

PARK AND RIDE DESIGN SERVICES

*Technical Memorandum #1
FAST Corridor Level Analysis*



INTRODUCTION

PROJECT PURPOSE

Across the SMART system, transit riders use a number of other Park and Ride lots, both formal (contract based) and informal (general parking lots associated with businesses). Along the three corridors served by SMART's FAST bus service, there is a need for additional park and ride capacity to help grow ridership. SMART has programmed grant funding to identify and develop this additional infrastructure – with the goal of maximizing these new resources to not only provide parking adjacent to bus stops but create mobility hubs that allow deployment and demonstration of new and emerging mobility tools. It is envisioned that these facilities could include space for scooters, bikes, and other personal mobility options – in addition to space for electric car charging or a visible transfer location between ride sharing, microtransit, demand response, carpool, and fixed route bus services. The facilities could also provide relief and/or change-off locations for SMART fixed route drivers, either mid-route or at the beginning or end of intersecting routes.

PROJECT GOALS AND OBJECTIVES

PROJECT MANAGEMENT TEAM GOALS

A kickoff meeting held with the SMART Project Management Team (PMT) revealed the following goals and objectives for the project:

- The final document should allow SMART to quickly move into the design and engineering phase.
- The sites should include the following amenities:
 - Layover space for buses
 - Driver amenities
 - Parking for vehicles
 - Uber/Lyft connections
 - Microtransit connections
 - Other passenger amenities
- Consider sites that could serve as a transfer point between multiple routes.
- There will likely be different goals for each corridor. For example, Michigan Ave may look to serve airport travelers, while Woodward may focus on smaller neighborhood-based hubs.
- Facilities should present SMART as an innovative and important part of the community and should be an asset to the system. Facilities should make a difference in the community and be able to evolve as the region evolves.

These goals will be used, along with input from the community and stakeholders, in developing evaluation criteria to select sites that will provide the most value to the community and region.

BRAINSTORMING MEETING AND RESULTS

A brainstorming meeting was held on October 14th, 2020 with all members of the PMT, along with other key SMART staff, to discuss additional goals for the project, specific goals for each of the FAST Corridors, as well as amenities, services, and connections each of the Park and Ride facilities should include. Prior to the Brainstorming Meeting, a survey was sent around to all of the attendees to gather preliminary input about the project's goals and jump start the conversation.

During the meeting, the goals and objectives for the overall project, as well as each FAST corridor, were discussed in order to help guide the evaluation process. Beginning with the overall project goals, the PMT was interested in further exploring the concept of mobility hubs at each location, as well as developing facilities that are viewed as an asset to the region. Specifically, the mobility hubs should provide value to communities they are located in.

Additionally, collaboration on the facility design with the specific communities is imperative to the success of the project.

In regard to the design of the facilities, there should be a clear delineation between public and private space. If space for driver layover is incorporated, it should only be able to be accessed by drivers. Adding public restrooms and other indoor spaces drastically increases operations costs. There is a big opportunity to provide space and amenities for drivers laying over. Ideas included:

- TV Area
- Table and Chairs
- Restrooms & Water bottle station
- Vending Machines

The overall site design should include adequate space for buses to easily access the shelters. Reducing conflict points for buses entering and exiting will help driver keep schedule and reduce unnecessary crashes. Separate entrances for vehicles and buses may help reduce these conflicts.

Specific goals for each corridor were also discussed as each route travels through distinct land uses and riders may have different needs.

Woodward Avenue

The following goals and guidance were developed for the Woodward Avenue corridor:

- Grow ridership.
- Explore storefronts with parking in the rear, or single level parking deck. Leasable retail could help meet community goals.
- Facilities in more urban areas will likely benefit from more multi-modal access.
- Explore TOD at sites but don't expect heavy development.
- Keep site(s) as close to Woodward as possible to avoid increases in travel time.
- Consider how site placement affects both directions of service due to center median.
- Coordinate and build from RTA MOD Study.

Gratiot Avenue

The following goals and guidance were developed for the Gratiot Avenue corridor:

- Explore different concepts for different communities along the corridor.
 1. True Park and Ride at terminus of Route, near I-94
 2. Mobility Hub concept in center of the corridor, near the Macomb Mall
- Look for sites targeted for demolition or improvement.
- Need a bus transfer area along the corridor where multiple routes meet.
- Northern Macomb County may see greater value in SMART with a true park and ride.
- Small, focused hubs located in southern communities may provide a large community benefit.

Michigan Avenue

The following goals and guidance were developed for the Michigan Avenue corridor:

- Potential for two sites along the corridor.
 1. Airport area with large, secure parking lot and transit service to DTW
 2. Dearborn area with smaller parking area, but more multi-modal connections
- Incorporate Dearborn Microtransit pilot into concepts.
- Identify an area for daily commuters to park.
- More SMART routes will be going to the airport in the future. Additional layover space is needed.
- Work with Romulus and the Airport Authority to identify a suitable location.
- Western/airport site should serve double duty as a commuter lot into Dearborn and Detroit.

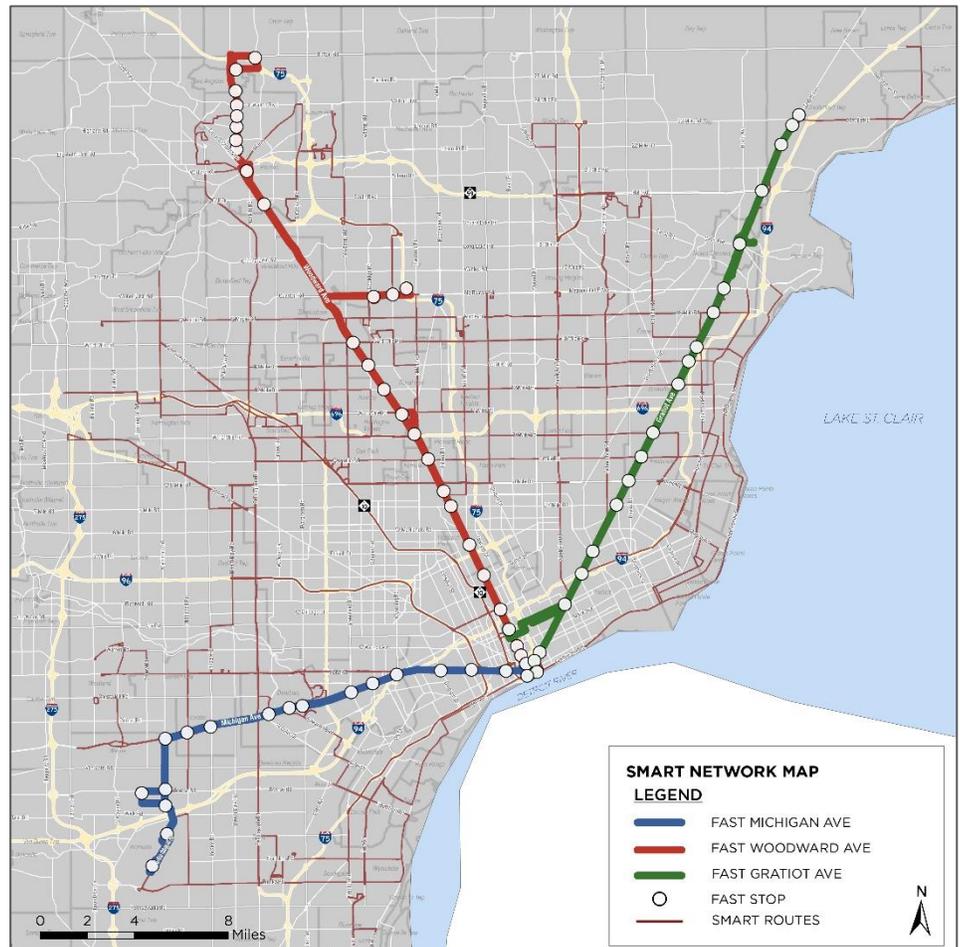
EXISTING CONDITIONS

SMART Service Area

SMART operates public transit routes in Oakland, Wayne, and Macomb Counties, and with the exception of the FAST Routes, Park and Rides, Peak Hour Limited Routes and Peak Hour Main Corridor Routes does not operate service in the City of Detroit. SMART is funded by opt-in property taxes in the Detroit suburban communities and service is unavailable in those communities that do not opt-in. SMART routes link up with routes operated by the Detroit Department of Transportation (DDOT) at specific areas along the main corridor routes leading into and out of the City, including downtown Detroit and at 8 Mile and Woodward at the State Fair Transit Center, at Fairlane Mall in Dearborn, and at 8 Mile and Gratiot.

Along the three FAST Corridors, there are opportunities to transfer to other SMART routes. These transfer points are essential to delivering riders to their final destinations and for allowing riders to move from north/south routes to east/west routes.

Figure 1: SMART System Map



Transit Ridership

Due to the ongoing COVID-19 pandemic, ridership data from September 2019 was analyzed. Similar to most transit agencies around the United States, SMART’s ridership dropped off considerably since the pandemic started. Ridership decline is due to a number of factors, including an increase in riders working from home, a reduction in lower wage employment prospects, and a fear of sharing enclosed spaces with others. Data from September 2019 gives a better understanding of the conditions experienced before the pandemic changed the way transit riders travel.

Gratiot Avenue has the highest ridership of the three FAST Corridors. The FAST Gratiot routes (561/562/563) averaged nearly 3,500 riders per weekday, over 2,500 riders on Saturdays, and about 1,250 riders on Sundays in September 2019. Additionally, the local Gratiot Route 560 carries similar level of riders. Over 181,000 riders used transit in the Gratiot corridor.

Woodward Avenue has the second highest ridership of the FAST Corridors. Three different services exist along the Woodward Corridor, Routes 450/460 Local, FAST Routes 461/462, and Limited Route 445. FAST Woodward has a higher ridership than FAST Gratiot with over 3,500 average riders each weekday, nearly 2,500 riders on Saturdays,

and about 1,300 on Sundays. Woodward’s local route carries far fewer riders per weekday with nearly 1,900, compared to Gratiot’s 3,900. Overall Woodward carried about 136,000 passengers in September 2019.

Michigan Avenue has the lowest ridership of the three corridors and also has a lower frequency of trips during the peak hour. FAST Michigan (Route 261) has no route deviations and carries, on average, about 1,300 passengers on weekdays, 930 riders on Saturdays, and nearly 570 riders on Sundays. The Michigan Avenue local route (Route 200) has similar statistics. Route 200 has an average of 1,400 riders on weekdays, 730 on Saturdays, and 335 riders on Sundays. Overall, Michigan Avenue had a total corridor ridership of 65,700 rides in September 2019.

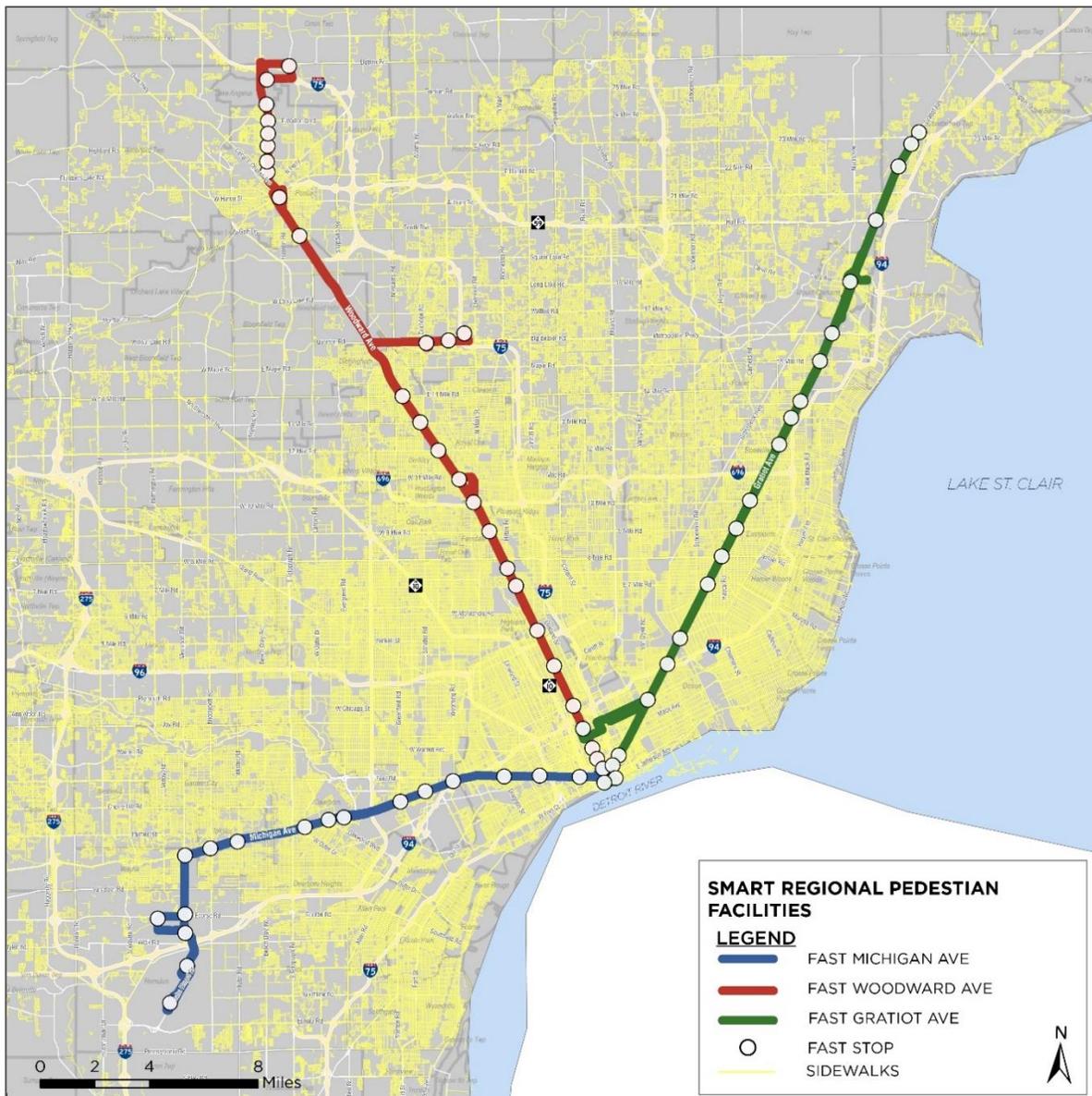
Table 1: FAST Corridor Ridership

Route	Weekday Ridership	Saturday Ridership	Sunday Ridership	Total Monthly Ridership	Total Corridor Ridership
Gratiot Ave					
FAST Routes 561/562/563	3,459	2,554	1,236	94,879	181,302
Local Route 560	3,927	2,331	1,267	86,423	
Woodward Ave					
FAST Routes 461/462	3,570	2,471	1,298	45,482	136,055
Local Routes 450/460	1,899	972	602	89,063	
Limited Route 445	75	-	-	1,510	
Michigan Ave					
FAST Route 261	1,291	935	568	32,658	65,650
Local Route 200	1,388	730	335	32,692	

Non-Motorized Facilities

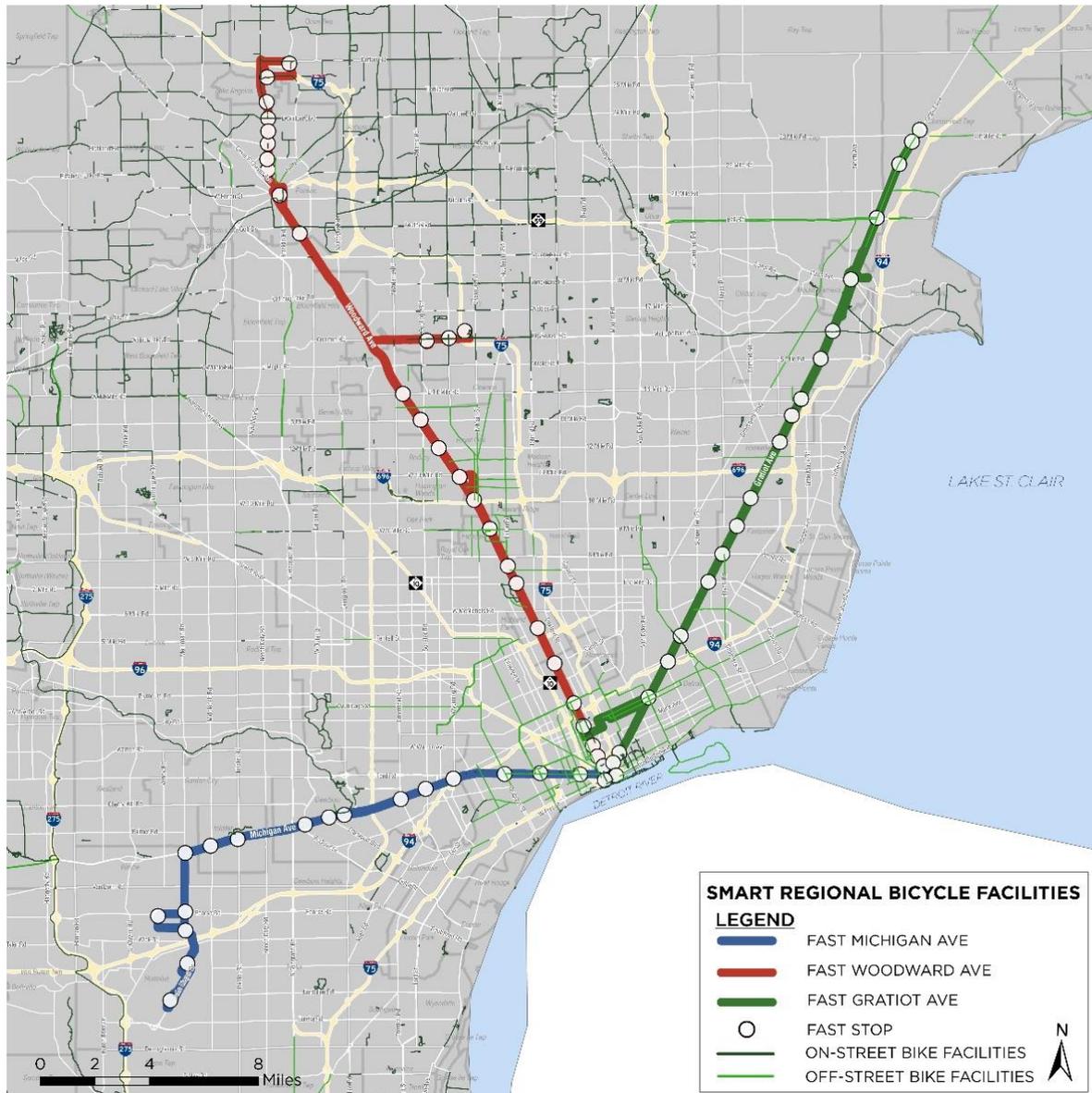
Throughout much of the SMART service area, there are bicycle and pedestrian facilities available. Sidewalks are more prevalent in the service area, especially in the communities located near the Detroit border. These communities tend to have a denser development pattern that includes sidewalks on all streets. Incidentally, these communities also have higher amounts of transit ridership compared to the communities closer to the termini of the FAST routes. The communities along Woodward Avenue, below Maple Road have the highest density of sidewalks. Within the City of Pontiac, a relatively high density of sidewalks is also available. The Gratiot Avenue corridor has the highest density of sidewalks south of Metro Parkway. Within Mount Clemens there is also a high sidewalk density. Along Michigan Avenue, the highest density of sidewalks is between Outer Drive and Merriman Roads. The large commercial and industrial property sites in central Dearborn reduce the sidewalk density in this area.

Figure 2: SMART Service Area Sidewalk Density



As shown in Figure 3 below, bicycle facilities around the region vary depending on the County and the individual community. The Woodward Corridor has the highest number of bicycle facilities located near the route, with a higher concentration of off-road trails and paths near the northern end and a higher concentration of on-road facilities in the communities south of I-696. Along the Gratiot Avenue Corridor, more connecting bicycle facilities are available north of Metro Parkway than are available in the communities located between 8 Mile and 15 Mile Roads. The majority of the bicycle facilities along Gratiot Avenue are off-road paths and trails that can accommodate both cyclists and pedestrians. Michigan Avenue has the fewest number of connecting bicycle facilities outside of the City of Detroit. The main facility is the Rouge River Trail that connects to the I-275 Trail and the larger Iron Belle Trail.

Figure 3: SMART Service Area Bicycle Facilities



Demographic Conditions

A high-level demographic analysis was completed to help determine where along the three FAST corridors park and ride facilities would be best suited. An analysis of the measures that help determine transit dependency, including population density, zero car household density, and the percentage of transit commuters was completed. Additionally, the “Transit Score” in the three corridors was also analyzed to determine which areas have the highest propensity for transit use. Demographic conditions for the areas two miles on either side of each FAST corridor were studied.

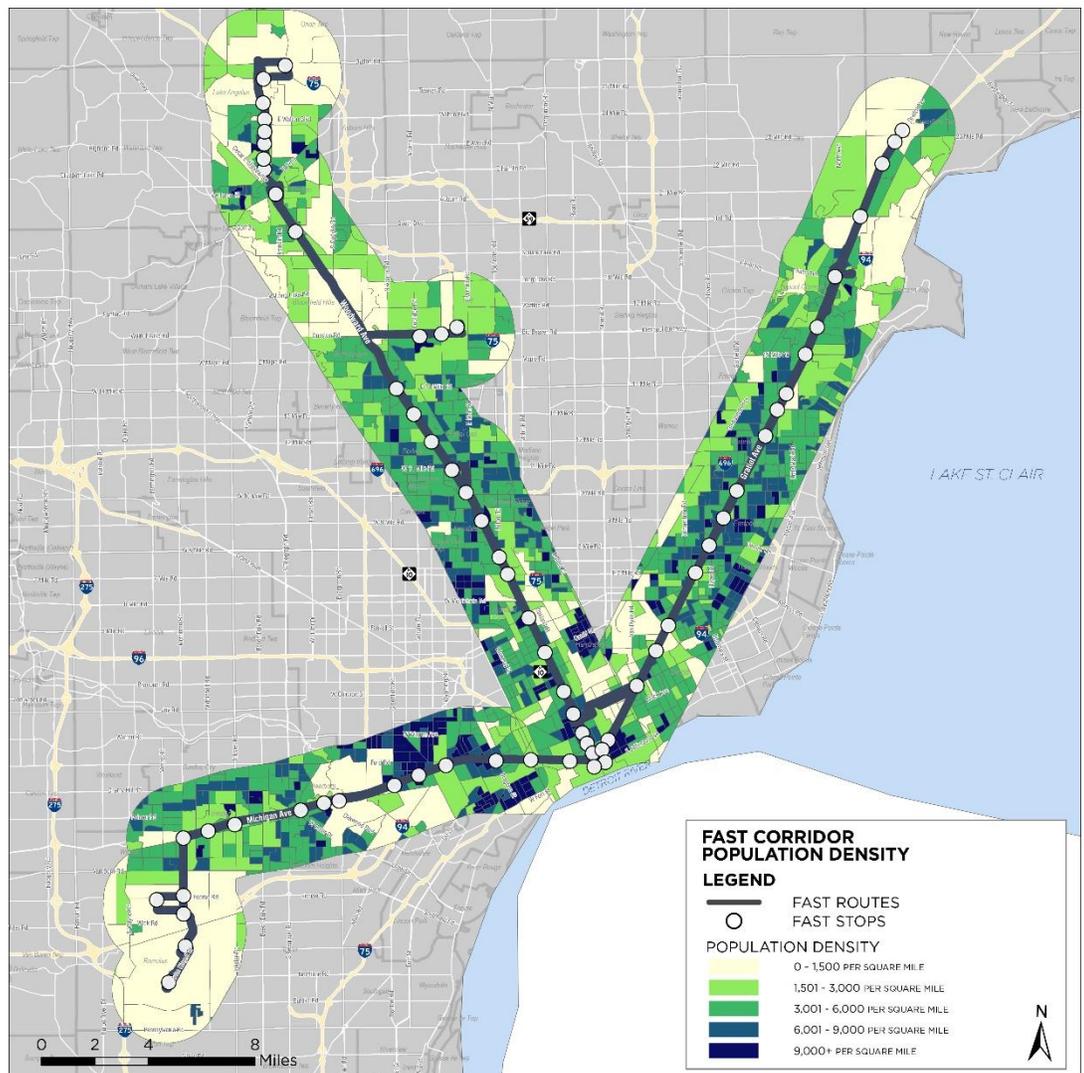
Population Density

Population density varies throughout the three FAST corridors, with many of the high-density block groups located in the communities near the border of the City of Detroit. Along Gratiot Avenue, many of the high-density block groups are located near Gratiot Avenue between 8 Mile Road and 13 Mile Road. Past 13 Mile Road, the block groups are larger and population density is lower. The areas with the lowest population density are near the terminus of the FAST Gratiot route at 23 Mile Road.

Along Woodward Avenue, the area of highest population density is between 8 Mile Road and 14 Mile Road. An additional pocket of population density also exists in the City of Pontiac. Between Big Beaver Road and South Boulevard and north of Walton Boulevard, population density is considerably lower. It is also worth noting that there are no FAST stops between Martin Luther King Jr Blvd in Pontiac and Maple Rd in Birmingham, as the communities in this area have opted out of SMART.

Along Michigan Avenue, the area of highest population density is along the north side of the corridor on the east side of Dearborn. Large commercial and industrial properties in Central Dearborn, near Fairlane Mall, reduce the population density to very low levels. West of Dearborn, the population density along Michigan Avenue is average. Figure 4 shows the population density along the three FAST Corridors.

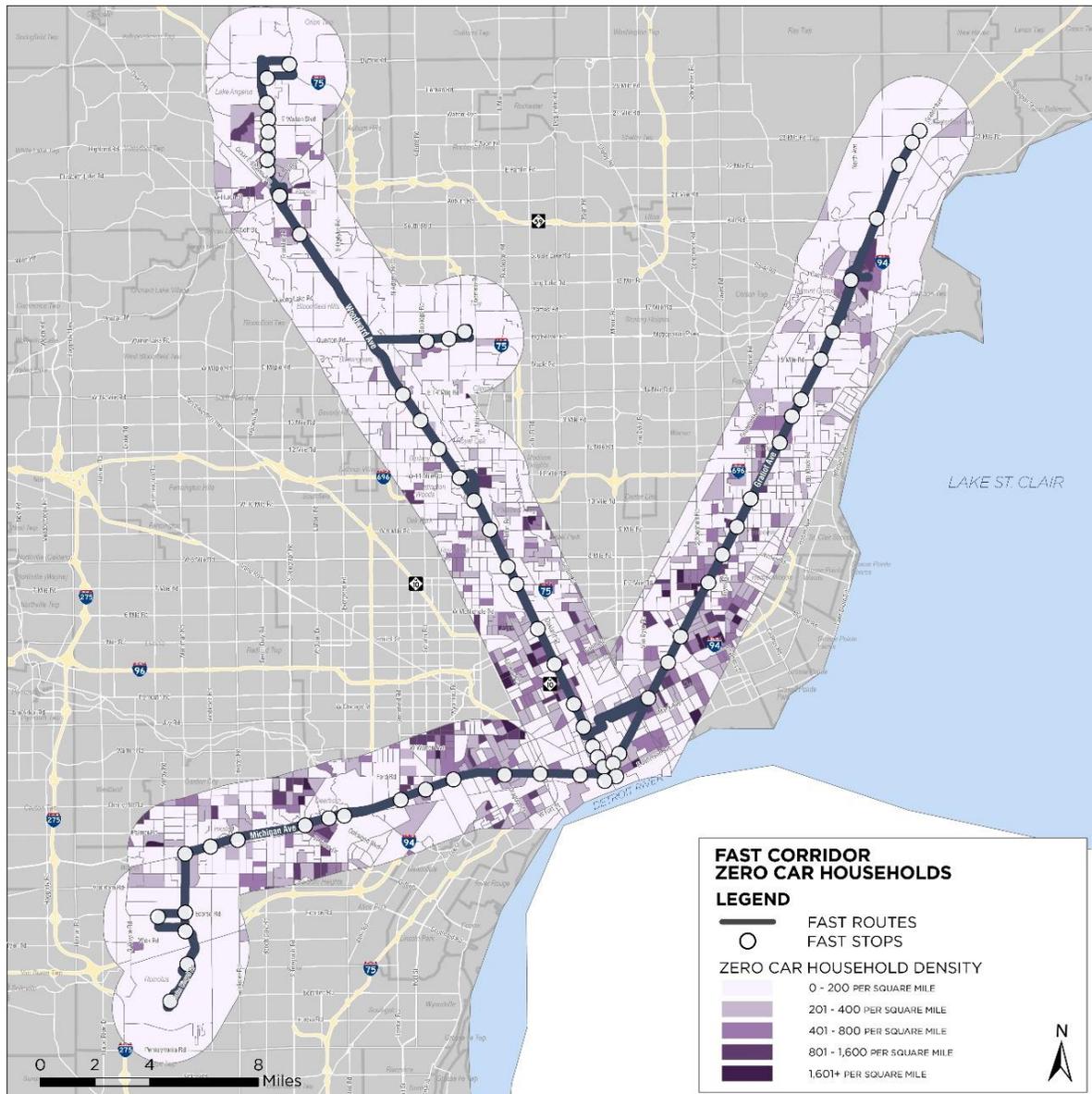
Figure 4: FAST Corridor Population Density



Zero Car Households

Zero car households are a good measure of potential transit demand as these households have transportation needs but cannot rely on a driving themselves. Pockets of zero car household density are spread throughout the three FAST corridors in no particular order. However, the areas of the corridors with greater population density tend to have more zero car households per square mile than those with lower population density. High concentrations of zero car households can be found in Mt. Clemens, Pontiac, Dearborn, and Royal Oak. Overall, the Gratiot corridor appears to have the highest density of zero car households directly along the corridor. Figure 5 shows the density of zero car households along the three FAST corridors.

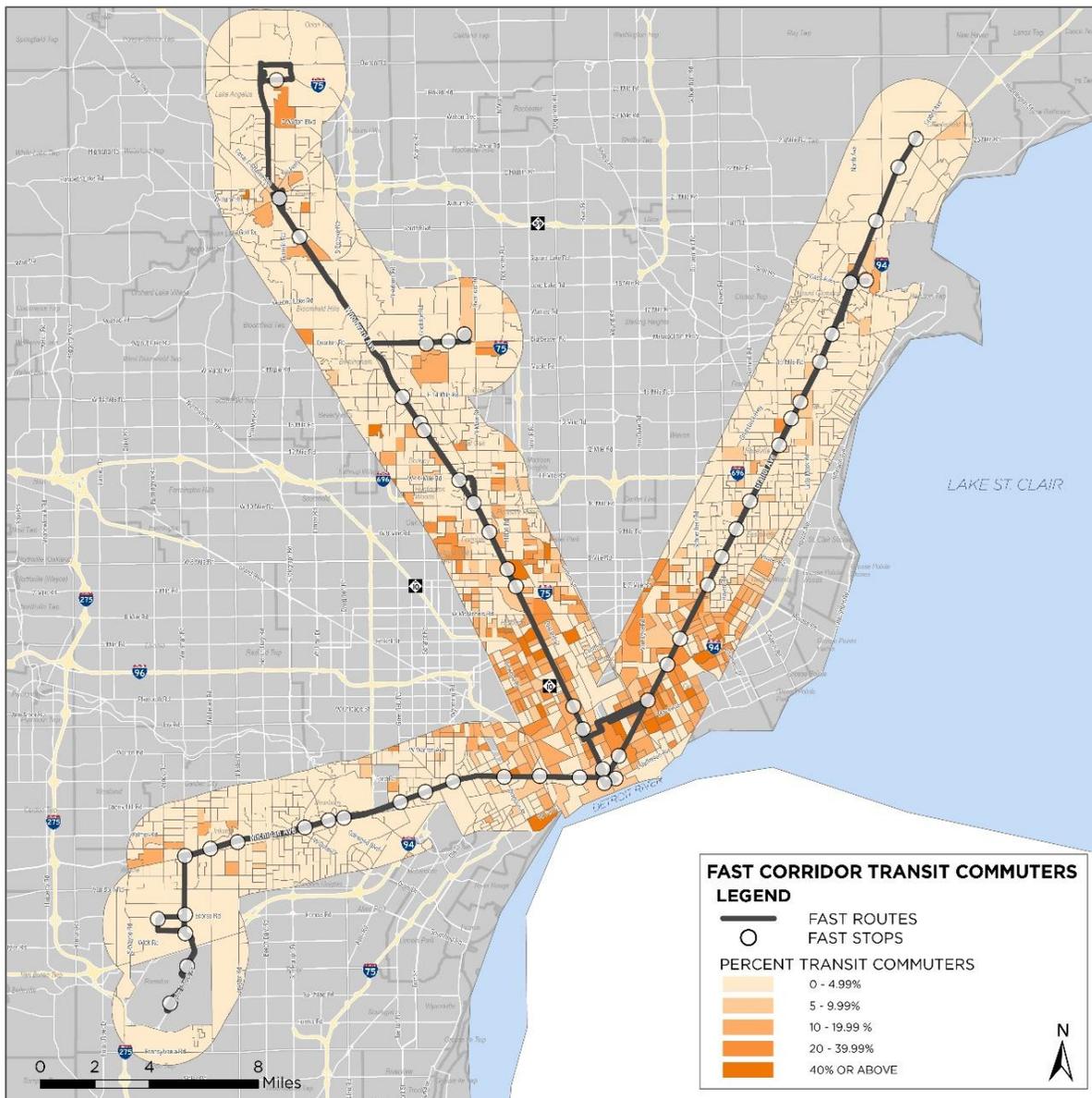
Figure 5: FAST Corridor Zero Car Household Density



Transit Commuters

Using data from the US Census, the percentage of daily commuters who use transit was analyzed in the three FAST Corridors. Overall, the areas with a higher density of transit commuters are located in the communities closest to the City of Detroit. Woodward Avenue has the greatest number of block groups with a higher proportion of transit commuters. Most of these block groups are located south of I-696, but pockets of transit commuters also live in Pontiac. Along Gratiot Avenue, areas of higher transit commuting are located in Mt. Clemens and near 14 Mile Road. Michigan Avenue has the lowest number of transit commuters living along the corridor, with a few higher percentage block groups located near Merriman Road. **Error! Reference source not found.** shows the percentage of transit commuters in the block groups along the three FAST Corridors.

Figure 6: FAST Corridor Transit Commuters



Transit Score

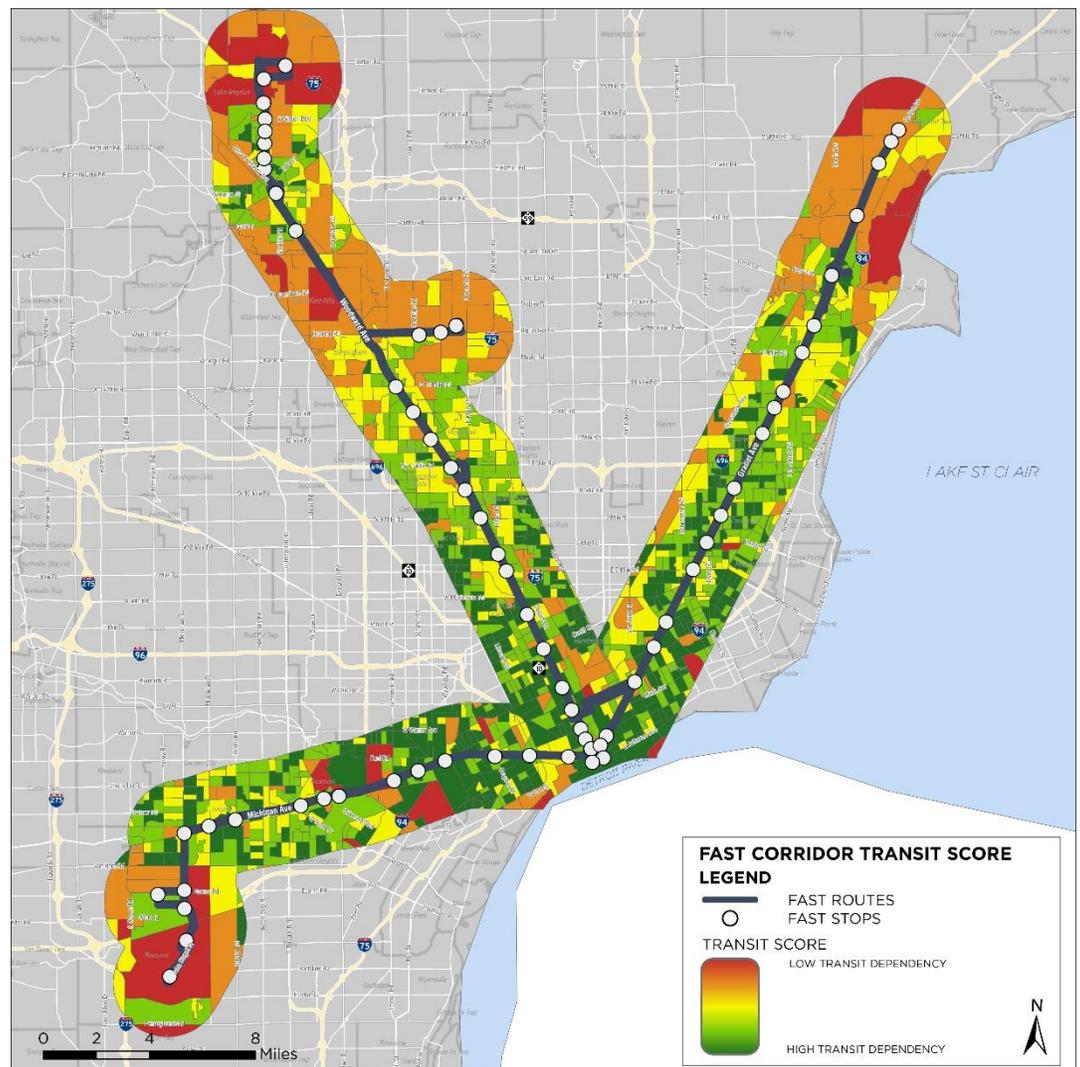
Additional demographic data were compiled from the US Census website and analyzed at the block group level to develop a ‘Transit Score’ for each FAST Corridor. ‘Transit Score’ is a measure of transit dependency or propensity that can be used to estimate how likely the residents in a given area are to use public transit. Understanding where transit facilities are most likely to be used can help ensure future park and ride facilities provide maximum value to the community.

To calculate an area’s ‘Transit Score’, each set of demographic data is sorted largest to smallest and divided into 5 equal groups based on the value. The geographic areas in the highest cohort are awarded a score of 5, the next cohort is awarded a score of 4, and so on. This process is repeated with each demographic dataset. An overall ‘Transit Score’ is calculated by summing the score of each dataset. The datasets used to calculate the transit score are as follows:

- Overall population density
- Zero car household density
- Senior population density
- Population density of low-income individuals
- Density of individuals with disabilities

As is expected, transit scores tend to be higher in areas where more transit service exists. Along Woodward Avenue, the areas south of Maple Road and surrounding Pontiac have the highest transit scores. Along Gratiot Avenue, the block groups south of Mt. Clemens have the highest transit scores. The block groups in East Dearborn and Inkster have the highest transit scores along the Michigan Avenue corridor. In these areas there is a greater chance that residents will use transit if it is available and convenient. Additionally, riders in these zones may utilize other modes to travel to park and ride facilities other than driving in these areas. Figure 7 shows the transit score by block group for the three FAST Corridors.

Figure 7: FAST Corridor Transit Scores



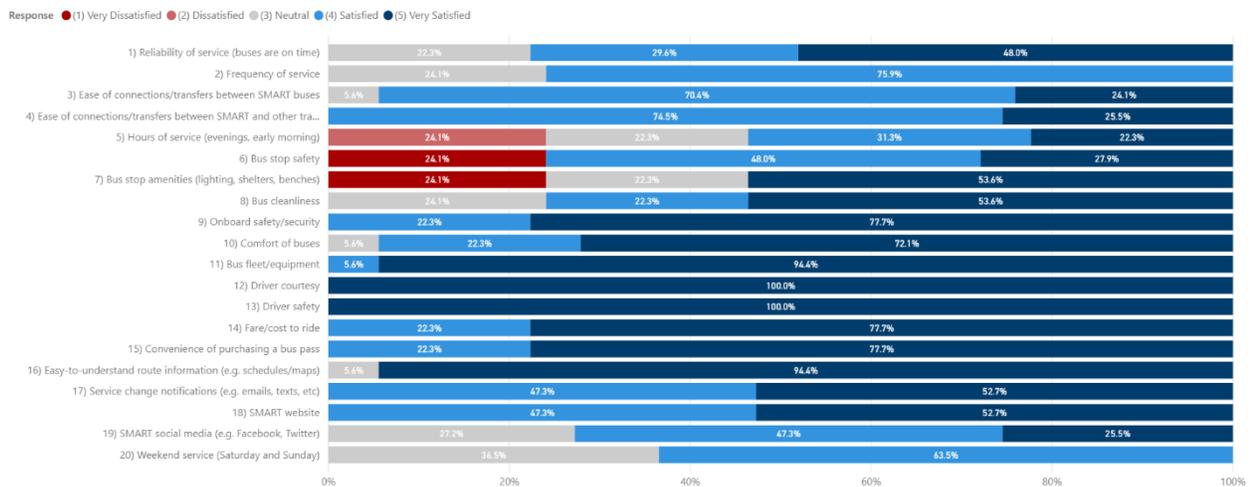
PREVIOUS PLANNING

2018 SMART MI On-Board Survey Results

The majority of respondents who utilize the FAST Michigan Avenue route are African American, age 45 or older, male, and receive a household income between \$25,000 and \$75,000. The majority of riders of the FAST Woodward routes ranked similarly with the exception of the majority age being between 25 and 44 years old, and a household income below \$25,000. Riders of Gratiot routes (561, 562 and 563) responded a bit differently, with more variation in demographics. Between the three routes, most respondents were African American, between 25 and 44 years old, and receive a household income below \$25,000.

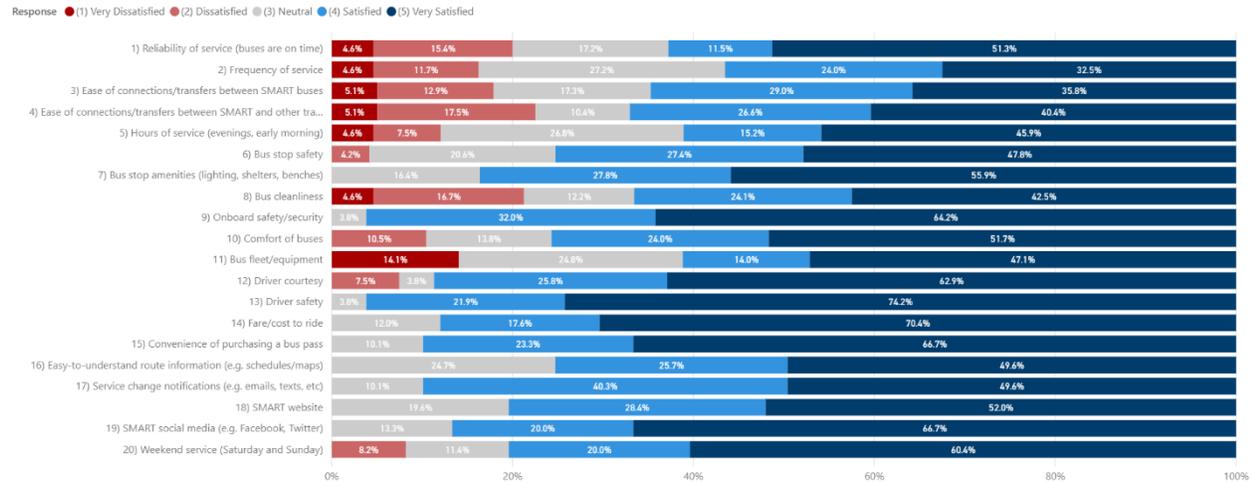
In terms of satisfaction, the survey inquired about topics such as reliability, safety, accessibility, and amenities. The following table displays the responses collected for the Michigan Avenue FAST Route. Respondents felt satisfied with most of the options, with the exception of amenities, hours, and safety. There was some dissatisfaction with the hours of service, bus stop safety, and amenities located at bus stops, such as lighting or benches.

Table 2: Michigan Avenue Route Satisfaction



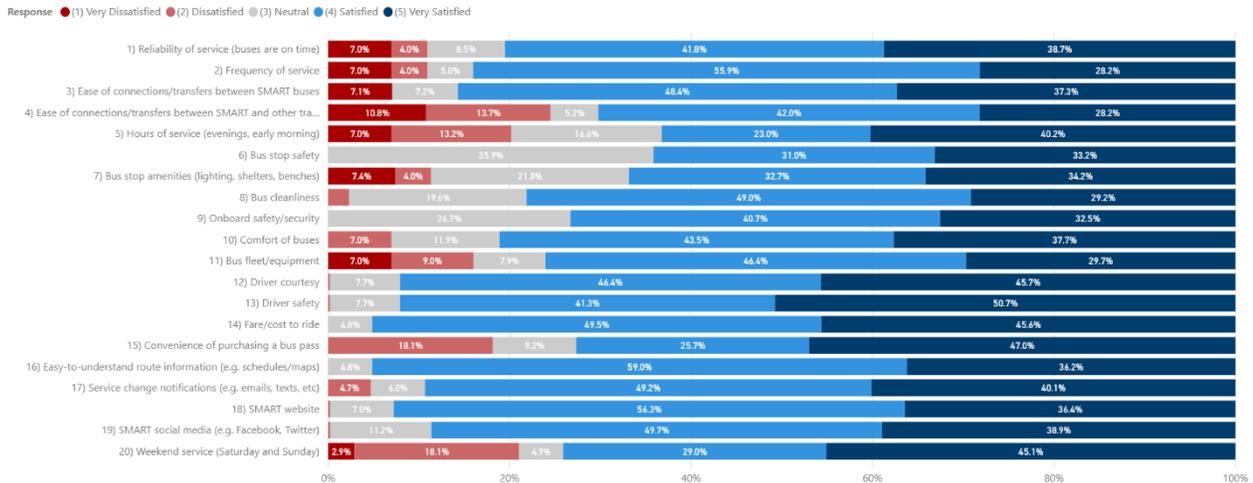
Responses for Woodward Avenue FAST routes showed more dissatisfaction in areas such as connections, hours, and cleanliness. Options that showed the highest percentage of dissatisfied riders include the following: Reliability of service, frequency of service, ease of connections/transfers between SMART buses and other transit, and bus cleanliness.

Table 3: Woodward Avenue FAST Route Satisfaction



Similar to Woodward Avenue responses, Gratiot Avenue FAST Route also had a greater variation in the level of satisfaction amongst riders. While all the options show that the majority of respondents are satisfied, the following items show the highest levels of dissatisfaction: ease of connections/transfers between SMART and other transit, hours of service, bus stop amenities, bus fleet/equipment, convenience of purchasing a bus pass, and weekend service.

Table 4: Gratiot Avenue FAST Route Satisfaction



The nature of trips along each of the three FAST routes differed only slightly. The majority of Michigan Avenue riders start their trips at their place of residence, did not make a trip in the opposite direction, accessed stops by

walking, did not have any previous transfers, and traveled for work purposes. Woodward Avenue riders scored similar with the exception of place of origin. While the slight majority responded that the origin of their trip was home, a large percentage also responded that they begin their trip at their typical workplace. Gratiot Avenue riders responded similar to Michigan Avenue riders, with the exception of taking a trip in the opposite direction. Again, while the slight majority stated they do not make a trip in the opposite direction, just less than half stated that they do.

Comprehensive Operations Analysis Plan

The Comprehensive Operations Analysis was completed in 2020 and identified, analyzed, and prioritized potential improvements to SMART's fixed route system. The plan lays out the following analysis and recommendations for SMART's FAST corridors.

Michigan Avenue FAST Corridor:

Performance Analysis

- Route 261 is an average to below-average route in the network, depending on time period.
- While average economic and financial ranks are in the second quartile, average service productivity rank is significantly better, ranking in the second quartile for weekday service.
- This route ranks low on operating costs (39th out of 43 on weekdays, 21st out of 25 on Saturdays, and 12th out of 16 on Sundays).
- Rider activity on this route is commuter oriented, with eastbound boardings spread along the western part of the service, with downtown Detroit (and to a lesser extent Dearborn) being the top destinations in the east. Westbound service shows a reverse of this pattern.
- Weekday ridership activity by trip shows this route has fairly consistent demand across all time periods. This is a bit surprising given the commuter orientation of the ridership pattern.

Potential Route Improvements

- Operate route hourly after 10:00 PM when ridership demand is lower.
- Operate the route with a more consistent clockface frequency of 20, 30, or 60 minutes. The route's inconsistent frequency dilutes from the FAST brand image of fast, frequent, and simple service.
- Right size service to the Amazon facility. If ridership at the Amazon stop is low, service to the site could be provided by Route 280 instead of Route 261. This would allow the FAST service to operate more directly between downtown Detroit and Detroit Metro Airport on all trips. If ridership is strong at Amazon then continue current service or possibly add trips.
- Consider new route numbering system that has numbering consistent for all FAST routes.

Woodward Avenue FAST Corridor:

Performance Analysis

- Route 461 is an above average performing route, with ranks varying widely across metrics networkwide throughout weekday and weekend service.
- Average service productivity ranks in the second quartile for weekday and Saturday service, and bottom quartile for Sunday service.
- Average economic productivity does slightly worse – ranking in the bottom quartile during weekday service, second quartile during Saturday service, and third quartile during Sunday service.

- Average financial productivity ranks in the third quartile for weekday and Sunday service, and second quartile for Saturday service.
- This route ranks best in Saturday ridership (1st out of 25) but performs poorly in terms of riders per revenue mile (18th out of 25).
- Rider activity is consistently high along the entire route. The middle part of the route – Ferndale, Royal Oak, and Birmingham – does the best.
- Weekday ridership activity by trip shows this route has peak demand. Similar to route 450 Woodward Local, demand on route 461 FAST Woodward occurs in both directions.
- Riders traveling northbound in the morning tend to make their trip earlier (between 5:00 and 7:00 am), while riders traveling southbound in the morning tend to ride between 7:00 and 8:00 am.

Potential Route Improvements

- Improve on-time performance since FAST Woodward has an image of providing fast, frequent, and reliable service. This image is undermined by the route's persistently poor on-time performance. A number of approaches can be taken to improve on-time performance:
 - Document actual running times by segment and by time of day to develop a more realistic service schedule.
 - Build at least 10% recovery time into total cycle time to ensure that late trips are isolated rather than propagated throughout the service day.
 - Consider service priority treatments for FAST buses including que-jump lanes and traffic signal prioritization, in partnership with member communities.

Gratiot Avenue FAST Corridor:

Route 561 Performance Analysis

- Route 561 is an above average performing route.
- An average of all service productivity metrics ranks in the second quartile for weekday service, and the bottom quartile for Saturday and Sunday service.
- An average of all economic productivity metrics ranks in the third quartile for weekday service, and the second quartile for Saturday and Sunday service.
- An average of all financial productivity metrics ranks in the second quartile for weekday and Saturday service, and the third quartile for Sunday service.
- This route ranks best in weekday daily ridership (2nd out of 43).
- Rider activity is consistently high throughout the corridor. Route 561 has a directional ridership pattern, with boardings occurring in highest numbers in the north and alightings occurring highest in the south.
- Weekday ridership activity by trip shows two travel patterns. One is peaked commuter demand, with riders traveling northbound in the AM peak between 6:00 and 7:00 am, and then back south between 4:00 and 5:00 pm. This route also has higher demand in both directions in the afternoon.

Route 561 Potential Route Improvements

- Consider consolidating Route 560 with Route 561/563. Route 560 carries more passengers than the Gratiot Avenue FAST Route (561/563). Combining the routes could simplify service in the corridor for riders by creating a single route with very high service frequency, which the corridor

appears able to support. Service could operate with a headway-based frequency rather than a schedule-based frequency and buses could be allowed to “leap-frog” one another to avoid bunching. This may be a more effective way to manage poor on-time performance than limited-stop service, as Route 561/563 has worse on-time performance than Route 560.

Route 562 Performance Analysis

- Route 562 is a below average performing route and lowest among Limited Fast routes. Across nearly all metrics networkwide the route ranks in the bottom quartile for weekday service.
- An average of all service productivity metrics, all economic productivity metrics, and all financial productivity metrics shows each ranks in the bottom quartile.
- Rider activity for this route is directional, with southbound boardings occurring throughout Macomb County and alightings occurring at 8 Mile Road and in Midtown Detroit.
- Weekday ridership activity by trip shows this route only operates during peak periods. The top AM southbound trip occurs at 7:00 am. The top PM northbound trip occurs at 4:15 pm.

Route 562 Potential Route Improvements

- Replace Route 562 with peak-hour commuter service that uses I-94 to connect to midtown Detroit. While there are no HOV lanes for transit vehicles to use in this segment of I-94, this proposed service would nevertheless provide travel times more competitive with driving relative to Route 562. This proposed service could follow the Route 562 alignment southbound to 13 Mile Road before using I-94 to travel towards the Detroit Medical Center and Midtown Detroit.
- Consider eliminating service given low performance and infrequent service.

RIDER AND STAKEHOLDER PERSPECTIVES

RIDER AND PROSPECTIVE RIDER SURVEY

In order to gather additional insight on the location and amenities of future mobility hubs in the SMART service area, a survey was developed and distributed to the community. SMART maintains an email database of over 17,000 riders and residents interested in transit, as well as a list of contacts at local communities. The purpose of the survey was to identify preferences from the community about which amenities should be included in future mobility hub/park and ride sites, where potential facilities should be located along each corridor, and better understand how riders would use them. The survey was distributed to riders and community members via email, social media, and using the digital screens at the FAST stops with shelters.

The questions asked via the survey are as follows:

1. How do you currently travel to your nearest bus stop?
 - a. Walk
 - b. Bike
 - c. Drive and Park
 - d. Dropped off
 - e. I don't take the bus (logic jump to Q3)
 - f. Other: _____

2. How long does it take you to travel to your nearest bus stop?
 - a. Less than 5 Minutes
 - b. 5 – 9 Minutes
 - c. 10 - 14 Minutes
 - d. 15 Minute or More

3. How far are you willing to travel to use a Park and Ride?
 - a. Less than 5 Minutes
 - b. 5 – 9 Minutes
 - c. 10 - 14 Minutes
 - d. 15 Minute or More
 - e. I wouldn't use a park and ride

4. What amenities would you like to see included in future mobility hubs? Select up to 3.
 - a. Green Space
 - b. Comfortable waiting areas
 - c. Connections to other modes
 - d. Electric vehicle/bike charging areas
 - e. Uber/Lyft Pick Up and Drop Off Area
 - f. Connections to microtransit
 - g. Adequate vehicle parking
 - h. Free vehicle parking
 - i. Paid, secure vehicle parking
 - j. Free Wifi
 - k. Bicycle parking
 - l. Concessions
 - m. Other, please explain:

5. What are the most important aspects of considering the location of a mobility hub along SMART's FAST routes? Choose up to 3.
 - a. Distance to job centers
 - b. Distance to Downtown Detroit
 - c. Connections to additional transit service
 - d. Accessibility by car
 - e. Accessibility by walking and biking
 - f. Site safety
 - g. Distance from FAST Route
 - h. Additional rider amenities
 - i. Other, please explain:

6. Which FAST route do you travel most often?
 - a. Michigan Avenue
 - b. Gratiot Avenue
 - c. Woodward Avenue
 - d. I Don't Use Transit on These Corridors

7. On which FAST corridor do you travel most often without using transit?
 - a. Woodward Avenue
 - b. Michigan Avenue
 - c. Gratiot Avenue

8. Which amenities or site considerations would be most beneficial for you to use a mobility hub on **Michigan Avenue**? Select up to two.
 - a. Secure parking area with transit connection to DTW Airport
 - b. Mid-corridor (Inkster, Dearborn Heights, Dearborn) mobility hub location
 - c. Easy access for daily commuters
 - d. Walking and biking access
 - e. Space for transfers to other SMART routes
 - f. Space for microtransit and autonomous vehicle connections
 - g. Other: _____

9. Which amenities or site considerations would be most beneficial for you to use a mobility hub on **Gratiot Avenue**? Select up to two.
 - a. Easy access to I-94
 - b. Adequate free parking
 - c. Community focused transit/mobility hubs
 - d. Space for transfers to other SMART routes
 - e. Walking and biking access
 - f. Space for microtransit and autonomous vehicle connections
 - g. Other: _____

10. Which amenities or site considerations would be most beneficial for you to use a mobility hub on **Woodward Avenue**? Select up to two.
 - a. Adequate free parking
 - b. Space for shops and other commercial development
 - c. Walking and biking connections to neighborhoods along Woodward
 - d. Design that fits the surrounding community
 - e. Space for transfers to other SMART routes
 - f. Space for microtransit and autonomous vehicle connections
 - g. Other: _____

11. How old are you?
 - a. Under 18
 - b. 18-24
 - c. 25-34
 - d. 35-44
 - e. 45-54
 - f. 55-64
 - g. 65 and above

12. What zip code do you live in?
 - a. _____

Survey Results

With over 270 responses, the majority of respondents walk to their nearest bus stop and use the Woodward FAST route most often. They currently travel less than 9 minutes to get to a stop and are willing to travel up to 15 minutes to access a park and ride facility.

When asked which amenities would be most beneficial at future mobility hubs, the majority of respondents chose comfortable waiting areas, connections to other modes of transportation, and adequate free vehicle parking. They also felt the most important aspects in determining location of mobility hubs are connections to additional other transit routes, the facility's distance to downtown Detroit, and site safety. In terms of facility amenities and site considerations for specific corridors, the following were the top responses.

Gratiot Avenue

1. Space for transfers to other SMART routes
2. Adequate free parking
3. Community focused transit/mobility hubs

Michigan Avenue

1. Convenient access for daily commuters
2. Mid-corridor mobility hub location
3. Space for transfers to other SMART routes

Woodward Avenue

1. Walking and biking connections to neighborhoods along Woodward
2. Space for transfers to other SMART routes
3. Adequate free parking

STAKEHOLDER INTERVIEWS

The project team met with stakeholders from around the region to gather additional input on the location and design of future park and ride facilities along the FAST corridors. These meetings, along with the online community survey, helped the team to better understand what riders and prospective riders would like to see in a Park and Ride facility.

During the week of December 13, 2020, four meetings were held via Zoom with the following groups: SMART Ombudspeople, Michigan Avenue corridor stakeholders, Gratiot Avenue corridor stakeholders, and Woodward Avenue corridor stakeholders. Each meeting began with a project overview, a review of community survey findings, and transitioned into a group discussion focused on future facility location priorities and amenities.

Overall, stakeholders feel that each route should house multiple park and ride facilities/mobility hubs and amenities should be included to provide improvements to maximize safety and rider comfort. The future facilities should also provide economic benefit to the surrounding community and serve as an asset to residents, riders, and local businesses. The following statements represent key findings from each stakeholder session.

SMART Ombudspeople

- Amenities at the future facilities should utilize technology to maximize comfort and include Wi-Fi, real-time arrival bus information, and phone chargers. They should also include space for rideshare use, EV charging stations, and maximize ease of transition from parking to boarding the bus.
- Key potential locations include Gratiot and 8 Mile, 9 Mile, 12 Mile, and 15 Mile Roads. For Woodward Avenue, the Northern end of the corridor or Auburn Hills may provide opportunity. Lastly, for Michigan Avenue, Outer Drive, Henry Ruff, or Romulus at Vining and Ecorse near the Amazon distribution center are potential locations.
 - The Eastpointe Mayor was very interested in the 8 Mile and Gratiot site for a park and ride or mobility hub to capitalize on transfers between SMART and DDOT.

- The future mobility hubs should consider the effects of COVID and remain flexible to address future needs and efficiency.
- Safety is a major concern of riders and should be addressed in design.

Michigan Avenue Corridor

- When looking at amenities, local culture should be considered and should connect to the surrounding neighborhood. Other amenities should include Wi-Fi, heated shelters, trash receptacles, covered bus shelters, and adequate parking.
- Marketing and public education efforts are needed to attract new riders.
- In looking at site location, Fairlane Mall, Schaefer Rd, the previous site of Eloise Hospital facility, UM Dearborn, and Henry Ford College all may provide opportunity.
- The cities of Westland and Dearborn have goals aligning with the project and are currently in discussion regarding possible site locations. Local institutions such as Ford, UofM, Fairlane, DTW, and Amazon should also be tied into the implementation and design of the future facilities.

Gratiot Avenue Corridor

- Amenities such as parking, areas for sitting, phone charging stations, warming areas, bicycle facilities, phone charging stations, mini police station/office, and improvements to existing non-motorized connections should be considered. They should also be connected to surround retail and commercial developments.
- Multiple park and ride/mobility hubs sites may be warranted along Gratiot Avenue to serve the varied communities along the route.
- Potential locations include Eastpointe (near 8 Mile and Gratiot) and Gratiot and Utica in Roseville.

Woodward Avenue Corridor

- Suggested amenities include bike share stations, adequate lighting and maintenance, outdoor bench seating for summer, wayfinding tools such as totems, maps, and schedules. Park and Ride/mobility hub facilities should fit the look and feel of the surrounding community and be designed as community hubs.
- Potential locations include the city of Pontiac, and Webster and Woodward in Berkley. The Amtrak and Greyhound station may also be utilized.

CORRIDOR ANALYSIS METHODOLOGY AND CRITERIA

The three FAST Corridors extend for miles through various cities and townships, all with different character and transit needs. In order to narrow down the areas where specific park and ride sites would be explored, a high-level, sub-area analysis was completed for each corridor.

CORRIDOR SUB-AREAS

In order to differentiate between the various communities along the FAST Corridors, each was broken down into a set of sub-areas that could be evaluated. The majority of the sub-areas are roughly 8 square miles in size, extending two miles on either side of the corridor and 2 miles along the corridor. The boundaries stop at major roadways or other logical stopping points. Some sub-areas are larger than 8 miles, particularly at the end of the corridors in order to accommodate the more dispersed land uses that exist further from the core of the SMART service area and align sub-area boundaries at logical end points. The sub-areas for each corridor are shown in Figure 8.

Figure 8: FAST Corridor Sub-areas

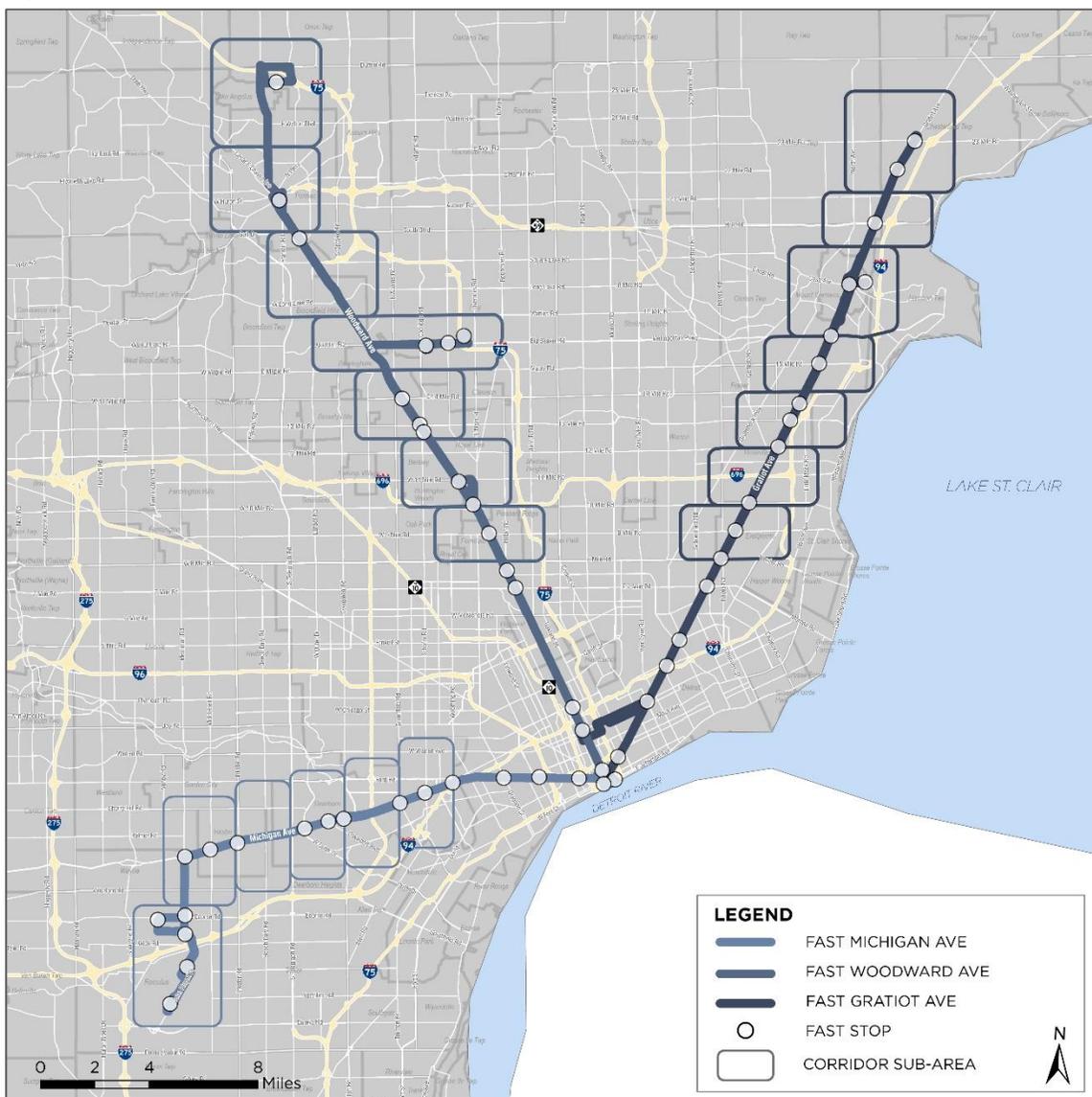


Table 5: FAST Corridor Sub-Areas

Sub-areas	Woodward	Gratiot	Michigan
	8 Mile Rd – 10 Mile Rd	8 Mile Rd – 10 Mile Rd	Wyoming Ave – Greenfield Rd
	10 Mile Rd – 12 Mile Rd	10 Mile Rd – 12 Mile Rd	Greenfield Rd – Evergreen Rd
	12 Mile Rd – Maple Rd	12 Mile Rd – 14 Mile Rd	Evergreen Rd – Telegraph Rd
	Maple Rd – Wattles Rd	14 Mile Rd – Metro Parkway	Telegraph Rd – Inkster Rd
	Wattles Rd – South Blvd	Metro Parkway – Mt. Clemens	Inkster Rd – Ecorse Rd
	South Blvd – Kennett Rd	Mt. Clemens – 21 Mile Rd	Ecorse Rd – Metro Airport
	Kennett Rd – Silverbell Rd	21 Mile Rd – 25 Mile Rd	

PRELIMINARY EVALUATION CRITERIA

In order to determine where specific park and ride sites would be best located, the sub-areas were subjected to a preliminary evaluation of the demographic, transportation, and land use conditions in each. The goal of this exercise was to narrow down the areas where potential park and ride/mobility hubs should be located based on the project goals established by the PMT. Through this preliminary evaluation, specific sub-areas will be carried forward to the site selection exercise in Task 4. In this task, specific sites will be identified and further refined based on estimated demand, amenity preferences, location, and more.

Building from the project goals established at the outset of the project, the following set of evaluation criteria were developed in an attempt to identify general locations that would advance those goals:

Average Stop Ridership

- Goal: Grow Ridership
- Measure: Average SMART bus ridership from September 2019 for all stops within the sub-area. This measure is intended to identify areas where people are already riding and build upon it.
- Evaluation: Sub-areas with greater average ridership were ranked higher than those with average ridership

Total FAST Ridership

- Goal: Grow Ridership
- Measure: Total FAST route ridership from September 2019 for FAST stops within the sub-area. This measure is intended to identify areas where people are already riding FAST and build on the ridership.
- Evaluation: Sub-areas with more FAST riders were ranked higher than those with lower numbers of riders

Population Density

- Goal: Grow Ridership

- Measure: Average population per square mile for each sub-area based on US Census 2019 ACS Data. This measure is intended to identify the areas where larger pools of potential riders currently live and attempt to capture that.
- Evaluation: Sub-areas with population density were ranked higher than those with lower population density.

Distance from Downtown Detroit

- Goal: Increase Access
- Measure: Distance from center of sub-area, along the applicable corridor, to Campus Martius in Downtown Detroit. This measure is intended to identify the sub-areas within a reasonable distance to Downtown that would most likely attract park and ride users.
- Evaluation: Mid-distance sub-areas (10-15 miles from Downtown Detroit) were ranked highest. The furthest sub-areas from Downtown were ranked second and the closest sub-areas ranked lowest.

Distance from Secondary Employment Center

- Goal: Increase Access
- Measure: Distance from center of sub-area, along the applicable corridor, to the secondary concentration of employment along each corridor: Woodward – Big Beaver at Coolidge Rd, Gratiot – Downtown Mt. Clemens, Michigan – Michigan Ave at Southfield Fwy. This measure is intended to identify sub-areas within a reasonable distance to other large employment centers in the corridor that would attract park and ride users.
- Evaluation: Mid-distance sub-areas (10-15 miles from Secondary Employment Centers) were ranked highest. The furthest sub-areas from these employment areas were ranked second and the closest sub-areas ranked lowest.

Total Highway Exits

- Goal: Increase Access
- Measure: Total number of highway interchanges located within the sub-area as a measure of accessibility from other areas in the region.
- Evaluation: Sub-areas with a greater number of highway interchanges received a higher ranking than those with fewer.

Total Miles of Principle Arterial Roads

- Goal: Increase Access
- Measure: Total miles of arterial roadways in each sub-area. This criterion is intended to measure the ease of accessibility of nearby residents to potential park and ride areas.
- Evaluation: Sub-areas with a greater total mileage of arterial roads are ranked higher than those with fewer arterial roads.

Total SMART Routes

- Goal: Increase Access
- Measure: Total number of SMART routes that run through the sub-area. This measure is looking for potential connections to other transit routes that could link up with the FAST service and other mobility options at the sites.
- Evaluation: Sub-areas with more SMART routes running through are ranked higher than those with fewer.

Density of Bike Facilities

- Goal: Increase Access

- Measure: Total miles of bicycle facilities per square mile, both on road and off road, within the sub-area. This measure is intended to identify the potential for bike connections to a future park and ride site. The measure includes density to accurately compare larger sub-areas to smaller ones.
- Evaluation: Sub-areas with more bike facilities per square mile are ranked higher than those with fewer bike facilities.

Density of Sidewalks

- Goal: Increase Access
- Measure: Total miles of sidewalks per square mile that currently exist within the sub-area. This measure is intended to identify the potential for pedestrian connections to a future park and ride site. The measure includes density to accurately compare larger sub-areas to smaller ones.
- Evaluation: Sub-areas with more miles of sidewalks per square mile are ranked higher than those with fewer.

Large Parcels

- Goal: Preserve space for future development
- Measure: Total number of parcels 5 acres or larger in the sub-area. This criterion is intended to measure the ease of finding a site large enough for a future park and ride site. 5 acres is the upper limit of a standard park and ride size.
- Evaluation: Sub-areas with more 5 acre and larger parcels were ranked higher than those with fewer 5-acre parcels.

A more refined set evaluation criteria will be used to identify specific sites for the park and ride facilities in Task 4.

Scoring Methodology

The evaluation criteria were paired with a scoring system intended to rank each sub-area for each evaluation category. This scoring methodology considers the raw data for each criterion and sorted by how well they meet the measure and goal. 1, 2, or 3 points are awarded to each sub-area depended on how they compare to each other For example, the population density evaluation awards the highest scores to the sub-areas with the greatest number of people per square mile. The top sub-areas receive 3 points, the middle density areas receive 2 points, and the least dense areas receive 1 point. The scores are totaled for all 11 evaluation criteria and a total score is calculated for each sub-area. The sub-areas with the highest score tend to meet the project goals best.

FAST CORRIDOR ANALYSIS

Using data collected from the US Census Bureau, SMART, SEMCOG, and the State of Michigan, the sub-area analysis yielded areas along each corridor where park and ride facilities may be most utilized. The results summarized below are simplified from the raw numbers developed in the analysis portion.

WOODWARD AVENUE

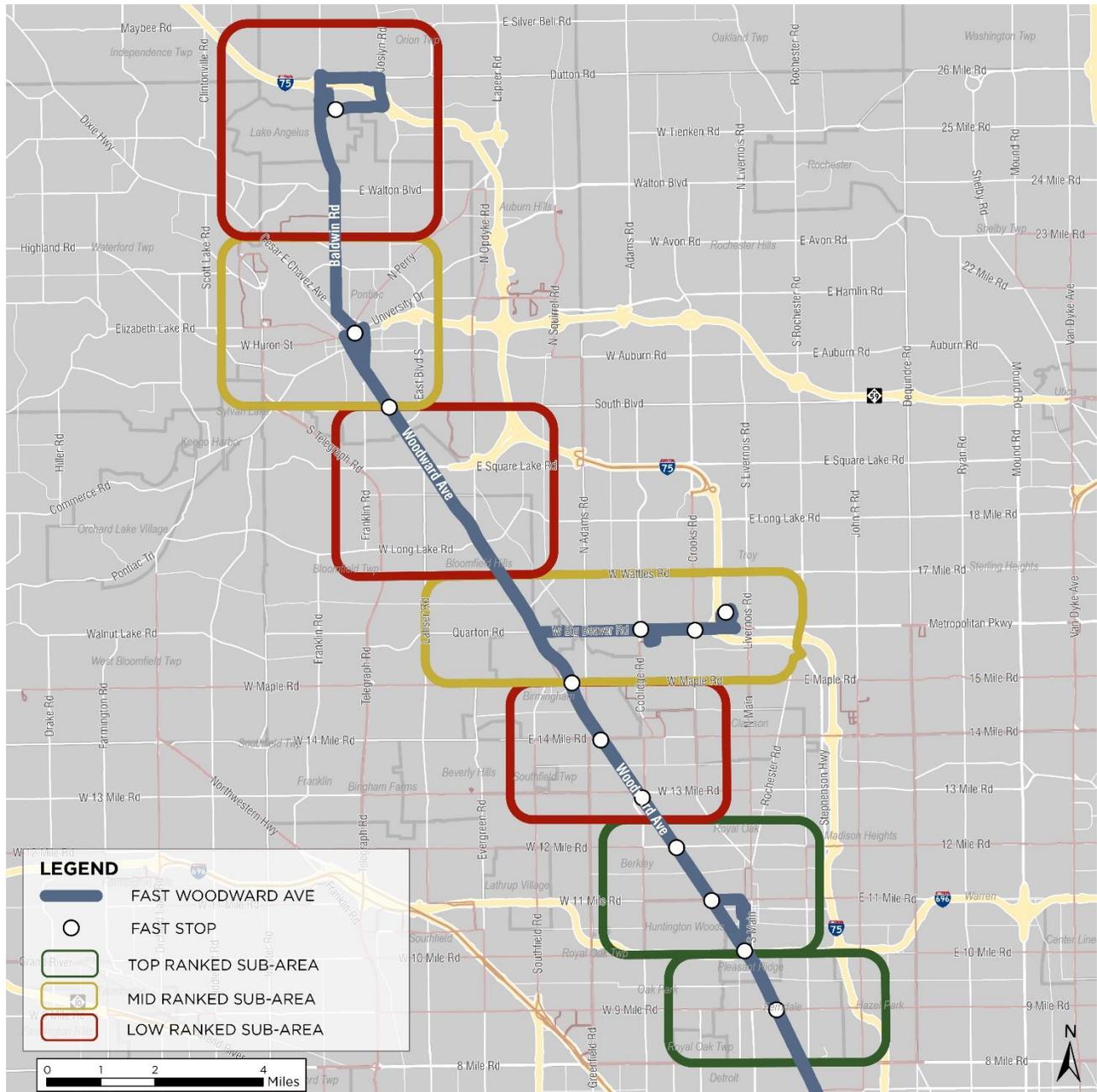
The Woodward Avenue FAST corridor stretches from Downtown Detroit to two different end points. Route 462 ends at Great Lakes Crossing in Auburn Hills and Route 461 ends at Civic Center Drive in Troy. Route 462 was recently extended from its previous terminus in Pontiac north to Great Lakes Crossing to better serve the employment center there. The Woodward Ave Sub-Areas start at 8 Mile Rd and extend north every 2 – 4 miles, depending on the logical barriers and borders along the corridor.

Overall, the 8 Mile – 10 Mile Sub-Area and 10 Mile - 12 Mile Sub-Area rank the highest due to their greater existing transit ridership, total available connecting transit routes, available non-motorized infrastructure, and population density. However, these sub-areas are lacking in accessibility for vehicles, potential available sites, and the distance from the secondary job centers. High ranked, northern sub-area include Pontiac (South Blvd to Kennett Rd) and Maple Rd to Wattles Rd. Table 6 shows the results of the analysis for Woodward.

Table 6: Woodward Avenue Sub-Area Analysis Results

Sub-areas	Avg Stop Ridership	Total FAST Ridership	Population Density	Distance from Downtown Detroit	Distance from Secondary Job Center*	Total Highway Exits	Total Principal Arterial	Total SMART Routes	Density of Bike Facilities	Density of Sidewalks	Total Large Parcels	Overall Score
8 Mile Rd – 10 Mile Rd	•••	•••	•••	•	••	••	•	•••	•••	•••	•	•••
10 Mile Rd – 12 Mile Rd	••	••	•••	•	•••	•••	•	•••	•••	•••	•	•••
12 Mile Rd – Maple Rd	••	••	••	•	•	•	••	•••	•	••	••	•
Maple Rd – Wattles Rd	••	•••	•	•••	•	•••	••	••	••	••	•••	••
Wattles Rd – South Blvd	•	•	•	•••	•	••	••	•	•	•	•••	•
South Blvd – Kennett Rd	•••	•	••	••	•••	•	•••	••	••	••	••	••
Kennett Rd – Silverbell Rd	•	•	•	••	••	••	••	•	••	•	••	•

Figure 9: Woodward Avenue Sub-Area Rankings



GRATIOT AVENUE

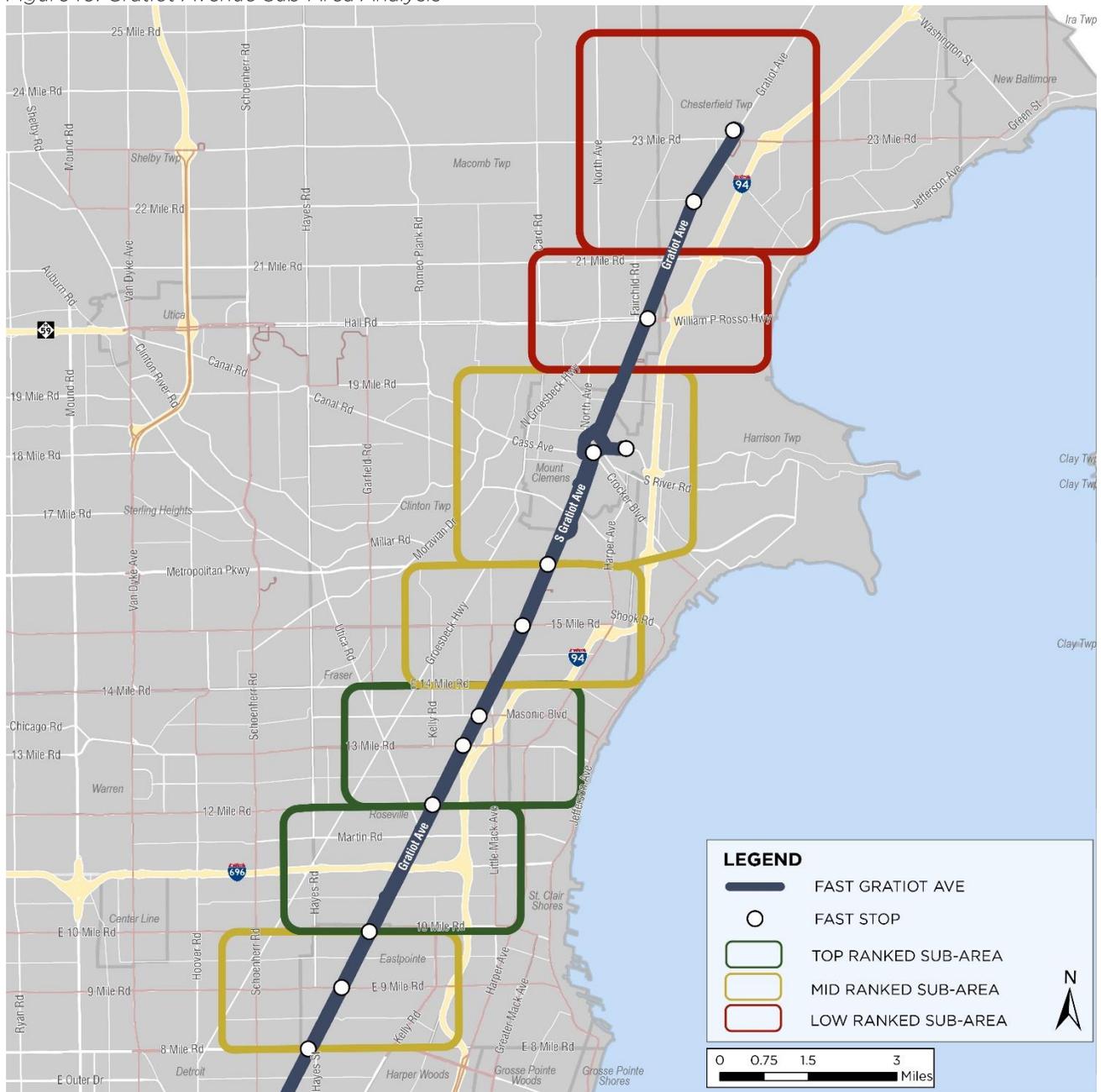
The Gratiot Avenue FAST corridor stretches from Downtown Detroit to the northeast and ends at two different points. Route 561 ends at the North River Park and Ride in Mt. Clemens and Route 563 ends at the Meijer Park and Ride in Chesterfield Township. An additional FAST Gratiot route is available as well, Route 562, which travels between Wayne State in Midtown Detroit and the North River Park and Ride.

The sub-areas that scored highest on the evaluation were the 10 Mile – 12 Mile and 12 Mile – 14 Mile Sub-Areas. These areas rose to the top due to their vehicle accessibility scores, the potential for connections with other SMART routes, and their population density. These areas, similar to Woodward, have fewer large parcels available and are further from the secondary job center. Mid-corridor sub-areas in Mt. Clemens and from 14 Mile to Metro Parkway ranked in the second tier. Table 7 shows the results from the Gratiot Sub-Area analysis

Table 7: Gratiot Avenue Sub-Area Analysis Results

Sub-areas	Avg Stop Ridership	Total FAST Ridership	Population Density	Distance from Downtown Detroit	Distance from Secondary Job Center*	Total Highway Exits	Total Principal Arterial	Total SMART Routes	Density of Bike Facilities	Density of Sidewalks	Total Large Parcels	Overall Score
8 Mile Rd – 10 Mile Rd	●●●	●●●	●●●	●	●●	●●	●●	●●	●	●●●	●	●●
10 Mile Rd – 12 Mile Rd	●●●	●●	●●●	●	●●	●●●	●●	●●●	●●●	●●●	●	●●●
12 Mile Rd – 14 Mile Rd	●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●	●●	●●	●●●
14 Mile Rd – Metro Pkwy	●	●●	●●	●●●	●●	●●	●●	●●	●●	●●	●●	●●
Metro Pkwy – Mt. Clemens	●	●●	●●	●●	●	●●	●●●	●	●●	●●	●	●●
Mt. Clemens – 21 Mile Rd	●	●	●	●●	●	●●	●	●	●●●	●	●●●	●
21 Mile Rd – 25 Mile Rd	●●	●	●	●●	●●●	●	●	●	●	●	●●●	●

Figure 10: Gratiot Avenue Sub-Area Analysis



MICHIGAN AVENUE

The Michigan Avenue FAST corridor stretches from Downtown Detroit directly west and ends at Detroit Metro Airport in Romulus. Select trips throughout the day detour off of the set route to serve the Amazon Distribution Center at Vining and Ecorse Roads.

The sub-areas that scored highest on the evaluation were the Greenfield – Evergreen and Evergreen – Telegraph Sub-Areas. Both of these sub-areas are in the City of Dearborn. These areas rose to the top due to their vehicular access via local arterial roads, the amount of bicycle facilities available, the average stop ridership, and the total potential SMART connections available. Table 8 shows the results from the Gratiot Sub-Area analysis

Table 8: Michigan Avenue Sub-Area Analysis Results

Sub-areas	Avg Stop Ridership	Total FAST Ridership	Population Density	Distance from Downtown Detroit	Distance from Secondary Job Center*	Total Highway Exits	Total Principal Arterial	Total SMART Routes	Miles of Bike Facilities	Miles of Sidewalks	Total Large Parcels	Overall Score
Wyoming Ave – Greenfield Rd	•	••	•••	•	•	•••	••	••	•	••	•	•
Greenfield Rd – Evergreen Rd	•••	•	•	•	•	•••	•••	•••	•••	••	•	••
Evergreen Rd – Telegraph Rd	••	•••	••	•••	•	•	•••	•••	•••	•••	•	•••
Telegraph Rd – Inkster Rd	••	•	••	•••	•••	•	•	•••	•	•••	•	•
Inkster Rd – Venoy Rd	••	•••	••	••	•••	•	•	••	•	•••	•••	•••
Ecorse Rd – Metro Airport	••	••	•	••	••	•••	••	••	•	•	•••	••

Figure 11: Michigan Avenue Sub-Area Analysis

