking, urban design). Each focus area provides tabular and/or graphical summaries of relevant existing conditions performance measures.

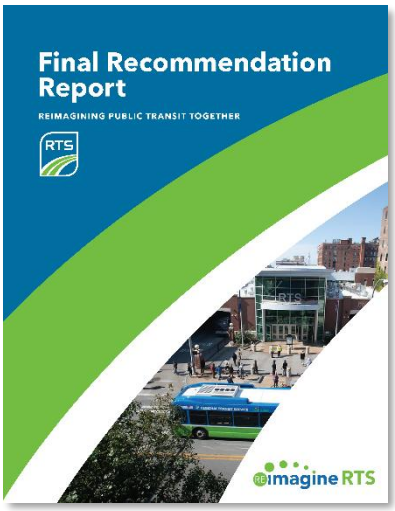
Technical appendices contain detailed information regarding background data, model development, and model results.

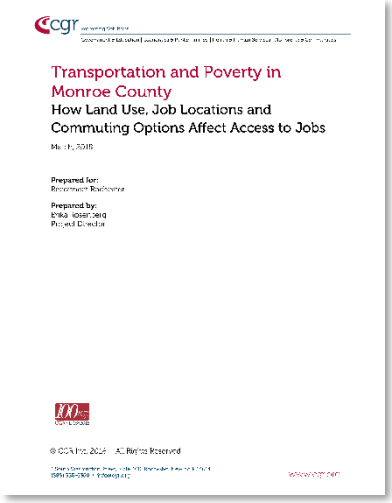
Review of Other Plans

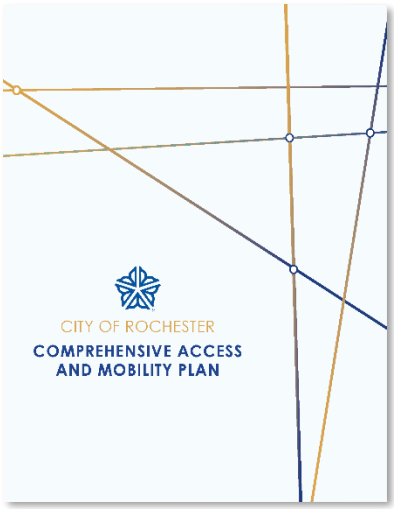
Several recently completed and ongoing local planning efforts have helped inform this Multimodal Accessibility Report. The following plans were reviewed as a part of this study process:

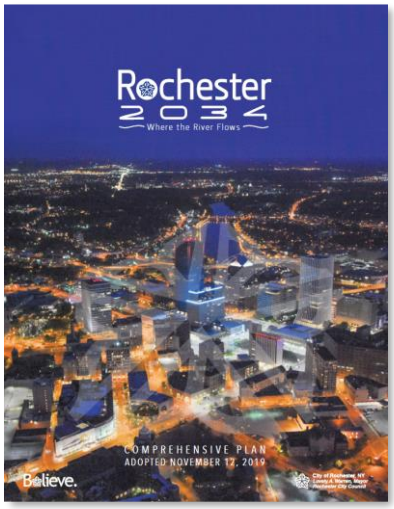












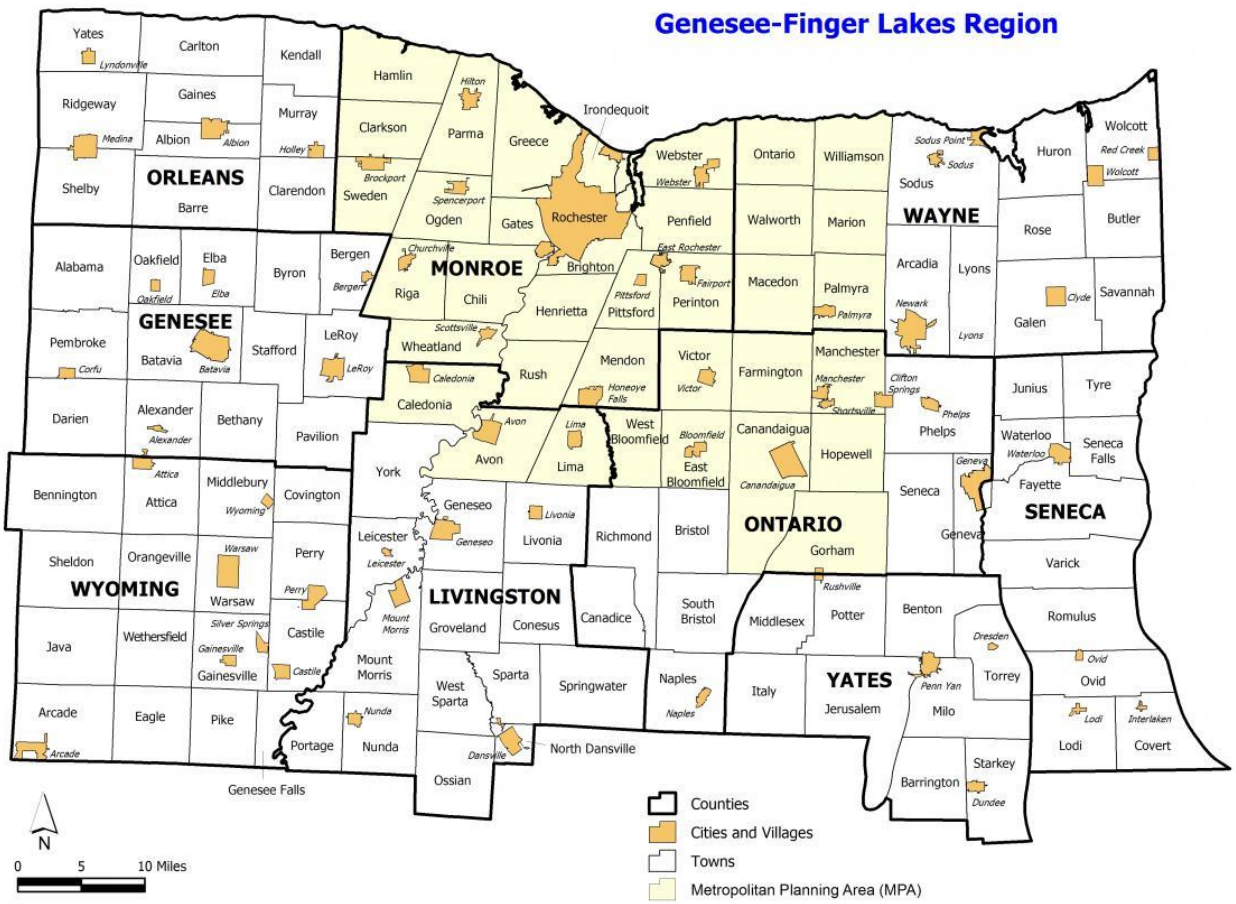
- ***Bicycle Master Plan (2011)*** – this plan serves as a framework for Rochester's future investment in bicycle infrastructure, much of which has already been implemented since the plan's adoption.
- ***ROC the Riverway (2018)*** – this plan envisions a seamless system of pedestrian and bicycle connections along both sides of the Genesee River via the Genesee Riverway Trail.
- ***Reimagine RTS Service Plan (2018)*** – this transit service plan refocuses Rochester's bus transit system to provide more frequent, direct, and connected service. Implementation of the plan is currently on hold due to the COVID-19 pandemic.
- ***Transportation and Poverty in Monroe County: How Land Use, Job Locations and Commuting Options Affect Access to Jobs (2018)*** – this report sheds light on the realities of transportation as a barrier for people living in poverty in Monroe County and provides critical information on geographic locations of residential and employment areas, commuting patterns, rates and financial burdens of car ownership, and the accessibility of jobs depending on place and residents' of mode of transportation.

- ***Comprehensive Access and Mobility Plan (2019)*** – this plan envisions a transportation system that improves the quality of life of people in Rochester by enabling efficient, safe, and comfortable access and connectivity among destinations and neighborhoods. Its ultimate goal is to facilitate transportation improvements that make Rochester a better place to live, do business, travel, and enjoy for all.
- ***Rochester 2034*** (2019) – this comprehensive plan lays out a vision for the future of development in Rochester. Rooted in community values, this document covers housing, parks and open space, economic development, and – most pertinent to this Multimodal Accessibility Report – transportation. Key transportation takeaways from Rochester 2034 include the city's status as a leader in progressive multimodal transportation, equity and safety as key drivers for decision-making, the importance of integrated land use and transportation regulations, and the need for investments in better data and Transportation Demand Management efforts.

Overview

Regional Context

Rochester is the seat of Monroe County in western New York, with an estimated population of 206,290[1], making it New York's third most populous city and the urban center of the Genesee-Finger Lakes Region that includes the counties of Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming, and Yates. Rochester is served by connections to the region's network of interstate highways (I-390, I-490, and I-590), the New York State Thruway (I-90), state routes and major arterial roads, intercity passenger rail, bus transit routes, and many trails, including the Erie Canalway Trail and Genesee Riverway Trail.



Source: Genesee Transportation Council

[1] American Community Survey, U.S. Census Bureau (2018 ACS 1-Year Estimates)

Study Area and Multimodal Analysis Area

The Inner Loop North study area is generally bounded by Smith Street and Upper Falls Boulevard to the north, Union Street to the east, Main Street and East Avenue to the south, and W. Broad Street and I-490 to the west. These study area boundaries fall roughly within the neighborhoods of Center City, Brown Square, High Falls, Upper Falls, and Marketview Heights. Center City, Rochester's central business district that straddles both sides of the Genesee River, sits at the core of the study area.

The Multimodal Analysis Area, a more refined area within the Inner Loop North study area, has been used for the transportation analyses outlined in this report. This refined area focuses the analysis more closely within the immediate vicinity of the Inner Loop. Several major streets fall within this area, including the Inner Loop, State Street, St. Paul Street, Clinton Avenue, Chestnut Street, Scio Street, Main Street, Union Street, and Andrews Street. Several of these streets provide crossings of the Genesee River for automobiles as well as pedestrians and cyclists. While the impacts of the broader Inner Loop North study will extend far beyond the Multimodal Analysis Area, establishing this refined geography is necessary to conduct analyses that tell the story of existing conditions.

The boundaries of the Study Area and the Multimodal Analysis Area are shown in **Figure 1** on the following page.

Another notable feature of the area is the Genesee Riverway Trail, a 24-mile multiuse trail that runs through Rochester and connects the Erie Canal to Center City and Lake Ontario. This trail provides pedestrian and bicycle access along the Genesee River and includes eight pedestrian bridges and 11 parks.

The Regional Transit Service (RTS) Transit Center, located within the Multimodal Analysis Area, serves as a major transfer point for local bus service. Regional and intercity travel is facilitated via rail and bus service, available at Rochester Station and the city's intercity bus station, both also located within the Multimodal Analysis Area.

Figure 1: Study Area and Multimodal Analysis Area

Demographics

Citywide, Rochester has more than 200,000 residents and approximately 150,000 jobs. Within the Inner Loop North study area there are about 7,400 residents and 24,500 jobs[2].

Much of the study area south of the Inner Loop and west of the Genesee River encompasses Center City, where land uses are more focused on office, retail, and commercial and have fewer residential areas. However, this area has much potential for both infill residential and mixed-use development and conversion of office towers to apartments. In these areas, daytime population increases greatly as employees commute to their jobs from outer areas of the city and surrounding suburbs.

Generally, in areas north of the Inner Loop and east of the Genesee River, land uses feature a greater mix of residential areas as well as industrial areas and destinations such as Amtrak's Rochester Station and the City of Rochester Public Market. In these areas, daytime populations decrease, which indicates that many residents commute out of their home neighborhoods for work.

Figure 2 and **Figure 3** below show these distributions in population density and employment density, respectively.

The Inner Loop North study area is racially diverse. Roughly 45 percent of residents are Black or African American; more than 30 percent of residents are white; approximately three percent of residents are Asian; and less than one percent of residents are American Indian or Alaska Native. Residents of other races or multiple races make up the remaining one-fifth[3]. Not noted are residents of Hispanic origin, which can identify with any race.

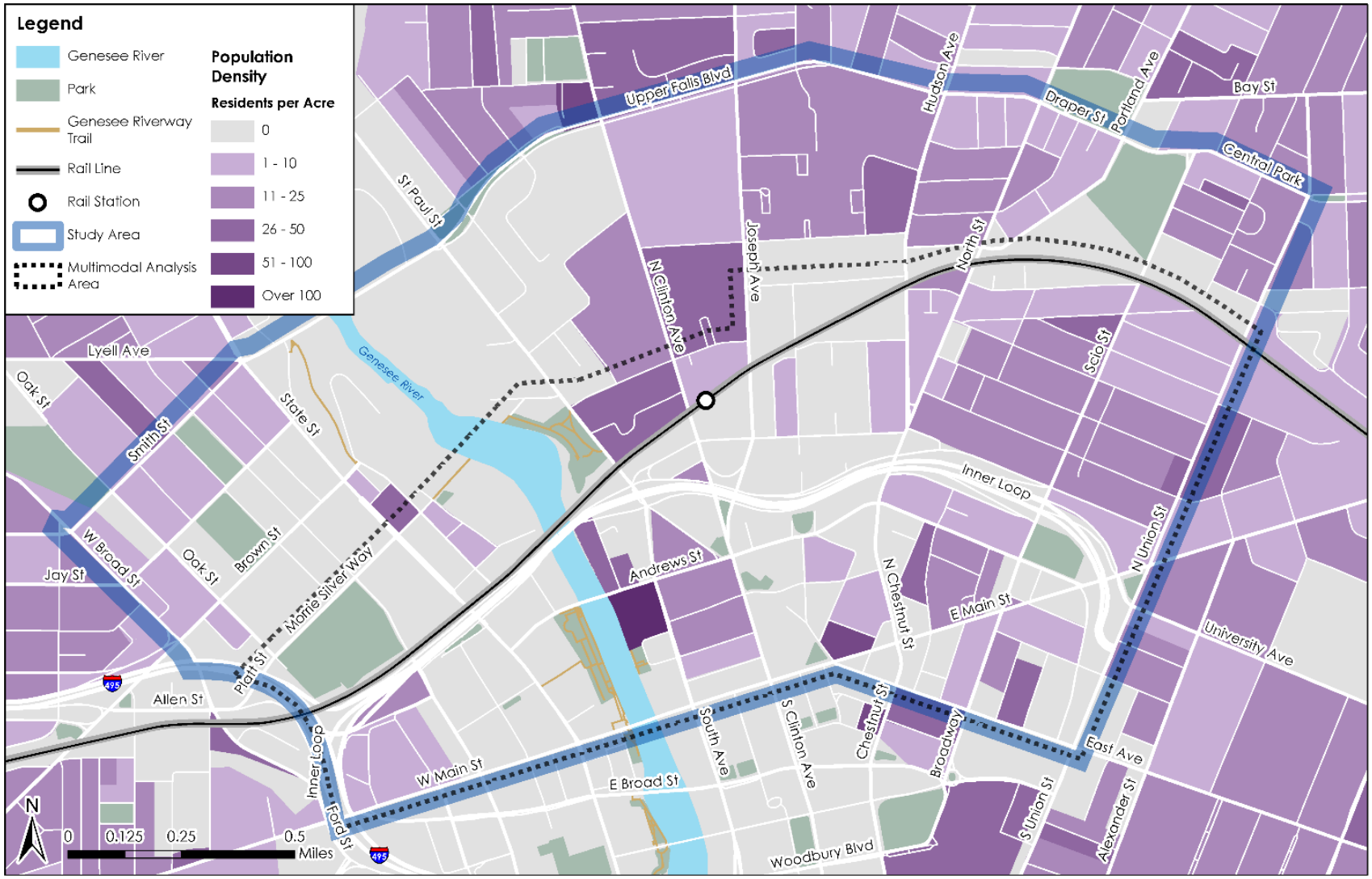
Based on U.S. Census reporting, people of Hispanic origin may identify with any race and may select one or more categories. While one cannot easily compare the overall share of residents who have Hispanic origin to other races, the study area hosts a significant concentration of residents with Cuban, Mexican, Puerto Rican, South or Central American or Spanish culture or origin. As of 2019, approximately 29.8% of the study area identified as Hispanic, a higher share than 7.3% for Monroe County and 8.0% for the Rochester Metropolitan Statistical Area (MSA).

Environmental Systems Research Institute's (ESRI) Diversity Index can be used to measure an area's racial and ethnic diversity. ESRI is an international supplier of geographic information systems software; their Business Analyst Online platform provides demographic, consumer spending, and business data. The Diversity Index provides a score between 0 (all residents belong to one racial/ethnic group) and 100 (many racial/ethnic groups represented). The Study Area has a Diversity Index of 81.2, significantly higher than 47.8 for Monroe County and 45.4 for the Rochester MSA.

Figure 4 provides a snapshot of the racial and ethnic composition of Rochester within the study area and **Figure 5** shows residents of Hispanic or Latinx origin within the study area. It should be noted that each dot on the demographic maps is representative of five people and is placed randomly within the census block group to convey density; it is not intended to show specific locations of individuals.

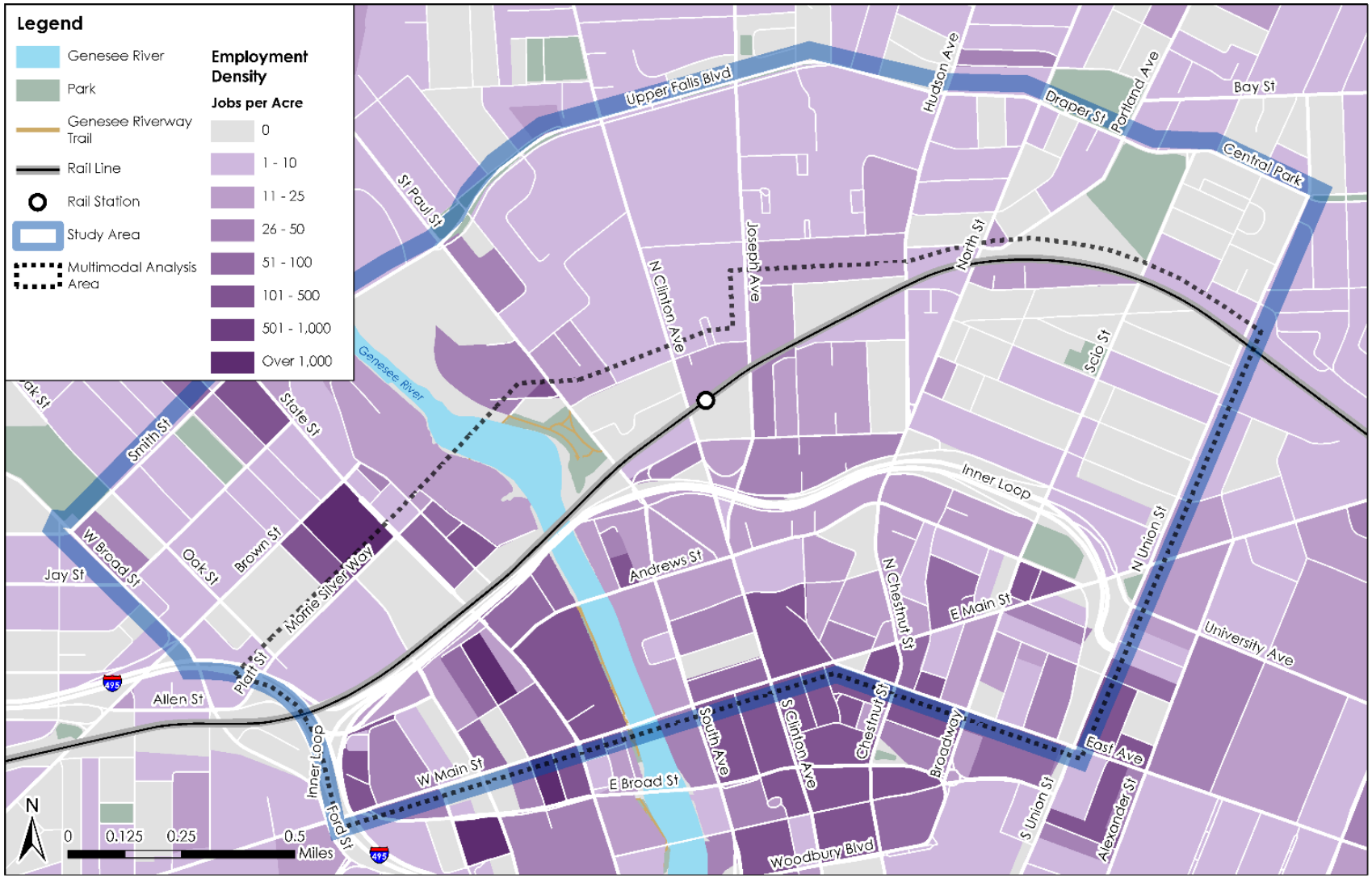
[2] ESRI Business Analyst – 2019
[3] American Community Survey, U.S. Census Bureau (2013-2017 ACS 5-Year Estimates)

Figure 2: Population Density



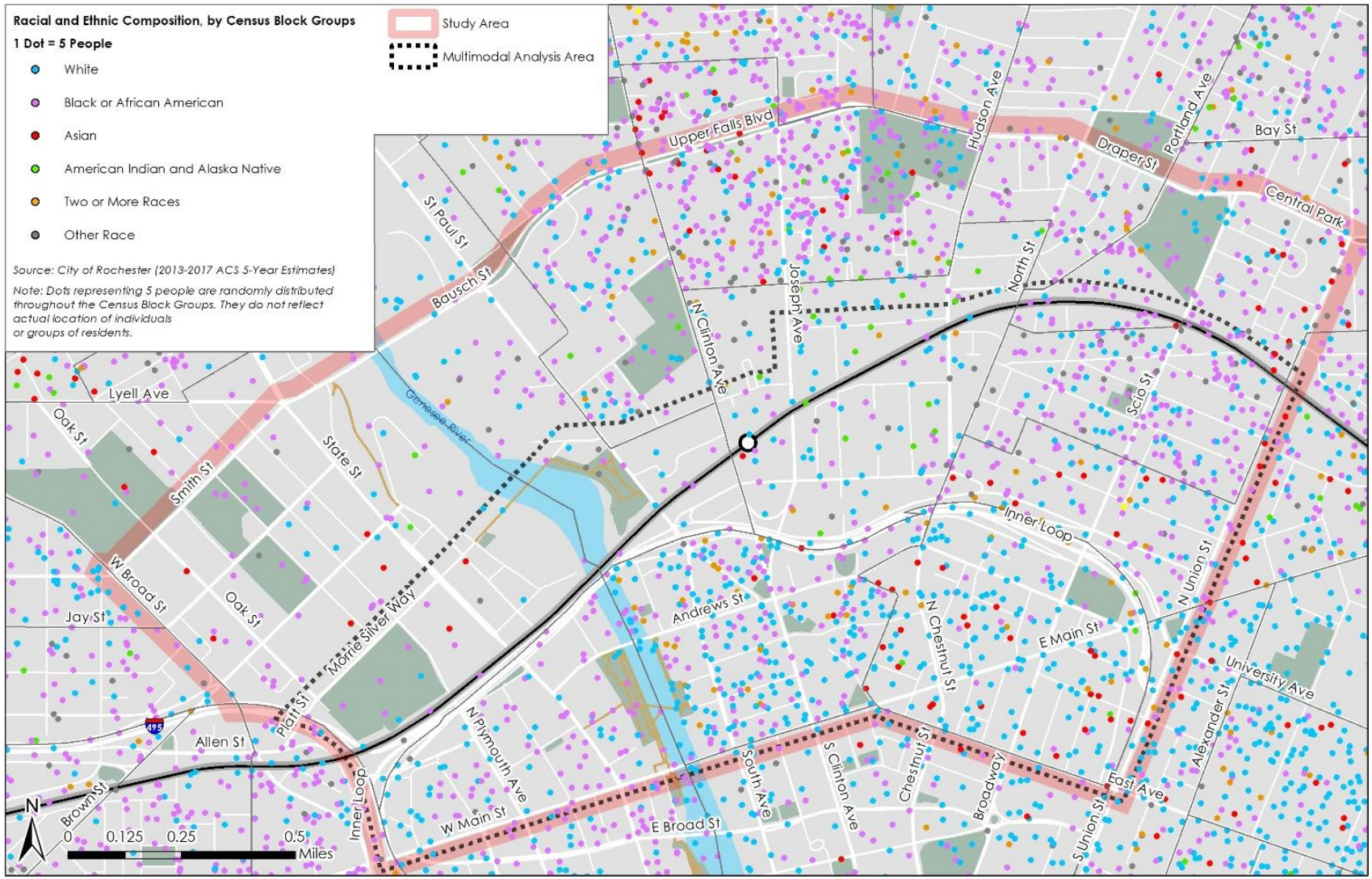
Source: Urban Footprint

Figure 3: Employment Density



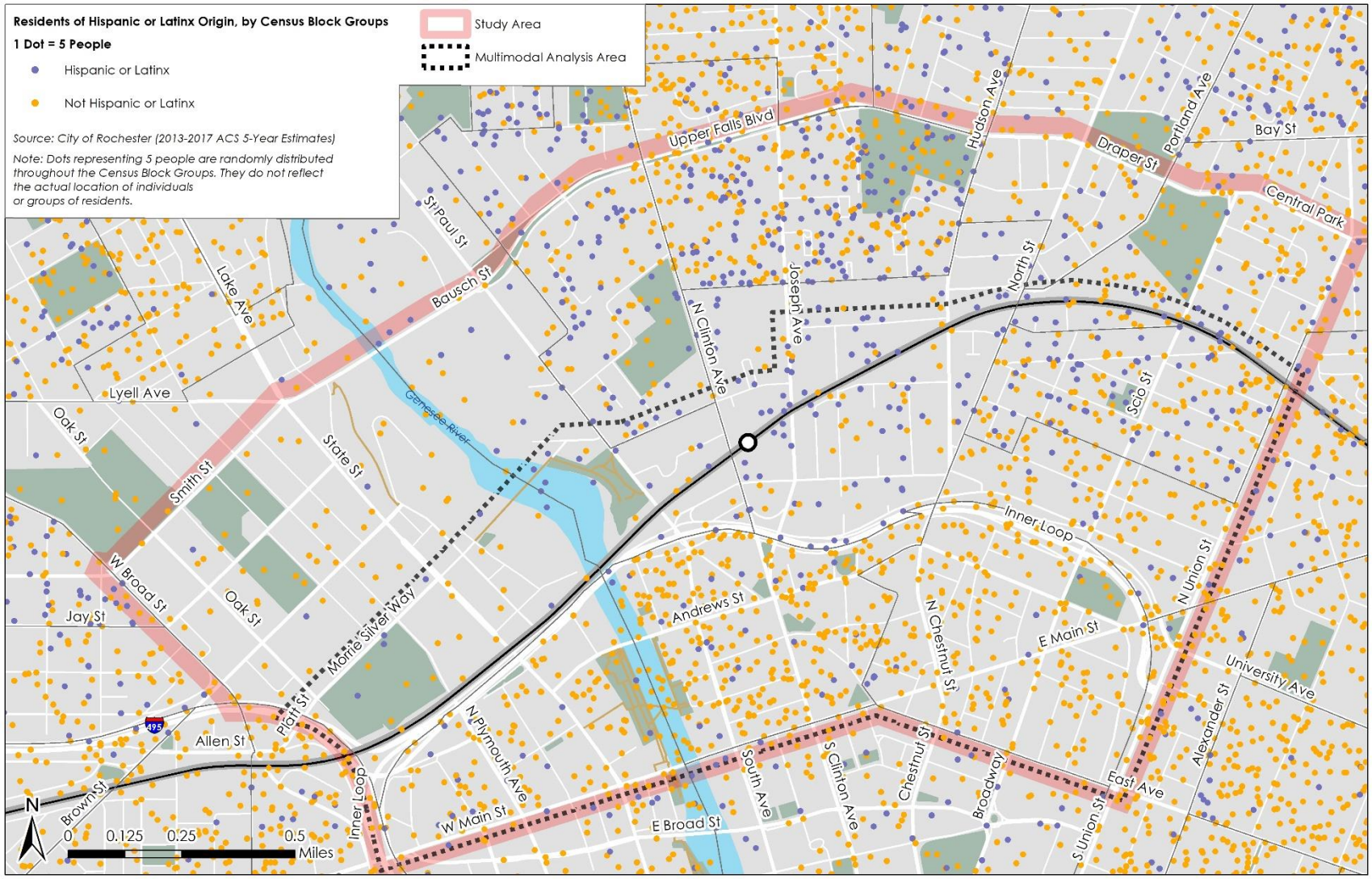
Source: Urban Footprint

Figure 4: Racial Density



Source: City of Rochester (2013-2017 ACS 5-Year Estimates)

Figure 5: Residents of Hispanic or Latinx Origin

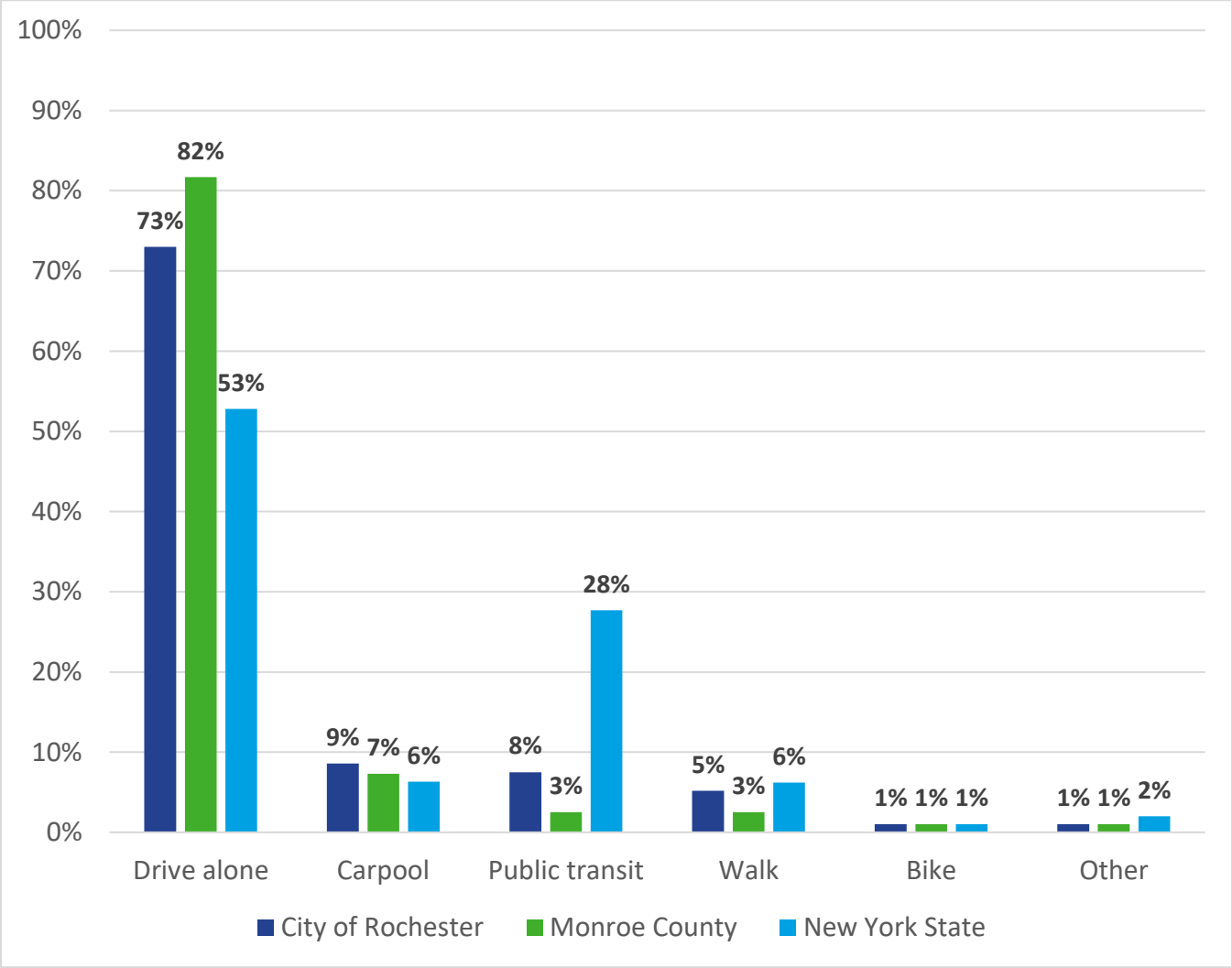


Source: American Community Survey, U.S. Census Bureau (2013-2017 ACS 5-Year Estimates)

Mode Share

In Monroe County, driving is the predominant commuting mode of transportation. Most people (82 percent) in the County get to work by driving alone, while only three percent travel to work using public transit. Within the City of Rochester, 73 percent of commuters drive alone. However, a slightly higher percentage of residents use public transit to get to work (eight percent).[4] Additional mode share breakdowns at the local, county, and state level are shown in **Figure 6**.

Figure 6: Mode Share



Source: American Community Survey, U.S. Census Bureau (2019 ACS 1-Year Estimates)

[4] American Community Survey, U.S. Census Bureau (2019 ACS 1-Year Estimates)

Street Network

The street network, shown in **Figure 7**, is the backbone of Rochester's existing transportation system—the structure of which is largely consistent throughout the Planning Study Area and Multimodal Analysis Area. Center City and the neighborhoods that surround it feature a grid of streets with fairly uniform block sizes. The city's major streets radiate outward from Center City, providing a choice of routes within the street grid to facilitate travel within and between neighborhoods.

The vast majority of these local streets are two-way and many blocks also have alleyways between them. However, several one-way streets exist, with many tradeoffs between them and their two-way counterparts. One-way streets may experience lower rates of crashes due to fewer turning movements and potential conflict points, however, they are known to encourage higher motor vehicle speeds and present potentially confusing conditions at intersections for both motorists and pedestrians. Additionally, motor vehicle drivers may be less cautious when turning left from one-way streets and less able to see crossing pedestrians due to poorer lines of sight. Two-way streets are known to reduce vehicle speeds due to increased turning movements and greater perceived 'friction' along the street caused by oncoming traffic in opposing travel lanes.[5] The City of Rochester has converted several one-way streets to two-way operations in recent years, including portions of S. Clinton Avenue and East Broad Street in 2018.

The Inner Loop right-of-way has a significant presence, both in size/width and volume of traffic. The Inner Loop cuts across the study area from west to east and interrupts the local street grid on either side of the freeway, with only select major streets providing connections across its path. This interruption in the street network consolidates traffic to fewer streets. As a result, local and regional motorists, bicyclists, pedestrians, and transit users must compete for limited space on roadways where the existing design gives motor vehicles priority.

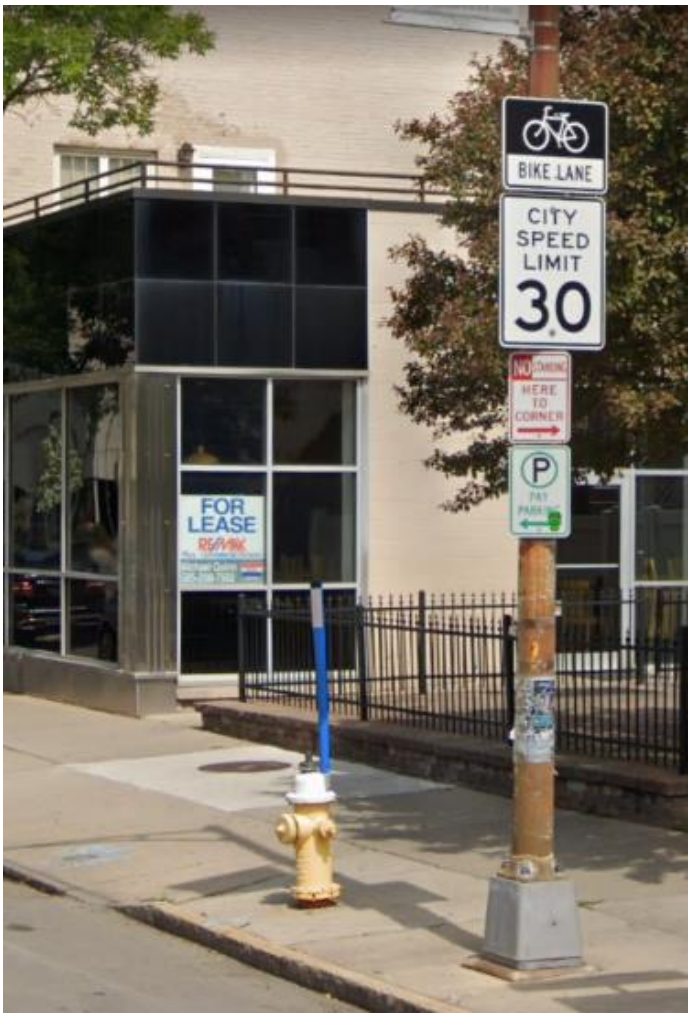
The layout and design of the Inner Loop presents several challenges to the street network, including faster traffic, greater volumes of traffic, longer adjacent street blocks, one-way service roads/ramps with limited pedestrian and bicycle facilities, and limited opportunities for parks, open space, and landscaping. While the Inner Loop is able to efficiently facilitate crosstown motor vehicle traffic, this vehicle efficiency comes at the expense of pedestrians, cyclists, public transit passengers, and other vulnerable users of the transportation network.

[5] Federal Highway Administration, U.S. Department of Transportation. http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=23

Figure 7: Street Network

Safety

The City of Rochester's *Comprehensive Access and Mobility Plan* identified several components of the existing transportation system that adversely affect safety for those using it. With the exception of school zones and select roads within parks, Rochester's default citywide speed limit is set at 30 miles per hour. Despite these signed regulations, many aspects of how streets are designed and built can promote riskier travel behavior, particularly by motorists. Some of these aspects include wide streets, wide travel lanes, and generous intersection corner radii that allow faster turning speeds—all of which endanger and increase the risk of collision with other vehicles as well as more vulnerable users such as pedestrians and cyclists. Collisions of this nature involving pedestrians or cyclists occur on a citywide scale, which make up 15 percent of all collisions in Rochester.[6]



Source: Google Maps

Within the Planning Study Area and Multimodal Analysis Area, most streets are designed in a multimodal fashion and do not feature the excess widths mentioned above, with the notable exceptions of the Inner Loop, its ramps, and parallel service roads that present pedestrians and cyclists with greater safety risks. During the May 28, 2020 meeting of the project's Citizen Advisory Committee (CAC), multiple participants noted the narrow nature of many of the sidewalks as a safety concern as well as a challenge to maintain a "social distance."

[6] Comprehensive Access and Mobility Plan, City of Rochester, 2019. https://www.cityofrochester.gov/camp/

Multimodal Travel Trends and Patterns

Multimodal Travel Trends

Trends in multimodal travel have been informed by Urban Footprint, a cloud-based software that provides insight into the fields of urban planning, finance, mobility, sustainability, policy making, healthcare, and disaster preparedness, among others, using nationwide data sources. Travel trends such as vehicle trip counts, vehicle miles traveled, greenhouse gas emissions, transit trip counts, and walk mode share have been complied in the following sections to aid in further understanding how people move in the vicinity of the Inner Loop.

VEHICLE TRIP COUNTS

Vehicle trip counts, the destinations of which are shown below in **Figure 8**, vary across the Multimodal Analysis Area. The vast majority of the area sees under 1,000 vehicle trips per day – likely due to large swaths of land being lower-density residential, industrial, or simply vacant, especially in areas adjacent to the Inner Loop. Higher vehicle trip counts are concentrated within the central business district, roughly aligning with blocks where employment density is higher or more prominent destinations exist.

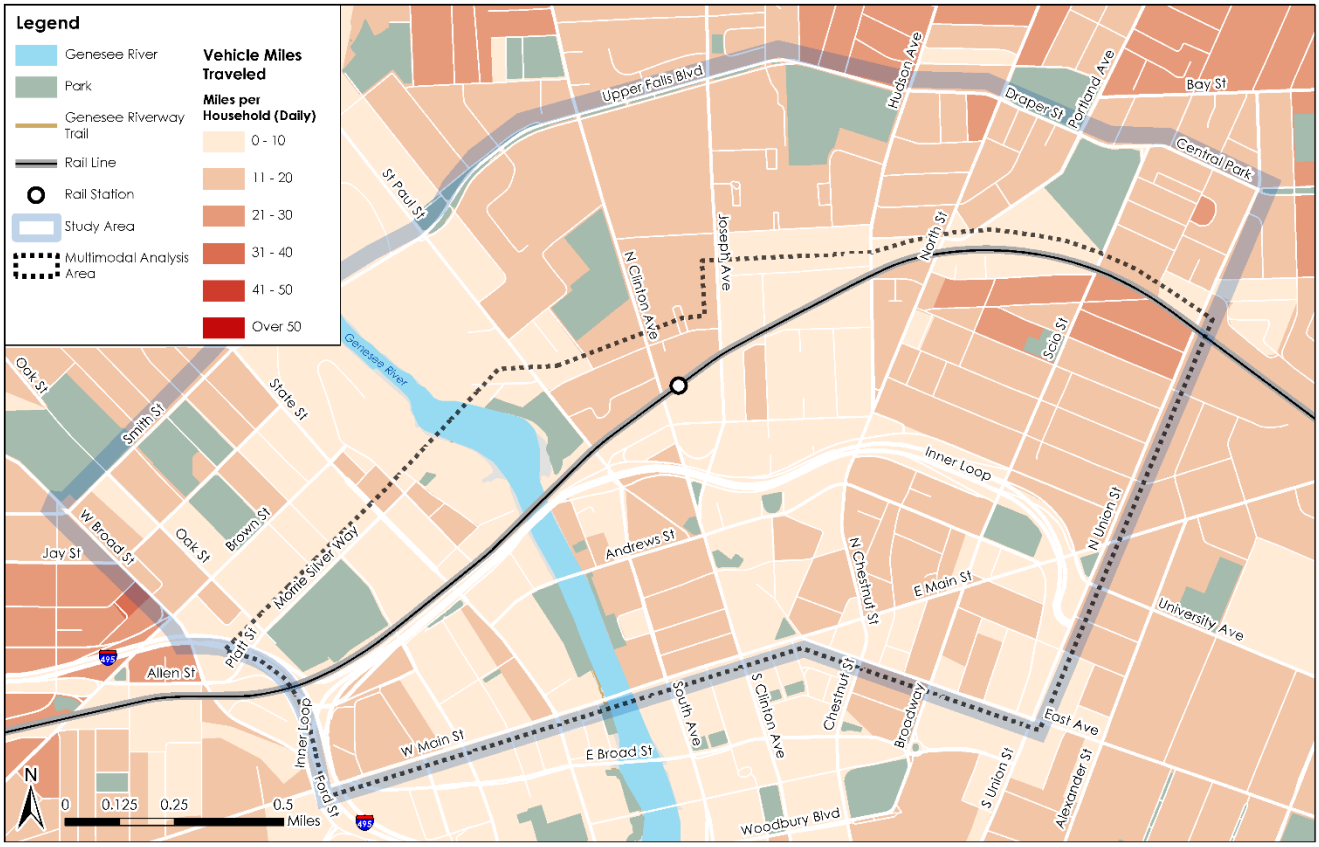
Figure 8: Vehicle Trips (Destinations)

Source: Urban Footprint

VEHICLE MILES TRAVELED

Vehicle miles traveled (VMT) is shown in **Figure 9** in the form of daily miles per household. The vast majority of households in the multimodal analysis area produce a daily VMT at or below 20 miles. This indicates that residents in the study area are using vehicles to travel less than other areas of the City. This could indicate that residents are traveling less or using higher rates of walking, cycling, and transit use among area residents as a means to travel.

Figure 9: Vehicle Miles Traveled

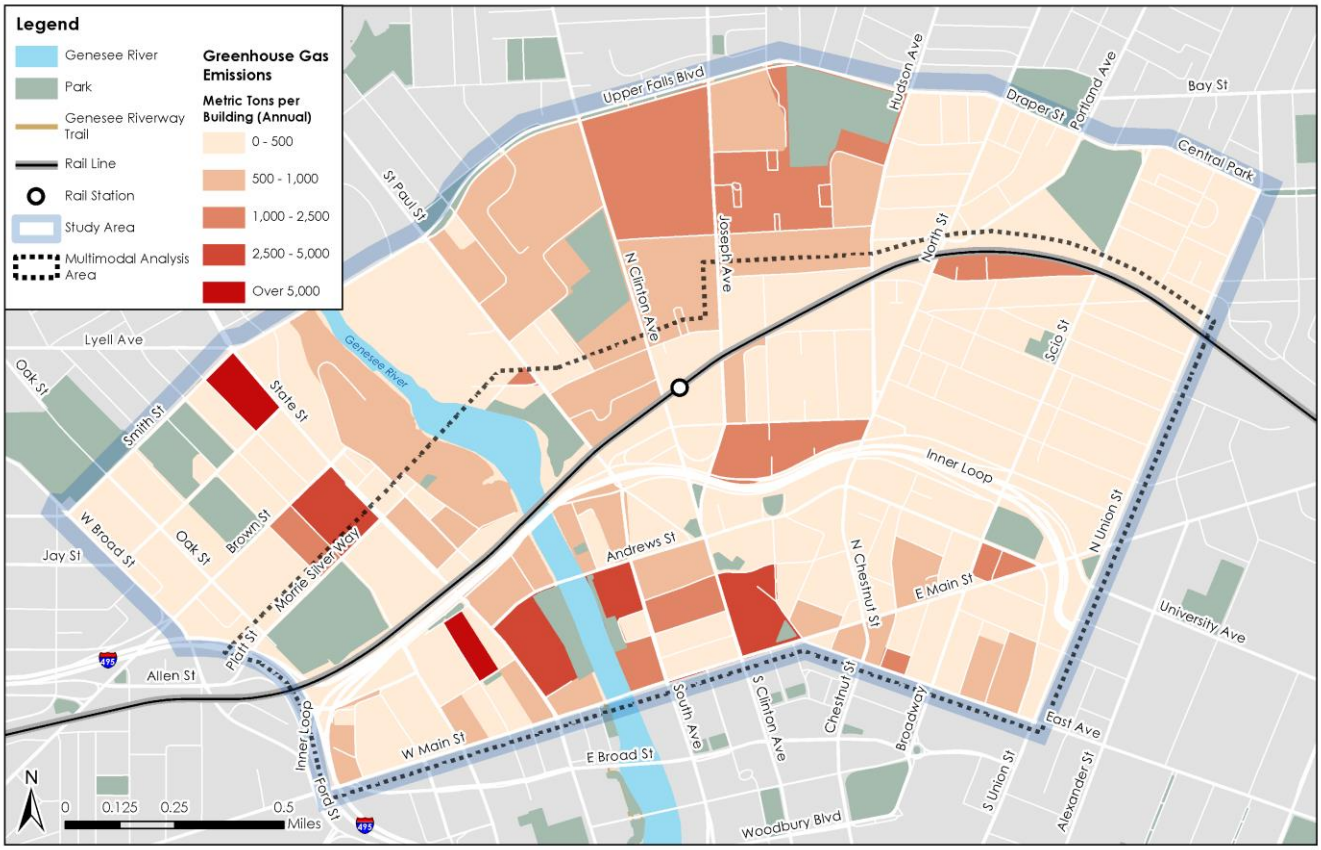


Source: Urban Footprint

GREENHOUSE GAS EMISSIONS

Greenhouse gas (GHG) emissions, shown as annual metric tons per building in **Figure 10**, are generally higher in areas with higher commercial and industrial land use, most notably in Center City and north of the rail station. The lower levels of emissions that can be seen outside of Center City is primarily due to a general lower population and employment density and lack of buildings being present on some specific blocks.

Figure 10: Greenhouse Gas Emissions



Source: Urban Footprint / U.S. Environmental Protection Agency (EPA)

TRANSIT TRIPS

Daily transit trip estimates are shown in **Figure 11**, and help depict which specific areas generate or attract the highest level of transit trips in and around the Multimodal Analysis Area. Generally, higher numbers of transit trips are seen within the central business district and can likely be attributed to the high density of jobs serving as trip generators in this area. Pockets of higher transit use are also visible adjacent to the edges of the Planning Study Area where denser residential neighborhoods comprised of greater transit-dependent populations are present. While the RTS Transit Center is a prominent transfer hub and serves most bus routes and passengers entering the city center, it is not shown as prominently on this map due to it not being the ultimate final destination for those who pass through it.

Figure 11: Total Daily Transit Trips (Origins and Destinations)

Source: Urban Footprint

Note: This map shows estimated number of transit trips daily. This variable considers all trips attributed to residents, workers, and visitors in the given area.

Study Area Travel Patterns

Travel patterns within the study area were analyzed using StreetLight Data, a provider of aggregated transportation analytics derived from anonymized mobile devices. StreetLight Data has a significant and representative sample of overall population travel patterns for urban areas and the data is a tool that has become widespread in transportation planning applications. The data can be used for a variety of analyses of multimodal travel for both specific street segments and for entire neighborhoods (or larger areas). For this project, StreetLight Data was used to understand travel patterns along various street segments in the Multimodal Analysis Area, including various segments of the Inner Loop as well as travel patterns within the adjacent neighborhoods. Example applications that were examined for this project included the following:

- Origins and destinations of trips along the Inner Loop
- Trip characteristics for trips along the Inner Loop as well as vehicular trips[7] through the adjacent neighborhoods, including a breakdown of trip lengths
- Traveler characteristics for trips along the Inner Loop and vehicular trips through the adjacent neighborhoods, including a breakdown of income and race

The data summarized in the following sections represents average weekdays (Tuesdays through Thursdays) across all of 2019.

Travel Along Inner Loop

The following major findings were identified regarding travel along the Inner Loop:

- Traffic volumes along the Inner Loop are generally highest at the far west end near I-490 and decrease heading east, with a significant drop-off in volume east of the river. For example, over the course of an average weekday, of all trips along the eastbound Inner Loop crossing the river, **approximately 50 to 60 percent of trips end up staying on the Inner Loop past the exit to St. Paul Street/Clinton Avenue**. This same trend holds true in the reverse direction; between **50 and 60 percent of trips along the westbound Inner Loop crossing the river came from the Inner Loop east of the St. Paul/Clinton Interchange**.
- At its far east end near the interchanges with Scio Street, E. Main Street, and Union Street, some of the trips being served are using the Inner Loop for only a short distance (e.g. entering/exiting the Inner Loop via the ramps east of Joseph Avenue), indicating that the Inner Loop represents the most direct path for some east-west trips through downtown east of the river. StreetLight Data estimates showed that **approximately 20 percent of trips along the Inner Loop at its east end are not coming from (eastbound) or heading to (westbound) the segment of the Inner Loop crossing the river.**

Figure 12 and **Figure 13** show approximate trip values in the eastbound and westbound directions, respectively.

[7] *All about "All Vehicles"*, StreetLight Data, 2020. https://support.streetlightdata.com/hc/en-us/articles/360039264211-All-about-All-Vehicles-

Figure 12: Eastbound AM Peak Period Inner Loop Travel

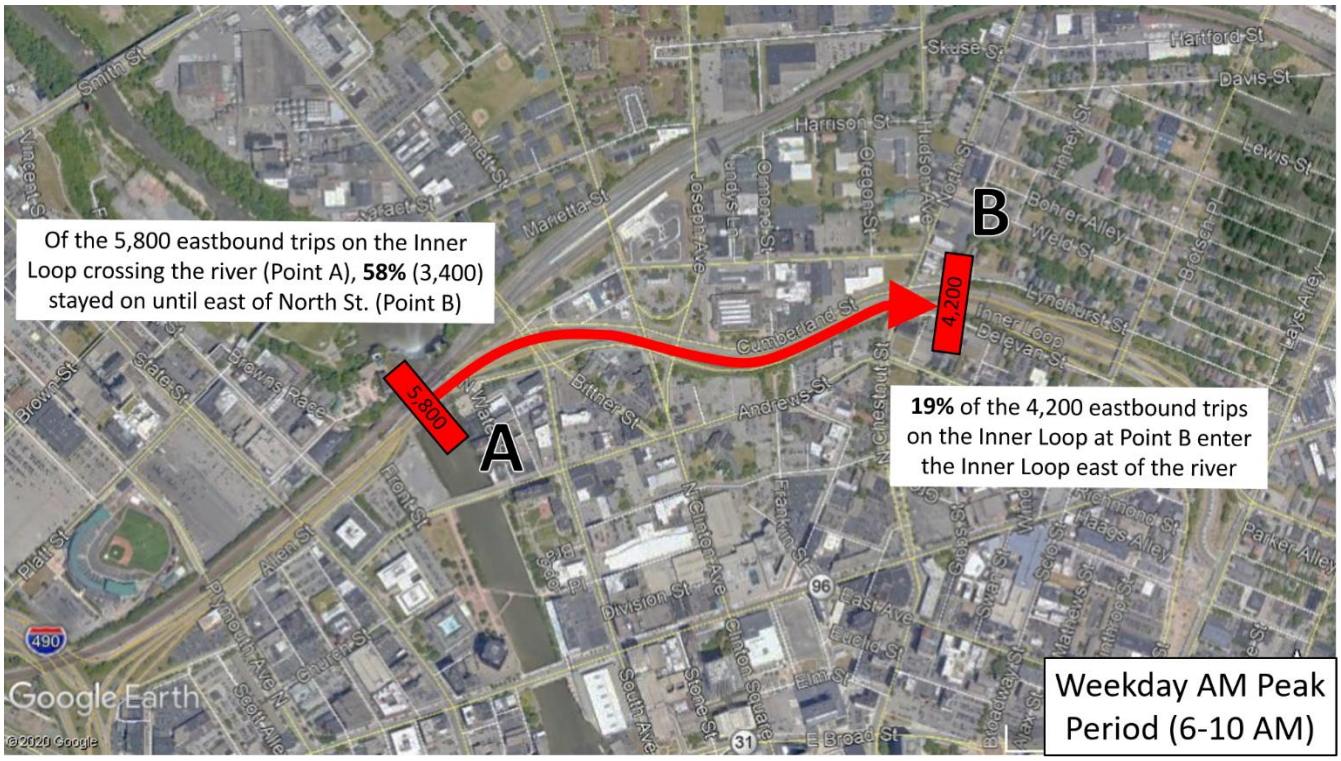
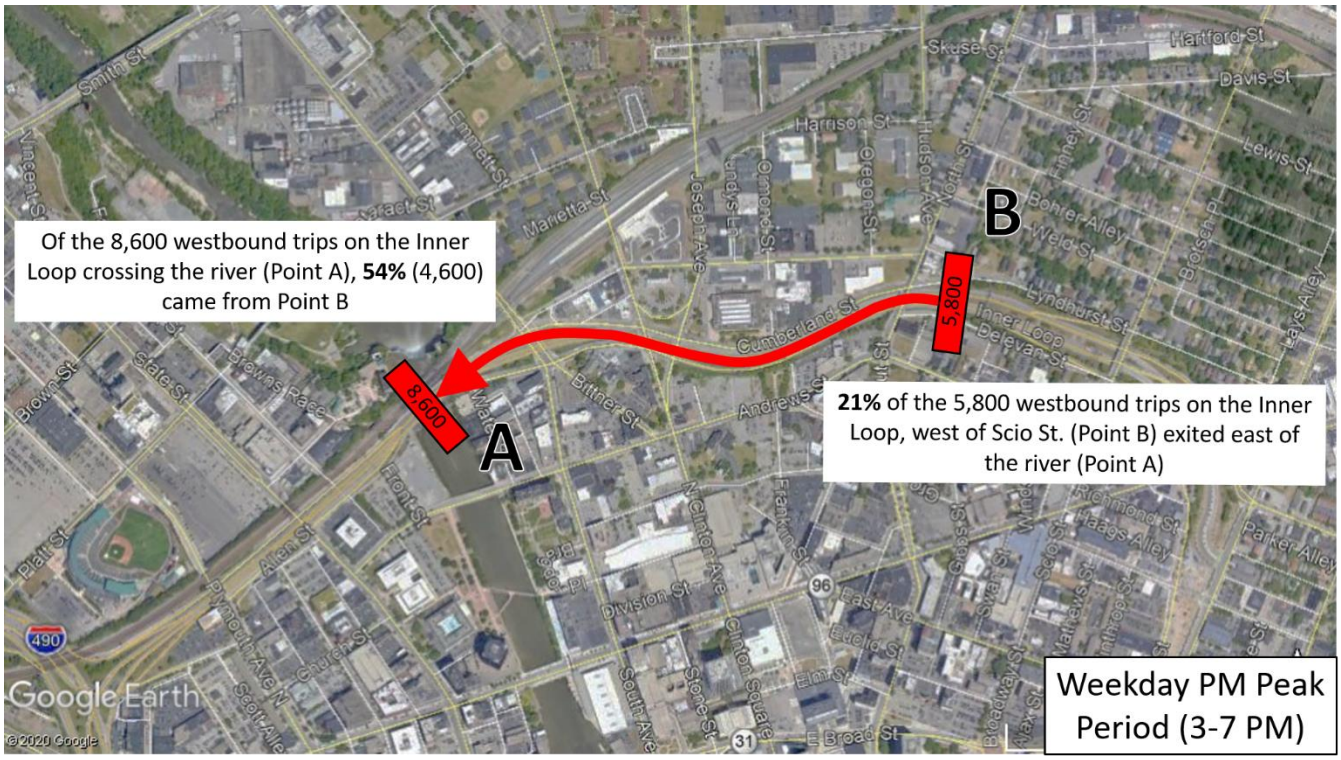
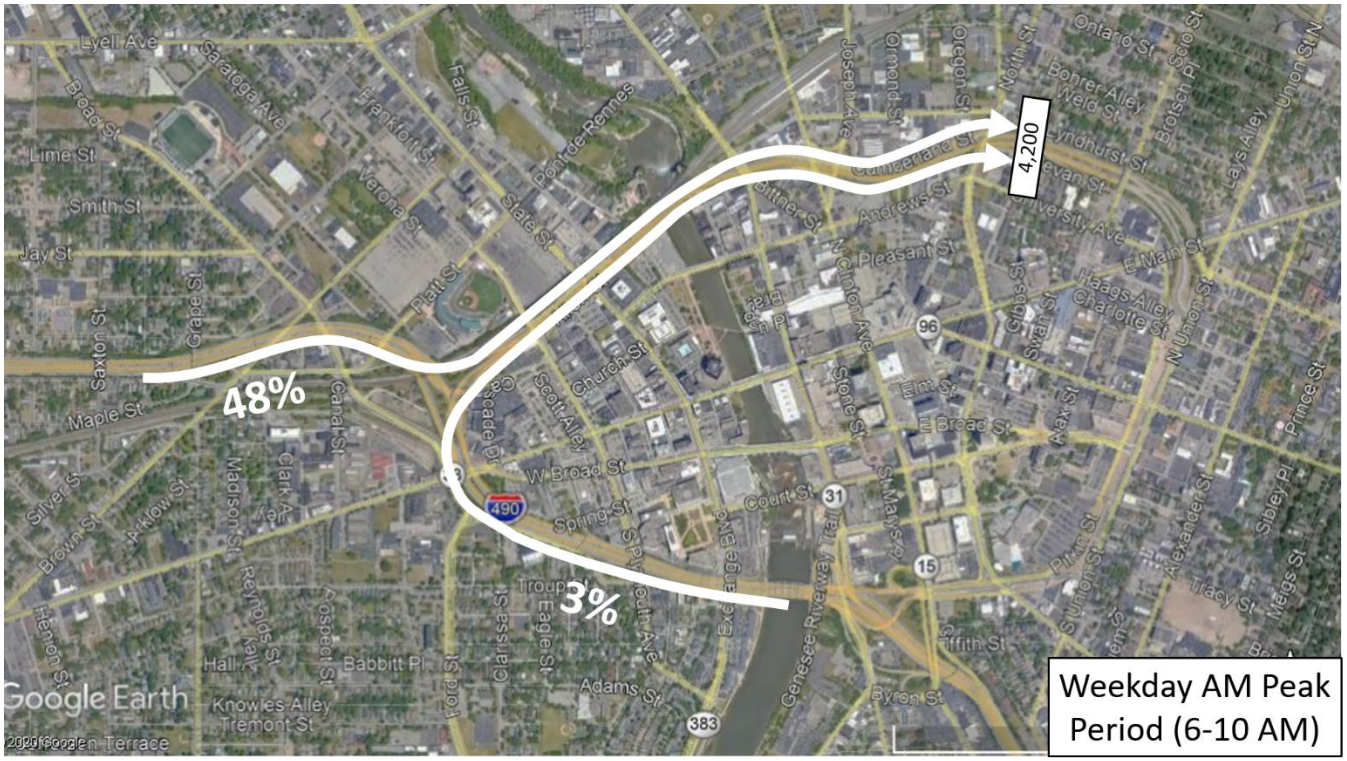


Figure 13: Westbound PM Peak Period Inner Loop Travel



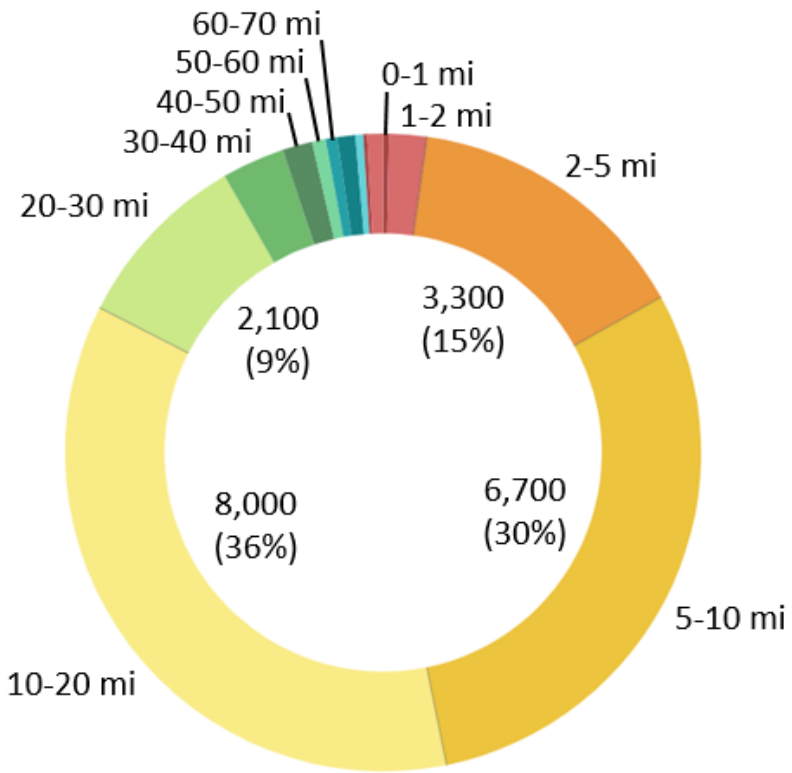
- At the Inner Loop's far east end near the interchanges with Scio Street, E. Main Street, and Union Street (Point B in **Figure 13)**, approximately 50 percent of trips come from or are going to I-490. **Figure 14** shows the percentage of eastbound trips at the far east end of the Inner Loop that came from either I-490 west of Broad Street or I-490 crossing the river during the AM peak period.

Figure 14: Percentage of Trips on Inner Loop Coming from I-490 (AM Peak)



- The distribution of trip lengths along the Inner Loop suggests that it is serving generally long-distance, regional trips. **Figure 15** shows this distribution for the eastbound Inner Loop across the river; this distribution was shown to be consistent for the westbound direction and for the Inner Loop further to the east. **More than half of trips are estimated to be at least 10 miles in length.** Only approximately 15 percent of trips are less than 5 miles in length, and a very low percentage (approximately three percent) are less than 2 miles in length.

Figure 15: Distribution of Trip Lengths along Inner Loop, Average Weekday, Eastbound at River

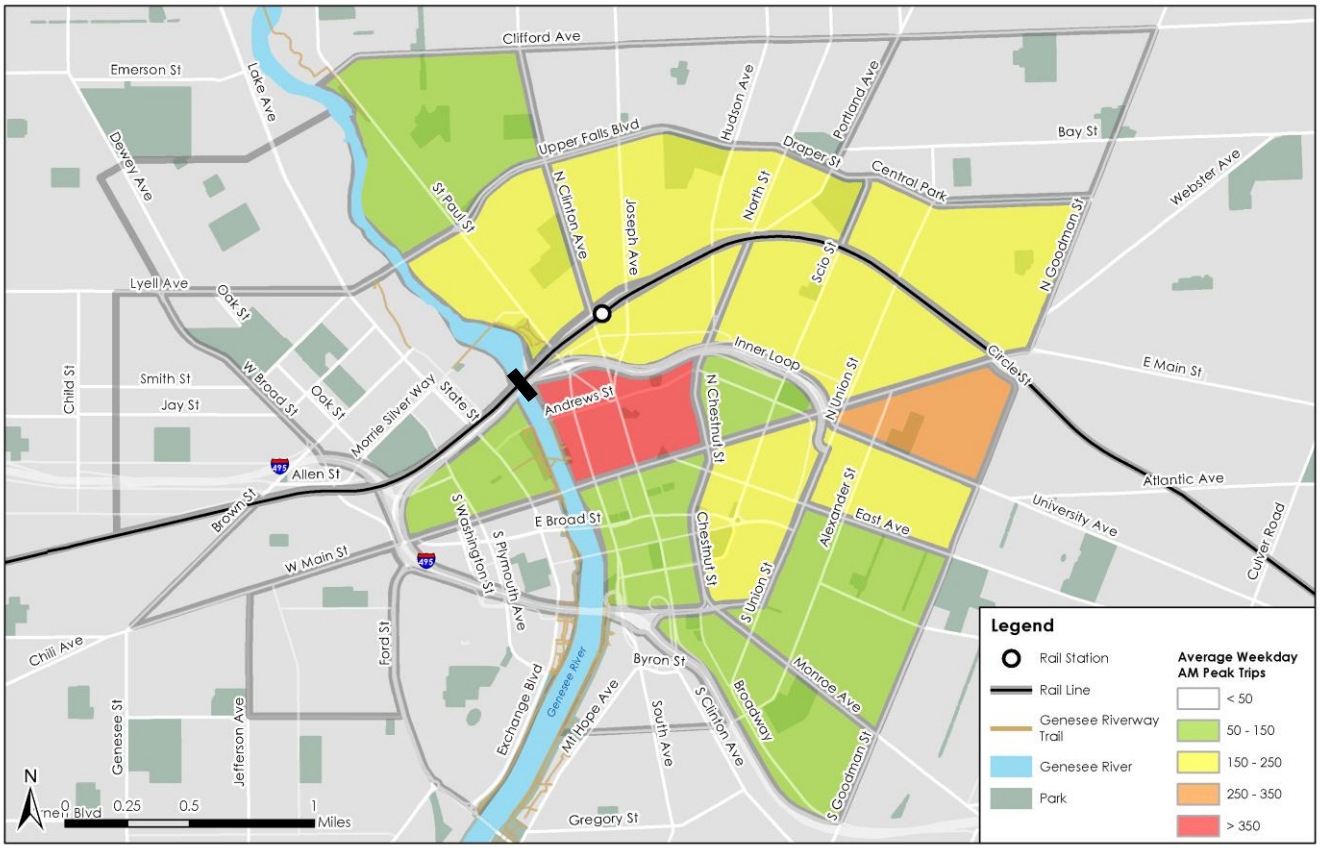


Source: StreetLight Data – 2019 Average Weekday

- During the AM peak period, approximately 50 percent of trips heading eastbound on the Inner Loop crossing the river are destined for the downtown neighborhoods in the study area. During the PM peak period in the opposite direction, approximately 40 percent of trips heading westbound are coming from downtown neighborhoods within the study area. This finding supports the conclusion that **a significant percentage of traffic using the Inner Loop is regional in nature.**

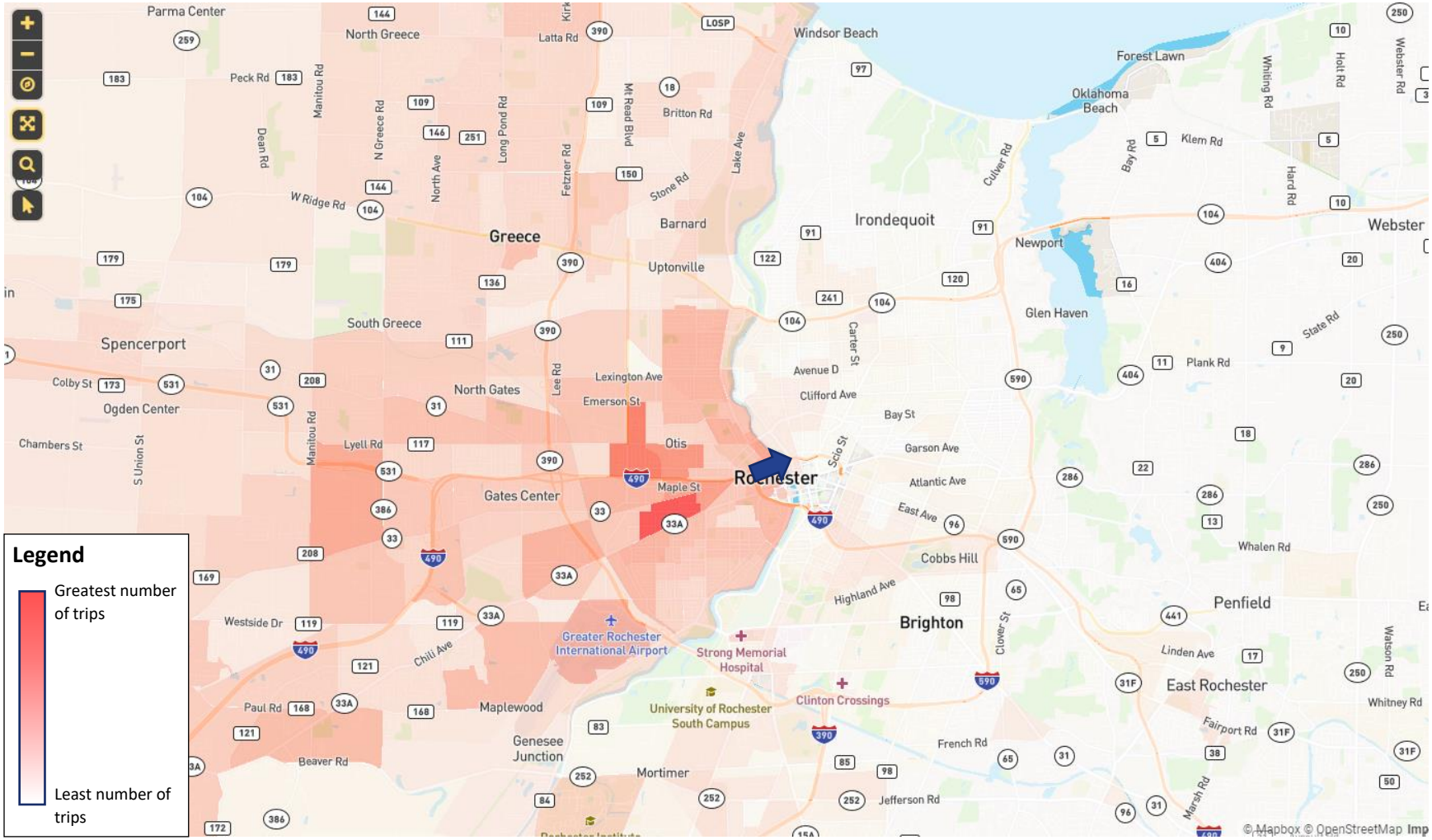
- **Figure 16** provides a heat map of weekday AM trips to downtown neighborhoods in the study area. An analysis of the starts and end points of trips using the Inner Loop suggest that it is being utilized to facilitate trips from the western half of the metropolitan area into downtown and neighborhoods close to downtown on the east side. **Figure 17** provides a heat map of the origins of daily weekday trips along the eastbound Inner Loop crossing the river, while **Figure 18** provides a heat map of the ultimate destinations for these same trips. As shown, the origins of trips are widely scattered throughout the western portion of the region, especially along the I-490 corridor. However, the destinations of trips are much more concentrated toward downtown.

Figure 16: Heat Map of Average Weekday AM Peak Trips to Study Area Neighborhoods from Eastbound Inner Loop Crossing River



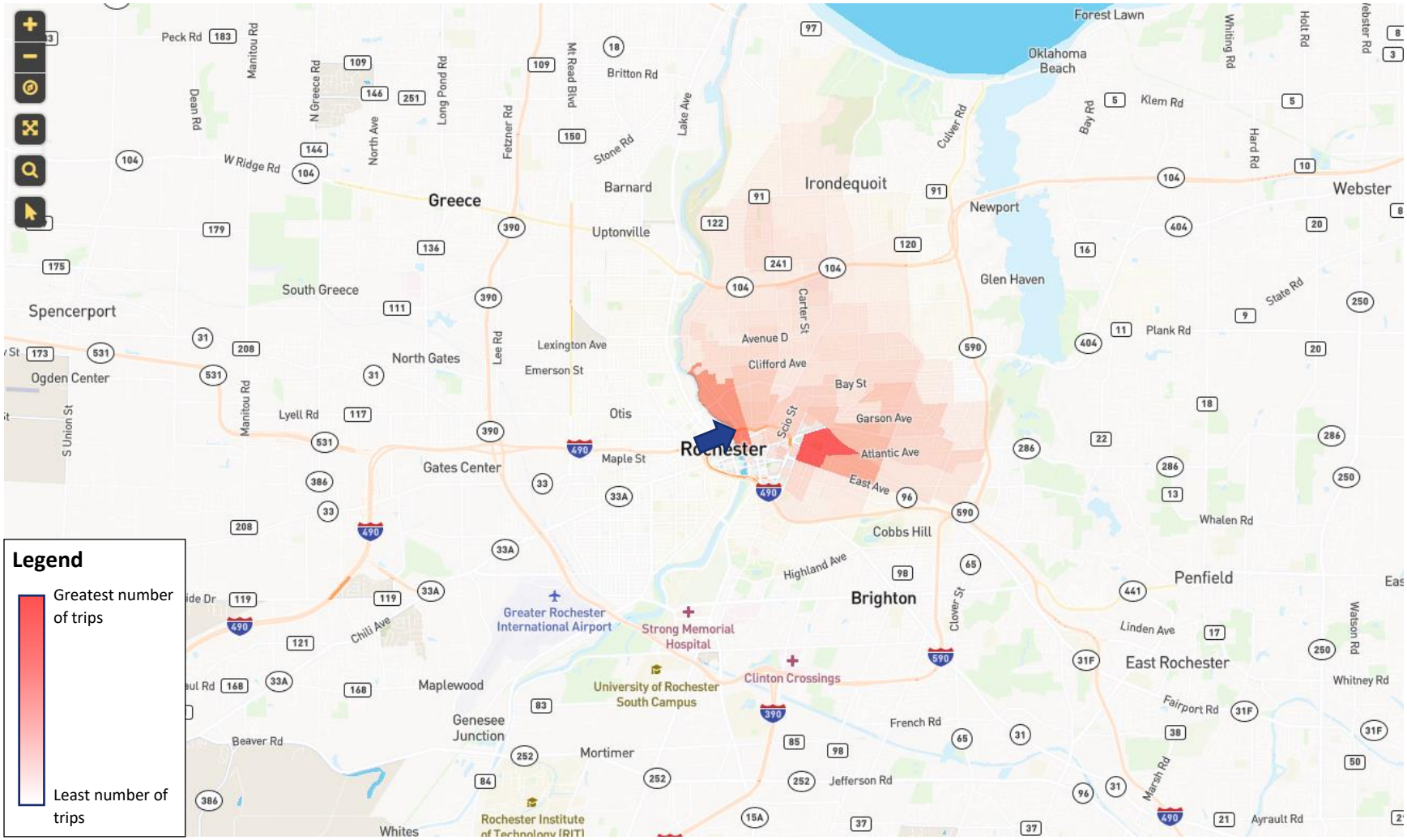
Source: StreetLight Data – 2019 Average Weekday

Figure 17: Heat Map of Origins of Average Daily Weekday Trips along Eastbound Inner Loop Crossing River



Source: StreetLight Data – 2019 Average Weekday

Figure 18: Heat Map of Destinations of Average Daily Weekday Trips along Eastbound Inner Loop Crossing River



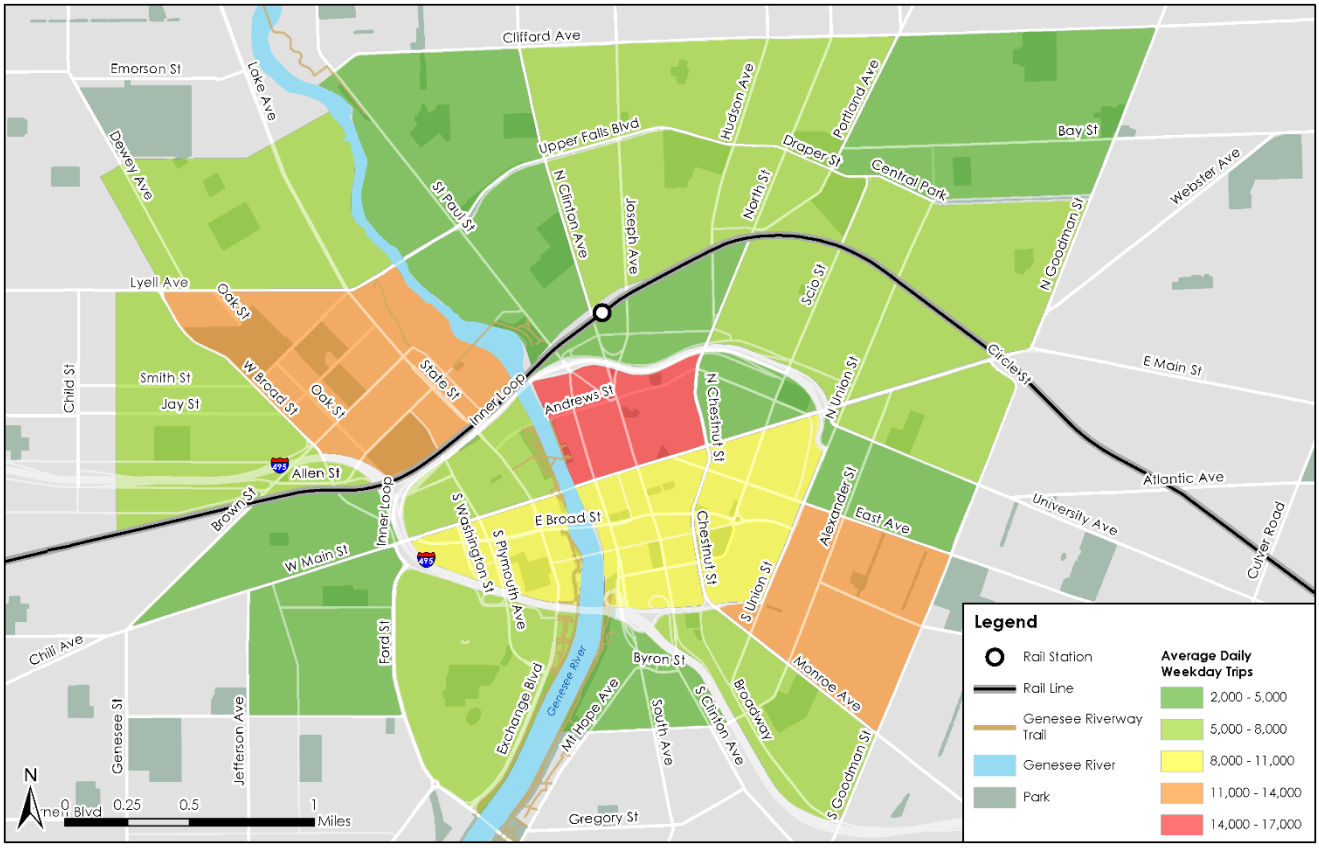
Source: StreetLight Data – 2019 Average Weekday

Travel Within Neighborhoods Adjacent to Inner Loop

The following major findings were identified regarding travel within the study area neighborhoods adjacent to the Inner Loop:

- The heaviest concentration of vehicular trips starting or ending in the study area is in the downtown area just east of the river and south of the Inner Loop. In general, the areas with a high concentration of commercial development—for example, the neighborhood adjacent to Frontier Field and the downtown neighborhoods south of Main Street near the former Inner Loop east—show the highest number of vehicular trips produced each day. **Figure 19** provides a heat map of the average daily weekday trips starting or ending in neighborhoods adjacent to the Inner Loop.

Figure 19: Heat Map of Average Daily Weekday Trips Starting/Ending in Neighborhoods Adjacent to Inner Loop



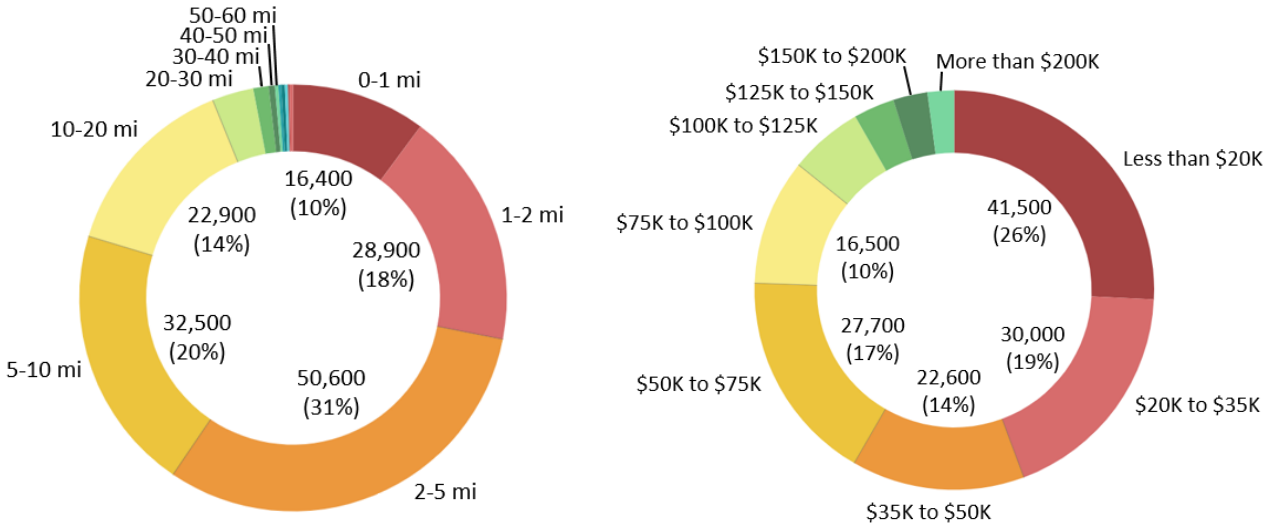
Source: StreetLight Data – 2019 Average Weekday

Vehicular trips starting or ending in the neighborhoods adjacent to the Inner Loop are much more local in nature than travel on the Inner Loop itself. The left chart in **Figure 20** shows a breakdown of these average weekday trips by trip length. Nearly 10 percent of trips are less than 1 mile in length; more than one-quarter of trips are less than 2 miles in length; and nearly 60 percent of trips are less than 5 miles in length. Note that StreetLight does capture trips that are taken on buses and is not able to separate these trips from overall vehicular trips.

However, these trips do not include any bicycle, scooter, or walking trips. These results suggest that a large number of trips are possibly amenable to a mode shift.

- The breakdown of income of vehicular trips being taken in the neighborhoods in the study area (shown in the chart on the right in **Figure 20**) is reflective of and consistent with known demographics in the study area. More than one-quarter of trips are taken by those with incomes of less than $20,000 annually and nearly half of trips are taken by those with incomes of less than $35,000 annually.

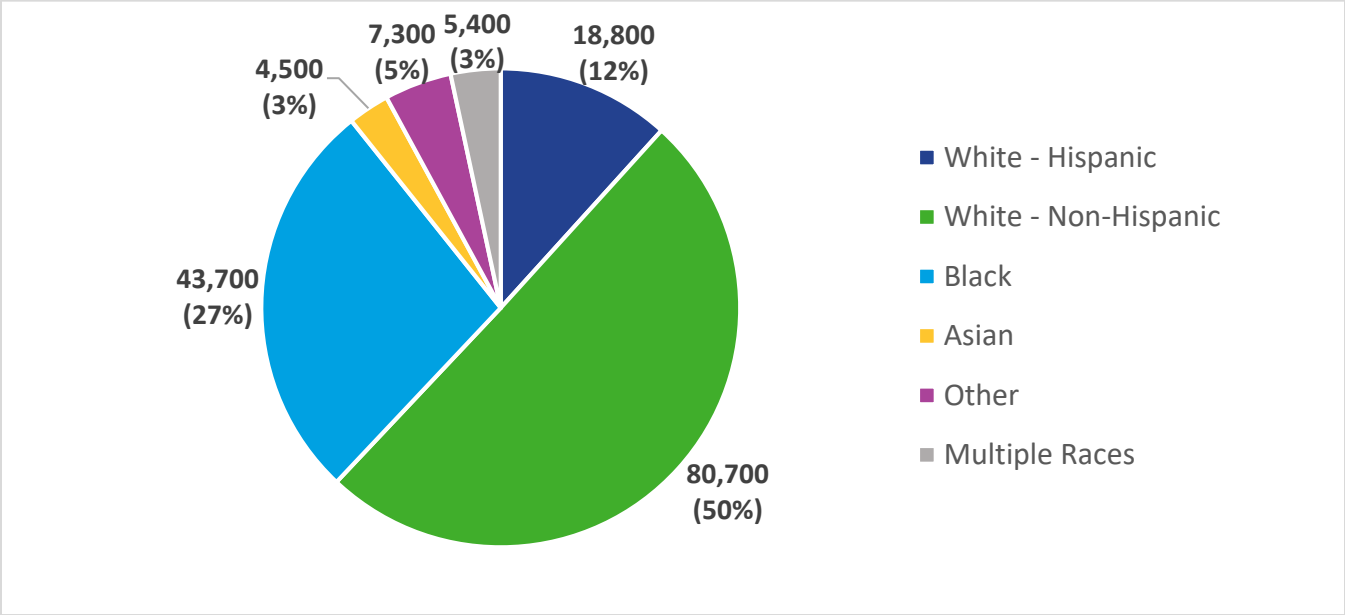
Figure 20: Summary of Daily Trips Starting in Inner Loop Adjacent Neighborhoods – Trip Length Distribution (Left) and Income Distribution (Right)



Source: StreetLight Data – 2019 Average Weekday

- **Figure 21** shows the racial breakdown of vehicular trips being taken in the neighborhoods adjacent to the Inner Loop. Roughly 60 percent of travelers are white; more than one-quarter of travelers are black; and three percent of travelers are Asian. Travelers of other races or multiple races make up the remaining eight percent.

Figure 21: Summary of Daily Trips Starting/Ending in Inner Loop Adjacent Neighborhoods – Racial Distribution



Source: StreetLight Data – 2019 Average Weekday

Issues and Opportunities

- **The Inner Loop is largely serving regional trips from the western suburbs into and out of the urban core of the city.** More than half of trips are estimated to be at least 10 miles in length. Only approximately 15 percent of trips are less than 5 miles in length, and a very low percentage (approximately three percent) are less than 2 miles in length. These findings suggest that these trips will continue to be served via the auto mode regardless of the future condition of the Inner Loop, and these trips would either continue to use the Inner Loop or a parallel facility in the street network. Traffic counts and the corresponding capacity analysis of the Inner Loop itself and its parallel corridors will assess the ability of a reimagined Inner Loop and parallel facilities to absorb these vehicular trips.
- An analysis of travel patterns along the Inner Loop suggests a sharp drop off in traffic volume east of the river/St. Paul/Clinton Interchange (only approximately 50 to 60 percent of trips remain). **Furthermore, data indicates that there is a small number of trips using the far east end of the Inner Loop for only a short distance.**
- Immediately adjacent to the Inner Loop, vehicular trips starting and ending in the study area neighborhoods are predominantly short-distance trips, with more than 25 percent of trips being less than 2 miles in length. **Some of these local neighborhood trips are likely amenable to a mode shift (walking, biking, transit) should those options become more attractive.**
- The racial breakdown of vehicular trips starting and ending in the study area neighborhoods adjacent to the Inner Loop suggests that **the Inner Loop North street network serves a racially diverse group of travelers.** However, the percentage of trips made by white individuals (62%) is noticeably higher than the percentage of study area residents that are white (30%).

Analysis Framework

Multimodal Measures of Effectiveness

Performance measures were developed to evaluate existing conditions of the various elements of Rochester's transportation network in the vicinity of the Inner Loop. These same measures will be applied to potential street reconfiguration options that are conceived as a part of this study. Performance measures are organized by mode of transportation or focus area. Each performance measure considers several individual measures of effectiveness (MOEs), both quantitative and qualitative.

The performance measures were developed using the goals of the study and are grouped into five categories that were used to assess existing conditions:

1. Pedestrian
2. Bicycle
3. Transit
4. Parking and curbspace
5. Public space/urban design

Once potential street reconfiguration options are developed, this performance evaluation will be expanded to include a comparative assessment between the existing conditions and those potential future options.

The overarching goal of performance evaluation is to identify the strengths, weaknesses, and tradeoffs between modes of transportation and inform a preferred future design option. Performance measures and MOEs are shown in **Table 1**. It is noted that some MOEs do not apply to existing conditions.

Table 1: Multimodal Measures of Effectiveness (MOEs) Structure

Mode	Performance Measures	MOEs
Pedestrian	• Pedestrian experience and comfort • Street crossing experience	• Quantity of enhanced crosswalks • Quantity of widened sidewalks (6 feet or wider) • Quality of street grid connectivity • Pedestrian experience and comfort • Walk access
Bicycle	• Connectivity of bicycle facilities to trail network • Provision of dedicated bicycle facilities	• Street network connections to local/regional trails • Quantity of dedicated on-street bicycle facilities • Quality of bicycle facilities • Quantity of new facilities • Bike access
Transit	• Accessibility of bus transit	• Quality of bus stop facilities • Residential and employment proximity to transit
Parking and curbspace	• Public parking • Curbside management	• Quantity of new curb space
Public space/ urban design	• Streetscape elements (trees, benches, bike racks) • Improved access to public spaces	• Quality of new streetscape • Quantity of public/green space

Isochrone Analysis

An isochrone analysis is a map-based analysis showing the "travel shed" (distance able to be traveled) to/from a specific location. An example would be the travel shed within a 5-minute, 10-minute, or 15-minute walk of a facility. This analysis was completed to better understand pedestrian and bicycle access and network connectivity for key locations in the study area. The analysis used real-world street and trail location data and assumed walking and biking speeds to evaluate time and distance coverage of the network related to a collection of origin points. Six origin points, shown in **Figure 22**, were strategically selected to capture diversity present in the study area:

1. RTS Transit Center
2. Rochester Station
3. Frontier Field
4. Selden Street
5. Lewis Street YMCA Child Care Center
6. Sojourner Home at Wilson Commencement Park

Figure 22: Origin Points for Isochrone Analysis

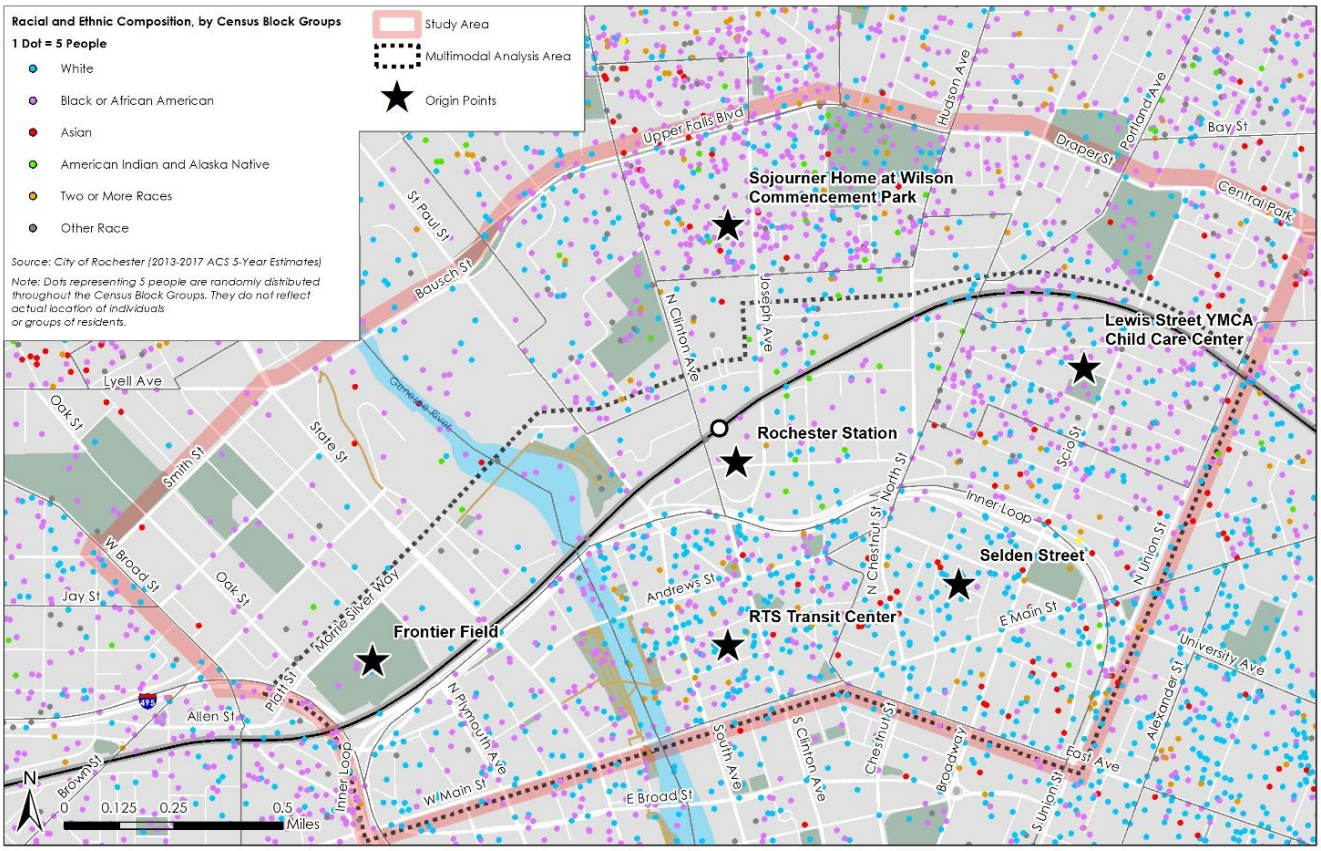


Figure 25 through **Figure 30** and **Figure 33** through **Figure 38** provide a summary of the pedestrian and bicycle isochrone analyses, respectively, for each of the origin points referenced above.

Figure 42 shows the 5-minute walk shed for all transit stops within the study area.

An isochrone analysis is revealing in terms of the impact of limited network connectivity on people's ability to conveniently access destinations by foot, wheelchair, or bicycle. Where radial analyses of limited pedestrian and bicycle networks may suggest that points of interest within one-quarter to one-half mile are easily accessible by foot or bike, actual routed analyses of these same networks reveal that areas within these short distances are much less accessible. For instance, the physical barrier that the Inner Loop currently poses to north-south pedestrian and bicycle travel and the overarching need for improved access were highlighted in this analysis. Making the pedestrian and bicycle networks continuous with sidewalk and trail system gap closures, along with strategic new off-street connections, could potentially increase people's access to points of interest north of the Inner Loop.

The transit isochrone analysis revealed that existing transit stops provide almost complete coverage (within a 5-minute walk) of the study area, with the exception of some pockets adjacent to the Inner Loop and a half-mile stretch north of the Inner Loop, along Scio Street. In general, a reasonable expectation for planning purposes is that people within a safe and comfortable 10- to 15-minute walk of high-quality transit services will do so, or consider doing so, to access transit.

Pedestrian Network

Inventory

Pedestrians crossing the Genesee River via the Main Street Bridge.
Source: Google Maps

Sidewalks, crosswalks, and trails represent the main components of the Rochester pedestrian network, shown in **Figure 23**, and provide areas for pedestrians within the city's public right-of-way. The sidewalk network within the Multimodal Analysis Area is largely complete with the majority of streets having sidewalks along both sides. However, there are several gaps in the area's sidewalk network, most of which stem from the layout and design of the Inner Loop. The pedestrian infrastructure is mostly in a state of good repair and compliant with the Americans with Disabilities Act (ADA) throughout the area. However, there are some areas where curb ramps are outdated or in need of repair, signal poles and signs conflict with pedestrian pathways, and sidewalks do not meet comfortable widths. The cold and snowy winters that Rochester experiences can have effects on pedestrians, especially when snow accumulates on bridges and sidewalks, making travel on foot or wheelchair difficult. On the Genesee Riverway Trail during the summer, for example, pedestrian counts are about four times higher than during the winter.[8]

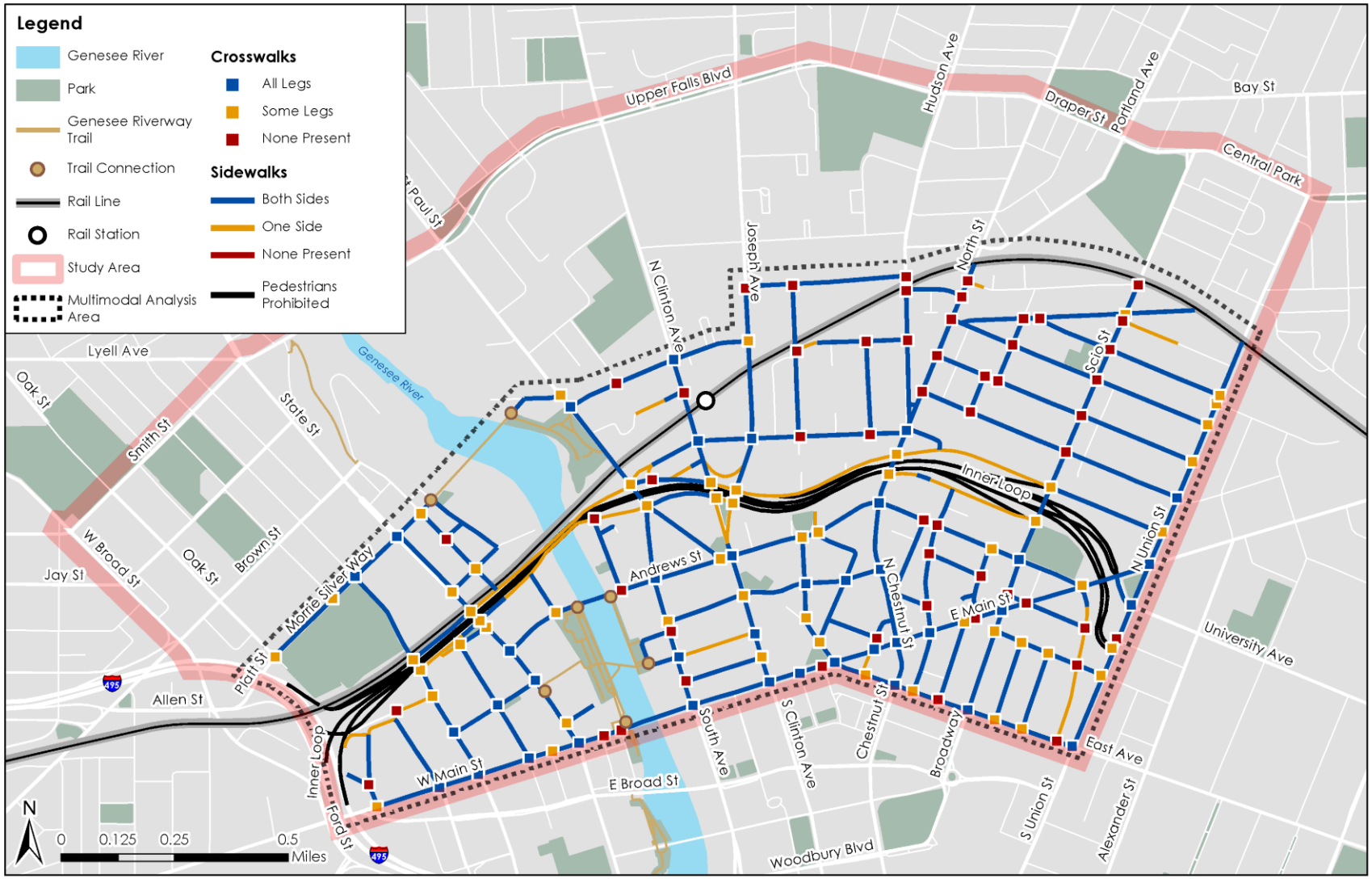
In areas south of the Inner Loop, marked crosswalks are present at most intersections in accordance with observed pedestrian demand and desire lines. However, north of the Inner Loop, there are fewer marked crosswalks as a result of lower demand for pedestrian travel.

Pedestrian travel is prohibited on the Inner Loop roadway itself, and the one-way service roads that parallel it on both sides present much longer blocks, fewer intersections with crosswalks, and limited sidewalks. While pedestrians traveling north-to-south across the Inner Loop have sidewalks and crosswalks to do so, the presence of the Inner Loop, ramps, service roads, and associated traffic volumes create longer crossing distances, indirect and inconvenient walking routes, and an overall lower level of walking comfort.

On-street pedestrian connections across the Genesee River are provided by sidewalks on the Inner Loop Bridge, the Andrews Street Bridge, and the Main Street Bridge. Off-street, pedestrian-only crossings of the river are a part of the Genesee Riverway Trail network and provided by the Pont de Rennes Bridge and the Sister Cities Bridge. Additionally, within the Multimodal Analysis Area, there are seven connection points between city streets and the Genesee Riverway Trail network, available on both sides of the river. This network of off-street trails accommodates both pedestrians and bicycles and is a complement to the on-street pedestrian network of Rochester.

[8] Genesee Riverway Trail Pedestrian and Bicycle Counts, City of Rochester

Figure 23: Pedestrian Network



Analysis/MOEs

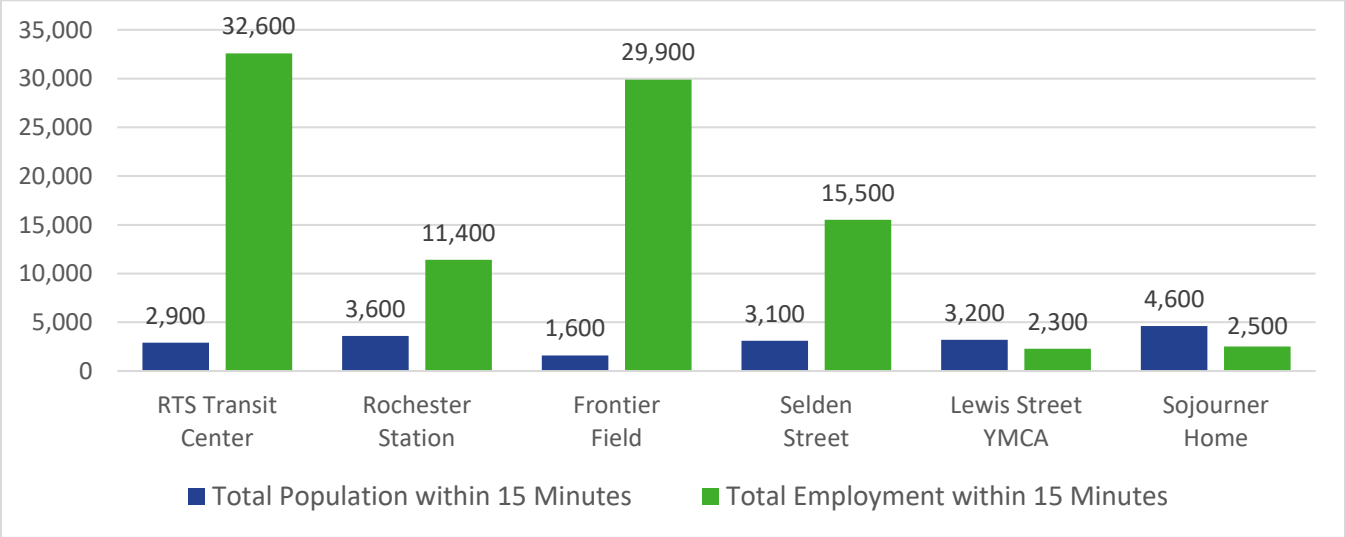
ISOCHRONE ANALYSIS

Results from the pedestrian isochrone analysis are shown in **Figure 25** through **Figure 30**. Population and employment within a 15-minute walk of the six origin points studied in this analysis are shown below in **Figure 24**.

Walk times for the pedestrian isochrone analysis were calculated based on distance and an assumed walking speed of 3.5 feet per second, as recommended by the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition.[9] This assumption is conservative, but appropriate to account for all types of users. Street centerline data was used to calculate distance.

Walk access and distance able to be traveled on foot is aided by Rochester's street grid. For locations at the convergence of several outward-radiating streets, the ability to travel in a straight line allows pedestrians to cover greater distances. The Inner Loop right-of-way is a prominent barrier to pedestrian travel and slows down those traveling on foot due to fewer sidewalks, crosswalks, and street grid connections across its path. Regarding residential and employment proximity, the RTS Transit Center has the highest employment within a 15-minute walk, while Sojourner Home at Wilson Commencement Park has the highest residential population within a 15-minute walk.

Figure 24: Population and Employment within a 15-minute Walk



Source: American Community Survey, U.S. Census Bureau (2013 2017 ACS 5 Year Estimates); Longitudinal Employer Household Dynamics Origin Destination Employment Statistics, U.S. Census Bureau

[9] Section 4E.06 – Pedestrian Intervals and Signal Phases, MUTCD, 2009. https://mutcd.fhwa.dot.gov/htm/2009/part4/part4e.htm

Figure 25: Pedestrian Network Isochrone Analysis – RTS Transit Center

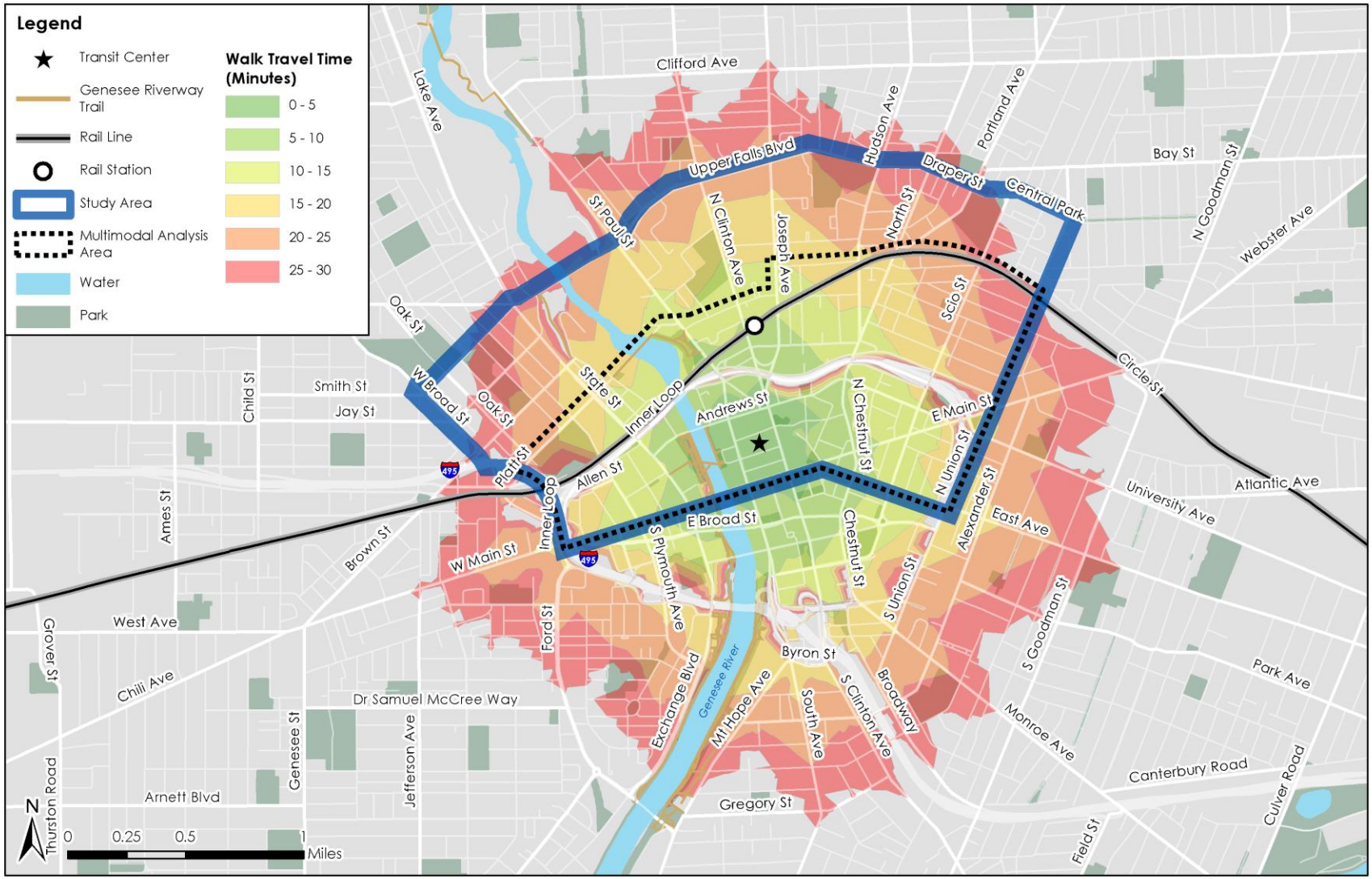


Figure 26: Pedestrian Network Isochrone Analysis – Rochester Station

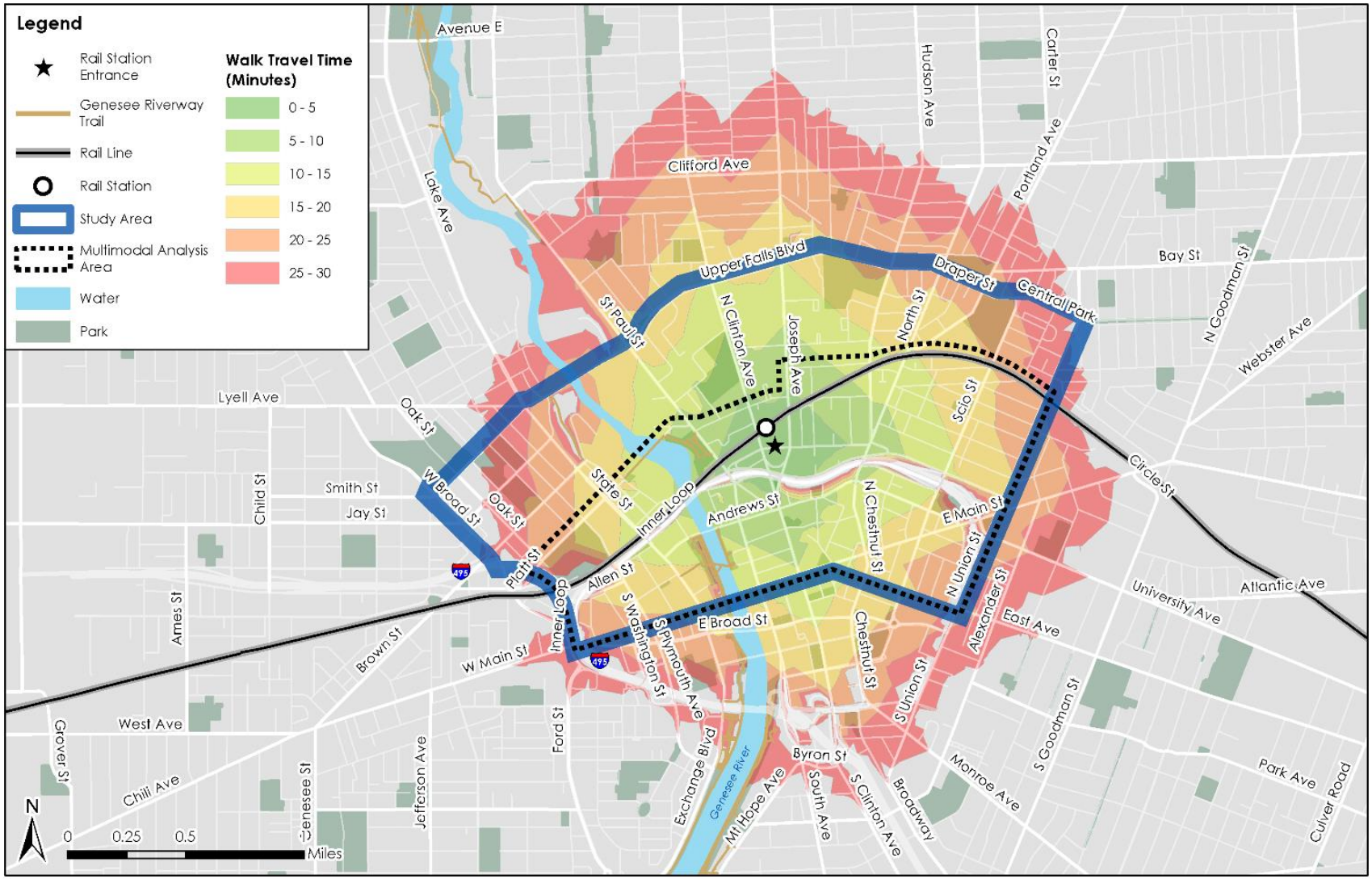


Figure 27: Pedestrian Network Isochrone Analysis – Frontier Field

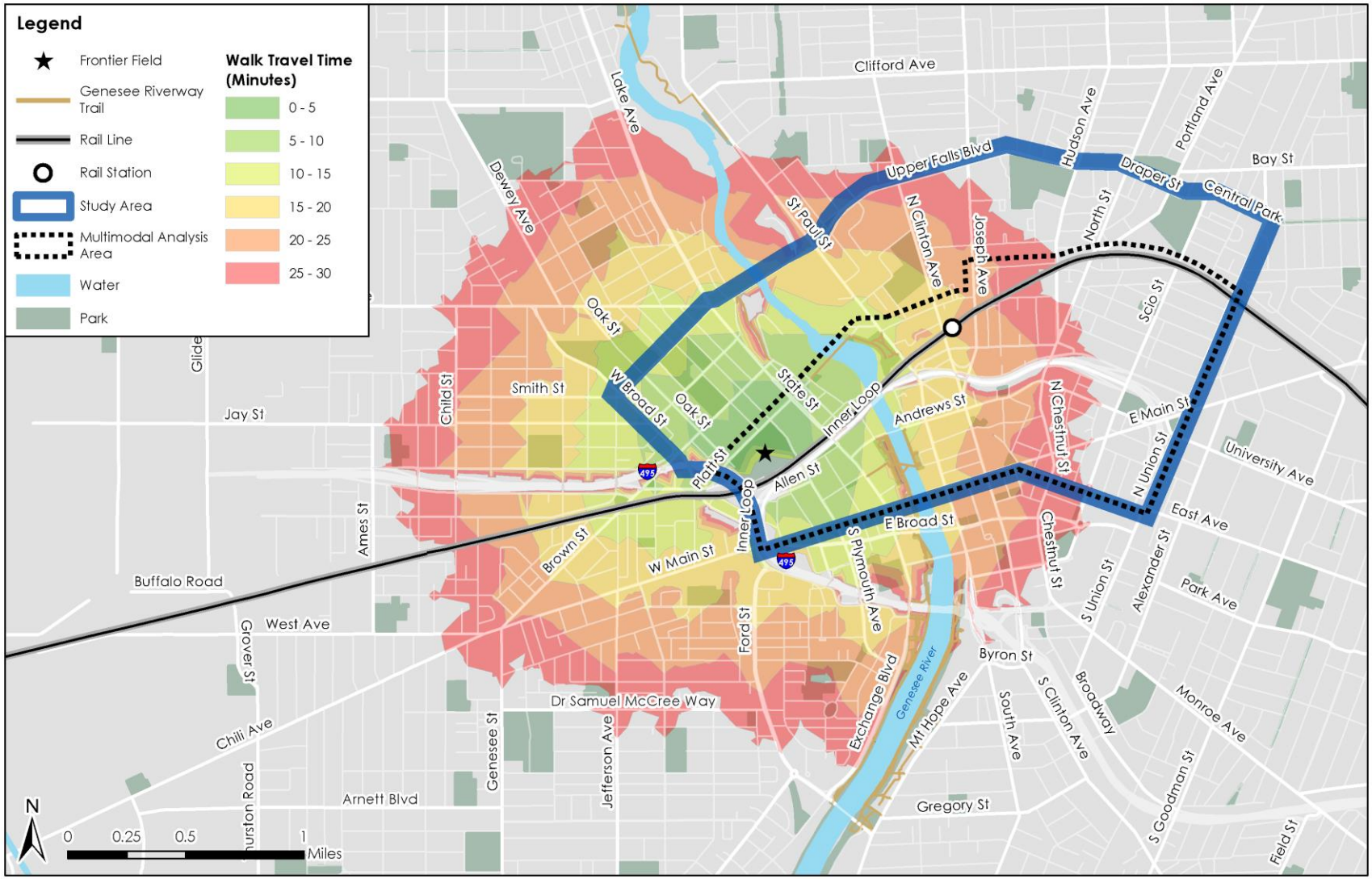


Figure 28: Pedestrian Network Isochrone Analysis – Selden Street

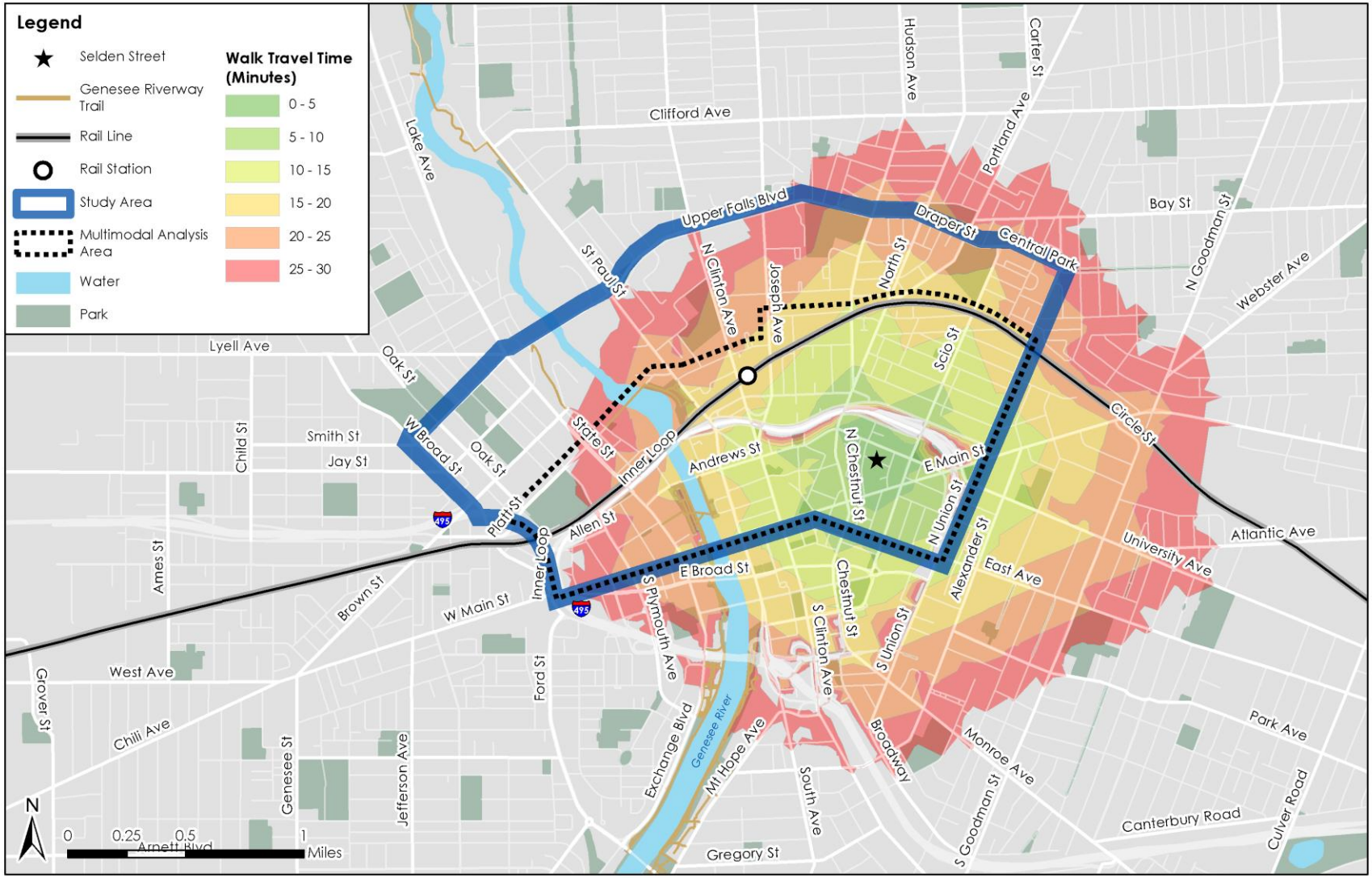


Figure 29: Pedestrian Network Isochrone Analysis – Lewis Street YMCA

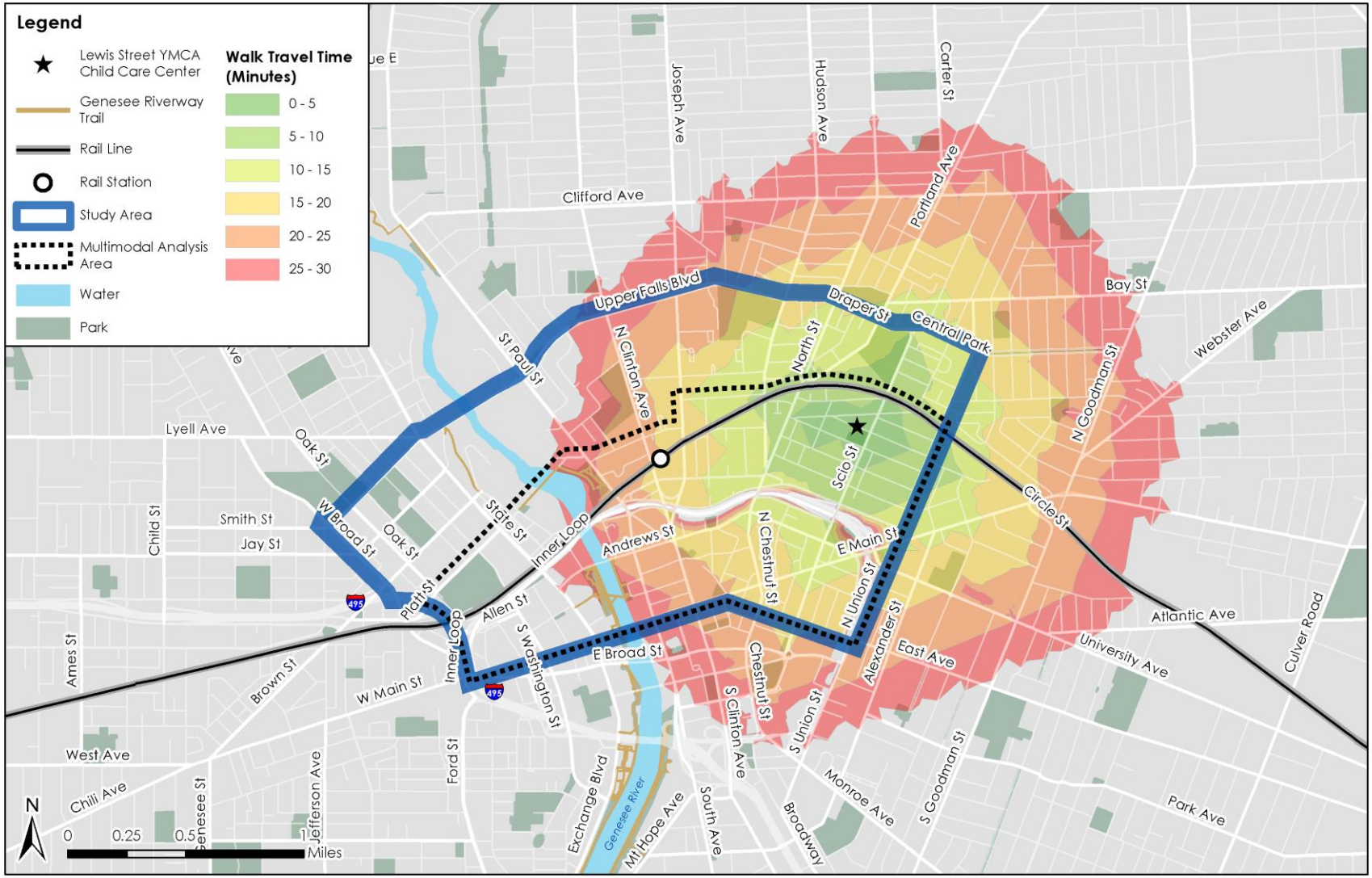
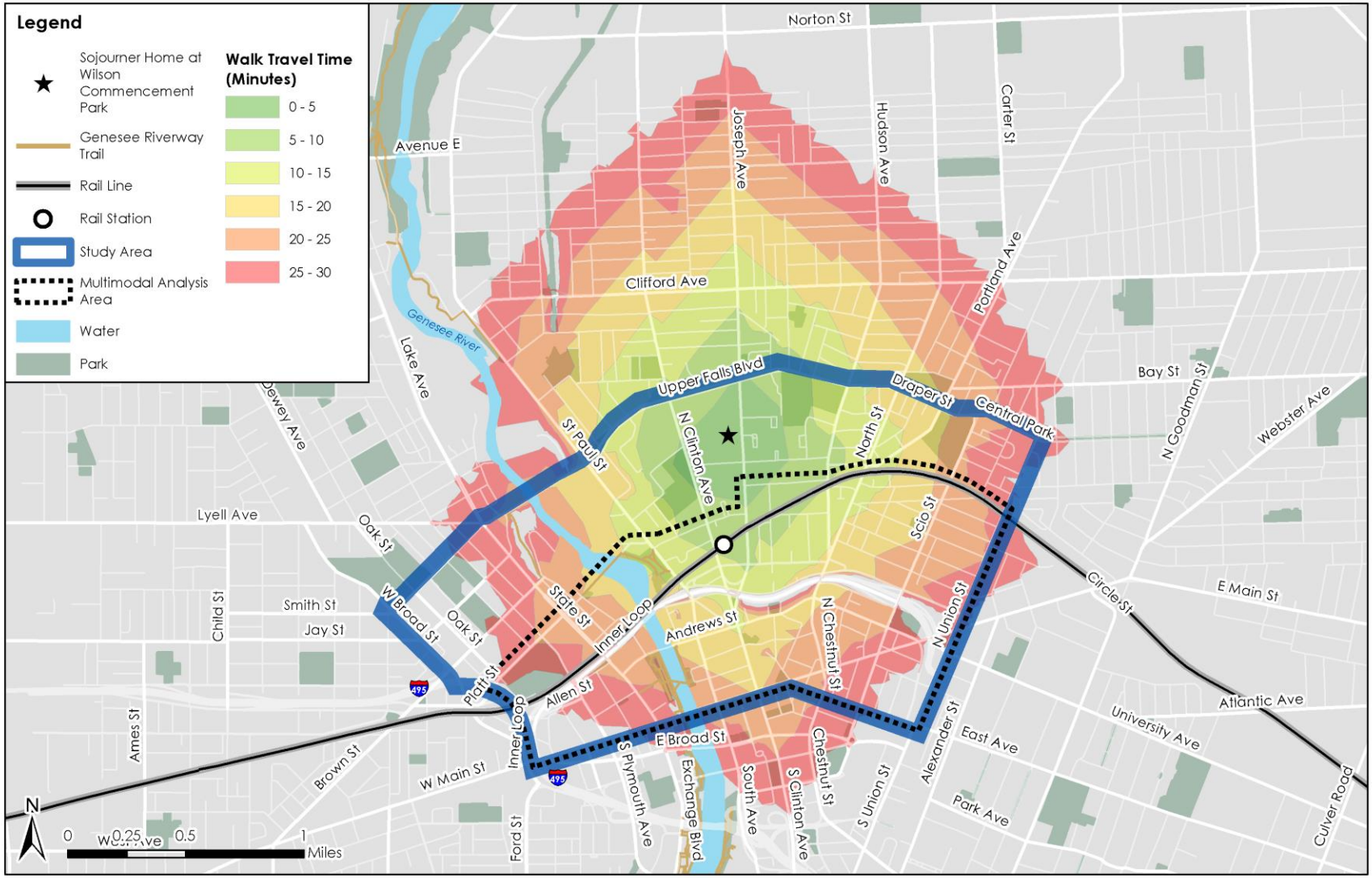


Figure 30: Pedestrian Network Isochrone Analysis – Sojourner Home



Performance measures for the pedestrian network are shown below in **Table 2.**

Table 2: Pedestrian Network Performance Measures

MOE	Evaluation Metric	Existing Condition
Quantity of enhanced crosswalks	Number of intersections with crosswalks across all legs	38
Quantity of widened sidewalks	Number of widened sidewalks (6 feet or wider)	*The number of widened sidewalks will be measured under future conditions*
Quality of street grid connectivity	Number of north-south streets that cross the Inner Loop	8
Pedestrian experience and comfort	Linear feet of sidewalk	60,000 feet (11.36 miles)
Walk access	Population and employment within a 15-minute walk of key locations (see isochrone analysis)	**RTS Transit Center**: 2,900 residents | 32,600 jobs **Rochester Station**: 3,600 residents | 11,400 jobs **Frontier Field**: 1,600 residents | 29,900 jobs **Selden Street**: 3,100 residents | 15,500 jobs **Lewis Street YMCA**: 3,200 residents | 2,300 jobs **Sojourner Home**: 4,600 residents | 2,500 jobs

Issues and Opportunities

A narrow, one-sided sidewalk and long crossing distance at Cumberland Street, an Inner Loop parallel service road.
Source: Google Maps

While the pedestrian network is largely complete and connected, much opportunity exists to expand and enhance both the quantity and quality of sidewalks and crosswalks. Certain street blocks— notably those that parallel and interface with the Inner Loop—have sidewalks that are too narrow or are on only one side of the street and have intersections with long crossing distance across many lanes or missing crosswalk markings. Providing defined, marked crosswalks across all legs of signalized intersections is a strategy recommended by the National Association of City Transportation Officials (NAACTO) that can present a number of safety and accessibility benefits.[10] These benefits may include enhanced visibility for pedestrians with disabilities or visual impairments and greater yielding compliance by drivers approaching intersections.

A potential redesign of the Inner Loop corridor that features smaller block sizes, more intersections and street connections, and wider sidewalks has the opportunity to make walking a more appealing mode of transportation for Rochester residents, workers, and visitors and improve access for people with disabilities. Further, the reclamation of excess right-of-way for infill development that features an urban "street wall" (buildings built to the back of the sidewalk) and active ground floor uses will make the pedestrian experience more safe, pleasant, and engaging. Enhancements of this nature will not only elevate pedestrian safety and comfort but can also help to increase the rate of walking as a means of commuting or accessing daily destinations or needs.

[10] Urban Street Design Guide, Crosswalks and Crossings, National Association of City Transportation Officials. https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/

Bicycle Network

Inventory

Rochester's bicycle network, shown in **Figure 31**, features a variety of bicycle facility types and trails. While cycling is allowed on all local streets within Rochester, with the exception of limited access highways with signed prohibitions on cycling (i.e. the Inner Loop and I-490), many streets have dedicated and marked space for cyclist safety and comfort. Examples of these dedicated bicycle facilities include:

Protected bicycle lanes offer a dedicated space for cyclists to ride, separate from motor vehicle traffic as well as extra protections such as vertical elements or physical barriers. On N. Chestnut Street, a buffered bicycle lane is present, which features a painted buffer and vertical "flex post" barriers. Union Street features a cycle track that brings the bicycle lane up to sidewalk level, separating it from motor vehicle traffic with a full curb and landscaping buffer. This Union Street cycle track was completed under the past Inner Loop East project and represents the highest standard of protected bicycle lane design.

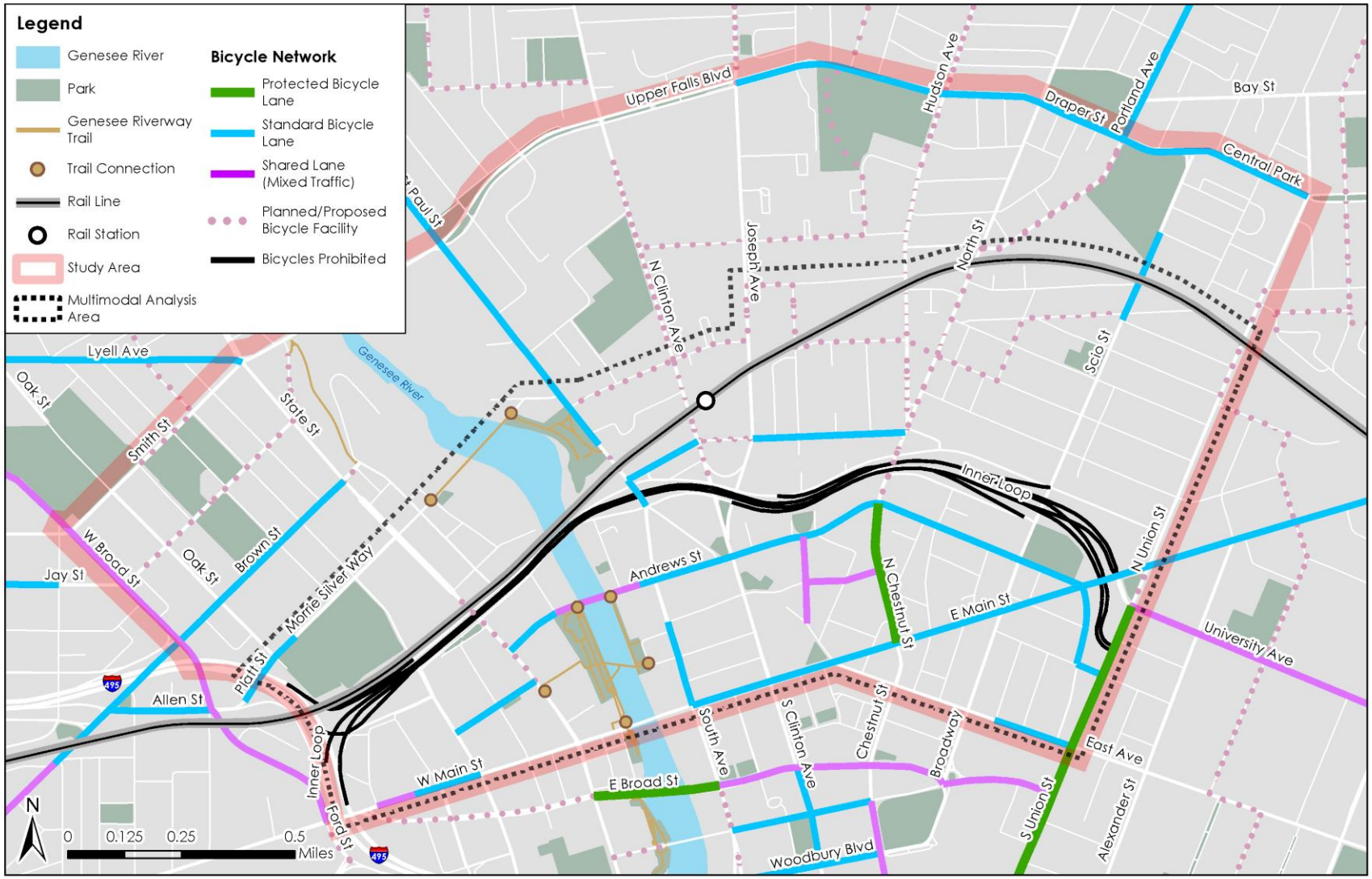
Standard bicycle lanes within the Multimodal Analysis Area are present on Morrie Silver Way, Church Street, Andrews Street, Central Avenue, University Avenue, St. Paul Street, Main Street, and East Avenue. While these standard lanes lack physical protection, they provide a dedicated space for cyclists to ride and often feature green paint for added visibility and awareness.

Shared lane designations – or "sharrows" – are marked on a portion of W. Main Street, the Andrews Street Bridge, Franklin Street, and Pleasant Street. These facilities lack physical protection and dedicated space for cyclists, but act as wayfinding for cyclists looking to connect to other dedicated facilities and as a reminder to motorists that cyclists may use the full roadway lane.

Facility Type	Example
Protected bicycle lane	 **Union Street Cycle Track** *Source: Google Maps*
Standard bicycle lane	 **East Avenue Bike Lanes** *Source: Google Maps*
Shared lane (Mixed traffic)	 **Andrews Street Bridge** *Source: Google Maps*

Additionally, within the Multimodal Analysis Area there are seven connection points between city streets and the Genesee Riverway Trail network, available on both sides of the river. This network of primarily off-street trails accommodates both pedestrians and bicycles and complements the on-street bicycle network of Rochester.

Figure 31: Bicycle Network



Analysis/MOEs

ISOCHRONE ANALYSIS

Results from the bicycle isochrone analysis are shown in **Figure 33** through **Figure 38**. Population and employment within a 15-minute bicycle ride of the six origin points are shown in **Figure 32**.

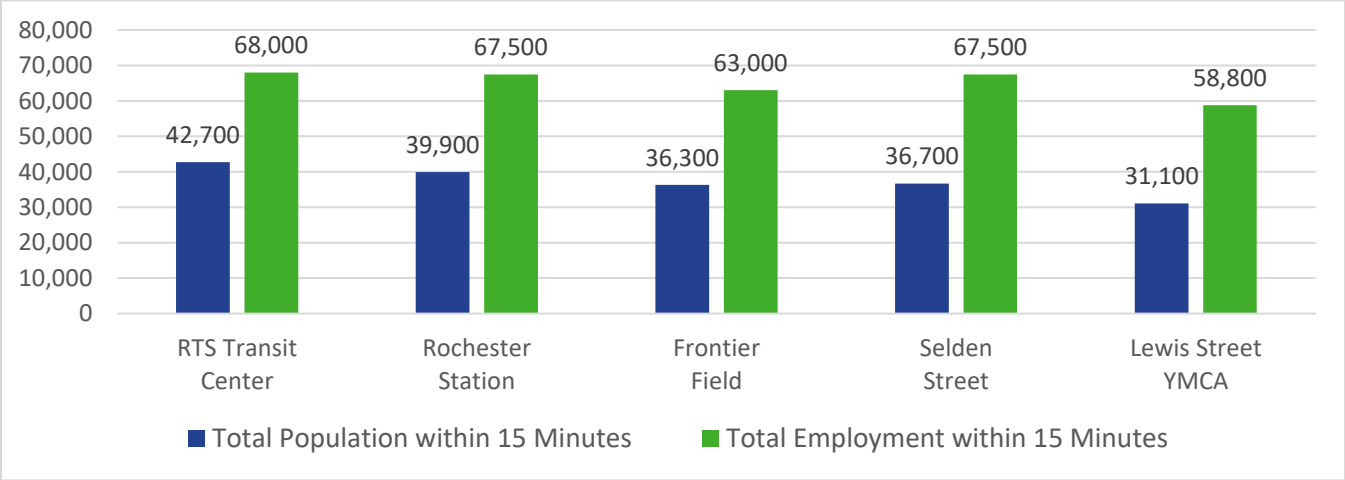
Bicycle times for the bicycle isochrone analysis were calculated based on distance and an assumed biking speed. Biking speeds were determined by facility type, as outlined below:

- On-Street Bicycle Facilities
  - Shared Lane or No Facility (Mixed Traffic): 5 miles per hour (7.3 feet per second)
  - Bike Lane or Cycle Track: 10 miles per hour (14.7 feet per second)
- Off-Street Trails
  - Pedestrian Trail: 8 miles per hour (11.7 feet per second)
  - Bicycle Trail: 12 miles per hour (17.6 feet per second)

These assumptions are conservative, but appropriate to account for all types of users. Street centerline and trail location data were used to calculate distance.

Bicycle access and distance able to be traveled by bicycle are aided by Rochester's street grid, much like pedestrian travel. For locations at the convergence of several outward-radiating streets, the ability to travel in a straight line allows bicyclists to cover greater distances. The Inner Loop right-of-way is a prominent barrier to bicycle travel and slows down those traveling by bicycle due to fewer streets with bicycle facilities and a lack of street grid connections across its path. The effect of the Genesee Riverway Trail is also notable in the results, as the off-street trail allows for safe and direct bicycle travel without having to contend with vehicular traffic or stop-and-go signal operations at street intersections. This ease of travel allows for greater bicycle access, as evidenced by locations closest to the Genesee Riverway Trail (i.e. RTS Transit Center, Rochester Station) having the greatest coverage and the highest population and employment within a 15-minute bicycle ride.

Figure 32: Population and Employment within a 15-minute Bicycle Ride



Source: American Community Survey, U.S. Census Bureau (2013 2017 ACS 5 Year Estimates); Longitudinal Employer Household Dynamics Origin Destination Employment Statistics, U.S. Census Bureau

Figure 33: Bicycle Network Isochrone Analysis – RTS Transit Center

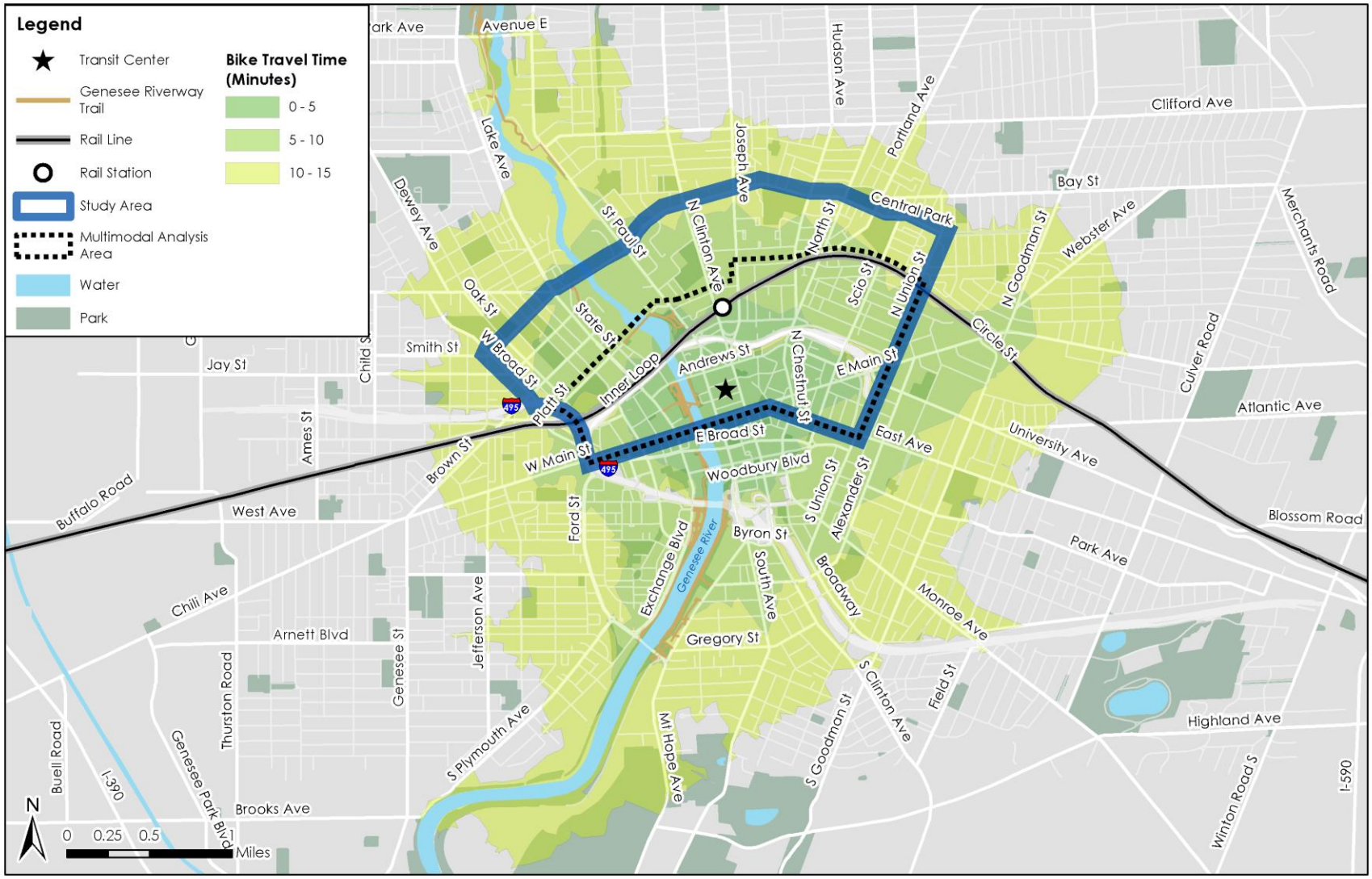


Figure 34: Bicycle Network Isochrone Analysis – Rochester Station

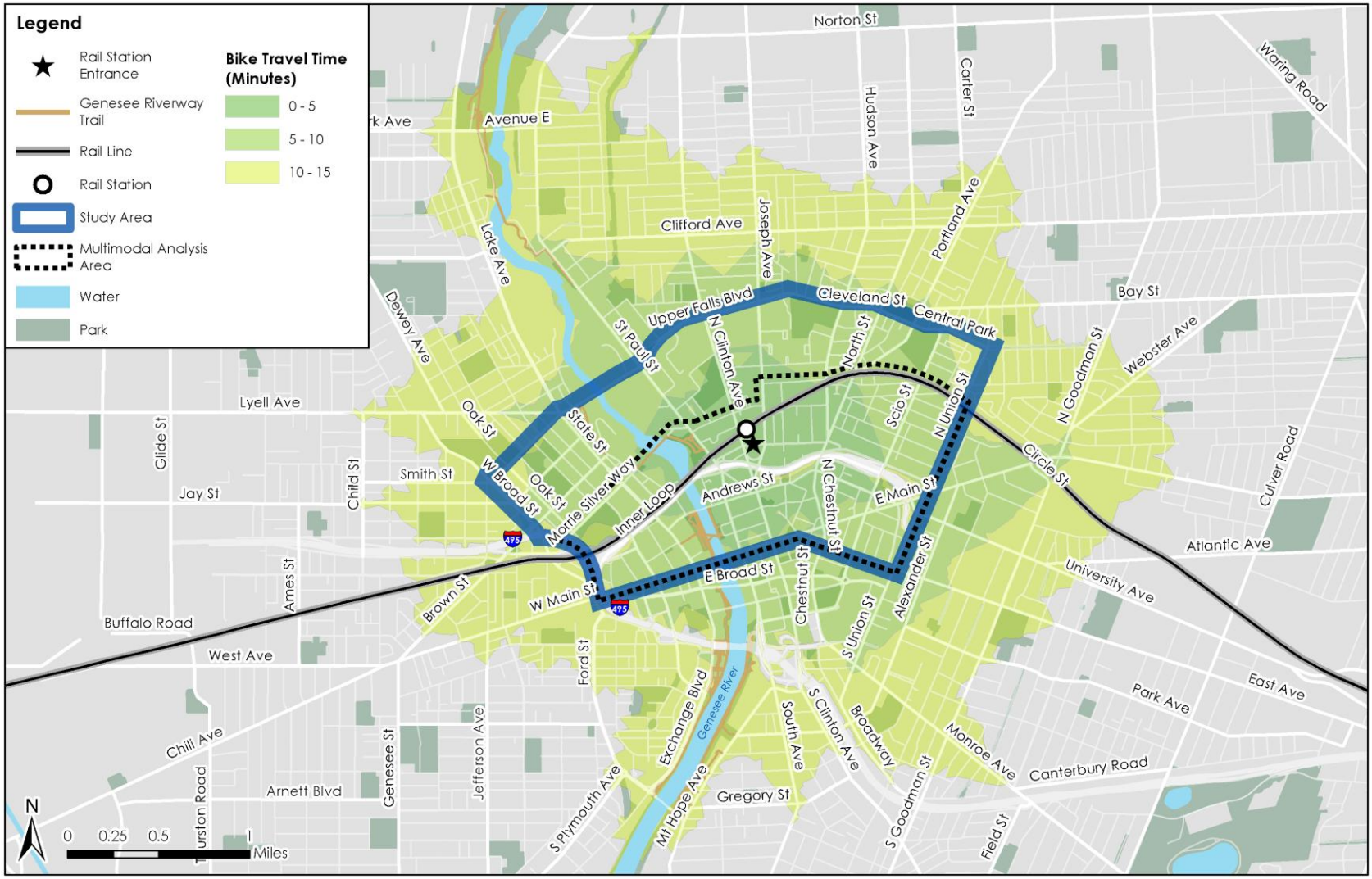


Figure 35: Bicycle Network Isochrone Analysis – Frontier Field

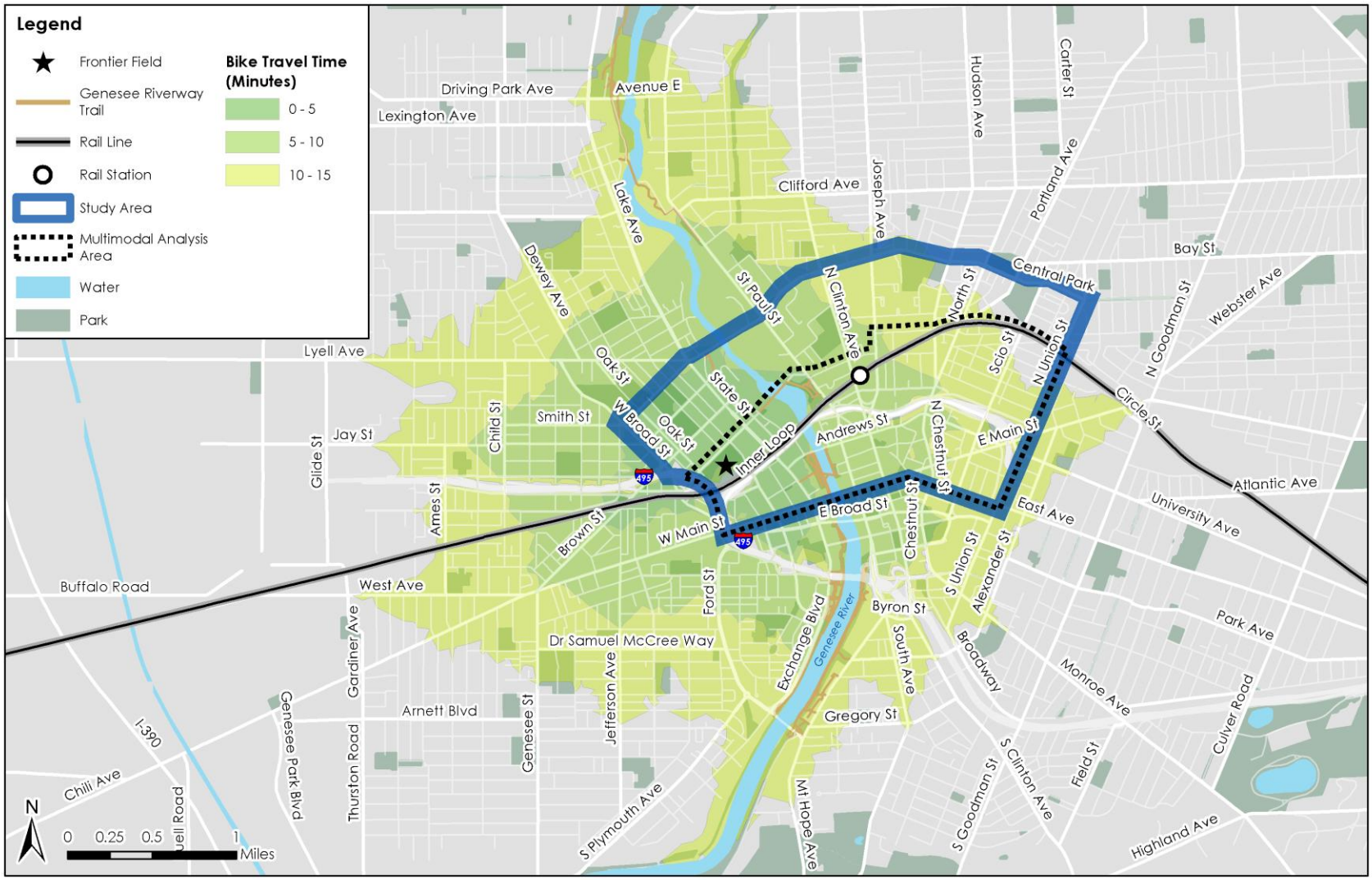


Figure 36: Bicycle Network Isochrone Analysis – Selden Street

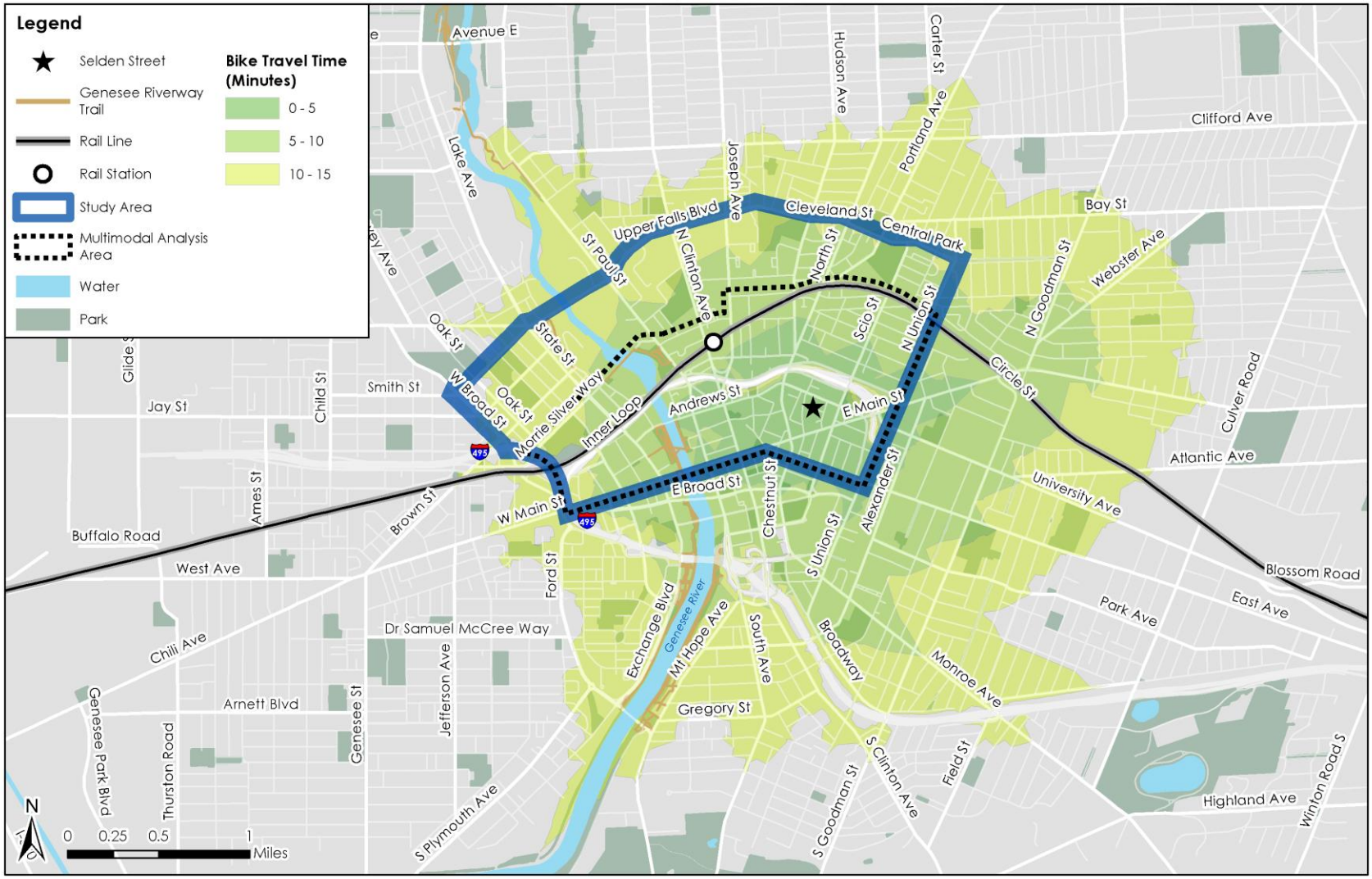


Figure 37: Bicycle Network Isochrone Analysis – Lewis Street YMCA

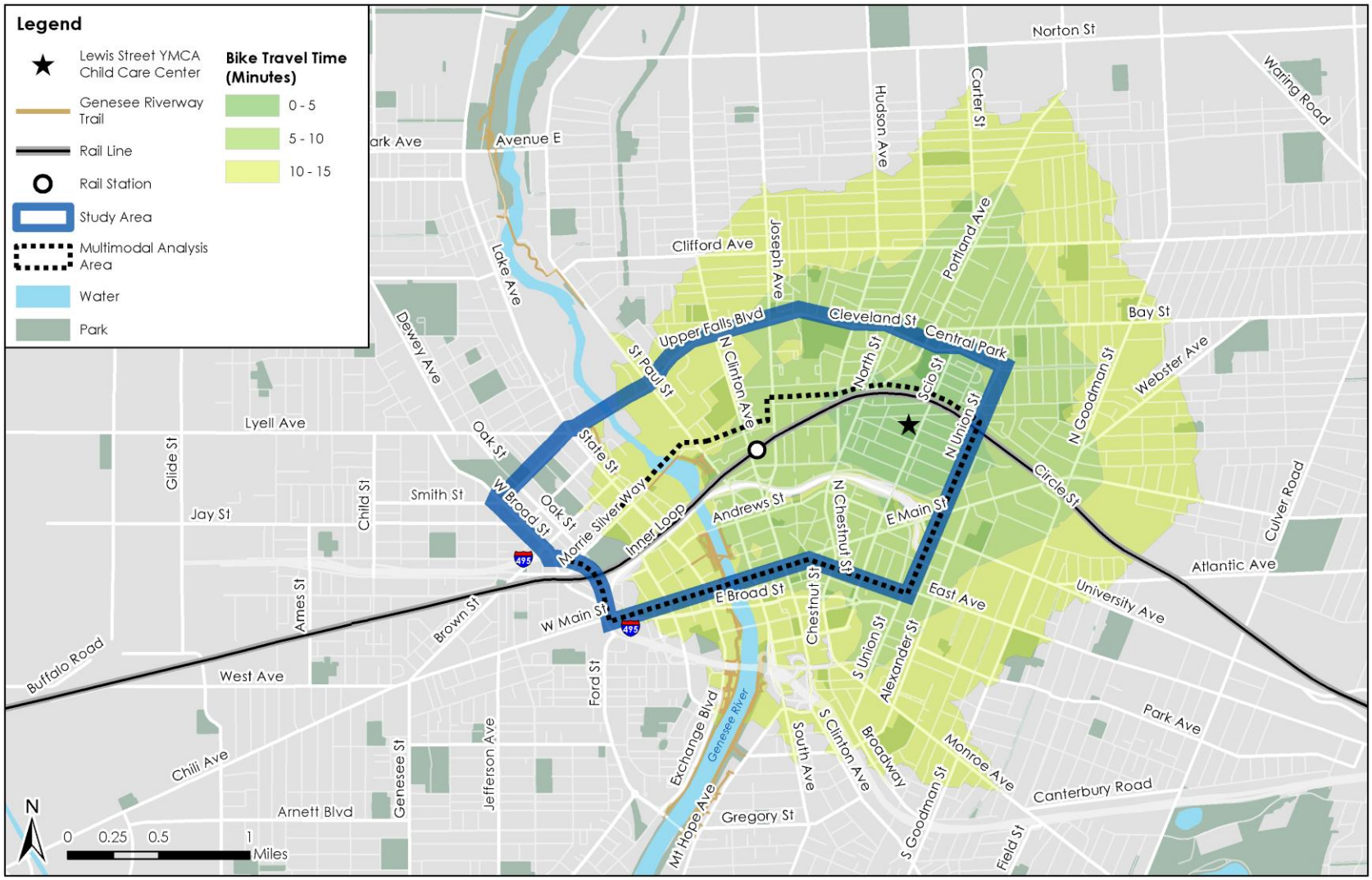
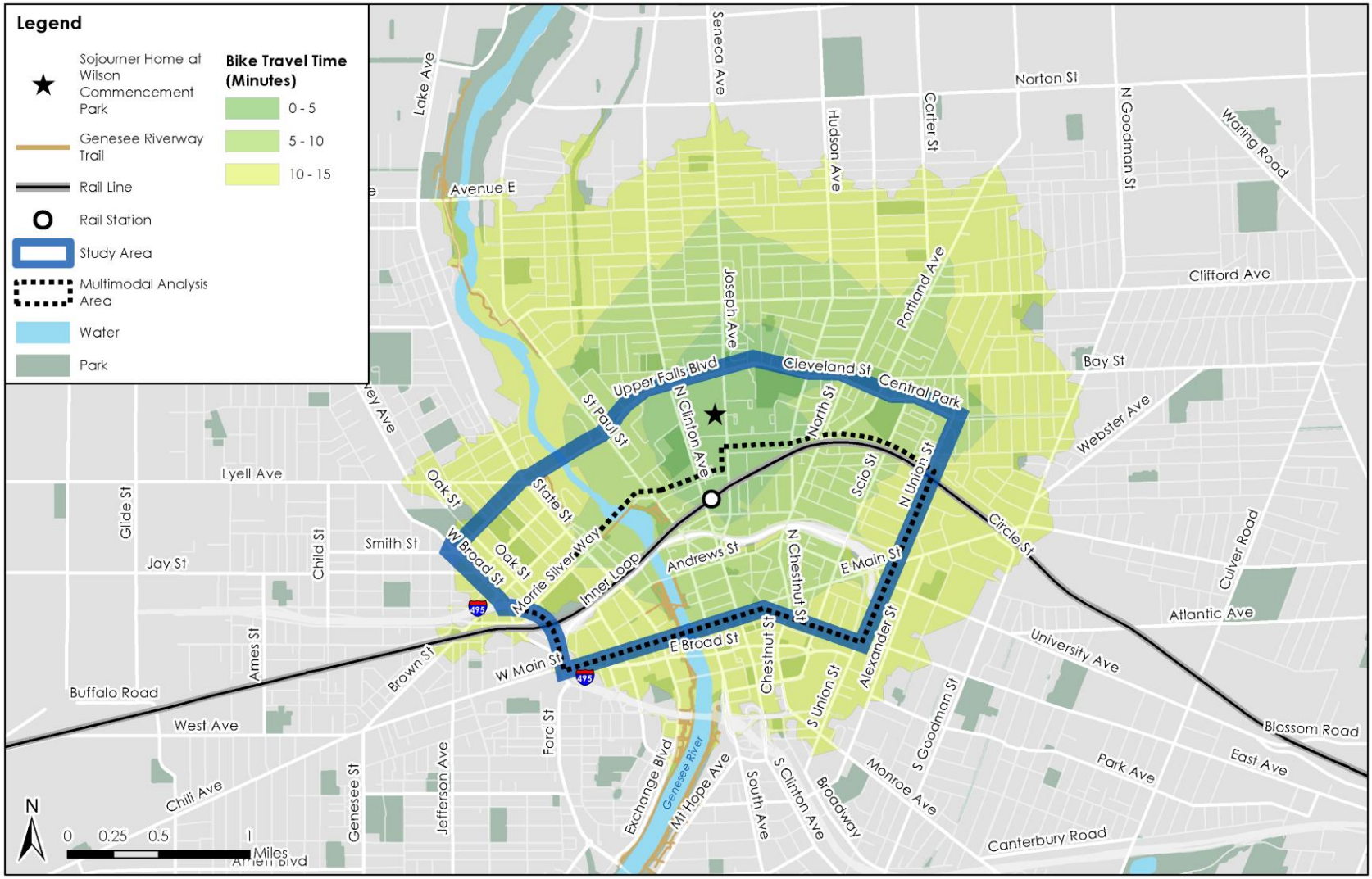


Figure 38: Bicycle Network Isochrone Analysis – Sojourner Home



BICYCLE LEVEL OF TRAFFIC STRESS

To better understand the perceived comfort for bicyclists in the Multimodal Analysis Area, major streets[11] were further assessed with a methodology called Bicycle Level of Traffic Stress (BLTS). BLTS is made up of a range of scores from 1 to 4, based on factors such as bicycle facility type/width, traffic speeds and volumes, street width (number of travel lanes), and presence of on-street parking. The combination of these factors contributes to the level of stress that a bicyclist may feel as they travel along a city street.

A street with a BLTS score of 1 provides a comfortable and low-stress riding experience for bicyclists of all ages and abilities, while a street with a score of 4 provides a low-comfort/high-stress environment in which to ride a bicycle. The methodology used for this analysis was developed by the Mineta Transportation Institute in 2012 and updated in June 2017[12].

Within the Multimodal Analysis Area, the level of stress experienced by cyclists varies. Much of the Multimodal Analysis Area is ranked as BLTS 2, 3, and 4. Even in areas where a bike lane is present, a high score is not guaranteed—the combination of street width, traffic volumes, and on-street parking present "friction" and conflicts that contribute to a higher stress environment for cyclists. The full protection of the Union Street cycle track, for example, gives it the highest possible score of 1. Other dedicated bicycle facilities, such as the East Avenue bike lanes, score between 2 and 3, due the lack of physical protection and presence of adjacent on-street parking.

Table 3: Bicycle Level of Traffic Stress (BLTS)

Rank	% of Major Streets	
1	4%	*High Comfort*
2	31%	↓
3	46%	
4	20%	*Low Comfort*

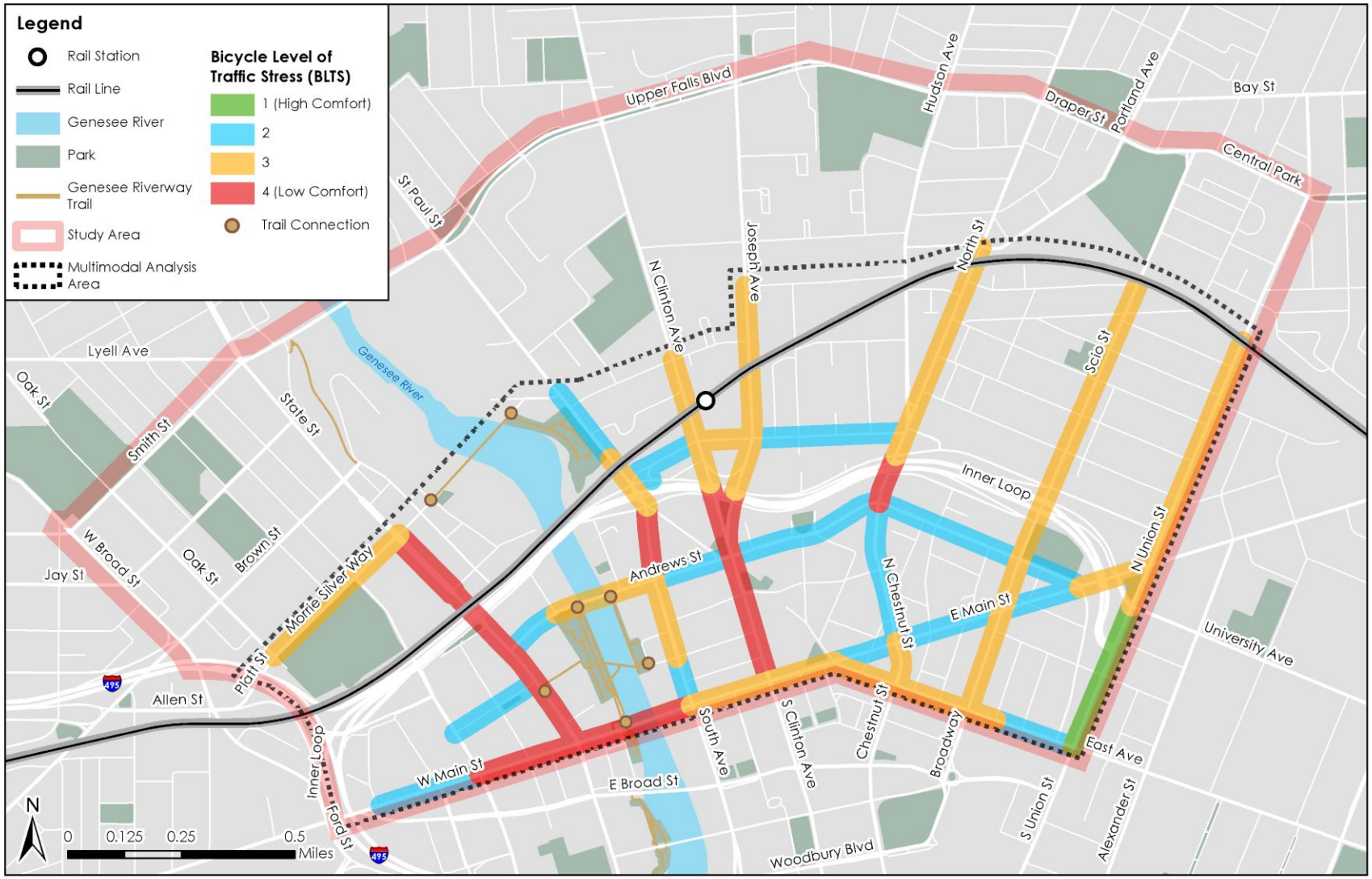
The presence of the Inner Loop and its effect on BLTS scores is notable. Only one street that crosses the Inner Loop has dedicated bicycle facilities (St. Paul Street). Additional design and physical features of these cross streets, such as traffic volumes, number of lanes, and traffic speeds, contribute to the lowest possible BLTS score of 4 as these streets cross the Inner Loop, further demonstrating the barrier-like nature of the highway.

Table 3 provides a breakdown of BLTS rank levels within the Multimodal Analysis Area and **Figure 39** shows the resulting BLTS for streets in the Multimodal Analysis Area.

[11] Major streets that underwent BLTS analysis include State Street, St. Paul Street, N. Clinton Avenue, Joseph Avenue, Franklin Street, N. Chestnut Street, North Street, Scio Street, Union Street, East Avenue, Main Street, Church Street, Andrews Street, University Avenue, Central Avenue, Morrie Silver Way, and the Inner Loop's service roads (Cumberland Street, Delevan Street, Lyndhurst Street, and Allen Street)

[12] http://www.northeastern.edu/peter.furth/research/level-of-traffic-stress/ (Introduction); http://www.northeastern.edu/peter.furth/wp-content/uploads/2014/05/LTS-Tables-v2-June-1.pdf (Updated Methodology)

Figure 39: Bicycle Level of Traffic Stress



Performance measures for the bicycle network are shown below in **Table 4**.

Table 4: Bicycle Network Performance Measures

MOE	Evaluation Metric	Existing Condition
Street network connections to local/regional trails	Number of trail connection points	7
Quantity of dedicated on-street bicycle facilities	Linear feet of dedicated bike facilities (protected bicycle lanes, standard bicycle lanes)	18,500 feet (3.5 miles)
Quality of bicycle facilities (Bicycle Level of Traffic Stress)	Percentage of major streets that have BLTS 1 or 2 (lowest stress levels)	35%
Quantity of new north-south facilities	Number of north-south streets that cross the Inner Loop with dedicated bicycle facilities	1
Bicycle access	Population and employment within a 15-minute bike ride of key locations (see isochrone analysis)	**RTS Transit Center**: 42,700 residents | 68,000 jobs **Rochester Station**: 39,900 residents | 67,500 jobs **Frontier Field**: 36,300 residents | 63,000 jobs **Selden Street**: 36,700 residents | 67,500 jobs **Lewis Street YMCA**: 31,100 residents | 58,800 jobs **Sojourner Home**: 31,900 residents | 58,600 jobs

Issues and Opportunities

As outlined in the City of Rochester's *Comprehensive Access and Mobility Plan* and further reinforced by the analysis in this report, many jobs and key destinations are within biking distance of residential areas but very few travelers opt to ride a bike to them. This finding is likely due to the perception of cycling being dangerous and strenuous as well as the reality of traffic speeds, volumes, and lack of safe places to ride creating a less-than-ideal environment for cycling.[13]

The majority of bicycle facilities in the Planning Study Area and Multimodal Analysis Area are oriented to serve east-west trips across Center City. The collection of dedicated bicycle facilities that do currently exist are of good design and connect key destinations, but the broader bicycle network has room for expansion and enhancement. There is currently only one bicycle facility that serves north-south trips across the Inner Loop, which greatly reduces the comfort and safety of cyclists traveling between Center City and the High Falls, Upper Falls, and Marketview Heights neighborhoods to the north.

The City of Rochester can enhance and expand its bicycle network in and around the Inner Loop—and citywide—by closing these gaps and making cycling a safer and more appealing mode of transportation for residents, employees, and visitors.

[13] Comprehensive Access and Mobility Plan, City of Rochester, 2019. https://www.cityofrochester.gov/camp/

Transit Network

The transit system of Rochester primarily consists of local bus service, with intercity bus and rail services also available. The sections below discuss the city's transit infrastructure and facilities (i.e., bus stops and transit stations), service patterns, and operational characteristics.

Inventory

INFRASTRUCTURE AND FACILITIES

Within the multimodal analysis area, there are 69 on-street bus stops, one transit center, one rail station, and one intercity bus station.

Bus Stops

Downtown Rochester is well-served by on-street bus stops, including in the Multimodal Analysis Area. Within this area, 69 on-street bus stops exist and are served by local bus service. Conditions and amenities vary, with some in the core of Center City featuring covered bus shelters and seating, while others on the periphery of the downtown core simply consist of signage and route information.

A bus stop on Main Street in Center City
Source: Google Maps

RTS Transit Center

The RTS Transit Center is the origin and destination of all downtown bus routes. The facility, located on Mortimer Street in the City Center, features an indoor waiting area and 30 covered bus bays that can accommodate 100 buses per hour. Additional features of the Transit Center include electronic displays, ticket vending machines, customer information desks, trip planning kiosks, on-site security, public and family restrooms, and ADA-compliant features.

The RTS Transit Center on Mortimer Street
Source: Google Maps

Intercity Bus Station

Rochester's intercity bus station is located in a small structure between Central Avenue and Cumberland Street, directly adjacent to Rochester Station. The facility is served by Greyhound, New York Trailways, Megabus, and FlixBus service with multiple departures per day.[14] [15]

[14] Megabus and FlixBus operations occur on Central Avenue in front of the bus station building.
[15] These service offerings reflect conditions prior to the COVID-19 pandemic.

Rochester Rail Station

Intercity rail service to and from Rochester serves the Louise M. Slaughter Rochester Station. Three long distance Amtrak intercity passenger rail routes serve the station with four trains per day, including:

- **Empire Service** (New York – Albany – Syracuse – Rochester – Buffalo – Niagara Falls | Two trains per day)
- **Maple Leaf** (Toronto – Niagara Falls – Rochester – Syracuse – Albany – New York | One train per day)
- **Lake Shore Limited** (New York/Boston – Albany – Rochester – Chicago | One train per day)

The existing facility was opened in 2017 after a full replacement of the prior existing station building and features an indoor waiting room, high-level platforms, and full ADA accessibility. While not yet scheduled for implementation, the facility was designed to be expanded to accommodate intercity bus service as a future replacement to the existing intercity bus station on Central Avenue. Rochester Station also features on-site and nearby connections to local bus, intercity bus, and taxi services.

SERVICE

Local Bus

RTS is the service provider for local bus service in the City of Rochester and Monroe County. With the presence of the RTS Transit Center at its core, the Multimodal Analysis Area sees a high level of transit activity along major streets and serves as a critical transfer point for bus service, with all routes converging at the Transit Center. Local bus routes and stops are shown in **Figure 40**.

During the morning and evening peak commuting periods, most bus routes run every 20 to 30 minutes, with some higher frequency along more in-demand routes/corridors. Weekend service is offered on many routes (both Saturday and Sunday) with longer wait times between buses.

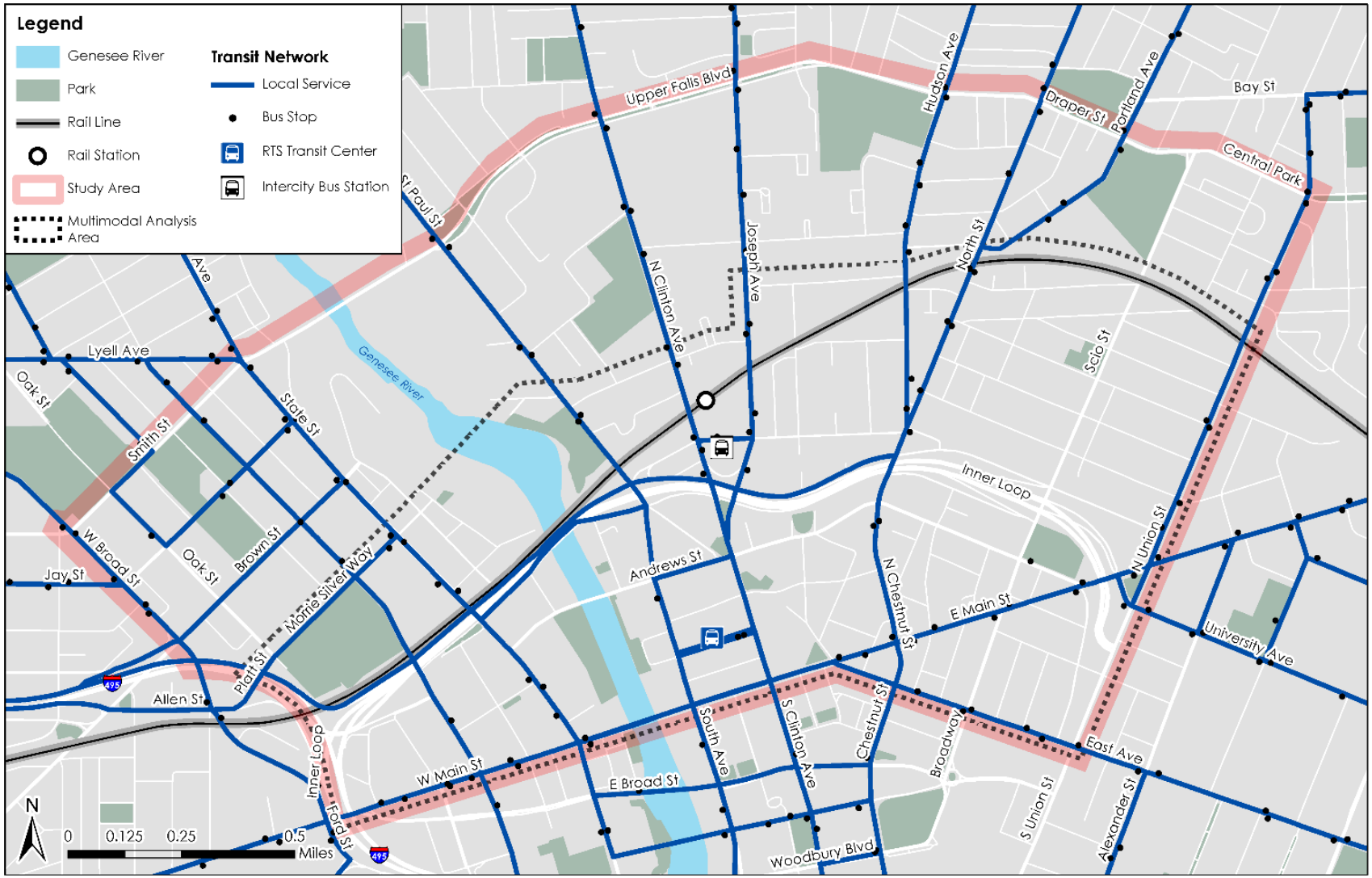
More than 40,000 trips per day are made on the local bus system, with varied ridership on a route-by-route basis. Routes that travel along major streets to the RTS Transit Center carry upwards of 1,000 passengers per day, while other routes with more crosstown or suburban alignments carry fewer than 400 passengers per day. Today, some bus routes use the Inner Loop as a means to cross the Genesee River or connect with I-490 to travel between Center City and neighborhoods to the west. At the systemwide level, annual transit ridership has declined since 2015, which is consistent with national trends.

As articulated in the city's *Comprehensive Access and Mobility Plan*, frequency and coverage of bus service is highly variable within the Rochester transit system. Some major streets in the city are served by more than 125 buses each weekday (i.e. Lake Avenue), while others see less than 50 buses each day (i.e. Plymouth Avenue and University Avenue).[16] Many City streets that do not have RTS service or stops still experience bus traffic as buses navigate to route starting points or idle during layovers between scheduled runs.

The University of Rochester also provides several shuttle routes between campuses and across the city for those with a University identification card, some of which serve downtown and the Inner Loop North study area.

[16] Comprehensive Access and Mobility Plan, City of Rochester, 2019. https://www.cityofrochester.gov/camp/

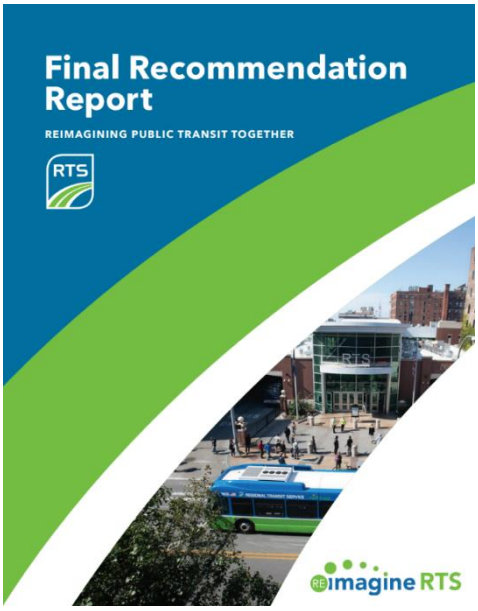
Figure 40: Existing Transit Network



System Redesign (Reimagine RTS Service Plan)

A redesign of Rochester's public transit system is planned as a means to maximize ridership, enhance the customer experience, and ensure system sustainability. The *Reimagine RTS Service Plan*, finalized in 2019, presents several key new features, including:

- A comprehensive network of **frequent transit**
- **A simplified system** that is easy to understand and use
- **An improved customer experience** that maximizes effectiveness and efficiency while minimizing the impact on current customers



The redesign will also position RTS for greater long-term financial sustainability. This will increase the likelihood of RTS having the funds to expand the network in viable ways, providing additional benefits to transit users into the future.

Specific alignment changes within the RTS system focus on growing ridership and productivity through faster, more direct service, with shorter wait times, and increased frequency and connectivity. The planned fixed-route bus service network consists of 30 routes, which is broken down into 10 "frequent service" routes and 20 "local service" routes, all of which will be available seven days a week. These service types are described below and shown in **Figure 41**. No future bus routes are planned to run on the Inner Loop, although buses are likely to continue to use the Inner Loop during out-of-service times to get to or from route start or end points.

The Frequent Service Network

The 10 routes included in the frequent service network represent RTS' highest ridership and most productive routes and cover major corridors throughout the entire city, creating a true network of frequent service that connects multiple neighborhoods and destinations. On weekdays, frequent service routes will run every 15 minutes between 6:00 AM and 6:00 PM and every 30 minutes all other times.

The Local Service Network

The 20 routes included in the local service network are intended to supplement the frequent service network and complete the fixed route system by filling gaps, extending coverage to areas that warrant fixed route service, and serving specific target markets. On weekdays, local service routes will run every 30 minutes between 6:00 AM and 6:00 PM and every 60 minutes all other times.

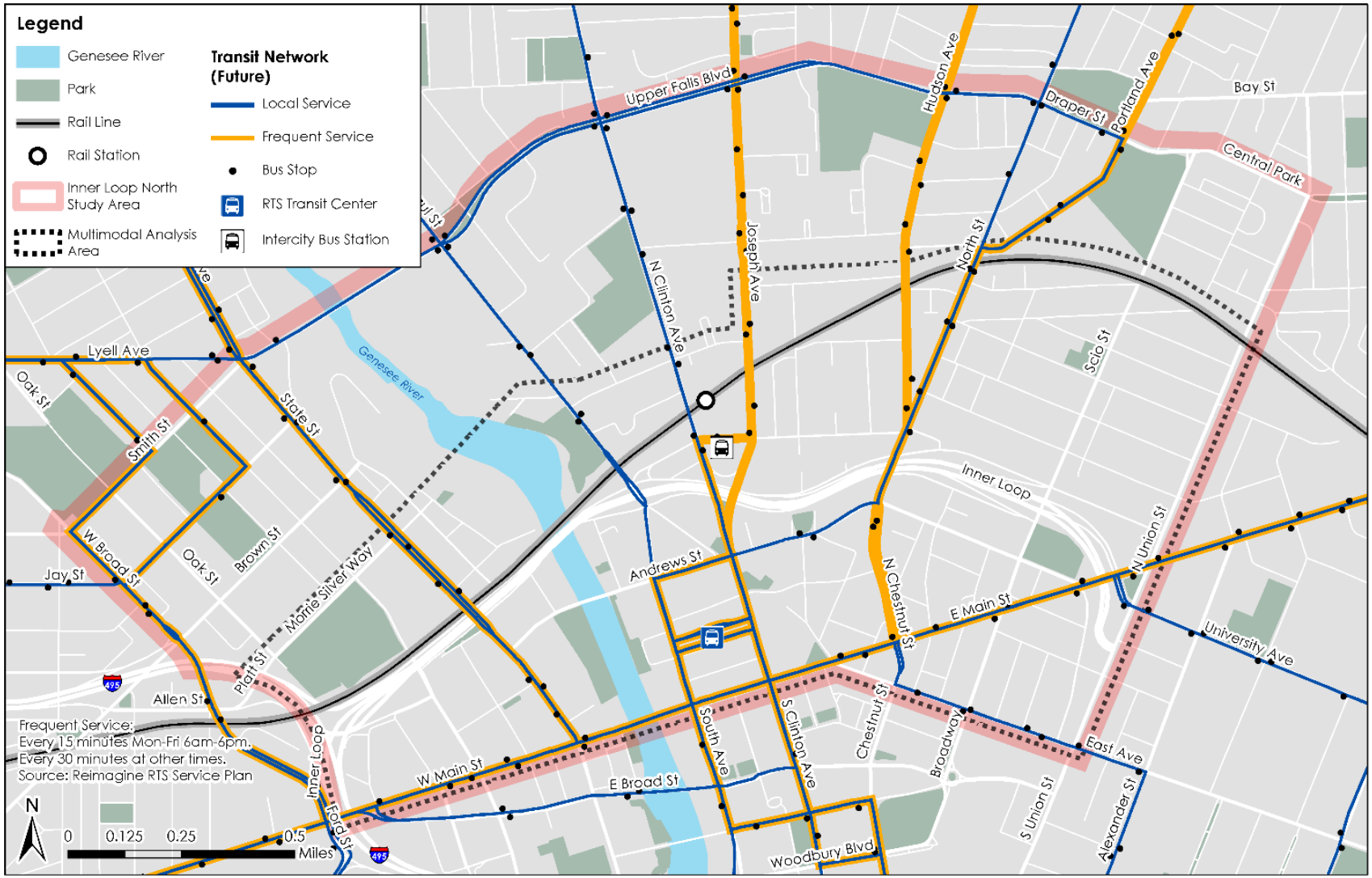
Crosstown/Suburban Service

The Reimagine RTS Service Plan will introduce new crosstown service options that minimize need for downtown transfers. However, no routes of this service type will serve the RTS Transit Center or the Multimodal Analysis Area of this study.

Commuter Service

The Reimagine RTS Service Plan will also introduce new commuter service for customers traveling to and from work during the morning and evening peak periods between several suburban areas. Of the eight planned Commuter Service routes, only one will serve the RTS Transit Center and the Multimodal Analysis Area of this study.

Figure 41: Future Transit Network (Reimagine RTS Service Plan)

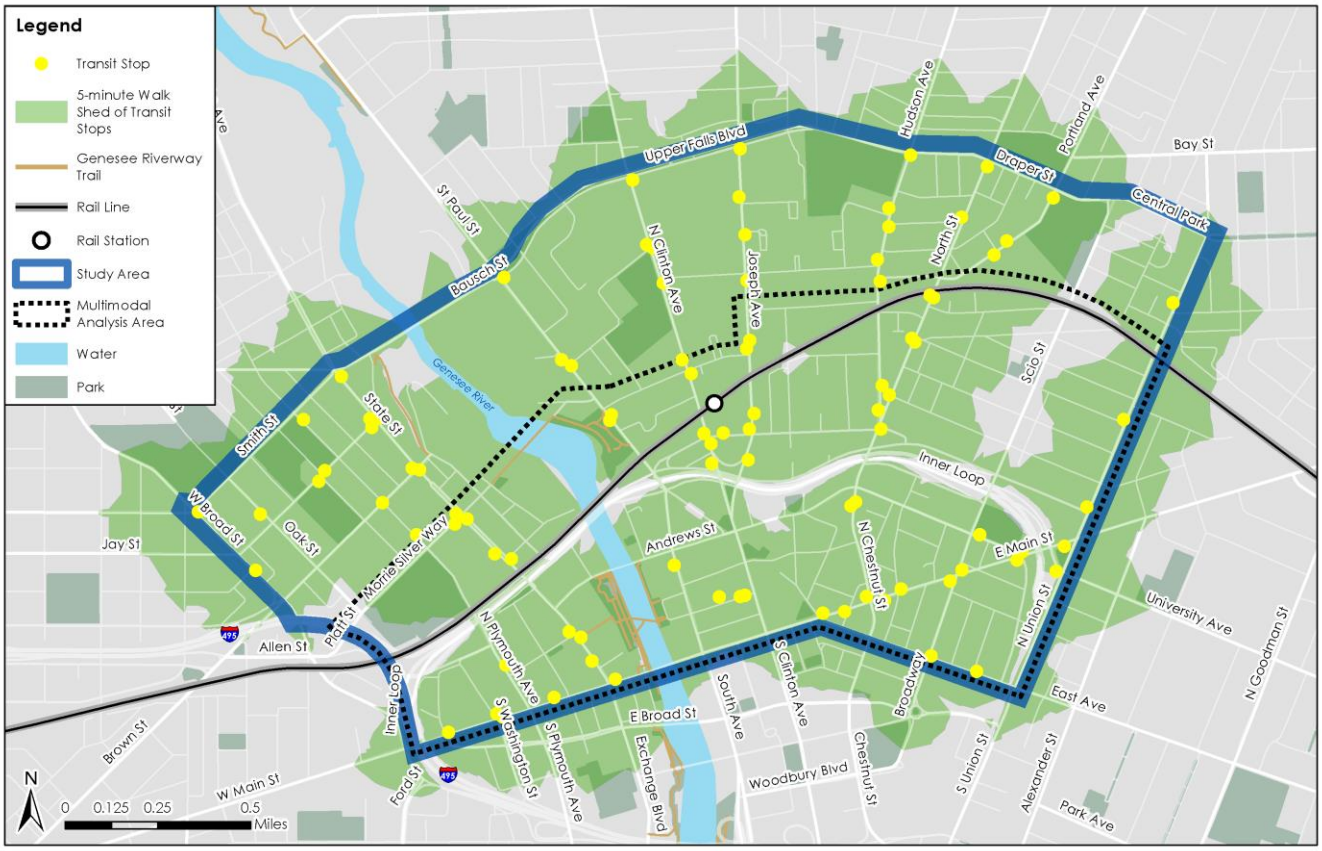


Analysis/MOEs

ISOCHRONE ANALYSIS

Results from the transit isochrone analysis are shown in **Figure 42.** Existing transit stops in the study area provide almost complete coverage (within a 5-minute walk) of the study area, with the exception of some pockets adjacent to the Inner Loop and a half-mile stretch north of the Inner Loop along Scio Street.

Figure 42: Transit Network Isochrone Analysis



Performance measures for transit are shown below in **Table 5**.

Table 5: Transit Network Performance Measures

MOE	Evaluation Metric	Existing Condition
Quality of bus stop facilities	Number of improved bus stops (added shelters, seating, bus boarding treatments, etc.)	*The number of improved bus stops will be measured under future conditions*
Residential proximity to transit	Population within a 5-minute walk of bus stops	8,800 residents
Employment proximity to transit	Jobs within a 5-minute walk of bus stops	45,000 jobs

Source: American Community Survey, U.S. Census Bureau (2013 2017 ACS 5 Year Estimates); Longitudinal Employer Household Dynamics Origin Destination Employment Statistics, U.S. Census Bureau

Issues and Opportunities

RTS and the transit system it provides performs well and is on par with peer cities in the United States as well as with national trends in systemwide ridership, as outlined in the *Comprehensive Access and Mobility Plan*. However, Rochester is no exception from the issues that adversely affect the transit systems of most cities, including longer-than-ideal wait times during off-peak hours and service spans that make opting for or relying on transit difficult, unappealing, or downright impossible. Additionally, the current structure of the transit map, with downtown Rochester at its center, concentrates on service to and transfers at the RTS Transit Center. This makes journeys difficult for those who live or work in outlying areas and do not need to travel downtown but must do so to get to where they need to go. As noted in the city's *Comprehensive Access and Mobility Plan*, "the difficulty of transferring limits the utility of the overall network to customers wishing to make trips to destinations other than those along their immediate route."[17]

There are opportunities to improve the transit system in Rochester, and these opportunities will be realized with the coming implementation of the *Reimagine RTS Service Plan*. The planned Frequent Service network tier will provide high-quality, reliable, "show-up-and-go" transit service along major streets that will not require burdensome advanced planning and studying of timetables or schedules. These improvements will reduce wait times and travel times as well as increase the ease of transferring for those who need to. Not only will this greatly improve the transit experience for existing riders—many of which are higher-risk and lower-income, as discussed in the *Transportation and Poverty in Monroe County* report—but it will work to attract new riders for whom the past transit system did not work efficiently for. As RTS creates more attractive service, the City should strive to ensure travelers have safe access and convenient amenities at key locations.

> *"The state of the transportation options in Monroe County and Rochester pose an equity issue for the community, both in terms of race and income. Drivers (who are whiter and wealthier than transit riders) face easy commutes and a wide access to jobs. Those who ride the bus face very long commutes and limited access to jobs. Given these differences, the transportation system at large reinforces the disparities that already exist in the community rather than helping to reduce them."*
>
> – ***Transportation and Poverty in Monroe County* Report**

[17] Comprehensive Access and Mobility Plan, City of Rochester, 2019. https://www.cityofrochester.gov/camp/

Parking and Curbspace

Inventory

While this study does not include a detailed inventory and assessment of parking and curbspace within the study area, there are various uses of urban curbspace in Rochester. The curb is a part of the transportation system that is in high demand among many different users. Some of these competing curbspace demands include:

- On-street parking
- Bus stops
- Loading zones
- Taxi stands
- Pick-up and drop-off zones

Areas of the curb that are unusable to vehicles are also very common and take up a large proportion of available curbspace in any city. Curbspace that is designated as "No Parking" as well as driveways and curb ramps, make up a large share of unavailable curb space.

Curbside, on-street parking on Main Street
Source: Google Maps

Analysis/MOEs

Performance measures for parking and curbspace are shown below in **Table 6**. While existing conditions were not measured for this aspect of the transportation network, the study team will measure new curbspace created under proposed future conditions as part of the upcoming phases of the study.

Table 6: Parking and Curbspace Performance Measures

MOE	Evaluation Metric	Existing Condition
Quantity of new Curbspace	Linear feet of new curbspace created with the Concept Plan/Preferred Alternative	*The amount of new curbspace created will be measured under future conditions.*

Issues and Opportunities

Within the Multimodal Analysis Area, there are about 60,000 linear feet—more than 11 miles—of curbspace. This curbspace provides a resource of incredible value to the City of Rochester and its users of the transportation system. However, this availability of curbspace is greatly diminished due to the presence of the Inner Loop and its ramps and service roads, which generally do not offer a curb that is accessible to those not in a vehicle. A potential future redesign of the Inner Loop—one that provides more local street connections with accessible sidewalks on both sides—will greatly increase the supply of useable curbspace in Rochester for multimodal travel, whether the space is used for bike lanes, bus stops, rideshare pick-up/drop-off, or otherwise.

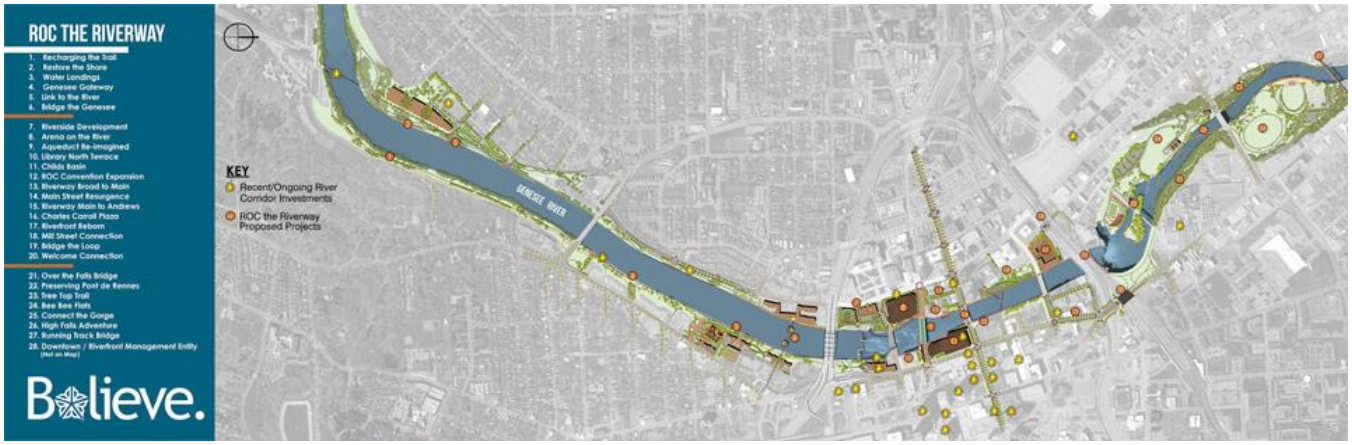
The Inner Loop, pictured here crossing over the Genesee River, does not currently offer multimodal curbspace
Source: Google Maps

Public Space and Urban Design

Inventory

The City of Rochester has demonstrated its commitment to emphasizing and incorporating quality urban design principles by incorporating them into new planning and construction projects. The Inner Loop East project that converted a section of the expressway to an at-grade urban boulevard is a recent example of this commitment and included many urban design best practices such as pedestrian-scale lighting, new sidewalks and crosswalks, and benches as well as street trees, landscaping, and other green space features. Additionally, the *Rochester 2034* plan places much emphasis on the central theme of placemaking and works to ensure that, as the City's comprehensive plan, it effectively guides subsequent planning efforts to focus on creating a strong sense of place. This Inner Loop North Transformation Planning Study is one such subsequent planning effort that presents many opportunities to strengthen the quality of urban design and sense of place in the city.

The urban design and livability in the Inner Loop North study area is greatly compromised by the expressway's presence. The remaining Inner Loop corridor represents a gap in street blocks that offer human-scale design, with long blocks devoid of landscaping, tree canopy, and lighting. There exists ample opportunity to complement the area's well-connected sidewalk network and ever-growing bicycle network by reimagining and repurposing the large expanses of the Inner Loop and adjacent high-speed travel lanes, expressway ramps, parking lots, and one-way streets. Capitalizing on this opportunity can transform these spaces into built environments that enhance multimodal travel, create desirable, human-scale destinations to travel to, and are safe and welcoming to all. Facilitating access to parks and open space is an important function of the multimodal transportation network. Rochester's Department of Recreation and Youth Services is the primary steward of the city's extensive parks system, which consists of more than 3,500 acres of parkland. The Genesee Riverway Trail connects 11 city parks along its path and is another public recreational feature for which the city takes much pride. Access to parks and open space is a critical contributor to physical and mental health, wellness, and overall quality of life. The city's *ROC the Riverway* program, a critical ongoing effort towards enhancing access to public space, consolidates more than two dozen transformational projects along the Genesee River into a unified strategy, one that will enable Rochester to better leverage the value of its riverfront.



ROC the Riverway Overview Map
Source: City of Rochester

Rochester currently has a large and well-connected system of parks, including eight parks within this study's Multimodal Analysis Area. However, in the vicinity of the Inner Loop, access to and between parks and residential areas is hindered by many of the issues noted in the prior sections, including high traffic volumes, wide streets, and intersections/street crossings that are difficult to access for pedestrians and cyclists.

Analysis/MOEs

Performance measures for urban design and public space are shown below in **Table 7**.

Table 7: Urban Design and Public Space Performance Measures

MOE	Evaluation Metric	Existing Condition
Quality of new streetscape	Blocks of the Inner Loop with street furniture/landscaping/tree canopy	0
Quantity of public/green space	Acres of parks and green/open space in Multimodal Analysis Area	28

Issues and Opportunities

A future redesign of the Inner Loop has the potential to reallocate the expressway and its excess transportation right-of-way into a corridor that exhibits the same level of quality, human-scale urban design seen in the Inner Loop East project. Reduction in width of the roadway and other impervious areas as well as the addition of streetscape enhancements, will also help to create a sustainable and attractive corridor for residents, employees, and visitors of Rochester. These same redesigned streets also hold the potential to facilitate more direct, comfortable, and safe routes to quality parks and open space for enjoyment and wellbeing of Rochester residents.

The *Rochester 2034* plan theme of placemaking can serve an equally prominent purpose in this Inner Loop North planning study. The presence of connected sidewalks and bicycle lanes alone does not make a place truly walkable or bikeable – this comes from intentional and meaningful relationships between transportation infrastructure, public space, and land use. Enabling quality urban design that will lay the groundwork for future businesses, destinations, parks, or other human-centered land uses will further strengthen the power of well-connected transportation infrastructure by proving desirable and quality destinations for the Rochester community.

"Comprehensive plans typically contain a future land use plan as the centerpiece for guiding physical change in the municipality. The community engagement process for Rochester 2034 made it abundantly clear that there are many other elements – physical projects, policies, and programs – that intersect with land use and development to contribute to a functional cityscape and positive sense of place. As such, this comprehensive plan contains an innovative approach to conventional land use planning by integrating these other elements into a larger Placemaking Plan."

– Rochester 2034 – The Placemaking Plan

The intersection of North Street and Delevan Street, overlooking the Inner Loop, lacks quality streetscape/urban design features and does not promote safe or comfortable access to parks
Source: Google Maps

The intersection of Union Street and East Avenue, recently redesigned under the Inner Loop East project, features new streetscape and urban design elements such as landscaping, trees, seating, and bike racks
Source: Google Maps

Summary

The following section summarizes the overall state of the multimodal transportation network within the Multimodal Analysis Area of this study, incorporating findings determined as part of this Multimodal Accessibility Report as well as key points identified in the *Comprehensive Access and Mobility Plan* and other past City resources that were reviewed. The Inner Loop North Transformation Planning Study concepts to be developed in the next stages of the study will consider how the existing challenges can be addressed and how existing opportunities can be realized.

Travel Patterns

The Inner Loop is largely serving regional trips from the western suburbs into and out of the urban core of the city. More than half of trips are estimated to be at least 10 miles in length.

An analysis of travel patterns along the Inner Loop suggests a sharp drop off in traffic volume east of the river/St. Paul/Clinton Interchange. Only approximately 50 to 60 percent of trips remain.

Some short-distance, neighborhood vehicle trips are likely amenable to a mode shift (walking, biking, transit) should those options become more attractive. Immediately adjacent to the Inner Loop, vehicular trips starting and ending in the study area neighborhoods are predominantly short-distance trips, with more than 25 percent of trips being less than 2 miles in length.

Pedestrian Network

Reconfiguring the Inner Loop offers an opportunity to enhance connectivity and safety of the pedestrian network. The Inner Loop, its ramps, and parallel service roads create long blocks that interrupt the street grid and diminish the quality urban fabric of downtown Rochester. Further, missing sidewalks and crosswalks are most prevalent at intersections that interface with the Inner Loop, which adversely affect how far a pedestrian can easily and comfortably travel, especially for areas north of the Inner Loop.

The Rochester street grid lends itself to improving pedestrian travel. Despite the presence of the Inner Loop and its effects on pedestrian travel, a significant number of residents and jobs exist within a 15-minute walk of key local/regional destinations on both sides of the Inner Loop. With better pedestrian connections and a greater number of pedestrian-friendly streets, the number of residents, employees, and visitors who choose to walk is likely to increase.

Bicycle Network

Reconfiguring the Inner Loop can provide new bicycle connections that link neighborhoods and fill gaps in the trail network. Rochester's street grid is conducive to a connected network of dedicated bicycle facilities, but the presence of the Inner Loop interrupts the street grid and therefore diminishes the potential of the existing—and future—bicycle network. Additionally, cycling along streets that cross the Inner Loop is difficult with many conflicts and safety risks due to higher traffic volumes, larger and more complex intersections, and a lack of dedicated bicycle lanes.

The Rochester street grid lends itself to improving bicycle travel. The great success of the Genesee Riverway Trail system has demonstrated that people will opt to bike—for work trips, non-work trips, and recreation—if safe and appealing routes are available. Applying this principle to a greater number of city streets will make

biking a safer, more convenient, and more appealing option for the thousands of residents within a 15-minute bike ride of key local/regional destinations.

Transit Network

Transit serves a critical mobility need. Rochester's existing transit network serves critical mobility needs at the local and regional level, especially for populations who rely on transit as a lifeline; however, the existing network can be improved to better serve these populations with more frequent service beyond the traditional peak commuting hours. The *Reimagine RTS Service Plan* holds much promise in meeting these needs with implementation of the plan.

Downtown Rochester is incredibly transit accessible. As demonstrated in the transit isochrone analysis, a large number of residents (8,832) and jobs (45,000) are within a 5-minute walk of transit stops within the study area. The *Reimagine RTS Service Plan* will provide increased access to more frequent service for much of the downtown area.

Parking and Curbspace

Many different modes of transportation are competing for limited curbspace. The Inner Loop and its surrounding streets do not meaningfully contribute to supply of multimodal curbspace. A potential future redesign of the Inner Loop area will provide more multimodal curbspace to allocate to high demand uses.

Urban Design and Public Space

The Inner Loop is an opportunity for new and innovative public space and urban design. Streets that cross or run parallel to the Inner Loop offer little-to-no amenities that contribute to an appealing and accommodating streetscape. Blocks are long and barren, and they lack features such as street trees or benches. Access to parks and public space is made more difficult due to the Inner Loop's barrier-like nature and its effects on walking and cycling. A potential future redesign of the Inner Loop area could provide more acres of urban parks and green space and create additional green space on or adjacent to the street, itself.

A summary of existing conditions performance measures for all elements of this report are shown below in **Table 8**.

Table 8: Summary Performance Measures

MOE	Evaluation Metric	Existing Condition
Pedestrian Network		
Quantity of enhanced crosswalks	Number of intersections with crosswalks across all legs	38
Quantity of widened sidewalks	Number of widened sidewalks (6 feet or wider)	*The number of widened sidewalks will be measured under future conditions*
Quality of street grid connectivity	Number of north-south streets that cross the Inner Loop	8
Pedestrian experience and comfort	Linear feet of sidewalk	60,000 feet (11.36 miles)
Walk access	Population and employment within a 15-minute walk of key locations (see isochrone analysis)	**RTS Transit Center**: 2,900 residents | 32,600 jobs **Rochester Station**: 3,600 residents | 11,400 jobs **Frontier Field**: 1,600 residents | 29,900 jobs **Selden Street**: 3,100 residents | 15,500 jobs **Lewis Street YMCA**: 3,200 residents | 2,300 jobs **Sojourner Home**: 4,600 residents | 2,500 jobs
Bicycle Network		
Street network connections to local/regional trails	Number of trail connection points	7
Quantity of on-street dedicated bicycle facilities	Linear feet of dedicated bike facilities (protected bicycle lanes, standard bicycle lanes)	18,500 feet (3.5 miles)
Quality of bicycle facilities (Bicycle Level of Traffic Stress)	Percentage of major streets that have BLTS 1 or 2 (lowest stress levels)	35%
Quantity of new north-south facilities	Number of north-south streets that cross the Inner Loop with dedicated bicycle facilities	1
Bicycle access	Population and employment within a 15-minute bike ride of key locations (see isochrone analysis)	**RTS Transit Center**: 42,700 residents | 68,000 jobs **Rochester Station**:

MOE	Evaluation Metric	Existing Condition
		39,900 residents | 67,500 jobs **Frontier Field**: 36,300 residents | 63,000 jobs **Selden Street**: 36,700 residents | 67,500 jobs **Lewis Street YMCA**: 31,100 residents | 58,800 jobs **Sojourner Home**: 31,900 residents | 58,600 jobs
Transit Network		
Quality of bus stop facilities	Number of improved bus stops	*The number of improved bus stops will be measured under future conditions*
Residential proximity to transit	Residential population within a 5-minute walk of bus stops	8,832 residents
Employment proximity to transit	Jobs within a 5-minute walk of bus stops	45,112 jobs
Parking and Curbspace		
Quantity of new curbspace	Linear feet of new curbspace created	*The amount of new curbspace created will be measured under future conditions*
Urban Design and Public Space		
Quality of new streetscape	Blocks of the Inner Loop with street furniture/landscaping/trees	0
Quantity of public/green space	Acres of parks and green/open space in Multimodal Analysis Area	28