



Southeast Michigan Transportation Operations Center
2014 ANNUAL REPORT

A Message From the Manager

We are committed to your safety and improved quality of life!

Our mission at Michigan Department of Transportation (MDOT) is to provide you the highest quality integrated transportation services for your economic benefits and to improve the quality of your life. We use the control room at the Southeast Michigan Transportation Operations Center (SEMTOC) to monitor the freeway system in Metropolitan Detroit (Oakland, Macomb, St. Clair, and Wayne counties) and to dispatch the Freeway Courtesy Patrol (FCP) 24 hours a day, seven days a week, 365 days a year.

2014 was a record-breaking year, with a record-breaking winter season followed by a record-breaking rain storm in August. We provided you and the first responder community (police departments, fire departments and emergency medical services) the information necessary to ensure your safe and effective travels during these significant events.

We also hosted the world! Detroit played host to the Intelligent Transportation Society of America (ITS America) World Congress at the newly renovated COBO Center in September 2014. The ITS World Congress was a gathering of more than 10,000 transportation experts and enthusiasts from more than 30 countries that represent the entire spectrum of intelligent transportation systems (ITS) technology and services, including domestic and worldwide public agencies, the automotive sector, consulting, infrastructure equipment, telematics and more. SEMTOC provided a highlighted tour of our control room for the program. Operations staff also operated live on the exhibit floor in a joint transportation operations center with other local agencies to demonstrate the collaborative communications and integration capabilities of ITS technologies. The event proved beneficial on many levels as SEMTOC built international relationships that will benefit you in the coming years through the sharing of best practices and a myriad of traffic mitigation strategies.

The dedicated professionals at SEMTOC are continuously looking for ways to improve your travel mobility and safety, and trust that this report will provide you with an informative overview of our operations and a helpful reference to use in trip planning. Remember, always check the Mi Drive website for up-to-the-minute traffic information before heading onto the roads, or download the new Mi Drive app for 2015!

Safe Travels,



Oladayo Akinyemi, PE
 Manager, Southeast Michigan Transportation Operations Center

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MDOT has been actively involved with ITS on southeast Michigan freeways for more than 50 years, and is often recognized as an industry leader in innovation. The phases of deployment can be summarized into four general eras:



JOHN C. LODGE
(1957– 1965)



SCANDI
(1976 – 1991)



MITSC
(1991– 2012)



SEMTOC
(2012 – CURRENT)

Each era brought new technologies and practices that led to gradual and yet drastic improvements in freeway operations. The history of ITS in Detroit can be accessed by clicking [here](#), scanning the QR code below or online at www.michigan.gov/ITS. Click on *Metro Detroit* under the “Links and News” section of the page. The *History of ITS in Detroit* pdf file is located under the “Links and News” section of the following page.



Fiscal Year (FY) 2014 experienced several events that highlighted the value of SEMTOC.

October 2013 Detroit Free Press Marathon

In supporting and promoting coordination for the first responder and security communities, SEMTOC hosted the 2013 Detroit Free Press Marathon Emergency Operations Center on Sunday, Oct. 20, 2013.



January 2014 Record-Breaking Weather

January 2014 set a new snowfall record with 39.1 inches. The increase in snowfall meant elevated operations. SEMTOC received compliments from numerous sources, including the governor, MDOT senior management and Michigan State Police officials, for internal and external coordination and management during the weather events.



July 2014 Integrated Corridor Management



MDOT implemented its first integrated corridor management (ICM) pilot projects in the Metro Region. ICM integrates arterial roadways with the freeway system, improving traffic flow and efficiency during major freeway congestion. The

projects installed trailblazing guide signs and arterial traffic cameras, and programmed special signal timings to improve flow between the freeway and arterial. All components are integrated into SEMTOC.

April – September 2014

I-96 Fix

Metro Region's high-profile project for the 2014 construction season was the "I-96 Fix" project that closed 7 miles of freeway for reconstruction, repaired 37 bridge overpasses, installed new freeway lighting and upgraded other utility infrastructure from April through September.



Even with the major closure in place, MDOT maintained mobility by using ITS infrastructure, adding portable dynamic message signs and effectively rerouting traffic.

August 2014 Floods



Considering the depth of the flooding and the erosion that took place, MDOT teamwork resolved the issues at an unbelievable pace.

SEMTOC helped manage the flooding event that took place on Aug. 11, 2014. Five major freeways were shut down for up to 48 hours.

September 2014 ITS World Congress

Detroit hosted the 2014 ITS World Congress Sept. 7–11, 2014. MDOT played a large role in the coordination of the event and SEMTOC held numerous tours to showcase its state-of-the-art technology and operations to the world.



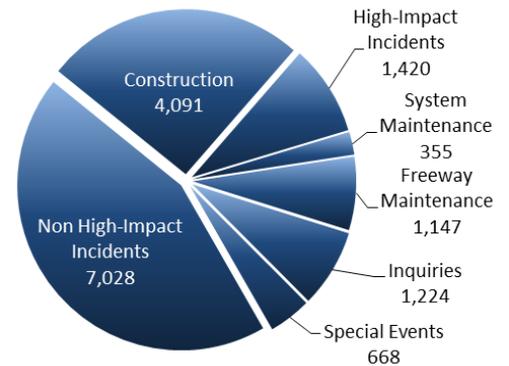


What happens in the control room?

Control room operators actively monitor roadway conditions, manage incidents and special event traffic, coordinate with maintenance personnel and respond to caller inquiries 24 hours a day, seven days a week. Such activities in which the operators are involved are logged as events. In 2014, the control room managed **15,933 total events**, which was a **2 percent increase** over the number of events managed in 2013.

High-impact incidents are those that result in a total freeway closure in one direction, a freeway-to-freeway ramp closure or only one lane open. **System maintenance** events are activities associated with ITS network issues. **Freeway maintenance** events are general maintenance activities performed along freeway routes, such as pothole patching.

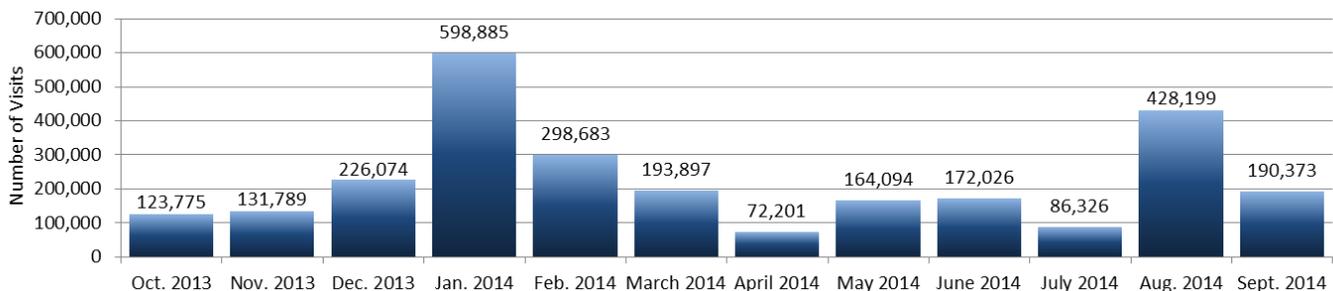
Events by Type



Where can I access roadway information?

Control room operators continuously share information with stakeholders and the public through various outlets, including local media partnerships, Twitter and MDOT's Mi Drive website and app. For the latest information, follow SEMTOC on Twitter (@MDOT_MetroDet) or access information online at www.michigan.gov/drive or using MDOT's Mi Drive app. In 2014, the Mi Drive website experienced nearly **2.7 million visits**. The winter storms in January and flooding in August resulted in spikes in use of the website.

Mi Drive Website Visits

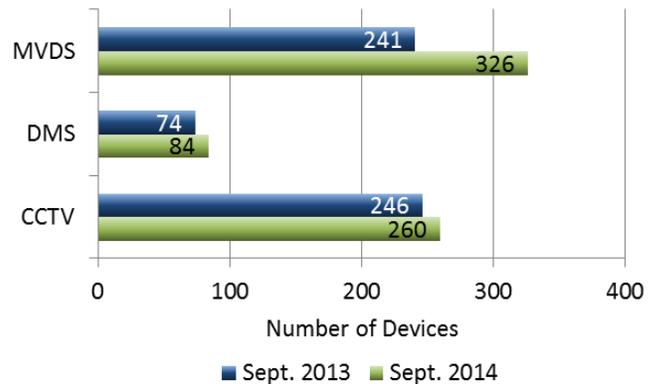




How many devices do we have?

Control room operators actively monitor roadway conditions using ITS equipment, such as closed-circuit television (CCTV) cameras, dynamic message signs (DMS) and microwave vehicle detection systems (MVDS), and coordinate with maintenance personnel to maintain the field equipment. During 2014, the number of devices available to operators increased from 561 to 670, which is a **20 percent increase** since the beginning of the period.

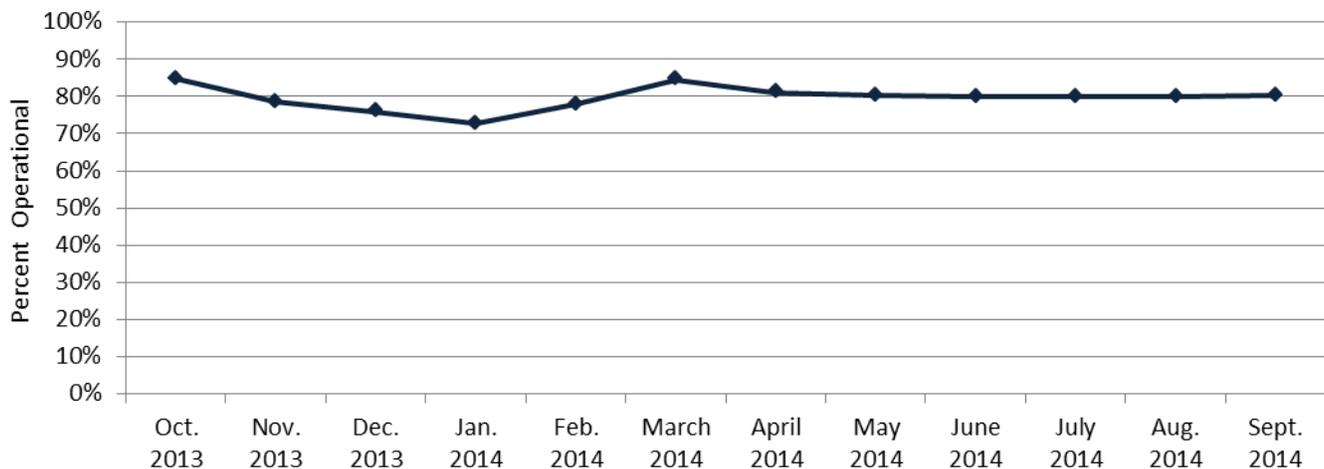
Device Growth



How reliable are the devices?

CCTV cameras and DMS are used by the control room operators to identify, manage and monitor incidents. The public can also monitor the devices from the Mi Drive website. Reliability is tracked by the average availability of system devices that are operational in the control room so that timely maintenance of the devices can occur.

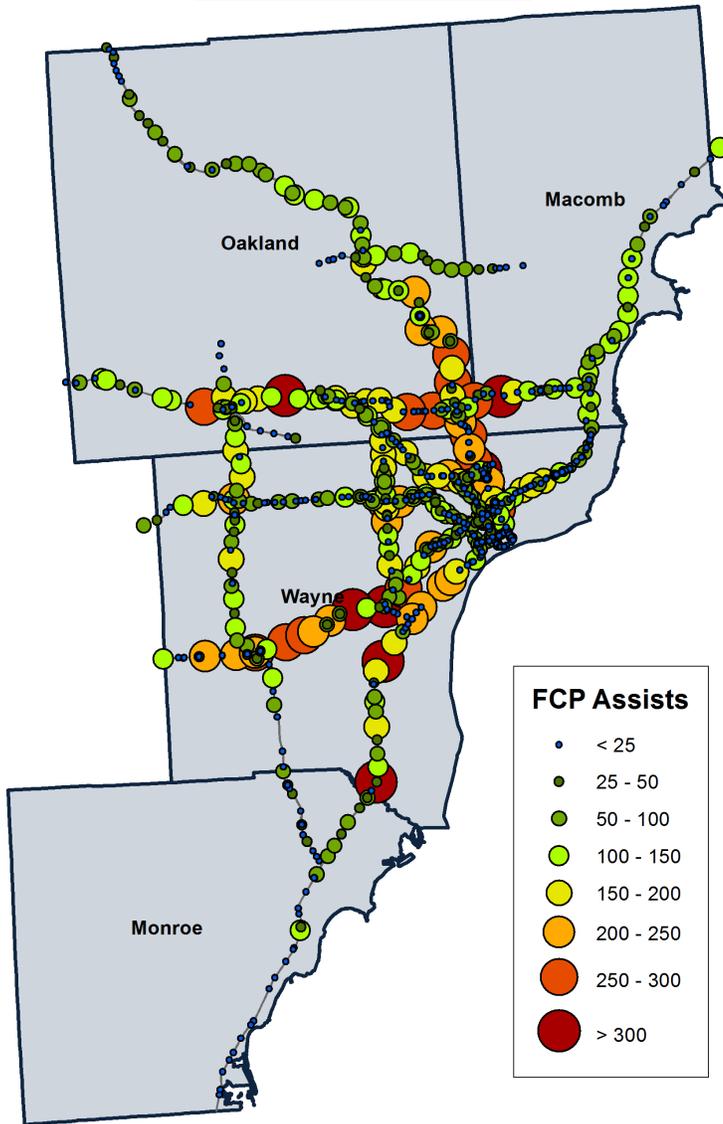
Monthly Device Availability



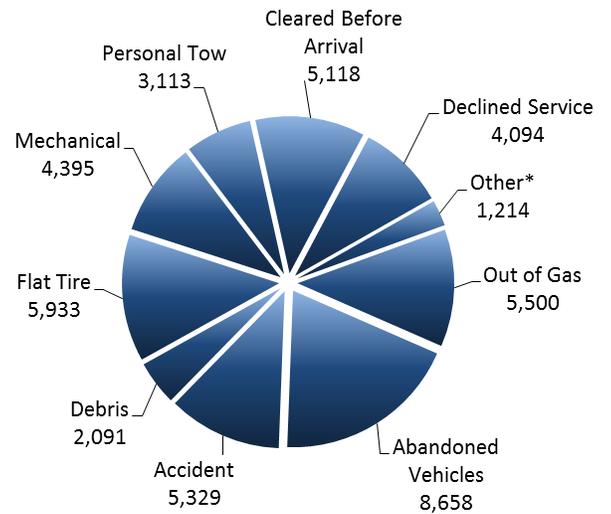
What is the Freeway Courtesy Patrol?

The Freeway Courtesy Patrol (FCP) is a service provided to the public to assist stranded motorists, provide traffic control for incidents and improve mobility along the freeways by keeping travel lanes clear of debris and disabled vehicles. In 2014, the FCP performed more than **45,000 assists** helping more than **36,000 motorists**.

FCP Total Assists

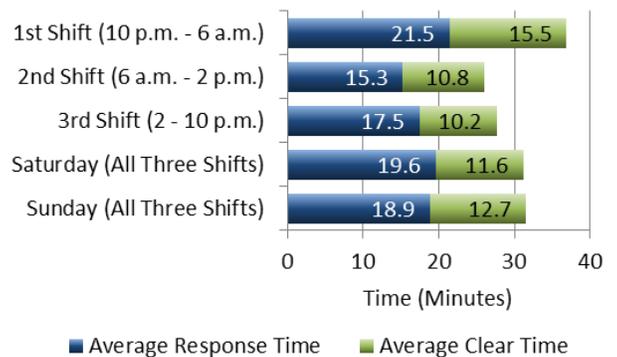


Assists by Type



*Other includes Cell Phone Assist, FCP Tow, Gave Directions, Traffic Policing and Motorist Transport

Average Assist Time

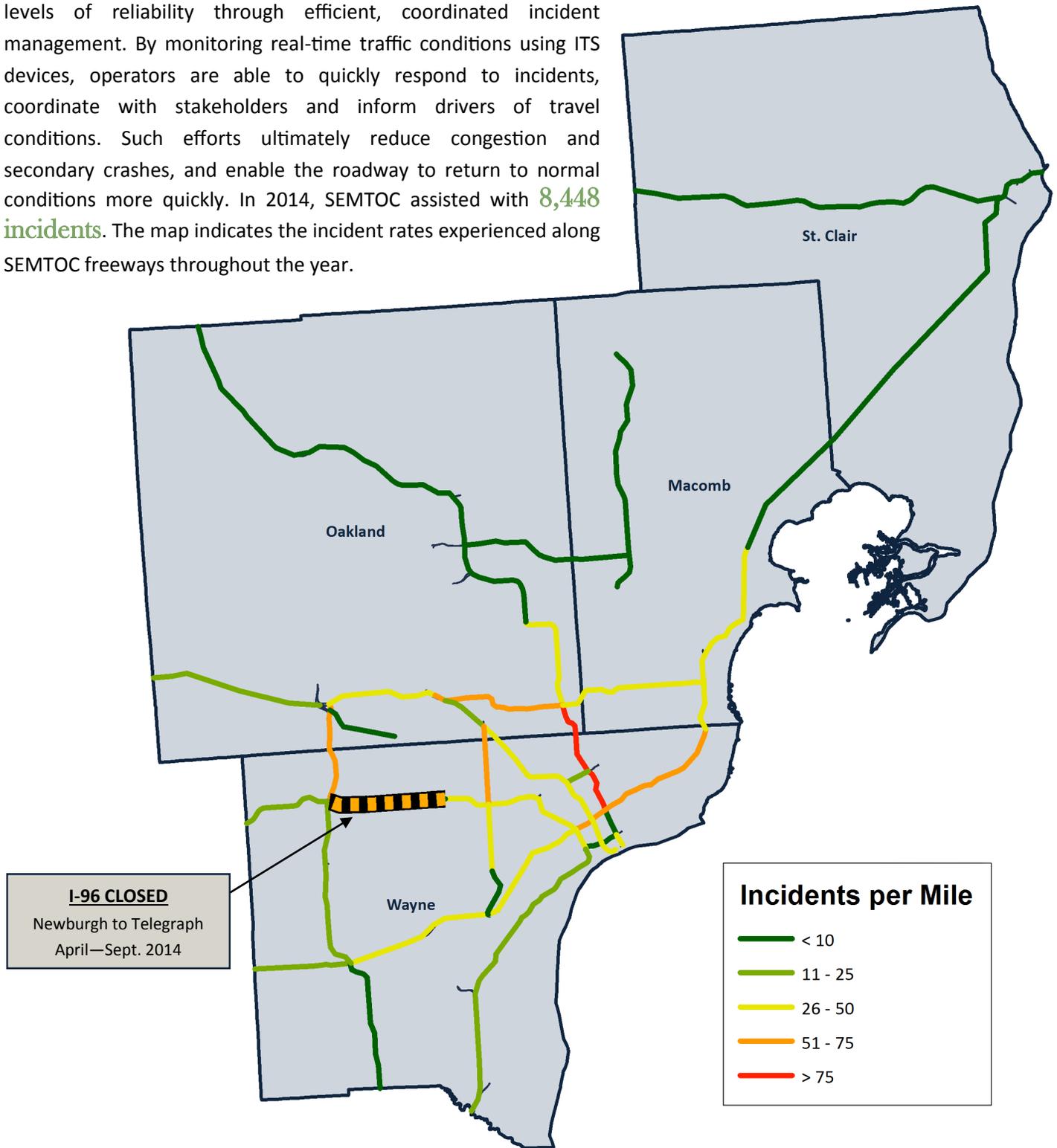


Each icon on the map represents the number of assists that occurred at that cross street. Closely spaced or overlapping icons indicate nearby cross streets. The assist counts for nearby cross streets should be added together to provide a total for the roadway segment.

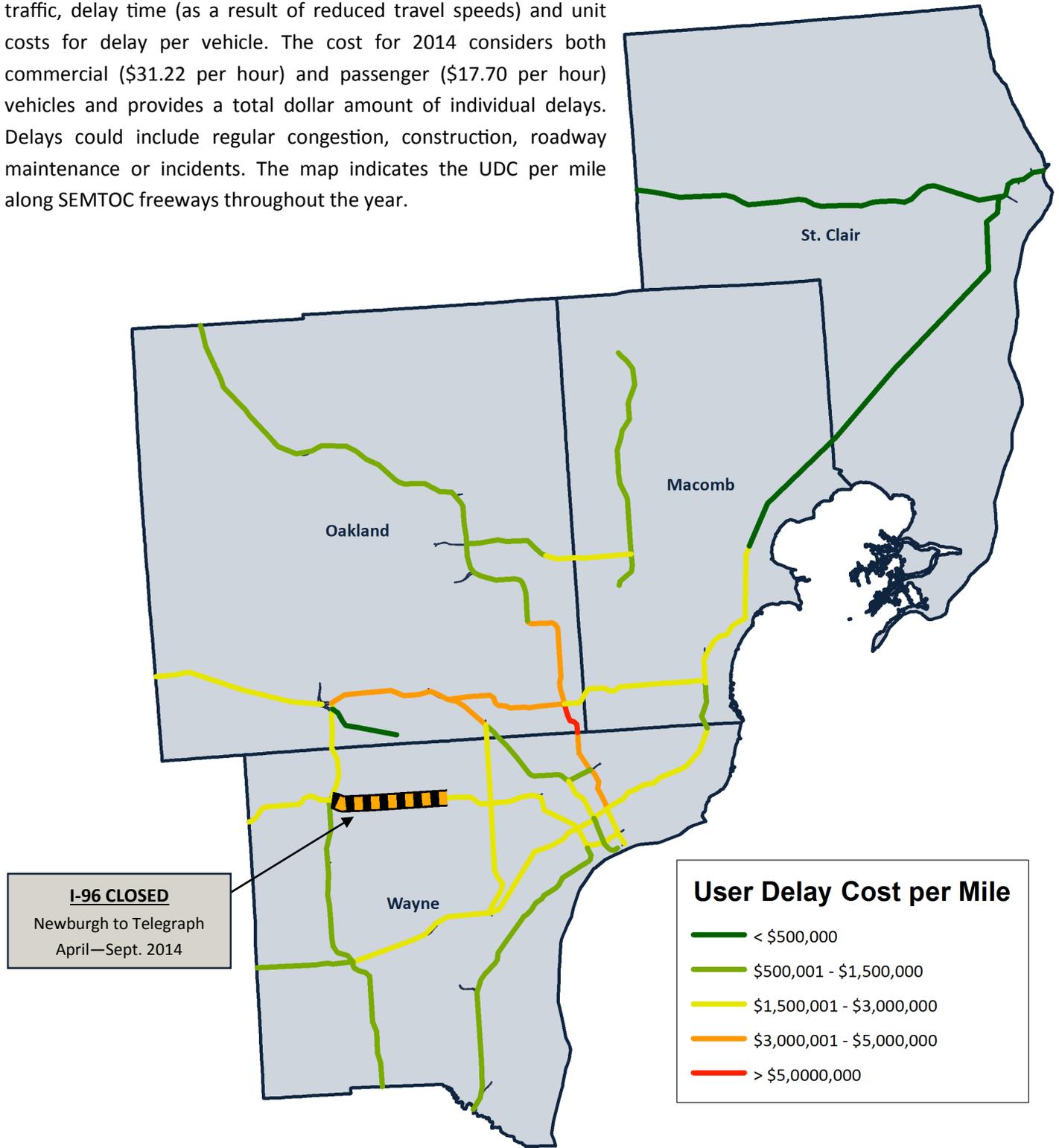
Response time is the time from detection to when FCP arrives on the scene.

Clear time is the time from FCP arrival to when all vehicles have cleared the scene.

Freeway reliability is a measure of how consistently a freeway operates over time. It analyzes average travel times, impacts from weather and impacts from traffic incidents. As incidents and weather events occur, the actual travel time deviates from the average, thereby reducing the freeway’s reliability. At SEMTOC, operators strive to maintain high levels of reliability through efficient, coordinated incident management. By monitoring real-time traffic conditions using ITS devices, operators are able to quickly respond to incidents, coordinate with stakeholders and inform drivers of travel conditions. Such efforts ultimately reduce congestion and secondary crashes, and enable the roadway to return to normal conditions more quickly. In 2014, SEMTOC assisted with **8,448 incidents**. The map indicates the incident rates experienced along SEMTOC freeways throughout the year.



MDOT recognizes user delay cost (UDC) as a key performance metric for both transportation professionals as well as the public and other partners in highway operations. UDC is commonly referenced in the analysis of work zone transportation management plans and alternatives for maintenance of traffic. It is a calculation based on volume of traffic, delay time (as a result of reduced travel speeds) and unit costs for delay per vehicle. The cost for 2014 considers both commercial (\$31.22 per hour) and passenger (\$17.70 per hour) vehicles and provides a total dollar amount of individual delays. Delays could include regular congestion, construction, roadway maintenance or incidents. The map indicates the UDC per mile along SEMTOC freeways throughout the year.



What is travel time reliability?

One of the most important questions a driver asks before making a trip is, “How early should I leave to make it on time?” A certain level of traffic congestion is expected during particular periods of the day, usually the morning and evening peak periods; however, the unexpected congestion (e.g., as a result of an incident), can cause frustration when planning a trip. Travel time reliability is a measure of how consistent travel times are along a segment of roadway over time. It analyzes average travel time as well as planning time. Planning time represents a travel time reliability of 95 percent or the amount of time the driver should allow for their trip to be on time 19 times out of 20. Metro Detroit drivers can use this data to make better-informed decisions when planning their trips since travel times are a good indicator of freeway performance and reliability.



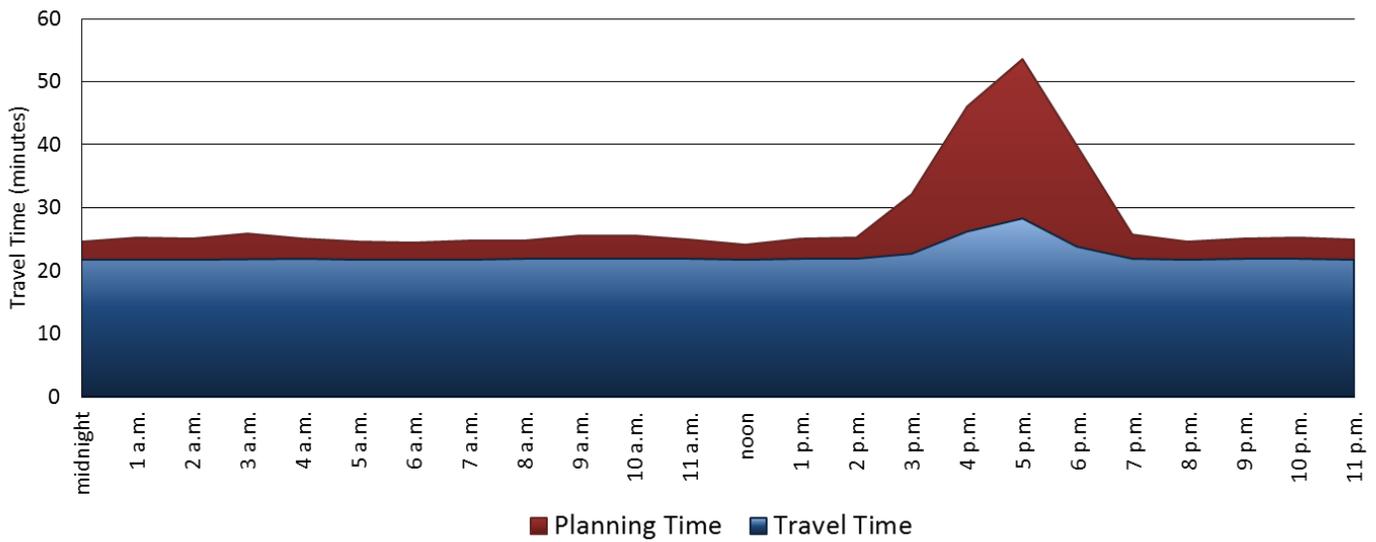
What are the travel time chart parameters?

The charts on the following pages present travel time data for common freeway segments used by commercial and passenger drivers. Using historical data (October 2013 – September 2014), the average weekday travel time and planning time was calculated for each hour of the day. Note that I-96 was closed between Newburgh and Telegraph roads for reconstruction from April to September 2014 and the charts presented for that corridor only include data from October 2013 to March 2014.

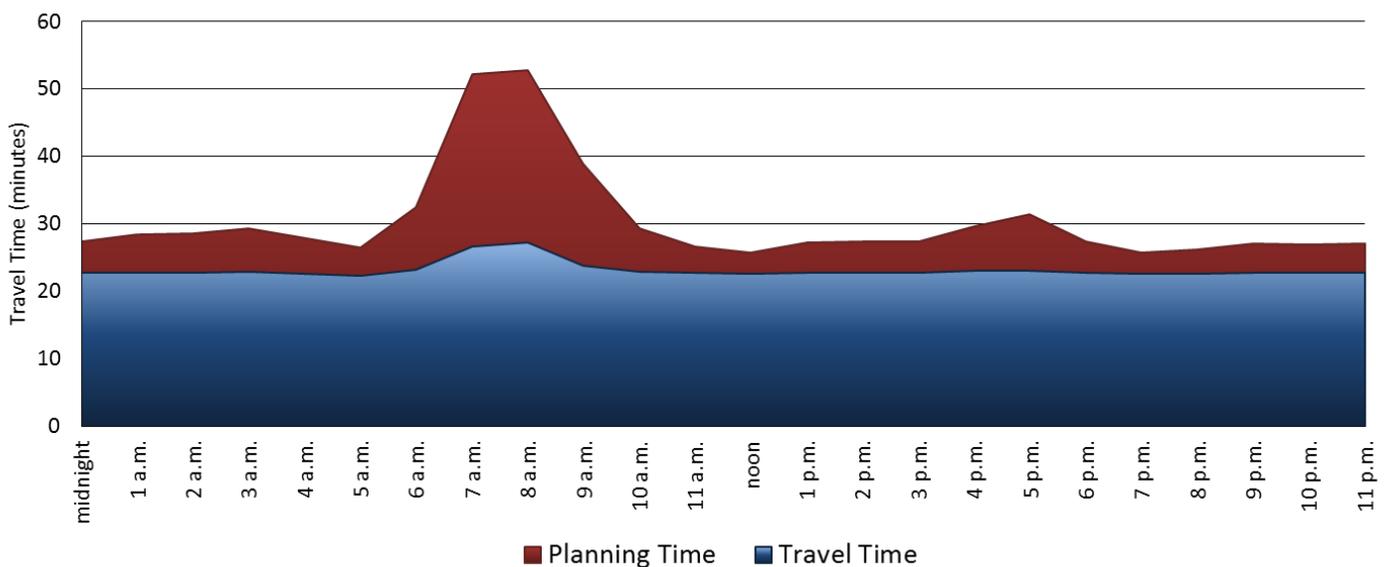
I-94 between I-75 and Metro Parkway 21.5 miles



Eastbound I-94 from I-75 to Metro Parkway



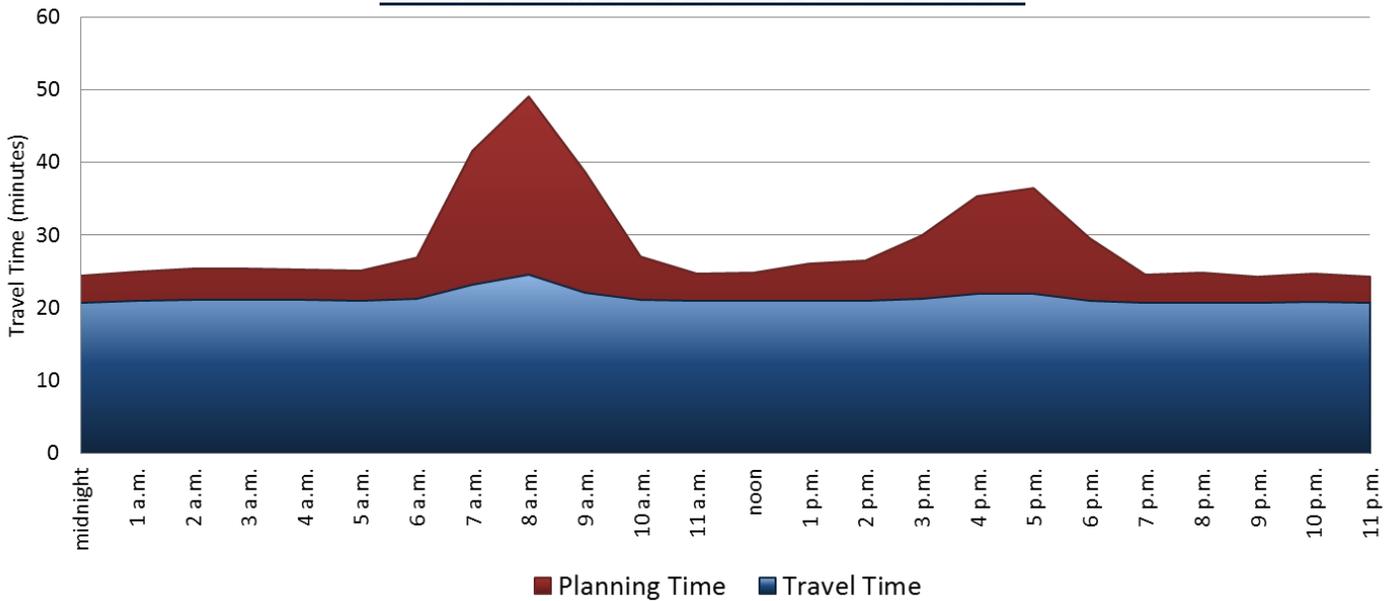
Westbound I-94 from Metro Parkway to I-75



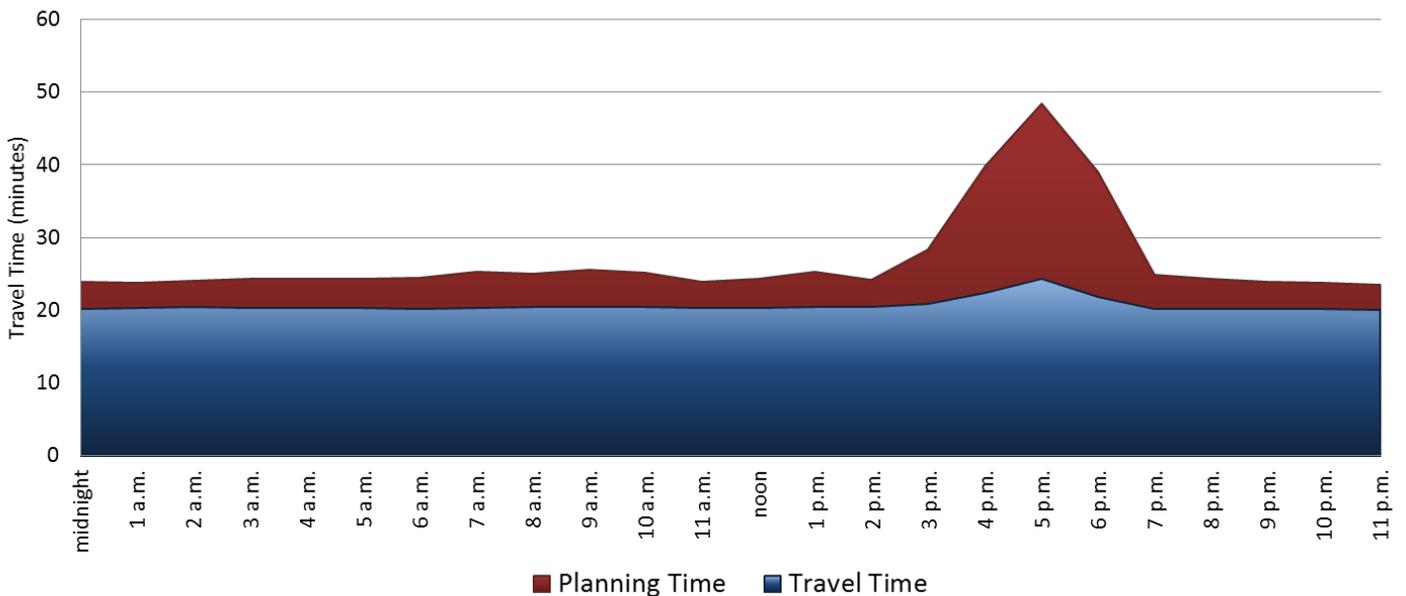
I-94 between I-275 and I-96 20.5 miles



Eastbound I-94 from I-275 to I-96



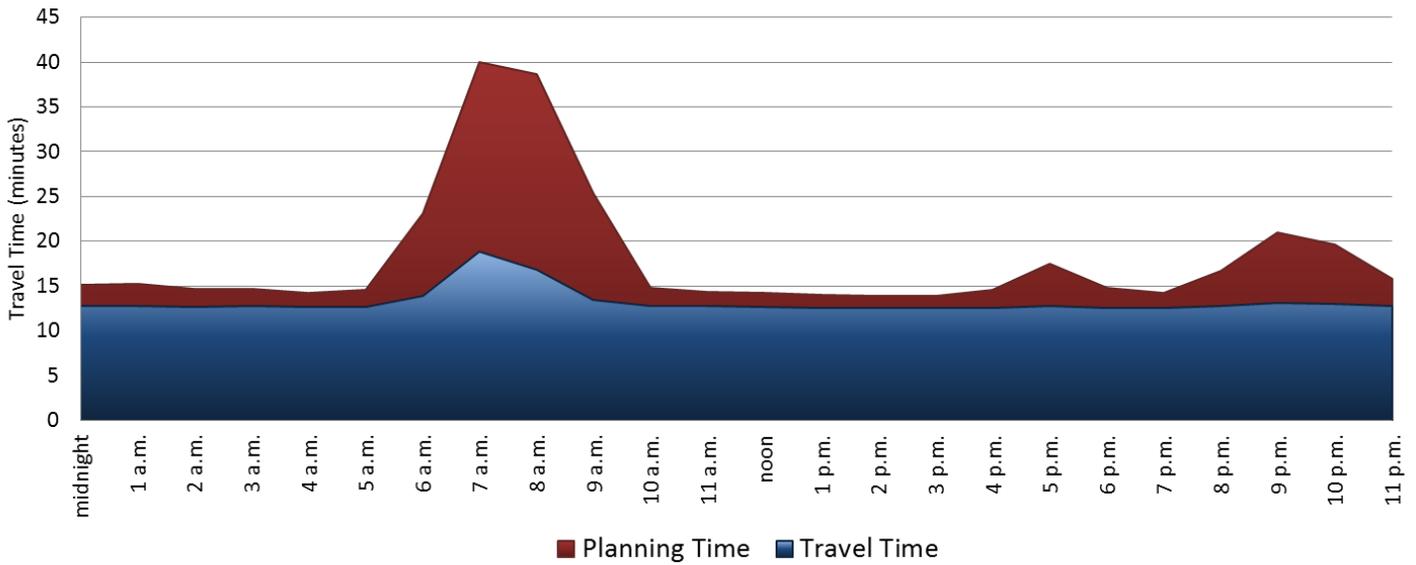
Westbound I-94 from I-96 to I-275



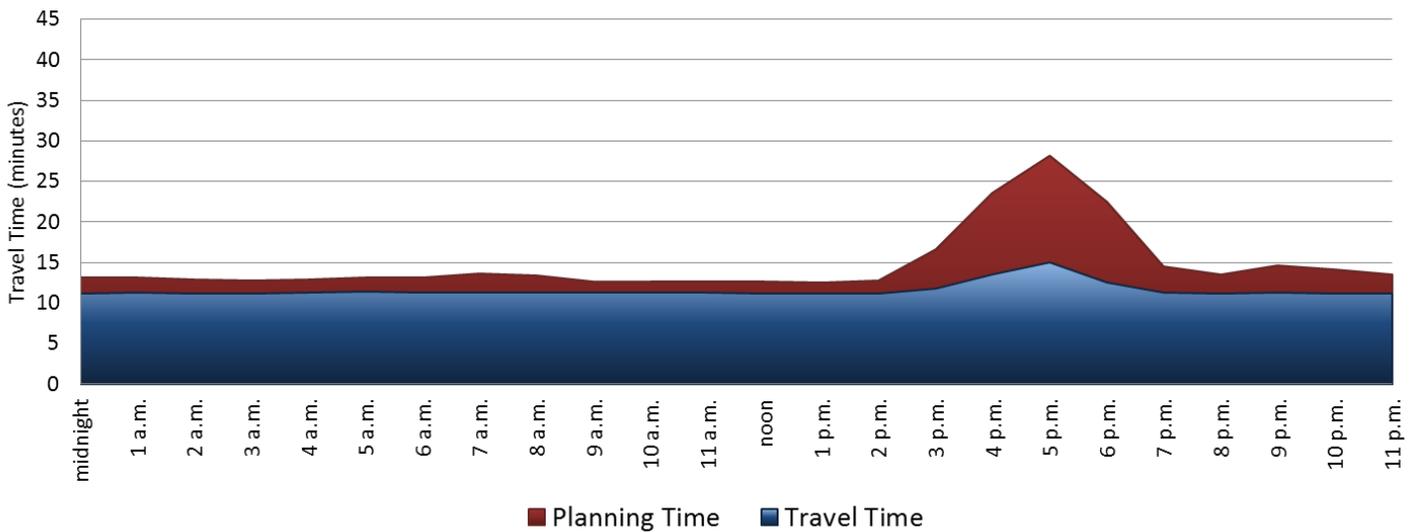
I-96 between Kensington Road and I-696/I-275 13 miles



Eastbound I-96 from Kensington Road to I-696/I-275



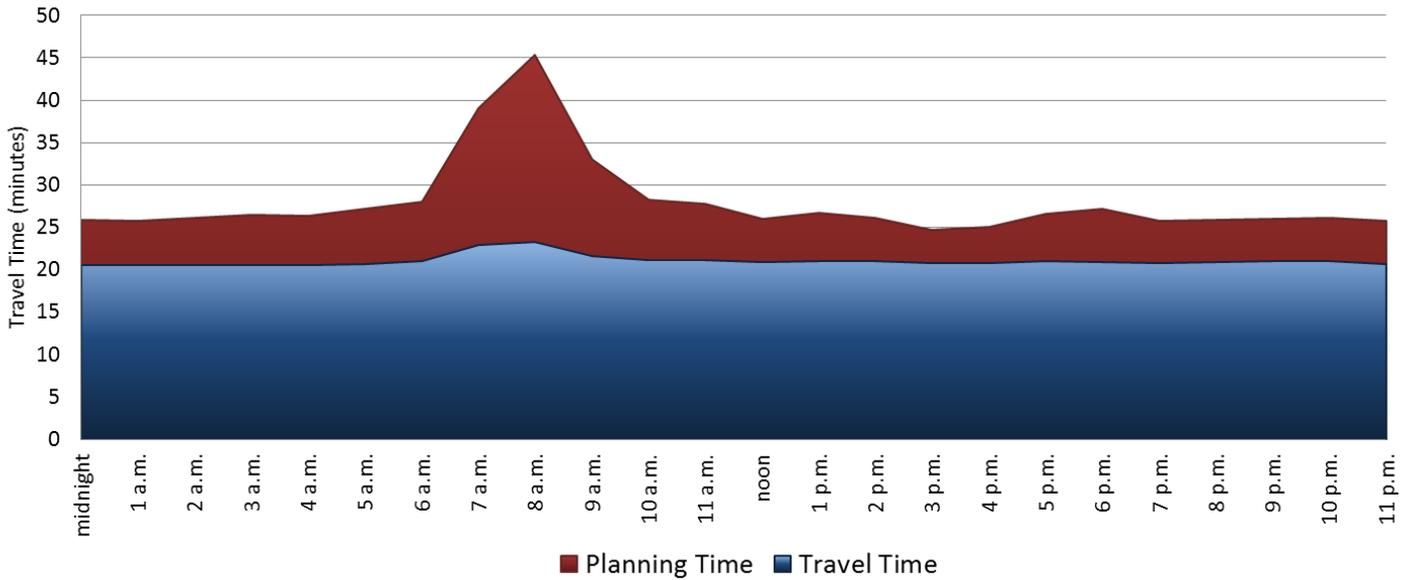
Westbound I-96 from I-696/I-275 to Kensington Road



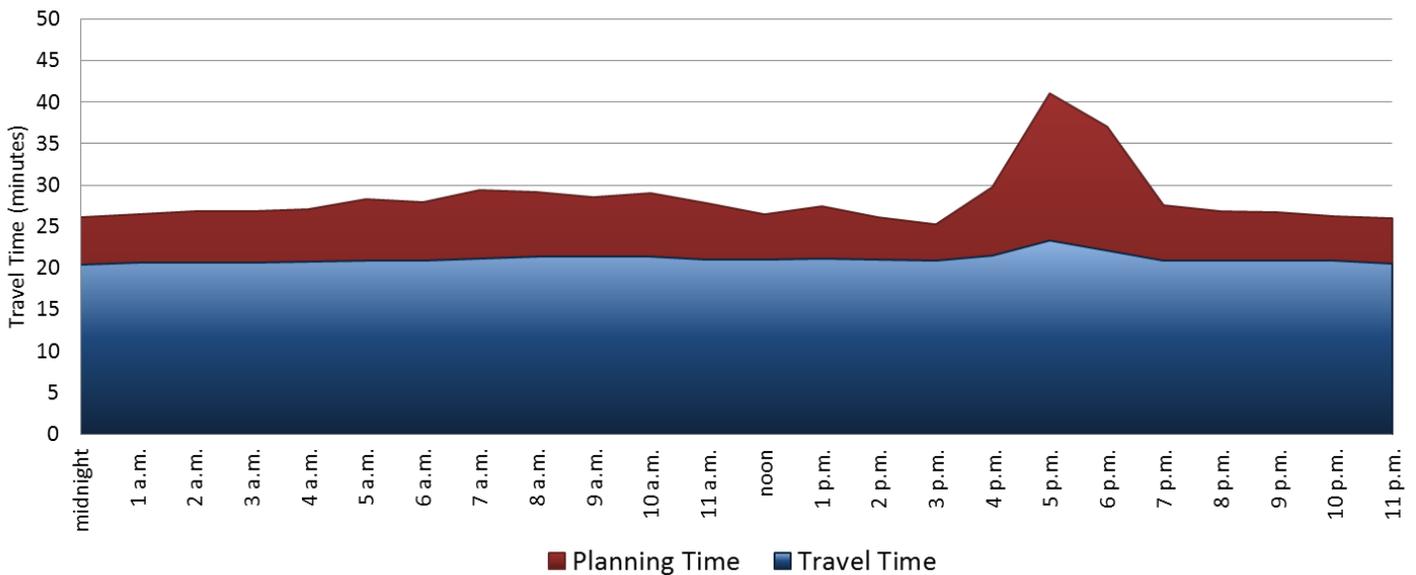
I-96 between I-275/M-14 and I-75 21.5 miles



Eastbound I-96 from I-275/M-14 to I-75



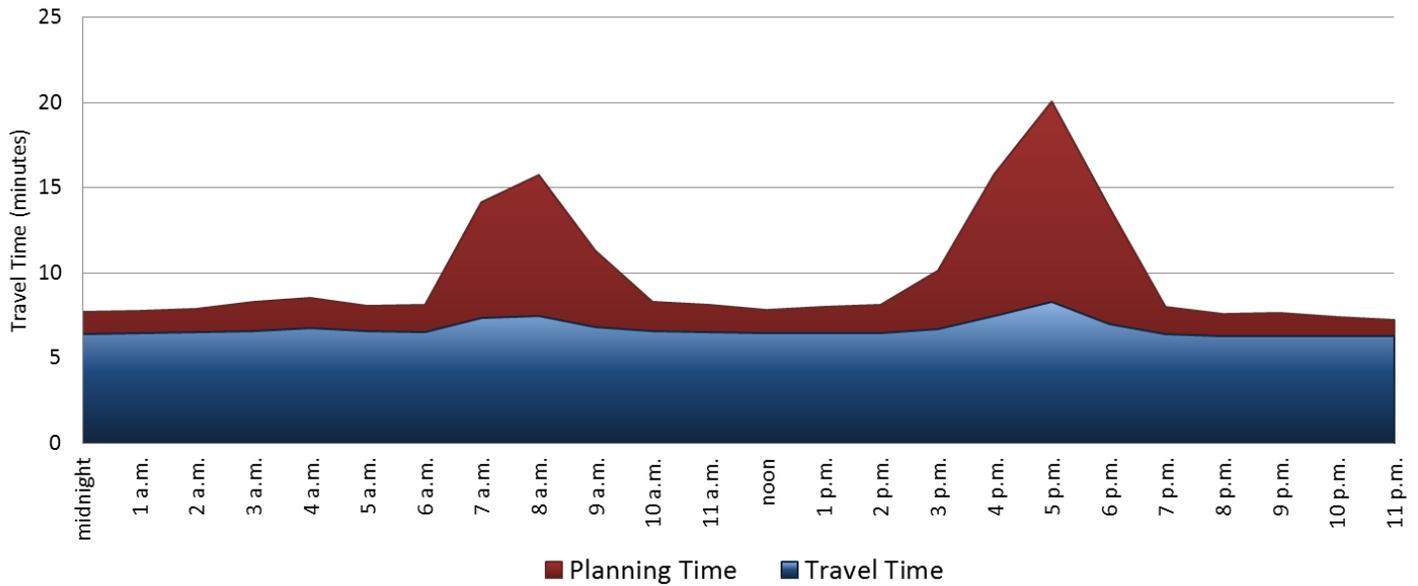
Westbound I-96 from I-75 to I-275/M-14



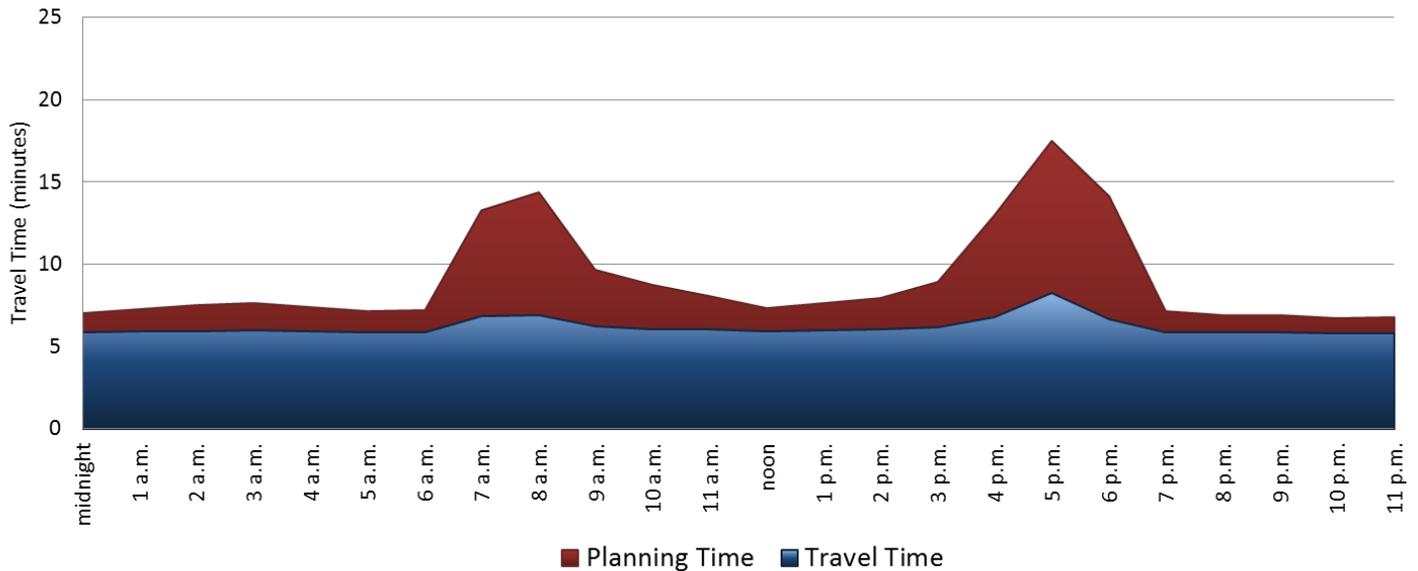
I-275 between M-14 and I-696 6.5 miles



Northbound I-275 from M-14 to I-696



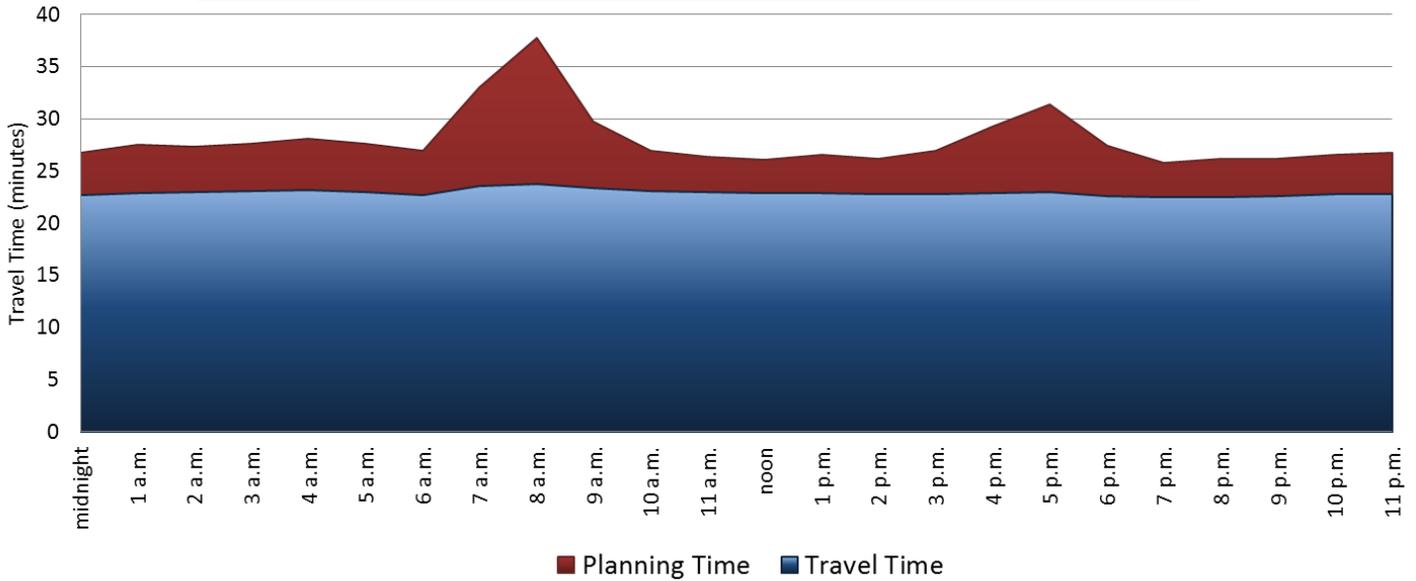
Southbound I-275 from I-696 to M-14



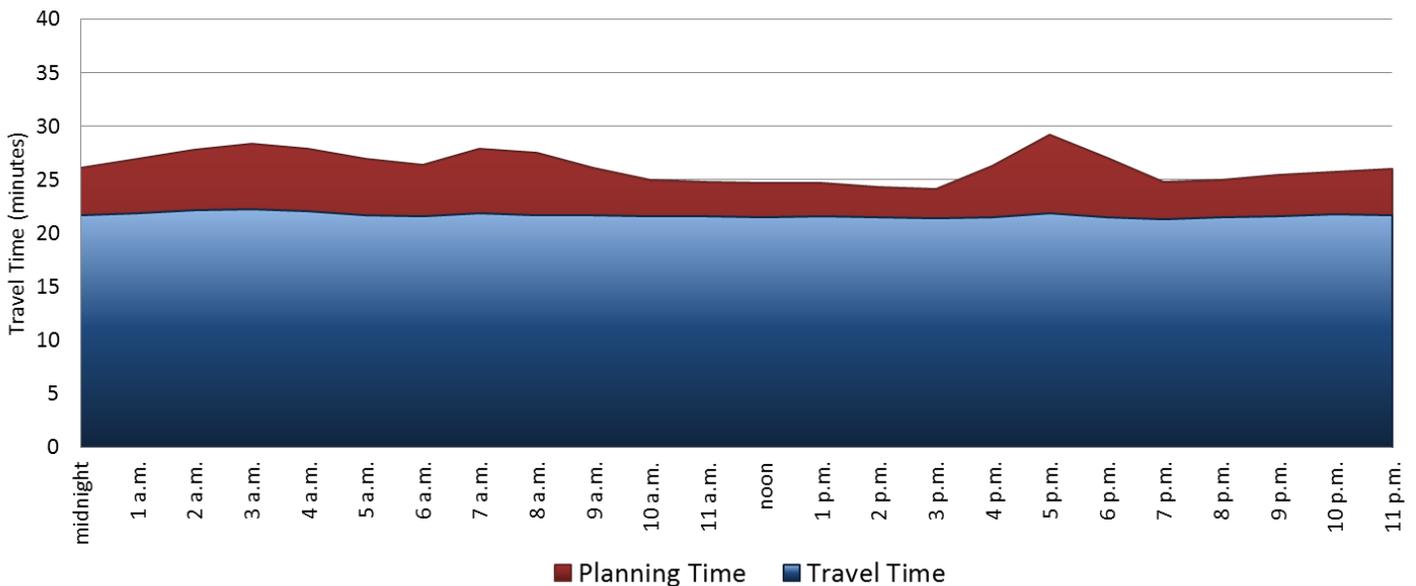
I-275 between Will Carleton Road and M-14 23.5 miles



Northbound I-275 from Will Carleton Road to M-14



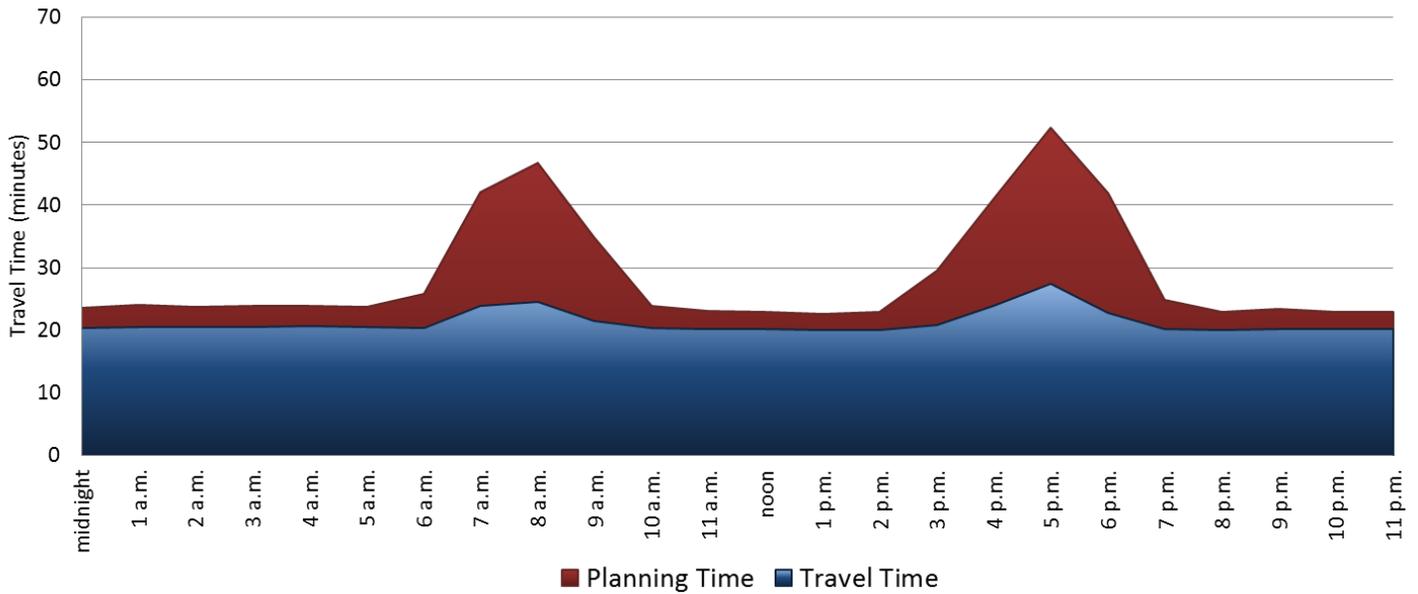
Southbound I-275 from M-14 to Will Carleton Road



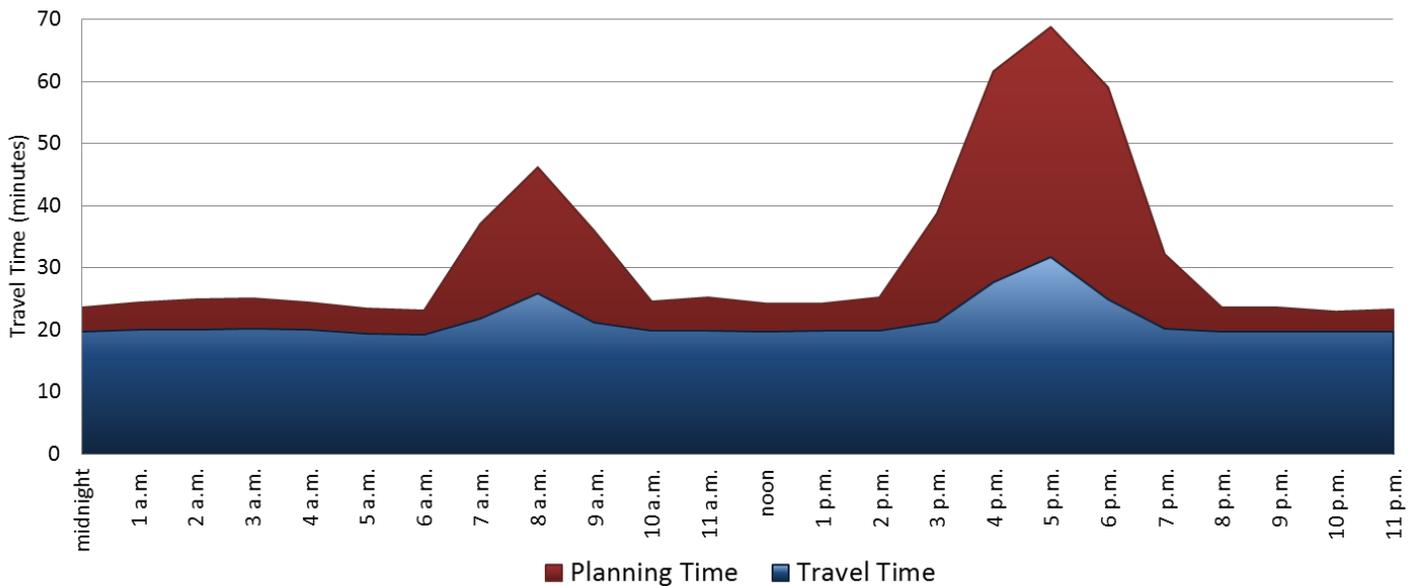
I-696 between I-275/I-96 and I-75 21.5 miles



Eastbound I-696 from I-275/I-96 to I-75



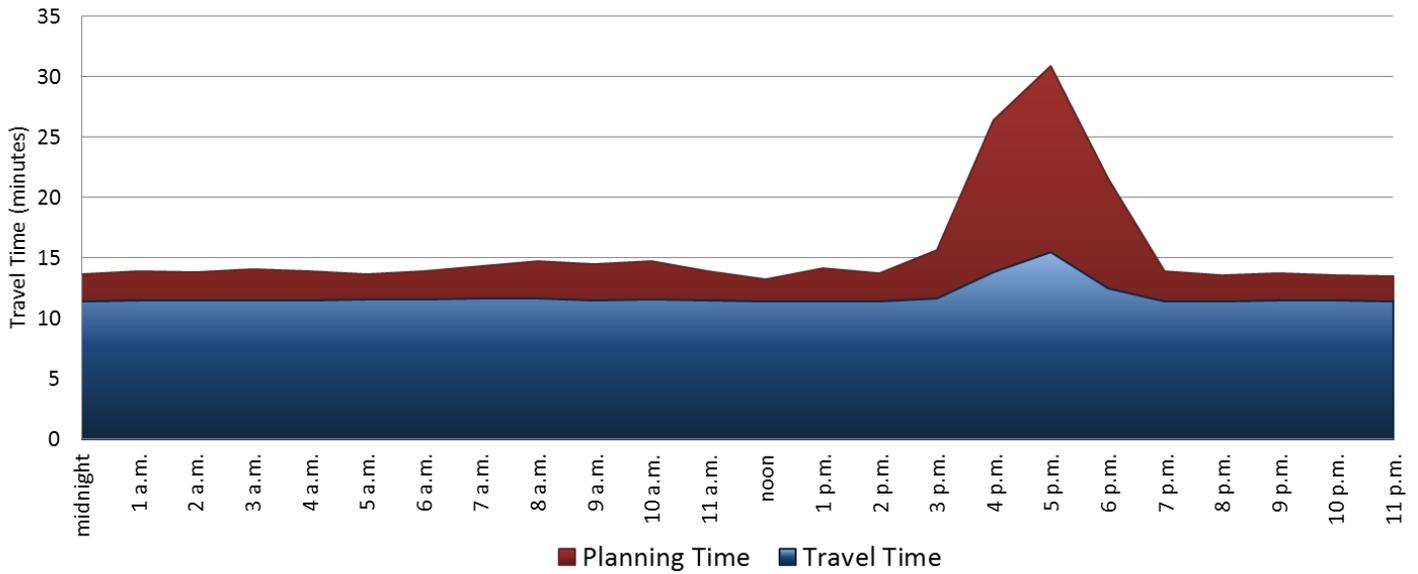
Westbound I-696 from I-75 to I-275/I-96



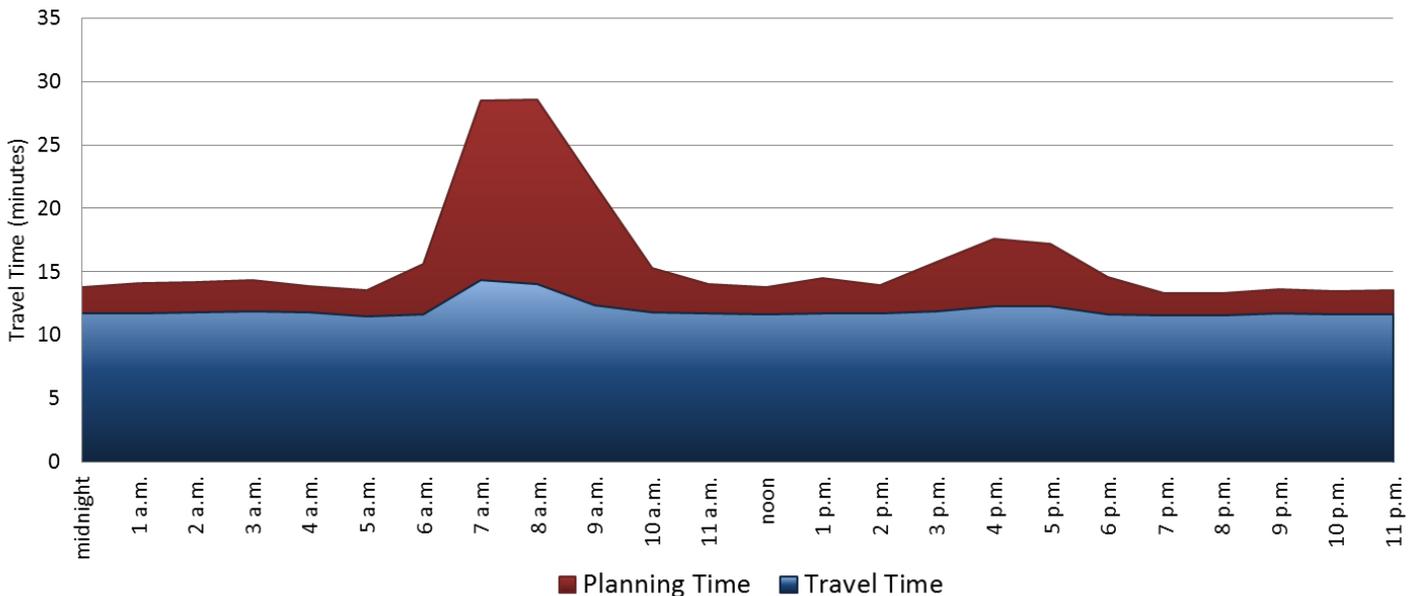
I-696 between I-75 and I-94 12 miles



Eastbound I-696 from I-75 to I-94



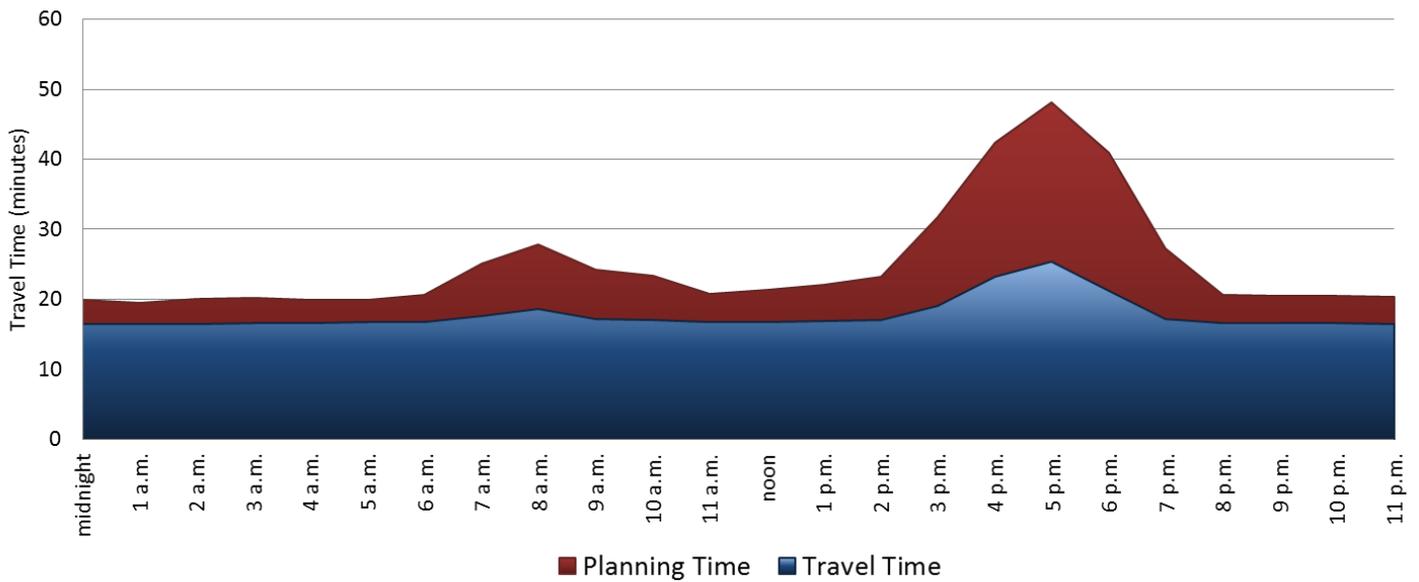
Westbound I-696 from I-94 to I-75



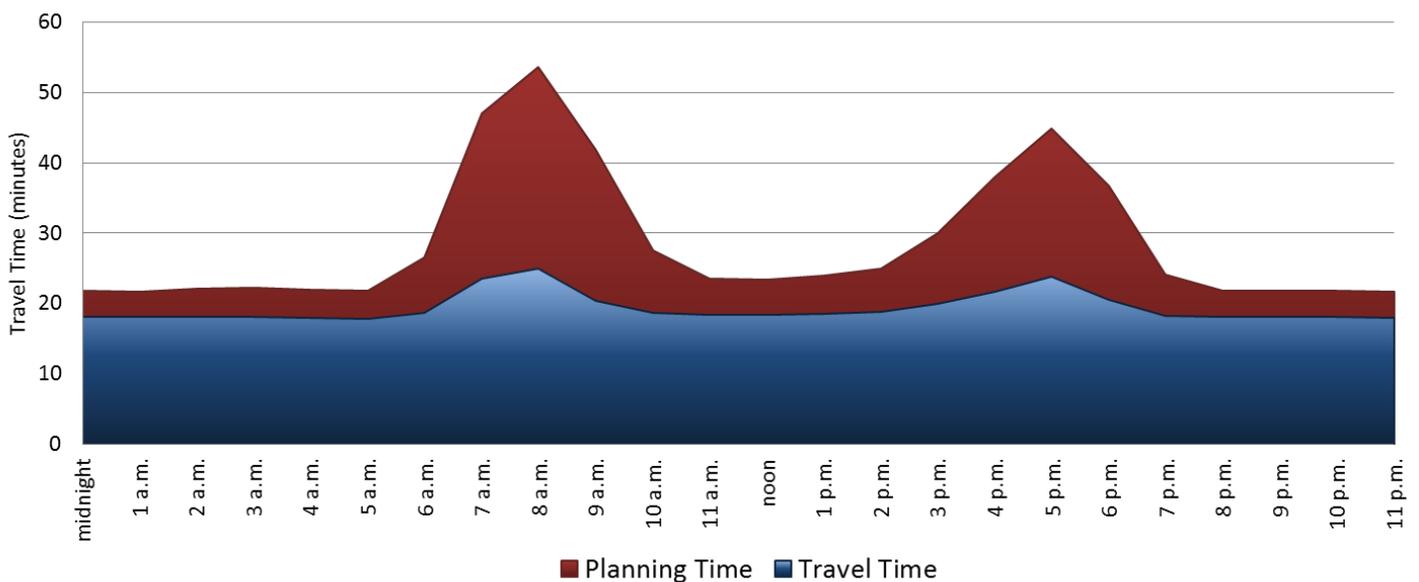
I-75 between I-94 and Big Beaver Road 18 miles



Northbound I-75 from I-94 to Big Beaver Road



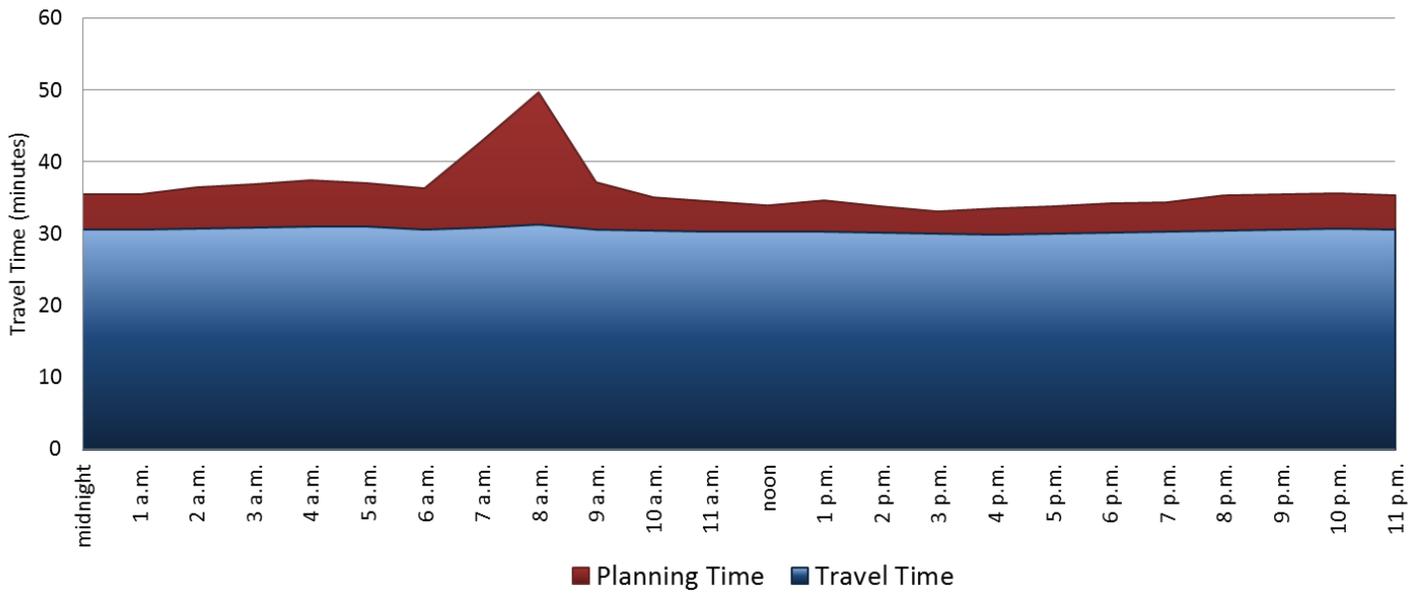
Southbound I-75 from Big Beaver Road to I-94



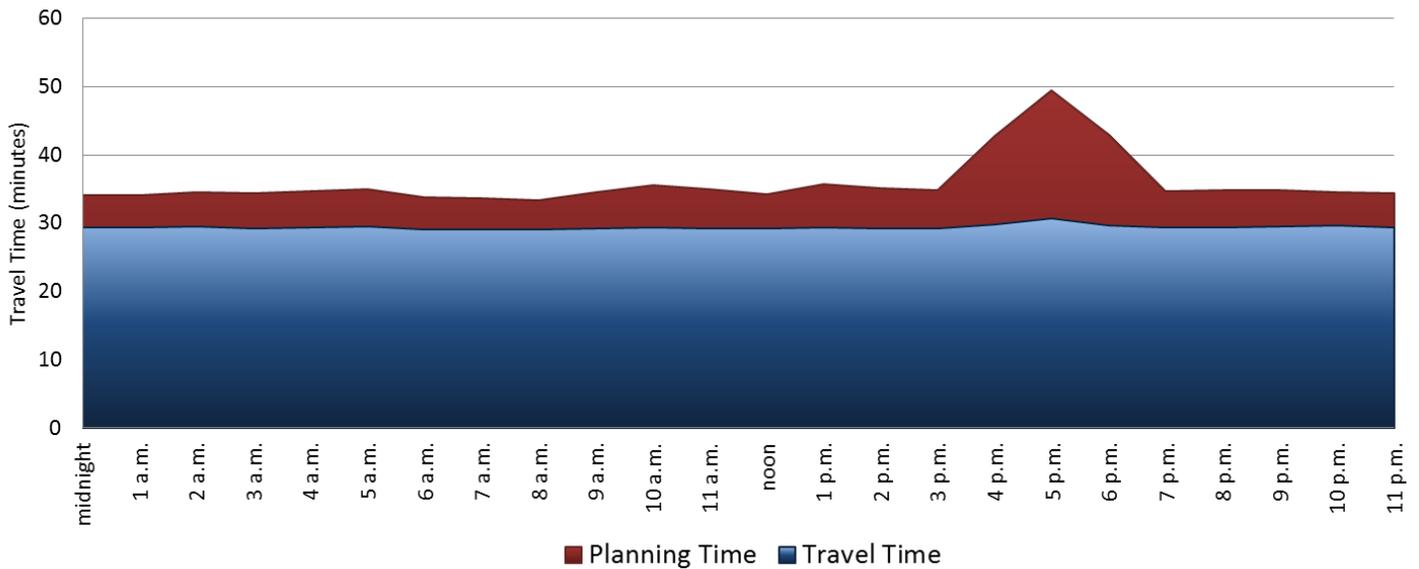
I-75 between I-275 and I-96 30 miles



Northbound I-75 from I-275 to I-96



Southbound I-75 from I-96 to I-275

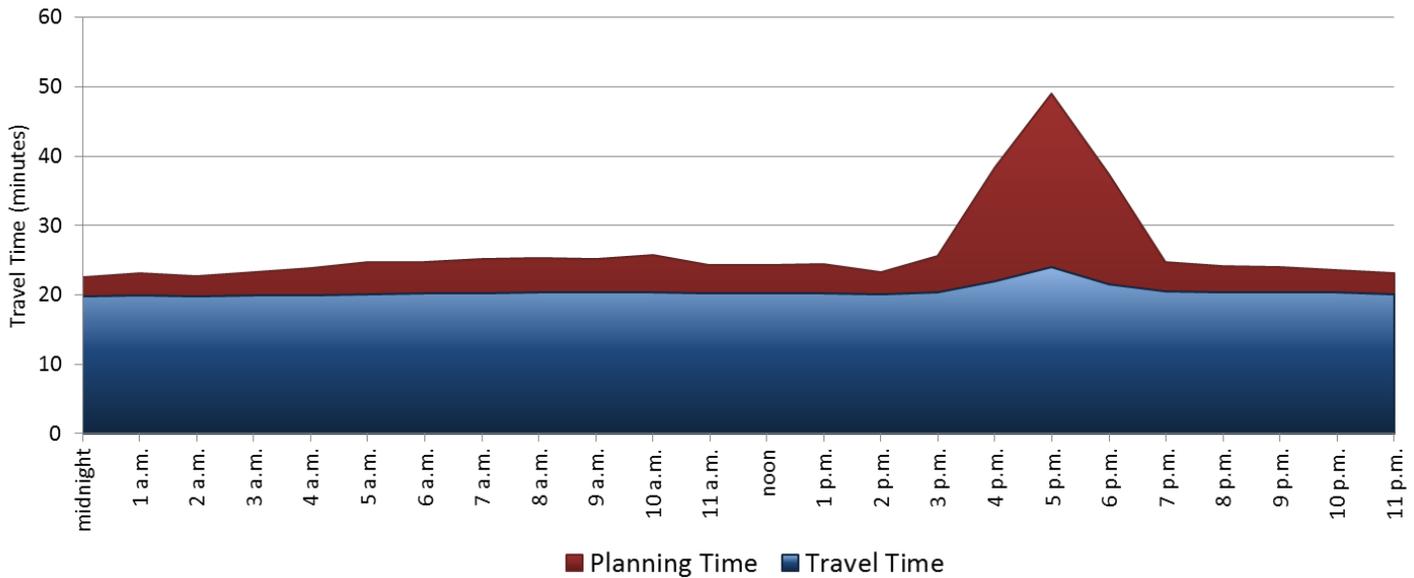


M-10

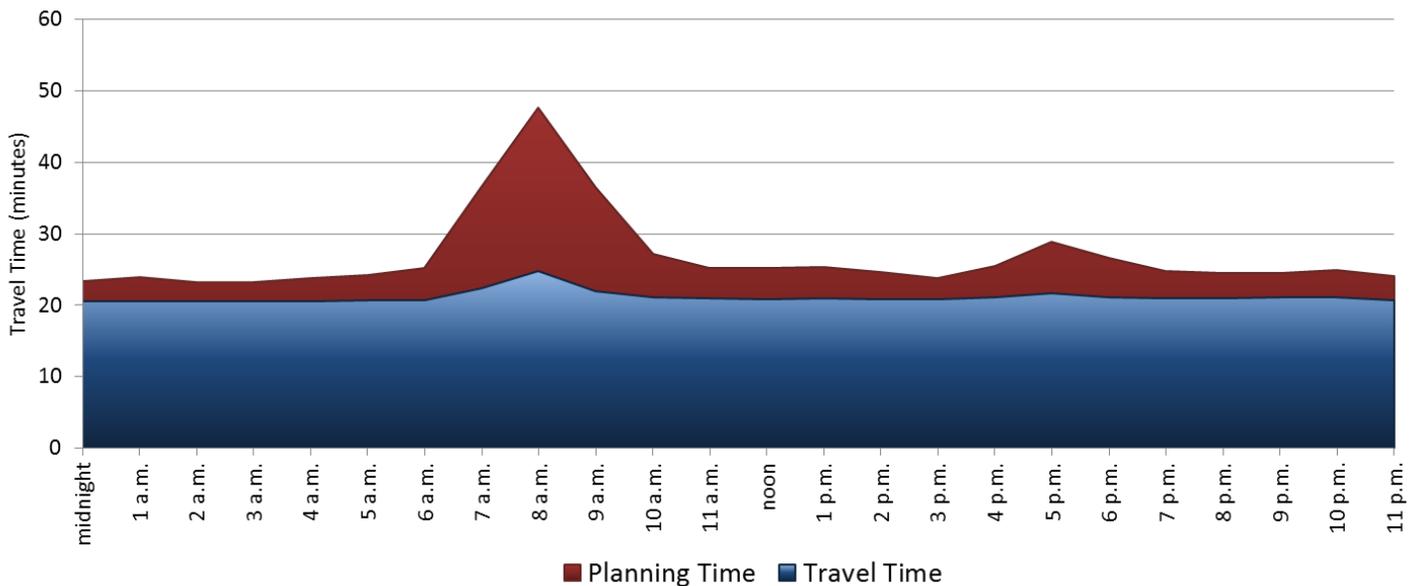
between US-24 (Telegraph Road) and M-1 (Woodward Avenue)
18.5 miles



Northbound M-10 from M-1 (Woodward Avenue) to US-24 (Telegraph Road)

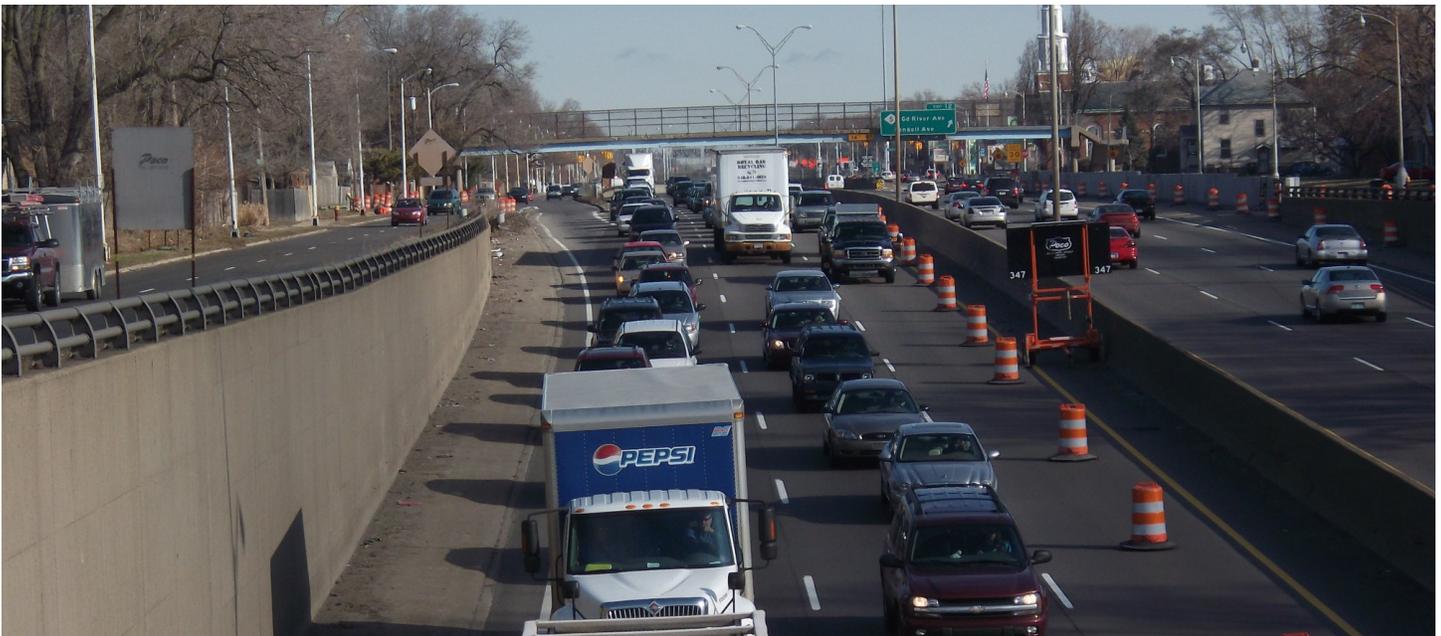


Southbound M-10 from US-24 (Telegraph Road) to M-1 (Woodward Avenue)



What is average travel speed?

Average travel speed is calculated as the distance traveled over the time of the travel. Various technologies are in place along Metro Region freeways to collect actual travel speeds in real time and analyze historical data. Throughout the Metro Region, freeway speed limits range from 55 to 70 miles per hour, and drivers expect actual travel speeds to be at or near the posted speed limits. During peak periods, however, when congestion levels increase, travel speeds typically decrease. By analyzing historical speed data, SEMTOC is able to provide drivers with more realistic average travel speed expectations during the peak periods of the day.



What are the peak average speed chart parameters?

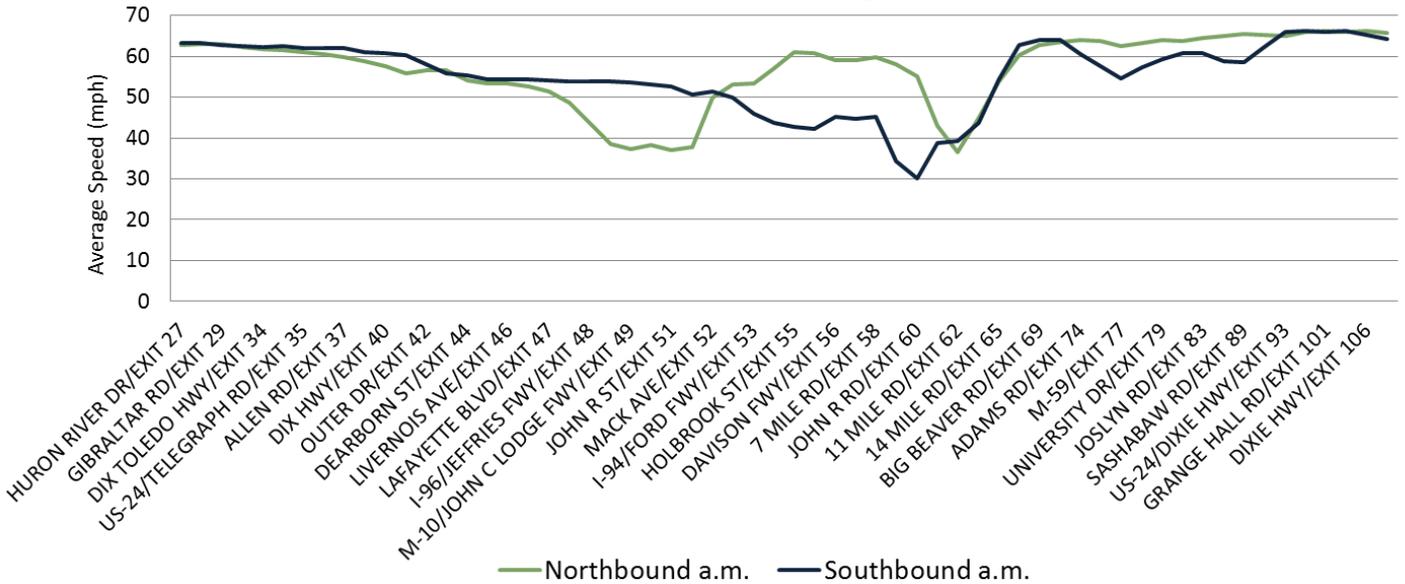
The charts on the following pages represent the average a.m. (midnight to noon) and p.m. (noon to midnight) peak hour travel speeds along Metro Region freeways. The peak hour for each corridor was chosen as the hour with the lowest average speed. The speeds for that hour were averaged for Monday through Friday between October 2013 and September 2014 and plotted along the corridors at each interchange. The speed plotted at a given interchange represents the average speed along the segment of freeway between the upstream interchange and plotted interchange. Note that I-96 was closed between Newburgh and Telegraph roads for reconstruction from April to September 2014 and the charts presented for that section only include data from October 2013 to March 2014.

I-75

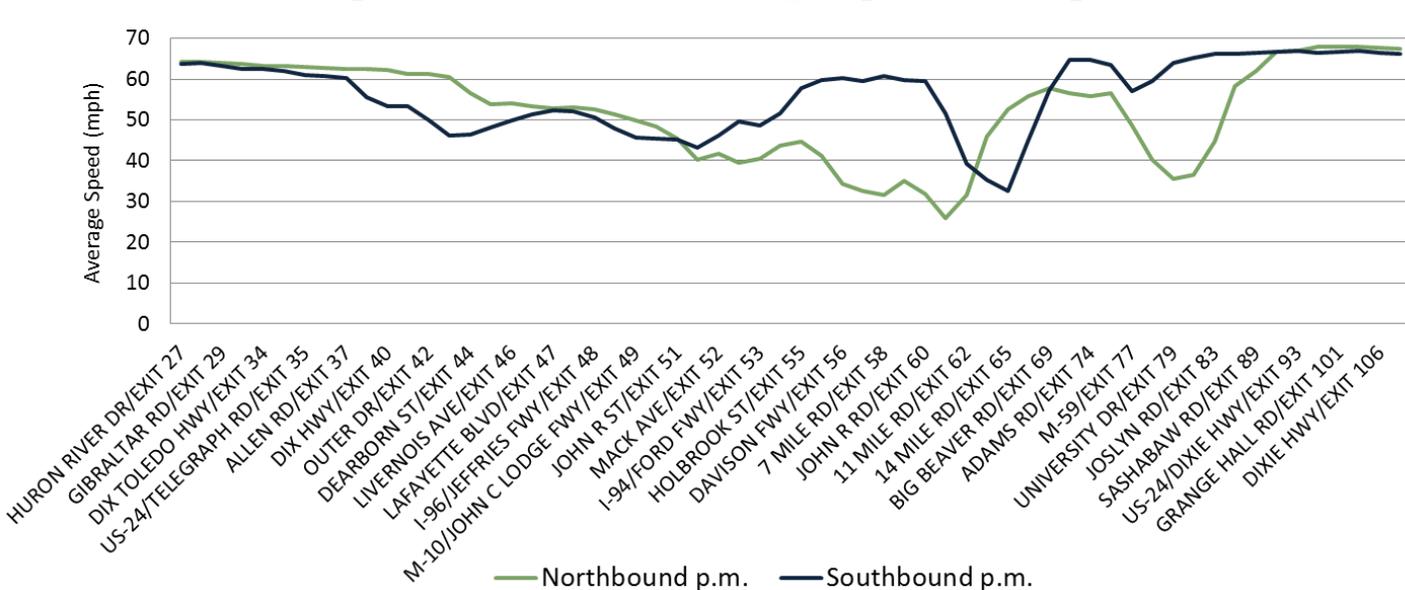
between Huron River Drive and Dixie Highway



I-75 a.m. Peak Hour Average Speed (8–9 a.m.)



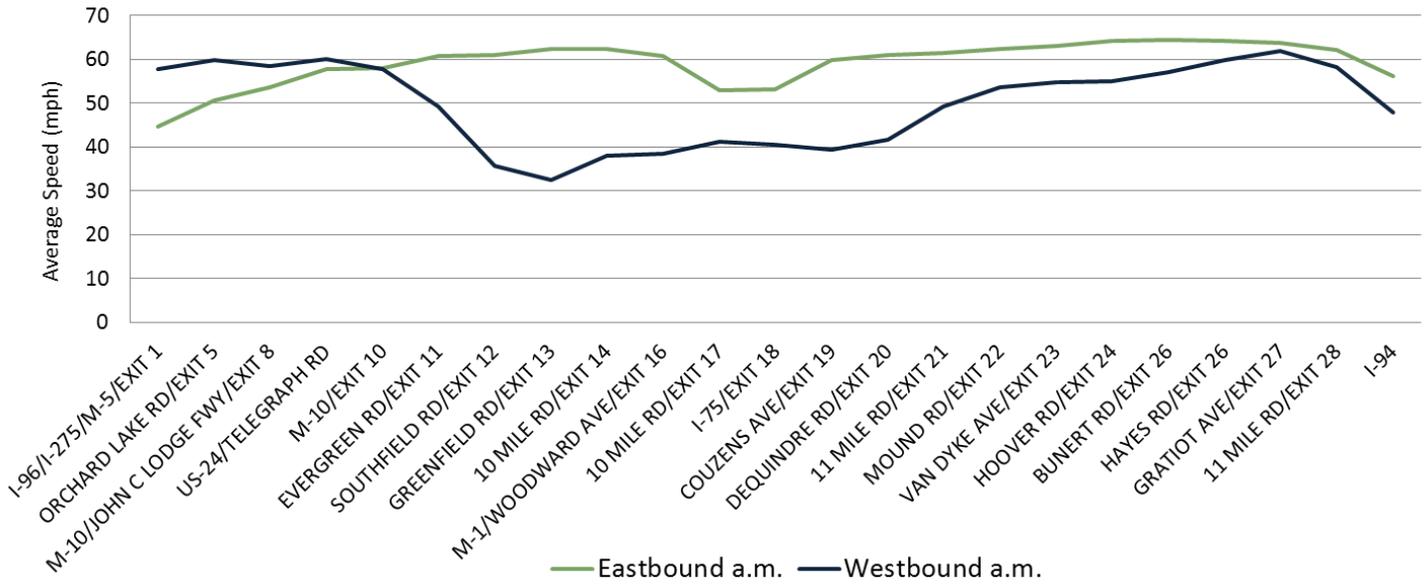
I-75 p.m. Peak Hour Average Speed (5–6 p.m.)



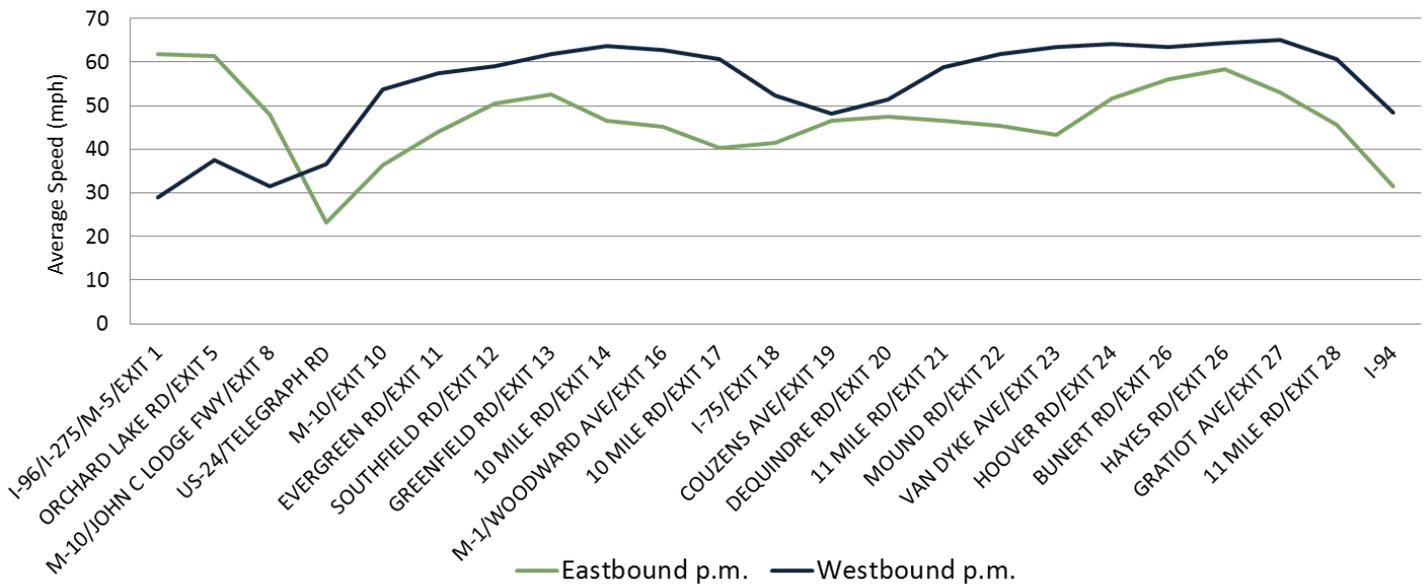


I-696 between I-96/I-275/M-5 and I-94

I-696 a.m. Peak Hour Average Speed (8–9 a.m.)



I-696 p.m. Peak Hour Average Speed (5–6 p.m.)

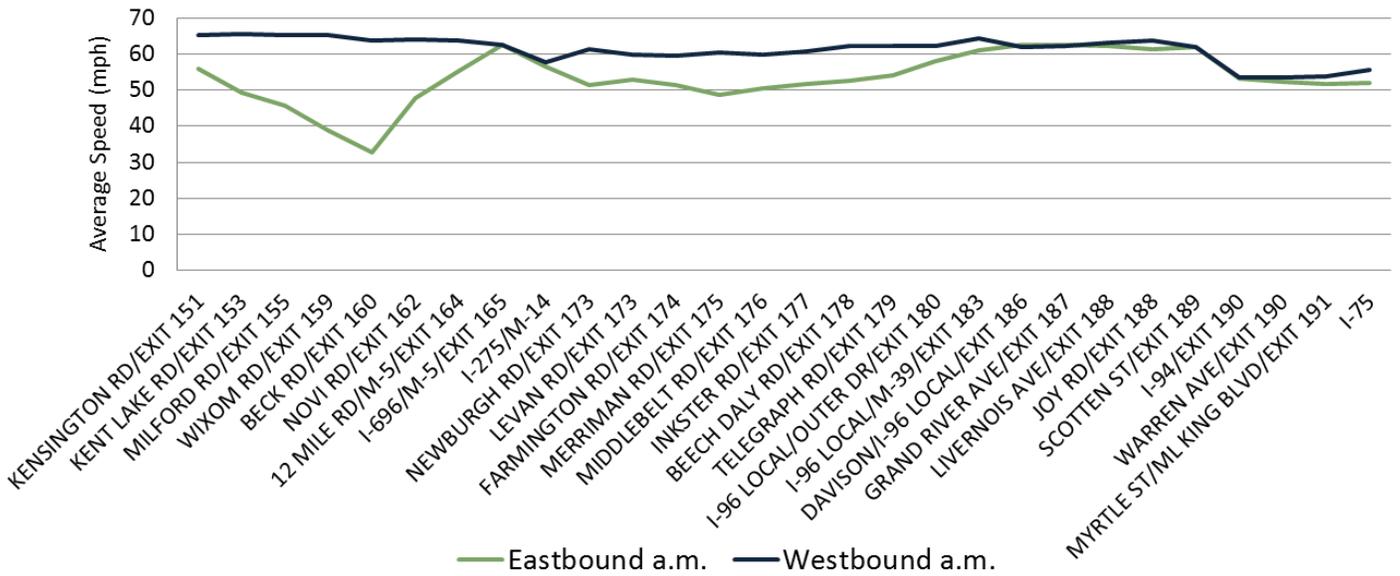


I-96

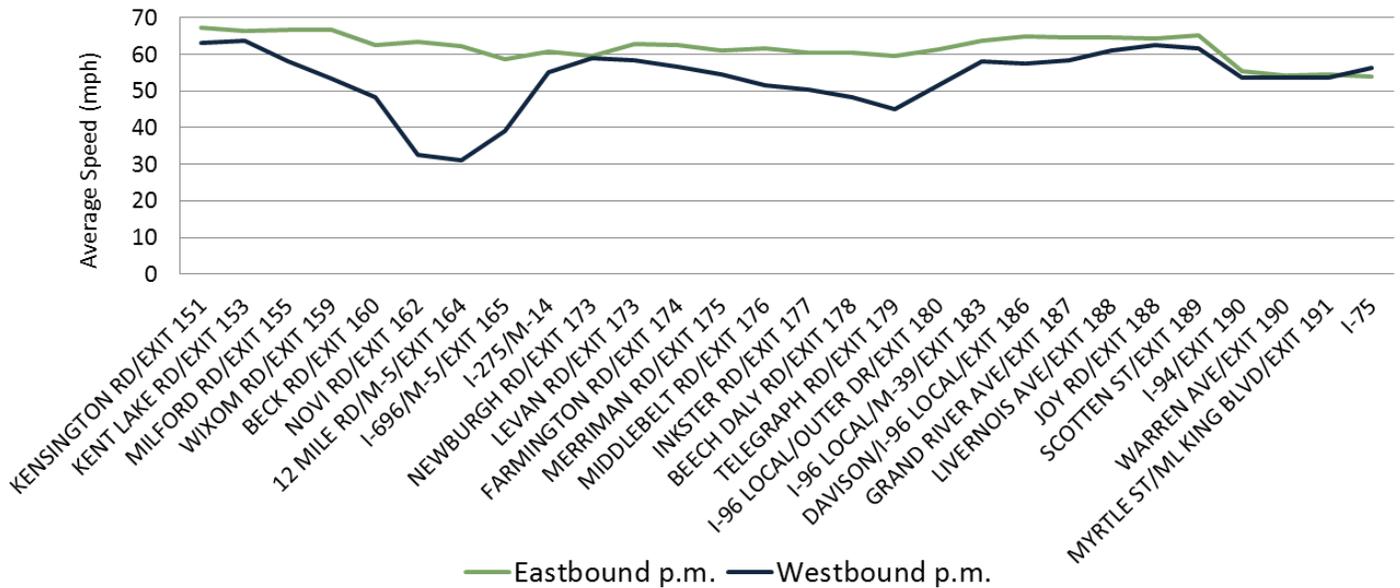
between Kensington Road and I-75



I-96 a.m. Peak Hour Average Speed (8–9 a.m.)



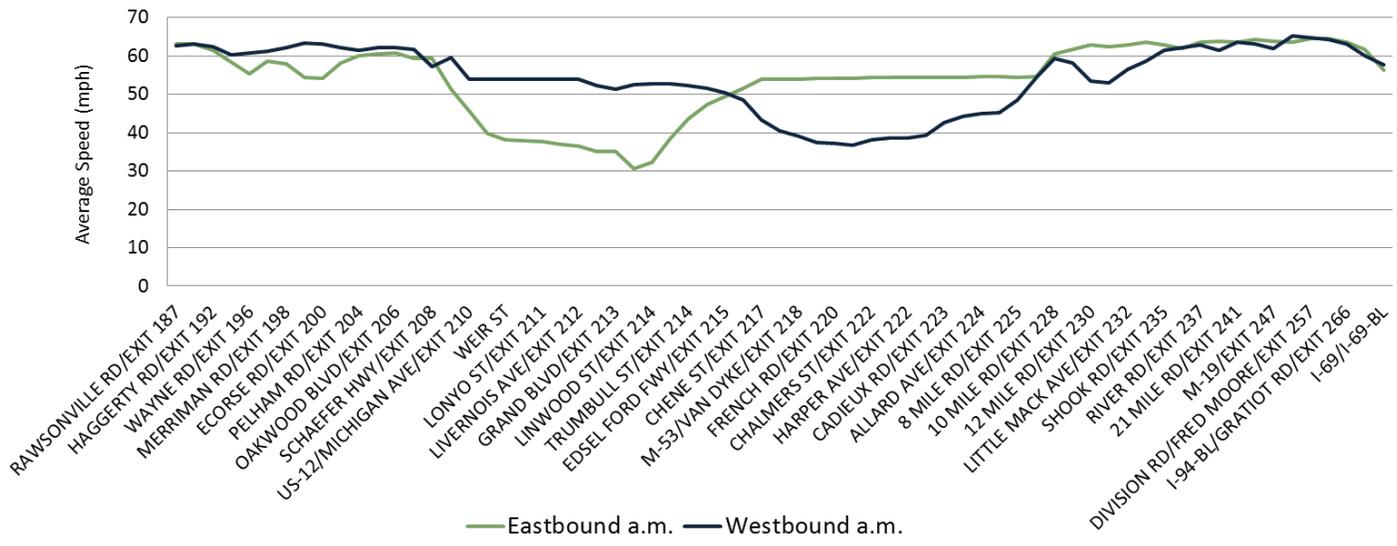
I-96 p.m. Peak Hour Average Speed (5–6 p.m.)



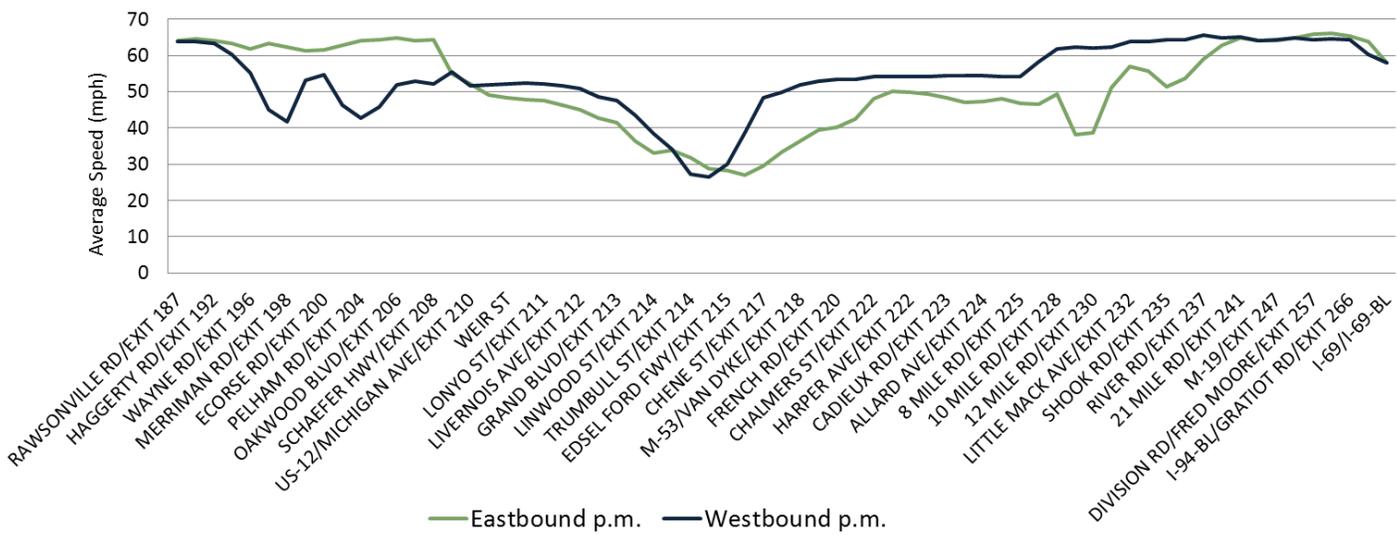


I-94 between Rawsonville Road and I-69

I-94 a.m. Peak Hour Average Speed (8–9 a.m.)



I-94 p.m. Peak Hour Average Speed (5–6 p.m.)

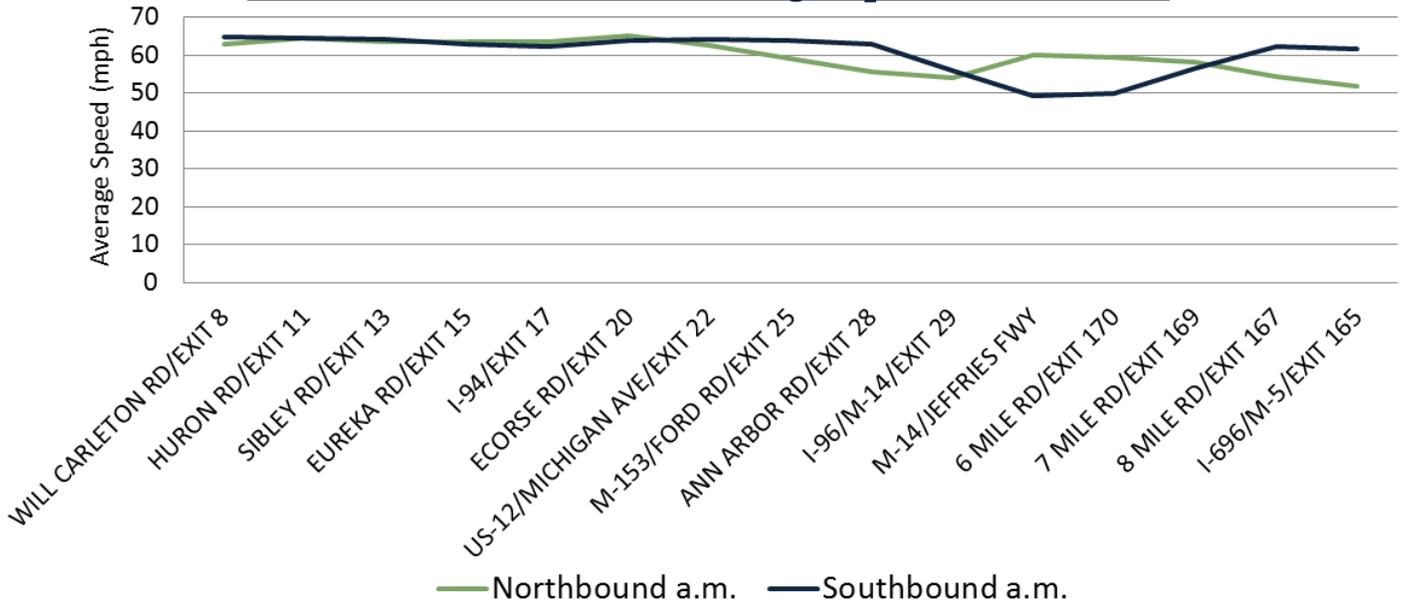


I-275

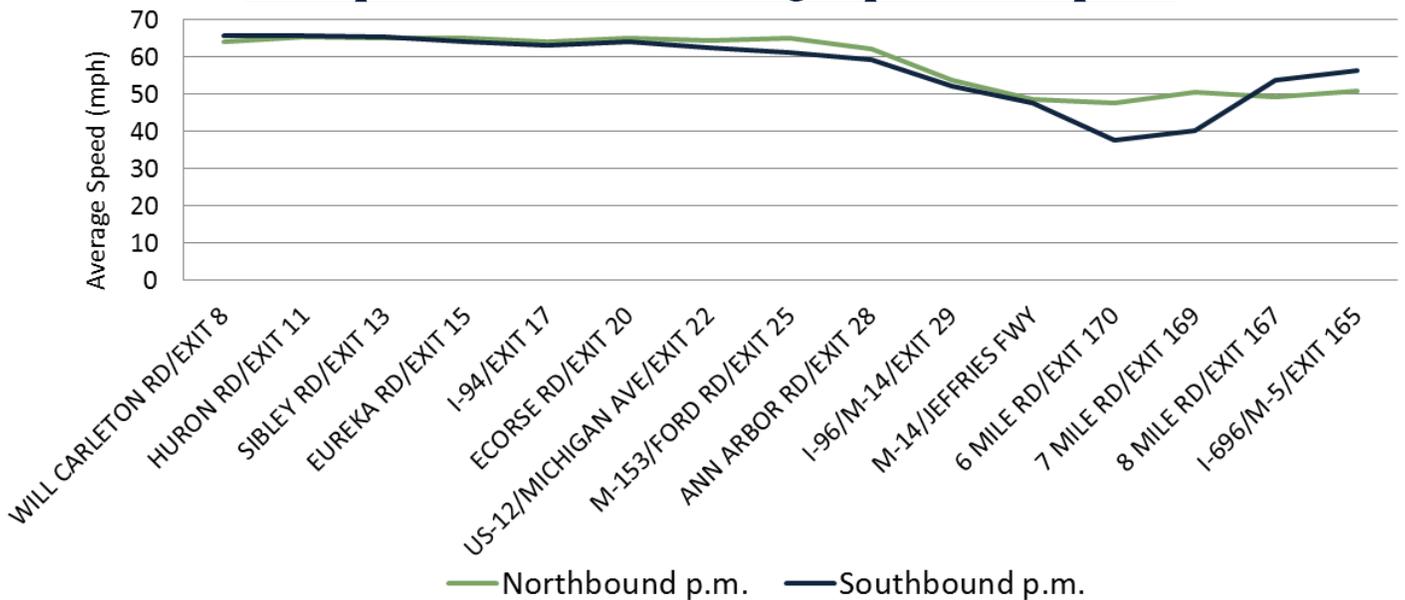
between Will Carleton Road and I-696/M-5



I-275 a.m. Peak Hour Average Speed (8–9 a.m.)



I-275 p.m. Peak Hour Average Speed (5–6 p.m.)

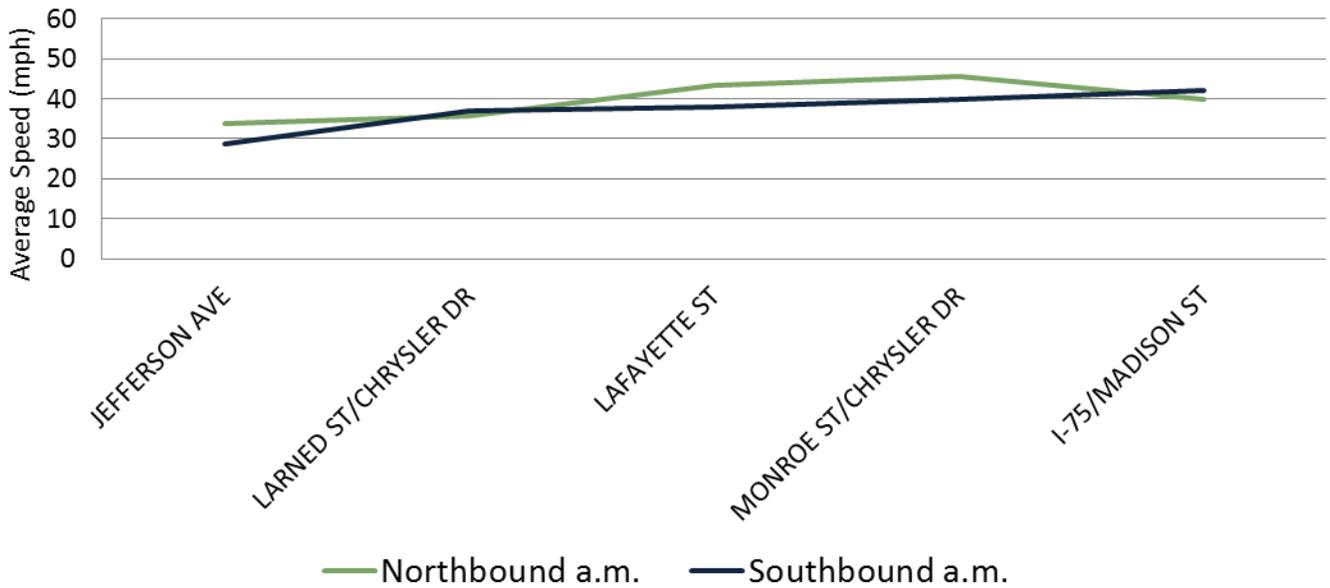


I-375

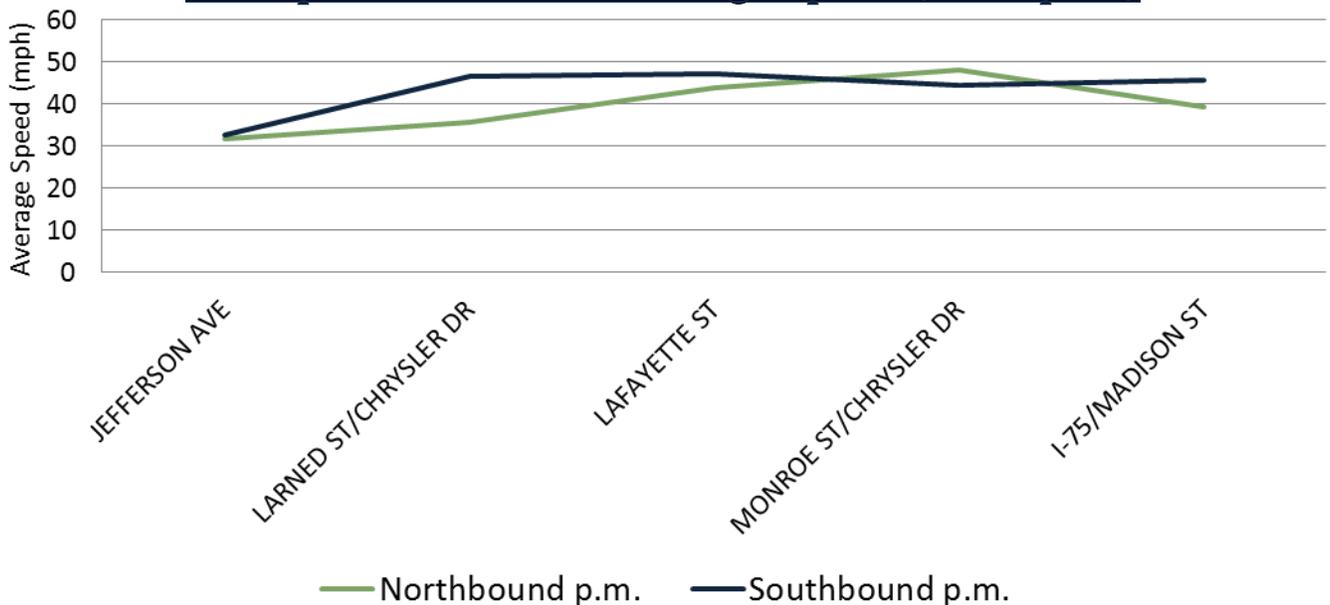
between Jefferson Avenue and I-75



I-375 a.m. Peak Hour Average Speed (8–9 a.m.)



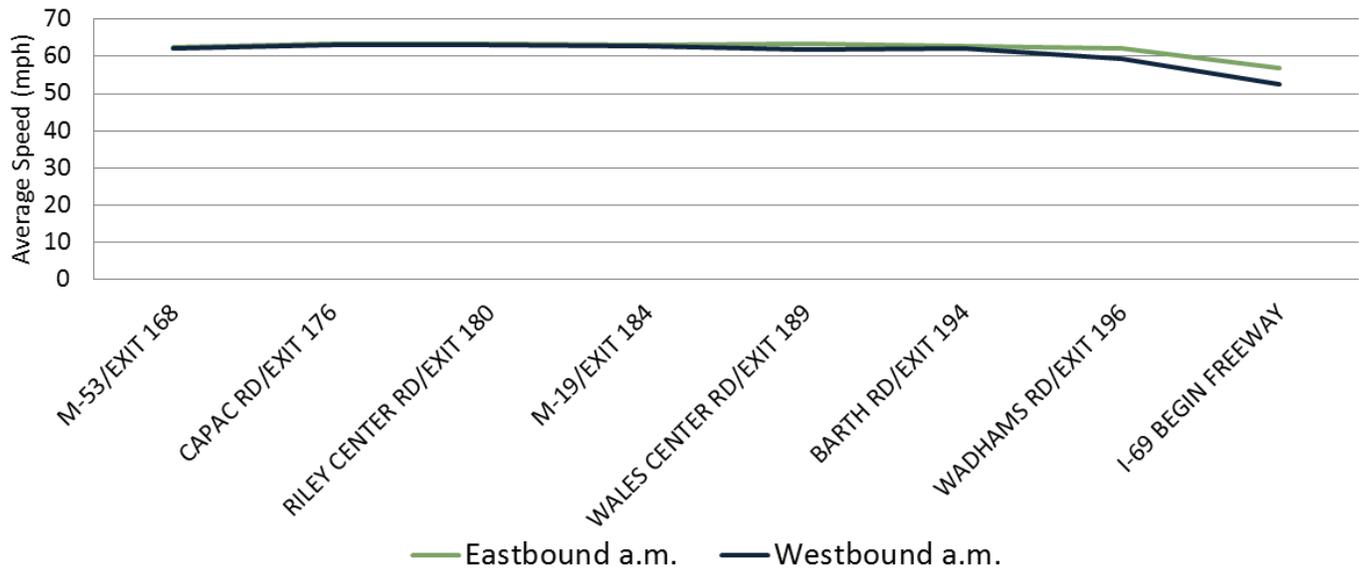
I-375 p.m. Peak Hour Average Speed (9–10 p.m.)



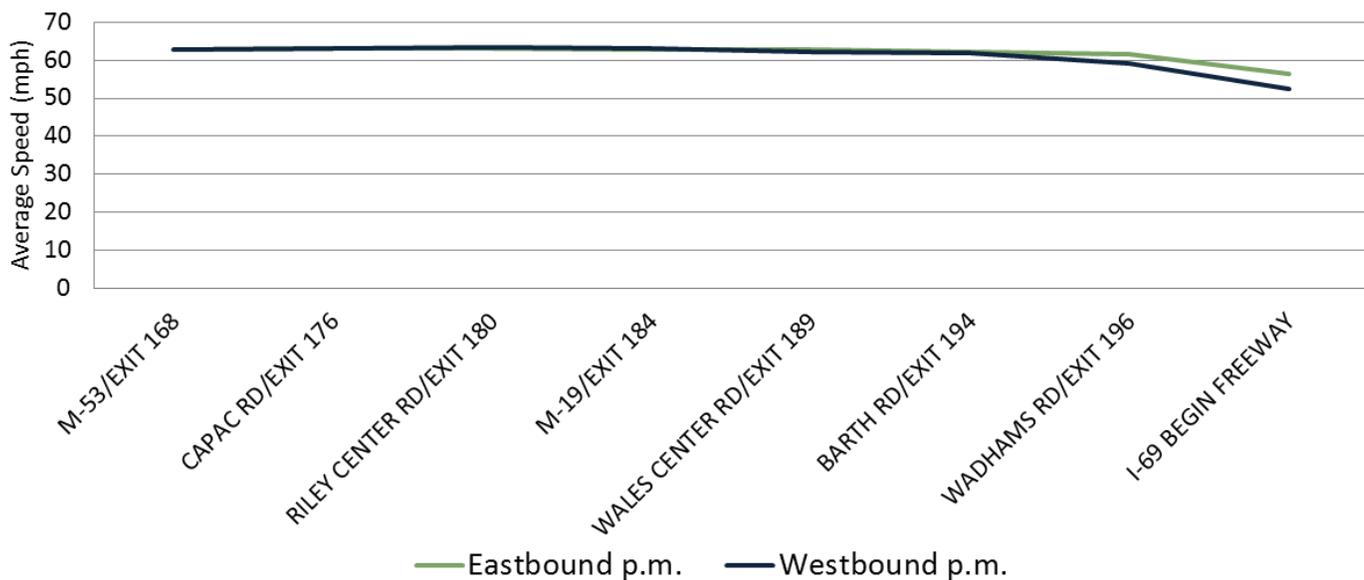
I-69 between M-53 and I-94



I-69 a.m. Peak Hour Average Speed (10–11 a.m.)



I-69 p.m. Peak Hour Average Speed (9–10 p.m.)

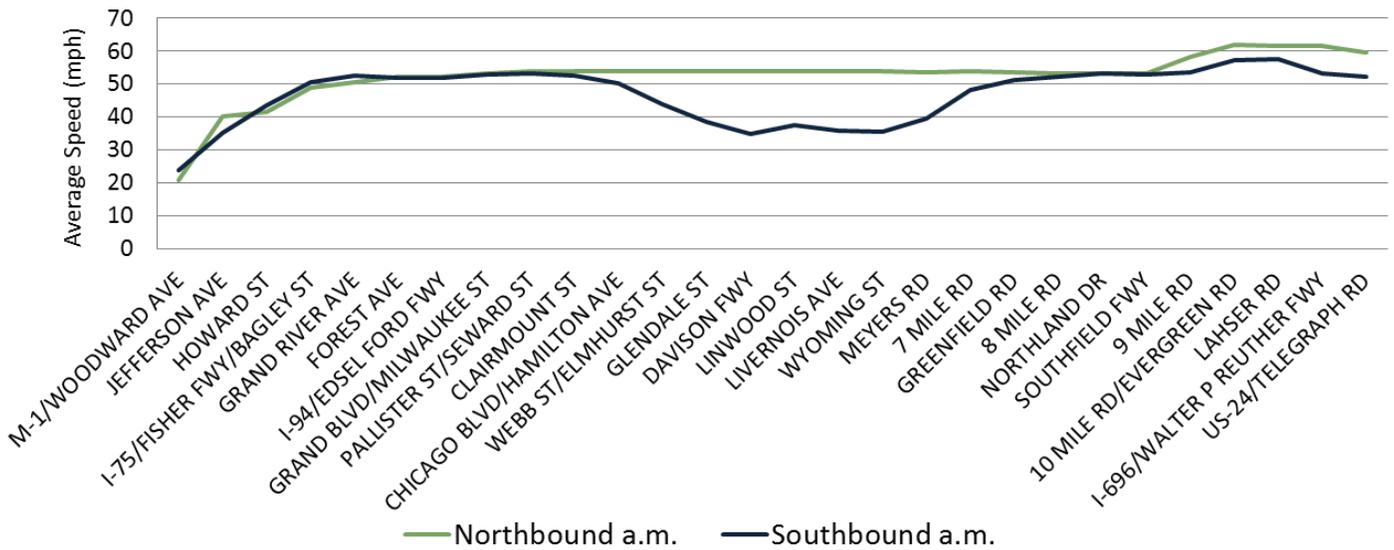


M-10

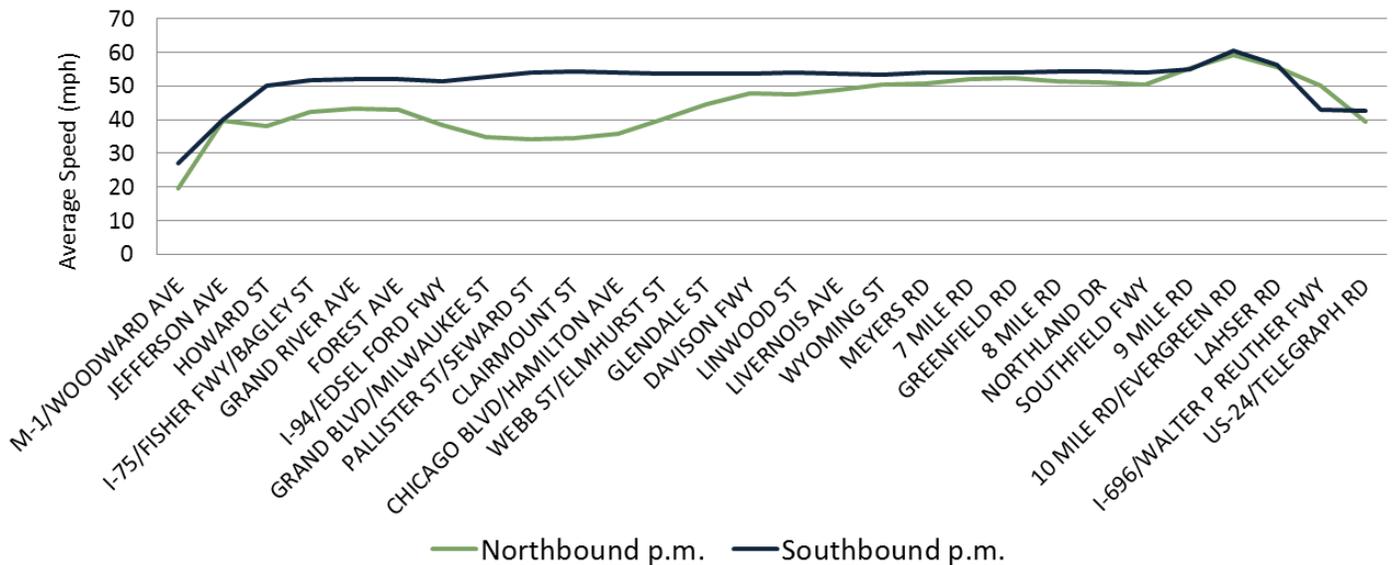
between US-24 (Telegraph Road) and M-1 (Woodward Avenue)



M-10 a.m. Peak Hour Average Speed (8–9 a.m.)



M-10 p.m. Peak Hour Average Speed (5–6 p.m.)

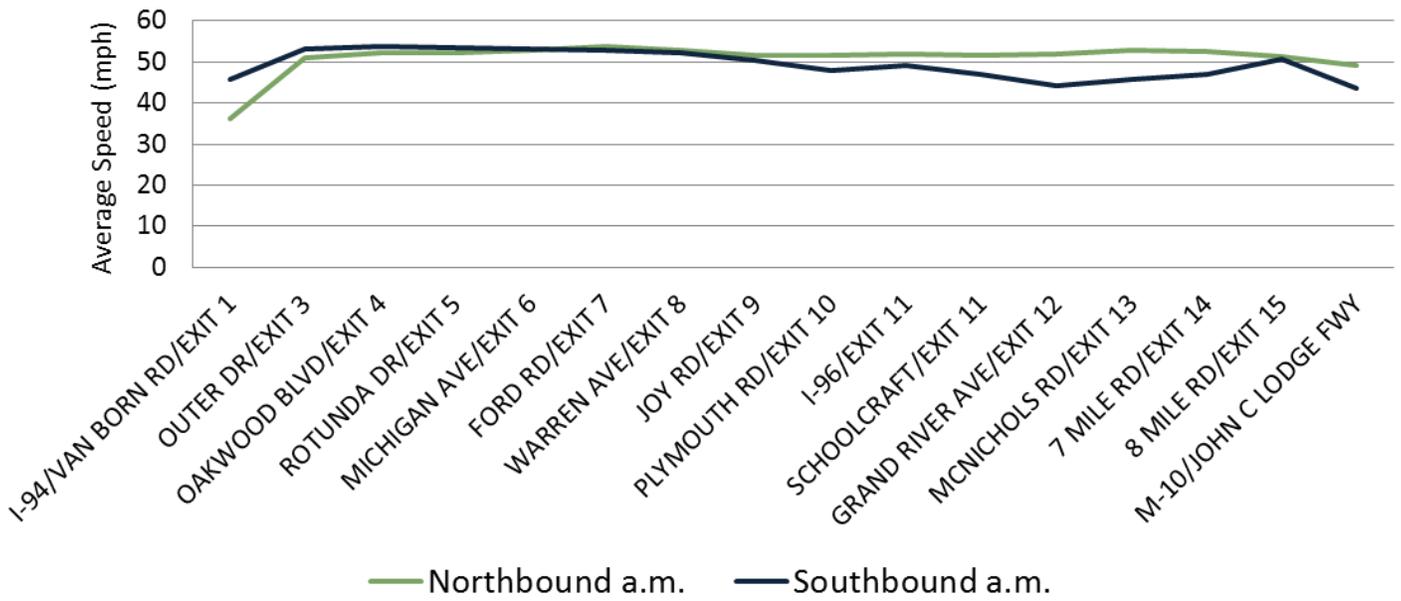


M-39

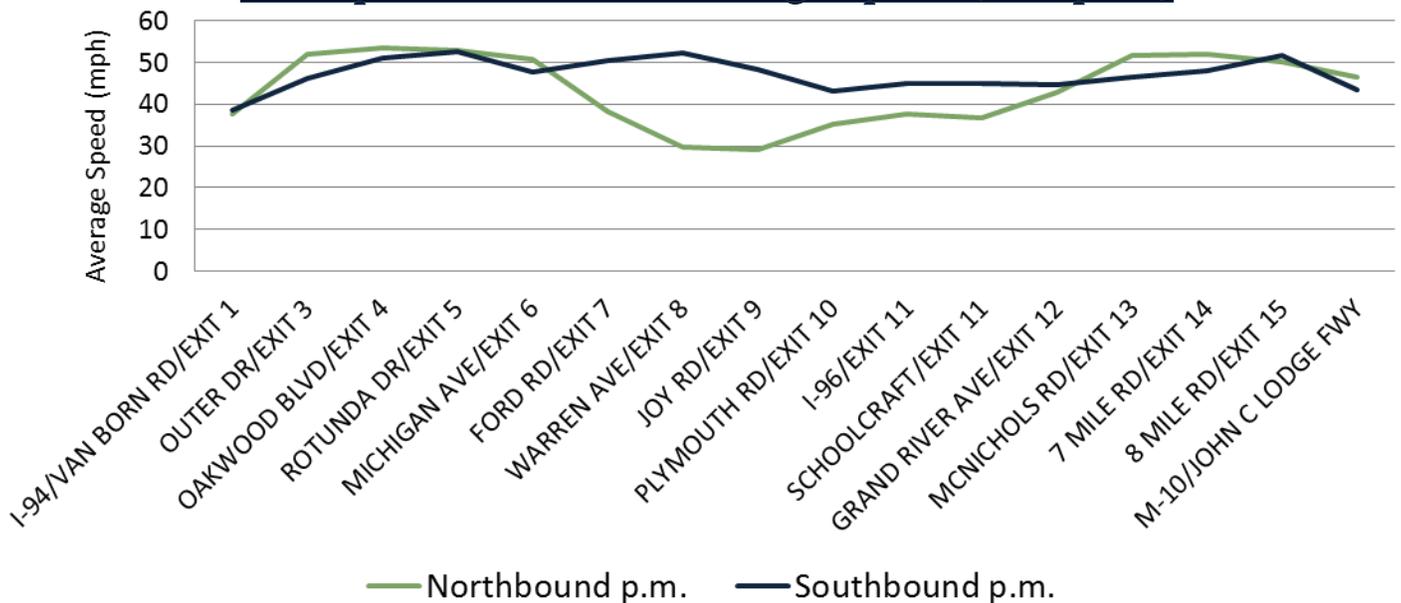
between I-94 and M-10



M-39 a.m. Peak Hour Average Speed (8–9 a.m.)



M-39 p.m. Peak Hour Average Speed (5–6 p.m.)

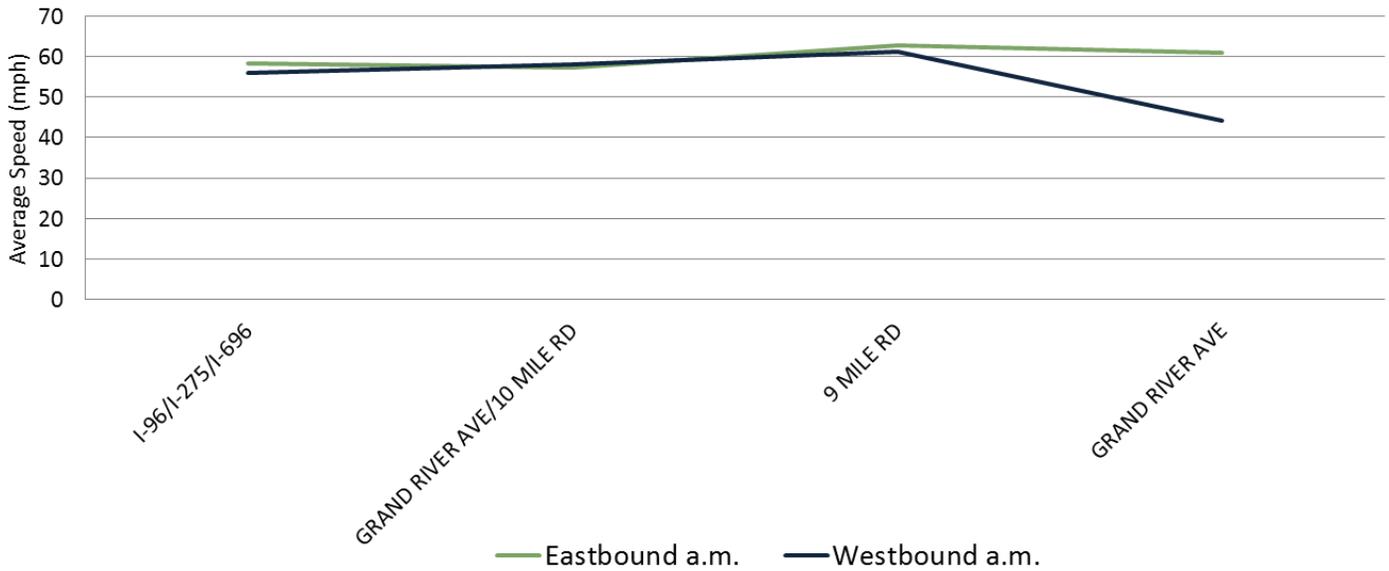


M-5

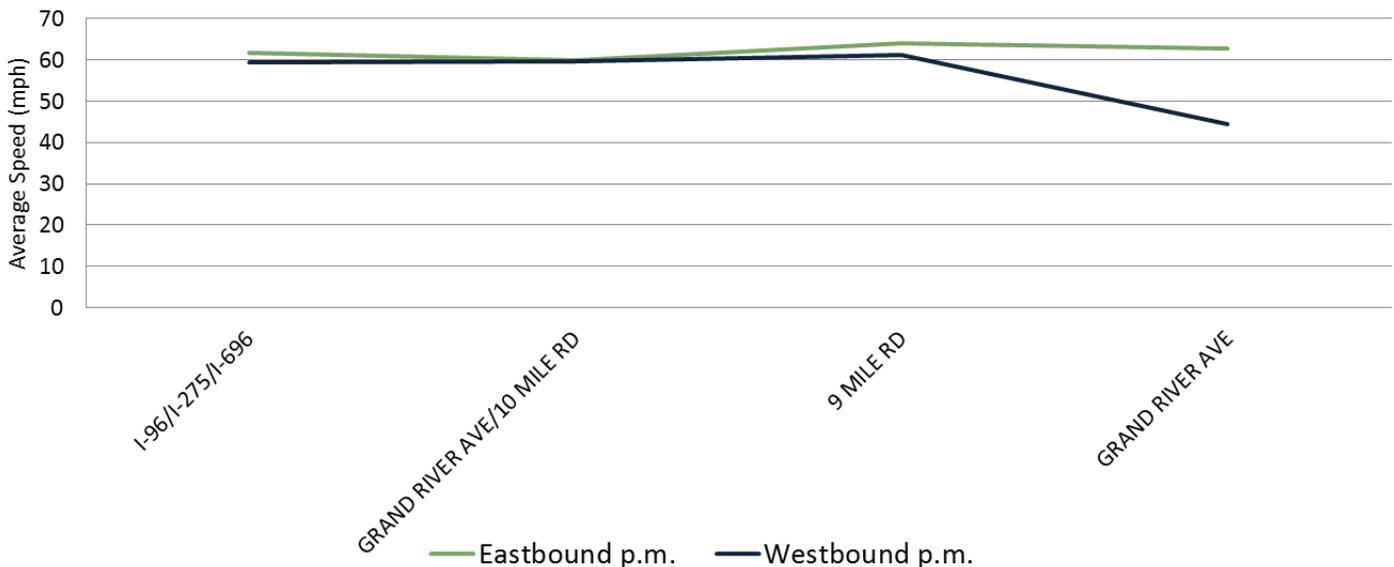
between I-96/I-275/I-696 and Grand River Avenue



M-5 a.m. Peak Hour Average Speed (8–9 a.m.)



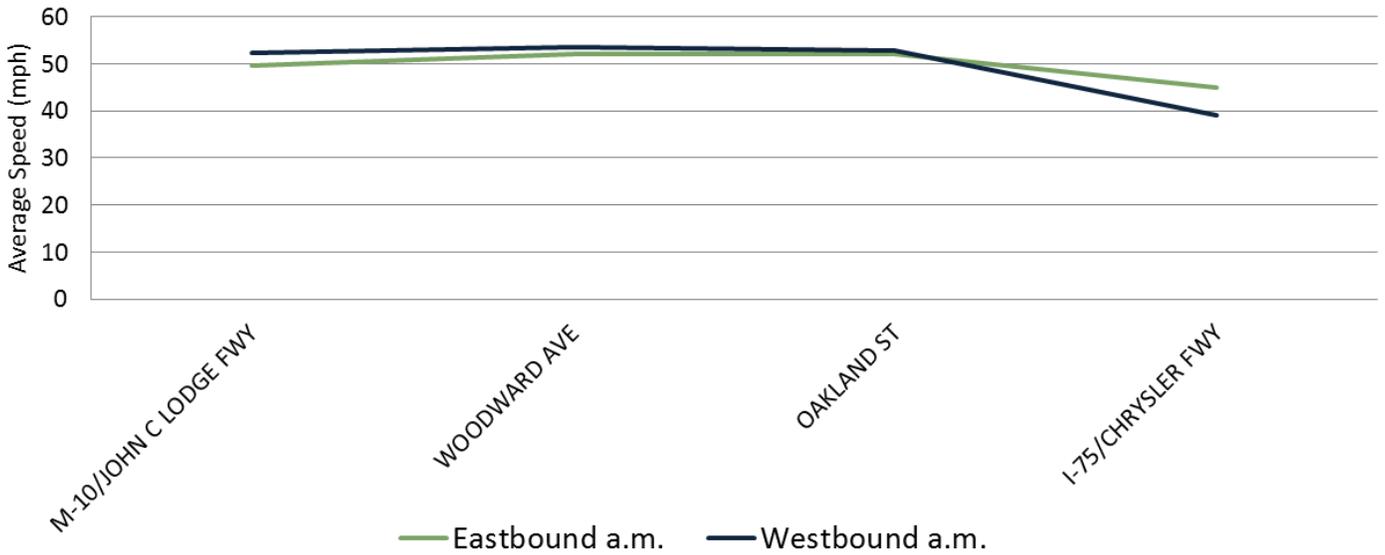
M-5 p.m. Peak Hour Average Speed (3–4 p.m.)



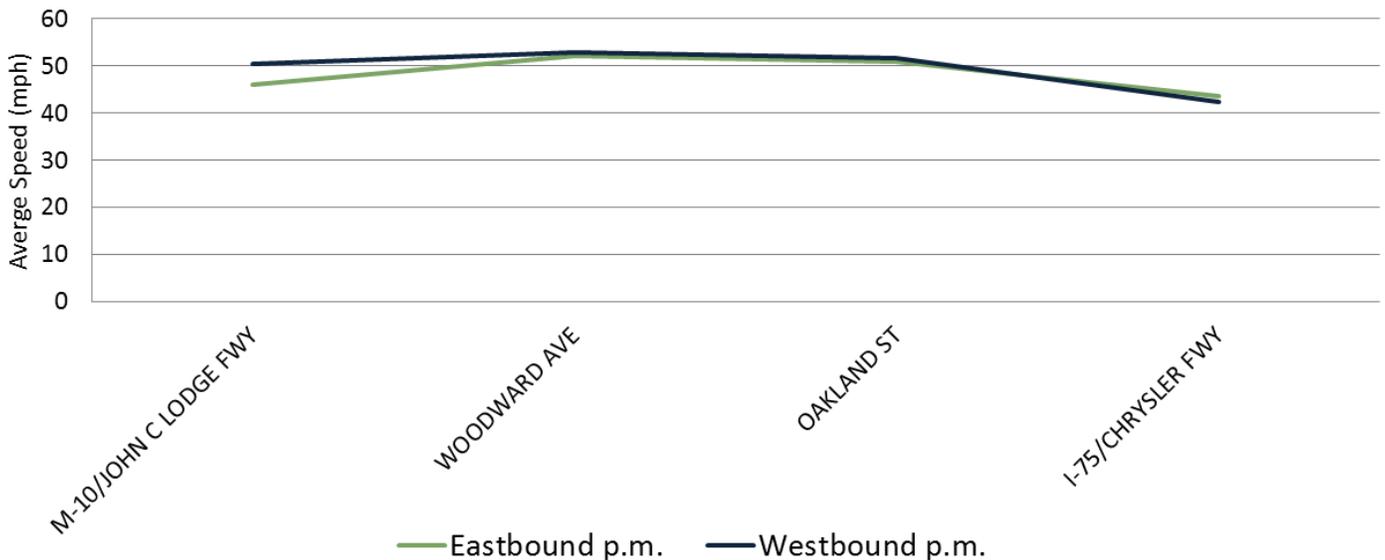
M-8 between M-10 and I-75



M-8 a.m. Peak Hour Average Speed (10–11 a.m.)



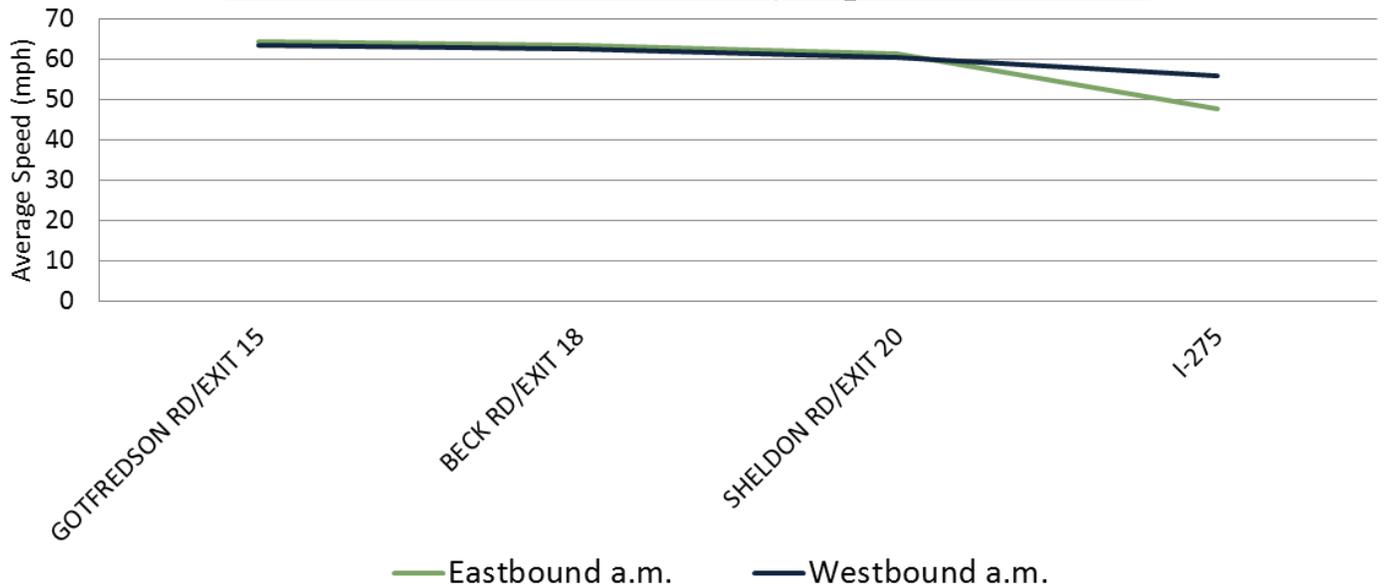
M-8 p.m. Peak Hour Average Speed (9–10 p.m.)



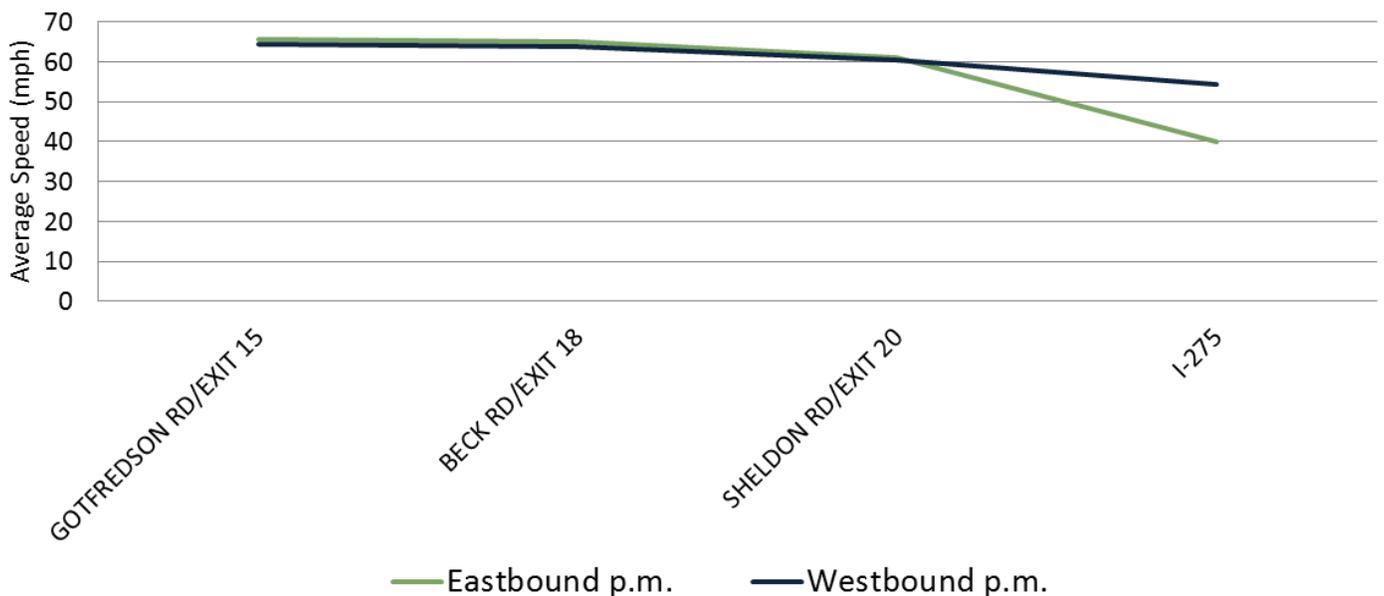
M-14 between Gottfredson Road and I-275



M-14 a.m. Peak Hour Average Speed (8–9 a.m.)



M-14 p.m. Peak Hour Average Speed (5–6 p.m.)

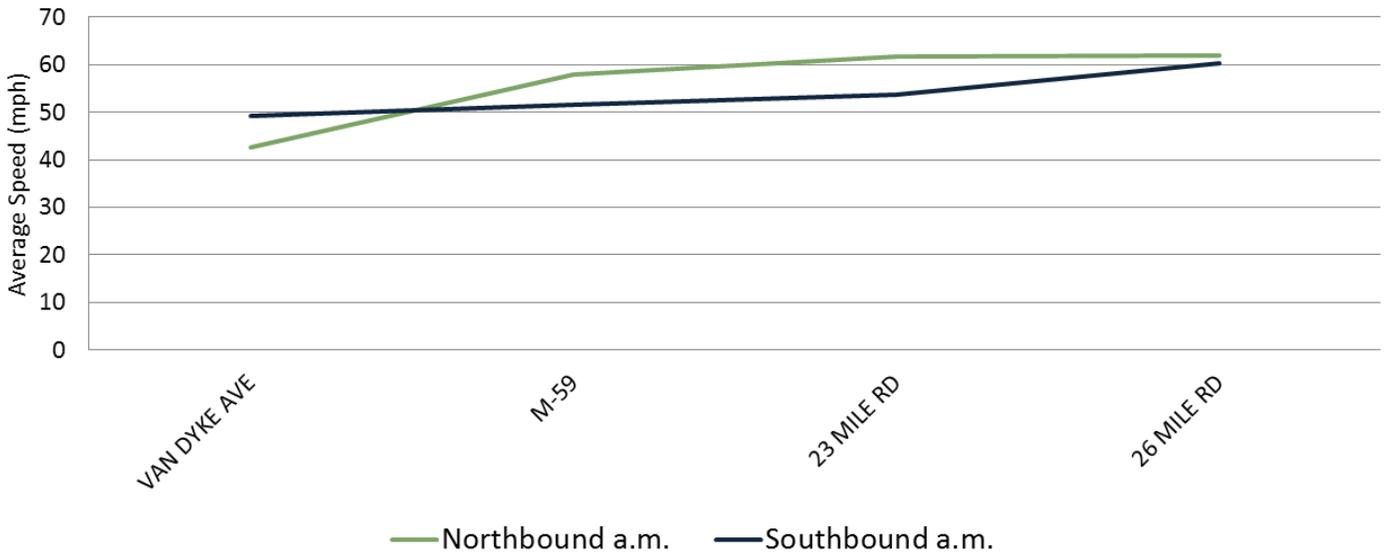


M-53

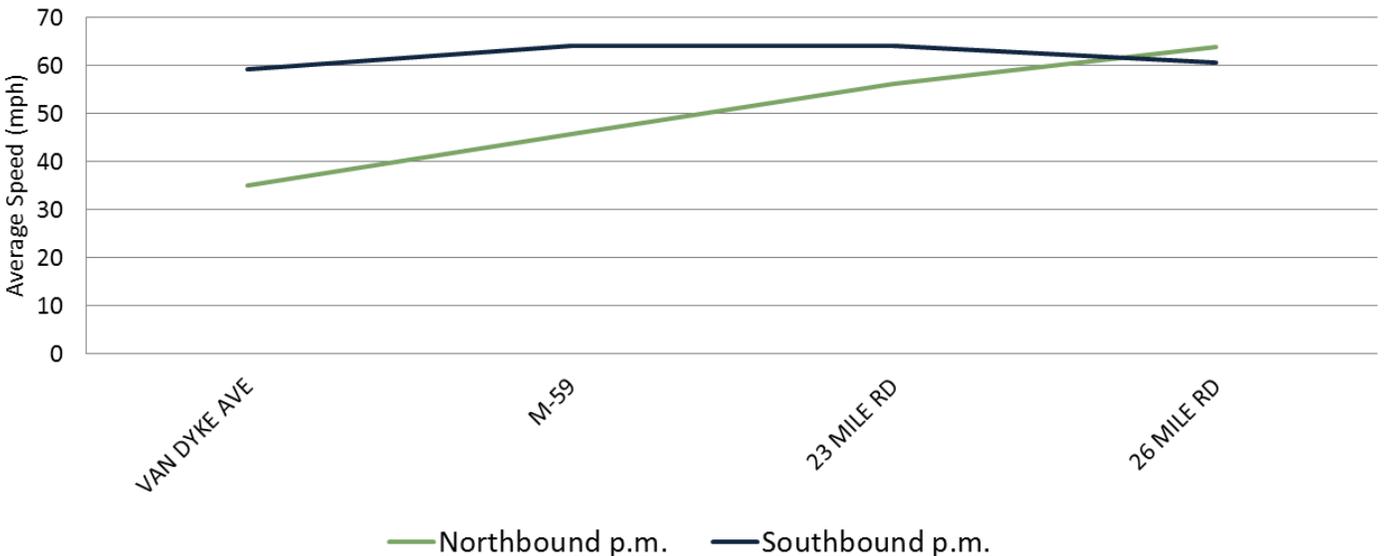
between Van Dyke Avenue and 26 Mile Road



M-53 a.m. Peak Hour Average Speed (7–8 a.m.)



M-53 p.m. Peak Hour Average Speed (5–6 p.m.)

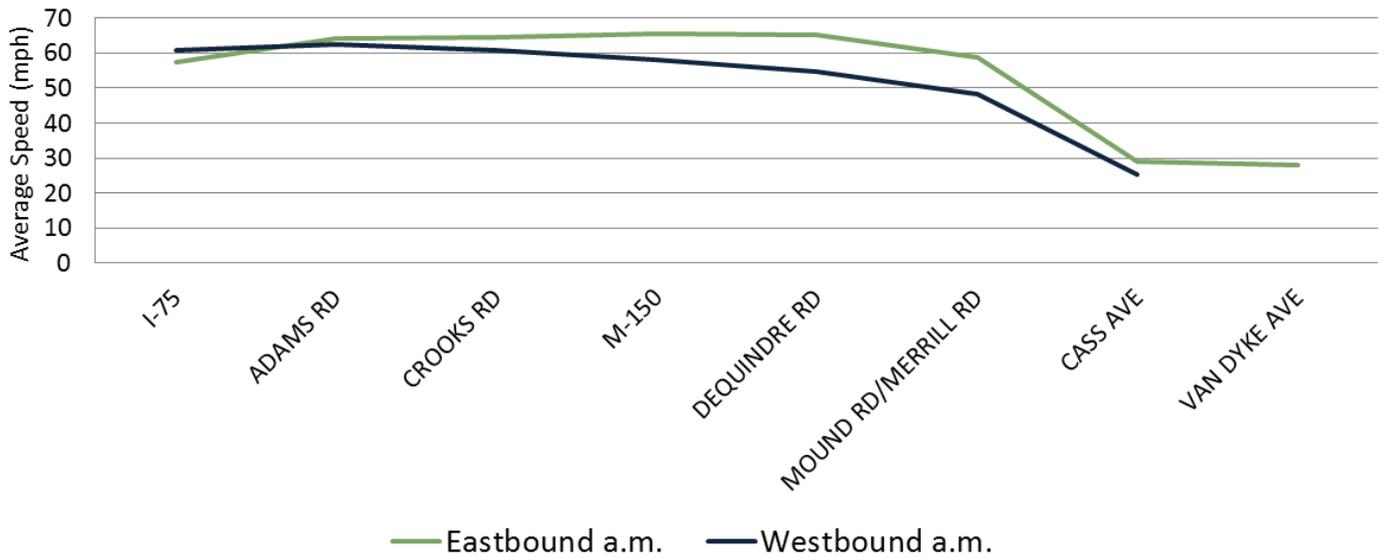


M-59

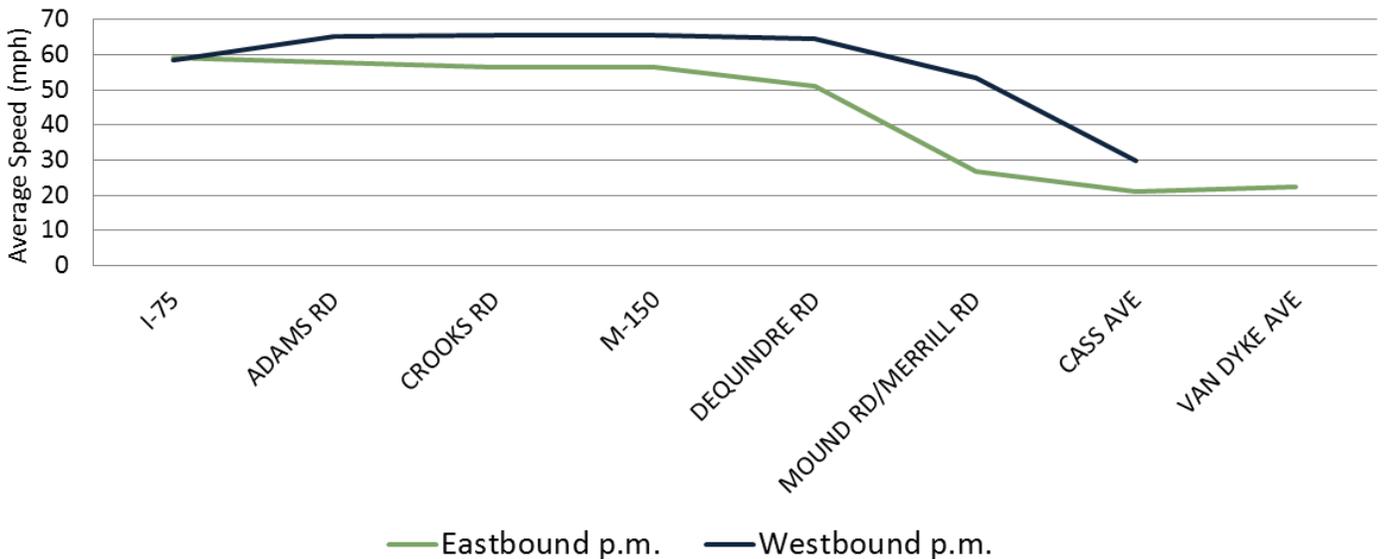
between I-75 and Van Dyke Avenue



M-59 a.m. Peak Hour Average Speed (8–9 a.m.)



M-59 p.m. Peak Hour Average Speed (5–6 p.m.)



MDOT Vision

MDOT will be recognized as a progressive and innovative agency with an exceptional workforce that inspires public confidence.



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