

City of Madison

MADISON DEPARTMENT



OF TRANSPORTATION

2021 Annual Operation Report

January 25, 2022

2021 MADISON TRANSPORTATION TRENDS

TRAFFIC

As we approach the second year of the COVID-19 pandemic, we seek to understand how the effect of the pandemic will permanently affect transportation trends. The past 18 months have seen a variety of circumstances, from stay-at-home orders, the development of vaccines, and the introduction of two more contagious variants. Telework has become much more prevalent in the work place and is likely to remain. This has reduced peak period (rush hour) trips, but may have a more limited effect on overall vehicle miles traveled (VMT). Long term traffic effects of the pandemic may provide opportunities in how we allocate street space as well as how much parking is needed.

Figure 1 compares the monthly average weekday traffic for three Madison arterials, taken from the City's Centracs signal software. Years 2019, 2020, and 2021 are shown. The graphs illustrate the traffic volume variance as we travel through the stages of the pandemic. However, if we use October 2021 as a comparison point, traffic volumes are still only 85 to 92 percent of what was experienced in 2019.

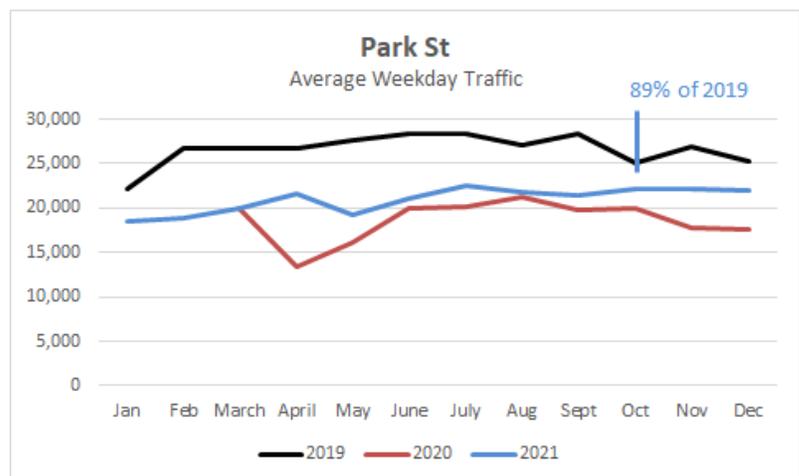
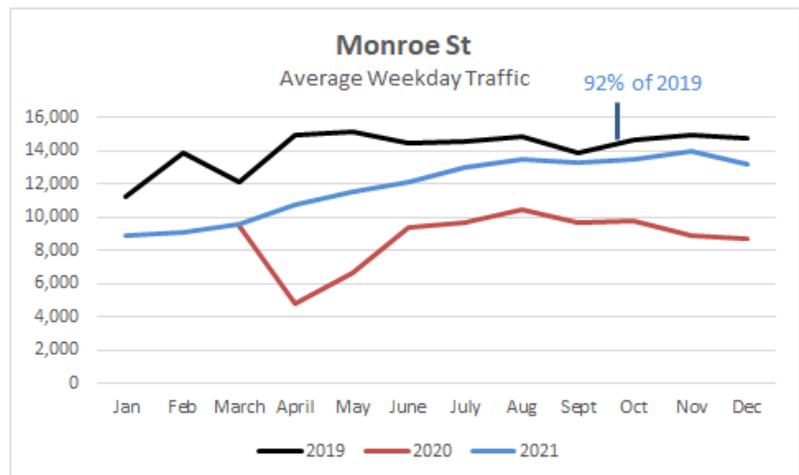
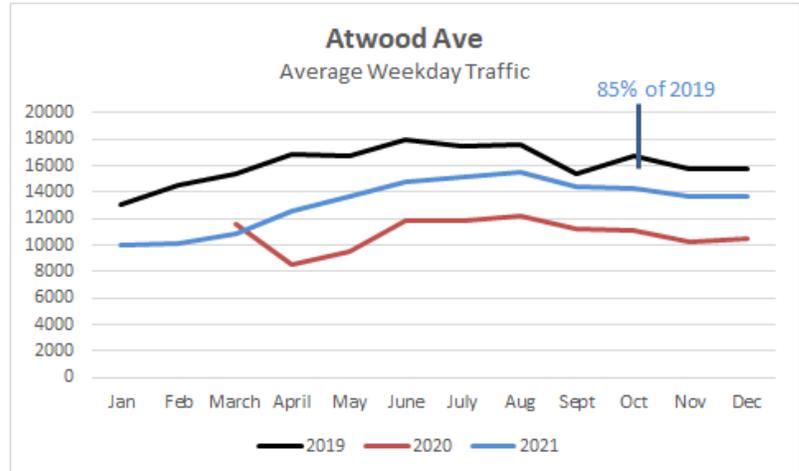


Figure 1 Average Weekday Traffic

Much of the traffic volume reduction is occurring during the morning and evening peak hours. Figure 2 illustrates the September hourly traffic volume on East Washington at the Yahara River for 2019, 2020, and 2021. The 2021 morning peak traffic volumes are roughly 60 percent of those experienced in 2019, with the evening peaks being roughly 70 percent. Much of the employment in the isthmus lends itself to telework, which could be contributing to these reduced volumes and could be a longer term effect.

Traffic volumes on the state system have recovered a little more rapidly. Figure 3 illustrates average weekday volumes on monthly basis for the Beltline. In October 2021 they were roughly 91 percent of what was experienced in 2019.

Nationally VMT is close to fully recovering. Figure 4 was obtained from Federal Reserve statistics and shows that VMT in October was 98 percent of that experienced in 2019. While this VMT is close to recovering, normally during this 3-year period national VMT would have increased 3 to 4 percent.

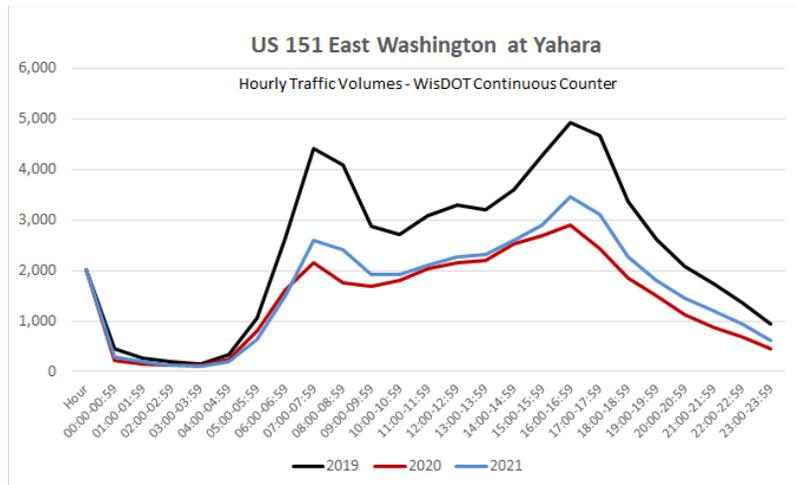


Figure 2 Weekday Hourly Volume – East Washington Ave

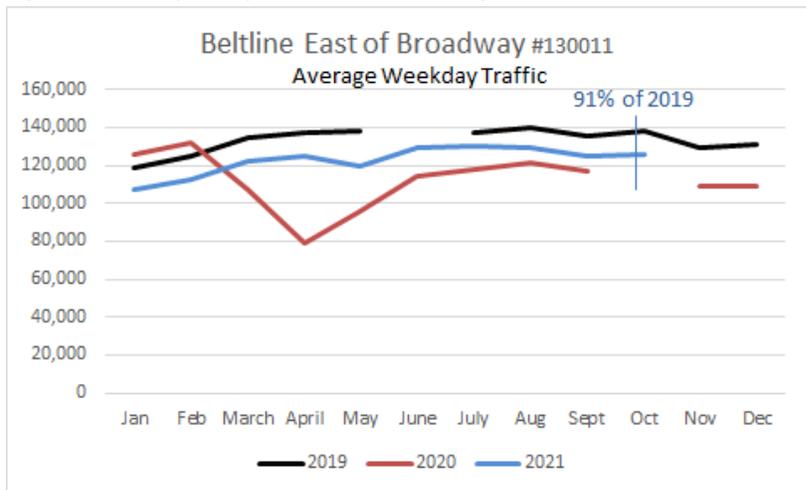


Figure 3 Beltline Average Weekday Traffic

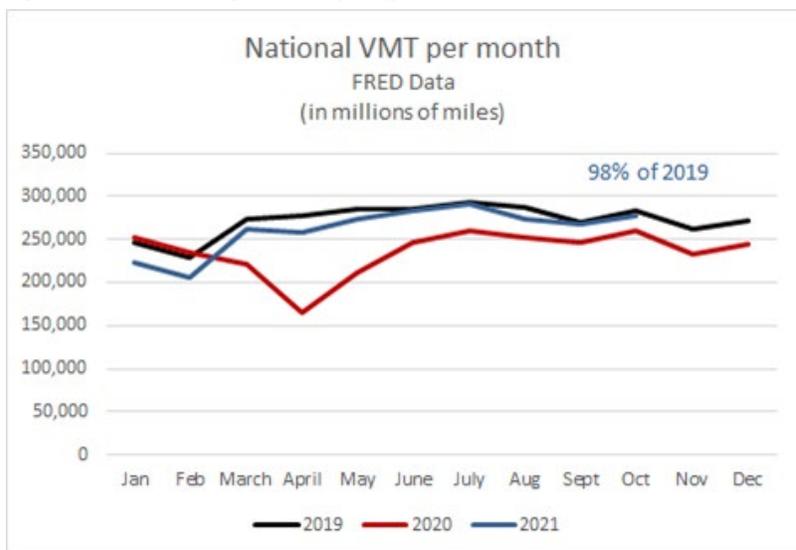


Figure 4 National VMT

2020 saw a decrease in bike work trips, with an increase in recreational trips. Bicycle traffic in 2021 has decreased from 2019 levels. Figure 5 shows counts taken by the Eco-Totem bicycle counters on the Southwest Path and the Capital City Trail. Volumes have slightly decreased – probably as a result of more telework. Note that volumes on the SW Path were affected in July and August by resurfacing work downstream of the counter.

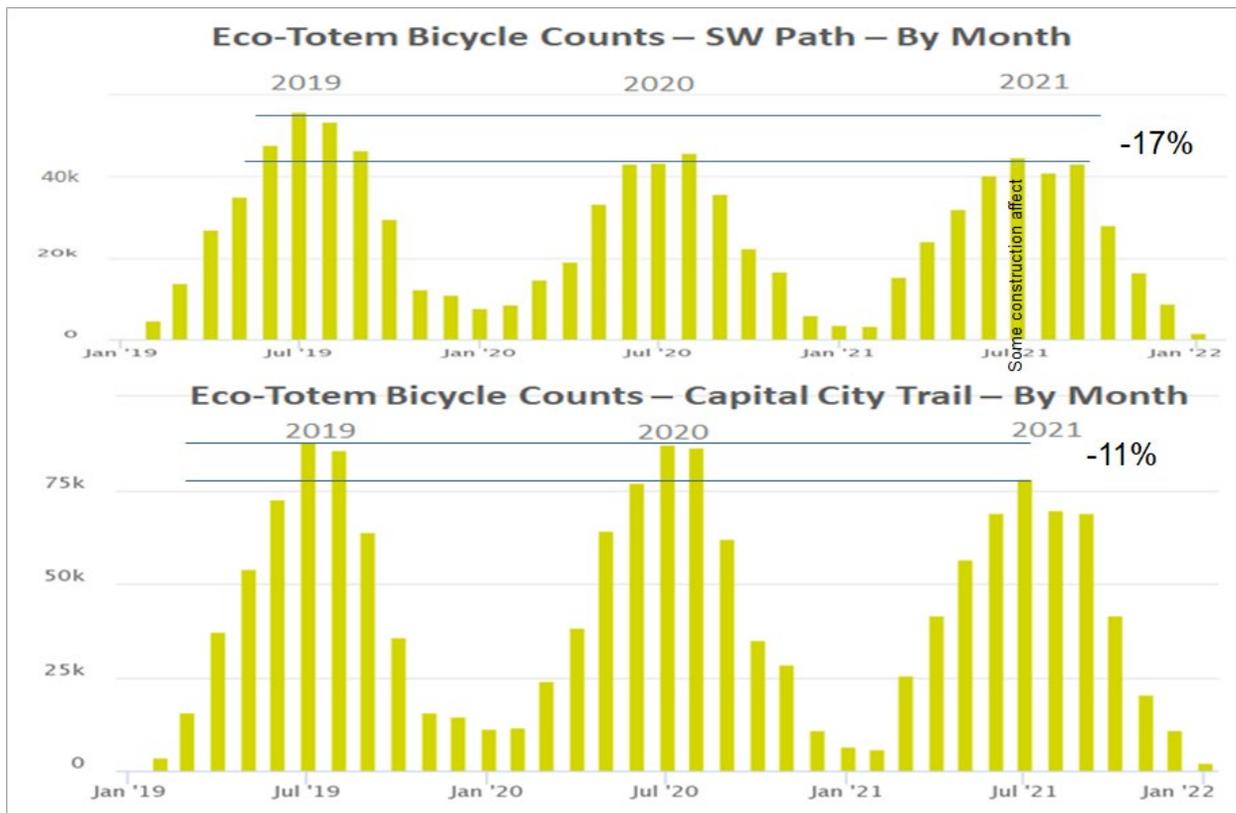


Figure 5 Bicycle Counts

The Greater Madison Metropolitan Planning Organization updated their telework survey in 2021¹. The survey continued to show that over 70 percent of executives and managers predict that more employees will work from home on a weekly basis. If this willingness continues, traffic volumes have the potential to remain low in the coming years. Working from home just one day a week has the potential to dramatically decrease traffic volumes during rush hour, when roadway capacity is most constrained.

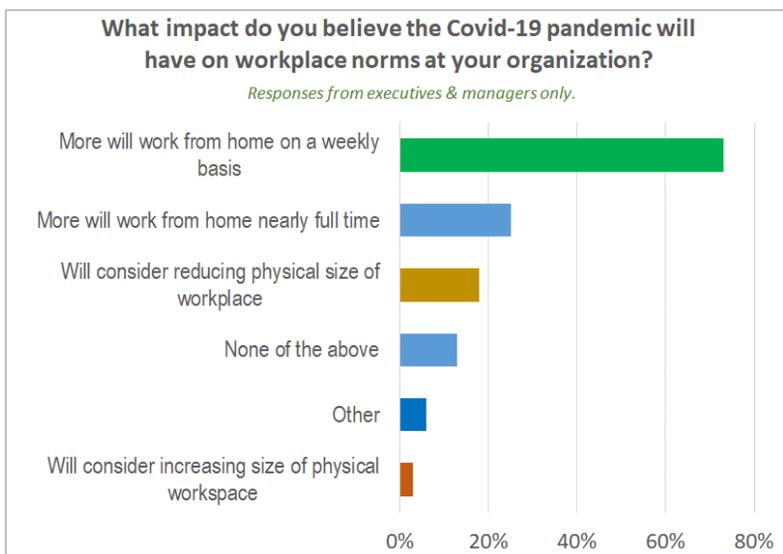


Figure 6 Greater Madison MPO Tele Work Survey

¹ https://www.greatermadisonmpo.org/planning/documents/GreaterMadisonTeleworkSurvey2021_Snapshot_FullResults.pdf

2021 saw 14 fatalities resulting from 12 crashes. While comparable with 2020, it is still higher than previous years. Of particular concern were 5 pedestrian and bike fatalities that occurred on East Washington Ave within the city limits. These fatalities represent a family forever changed and the status quo is unacceptable.

Unfortunately, this is consistent with national trends. In October the National Highway Traffic Safety Administration released a statement showing that fatalities in the first half of 2021 were up 18.4 percent over the same period in 2020 – with the largest projected fatalities since 2006. A subsequent report of behavioral research findings from March 2020 through June 2021 indicate that speeding and traveling without a seatbelt remain higher than during pre-pandemic times.²

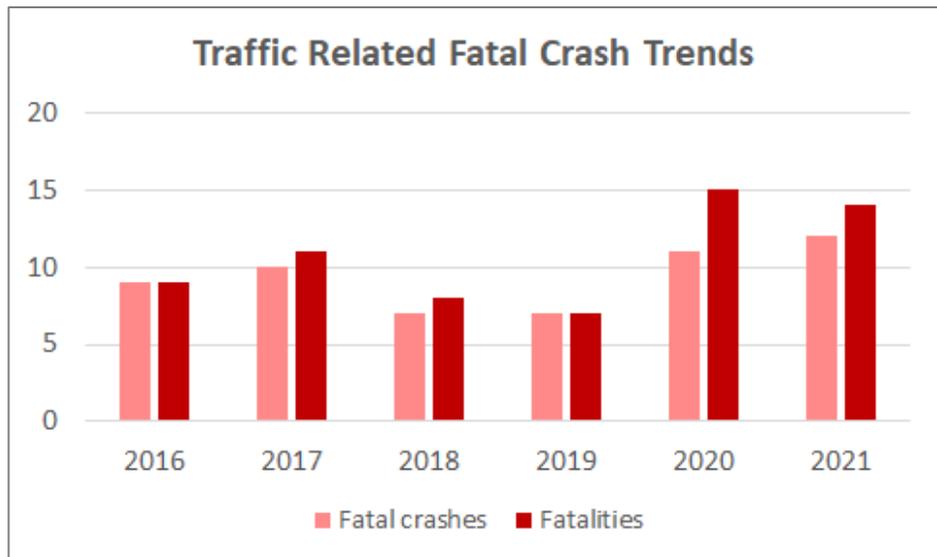


Figure 7 Traffic related Crashes and Fatalities

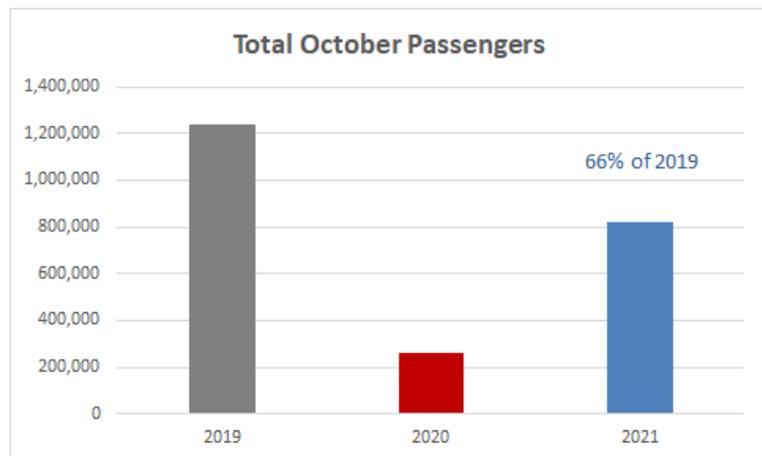


Figure 8 October Metro Passengers

TRANSIT

The effects of the pandemic on transit across the nation continue. With the resumption of in-person instruction at the University, many routes are recovering. Figure 8 illustrates October ridership in 2019, 2020, and 2021. Currently Metro Transit carries about 2/3 of what it did in 2019. The work-at-home policies that are producing lower traffic volumes also have an effect on Metro Transit ridership. Figure 9

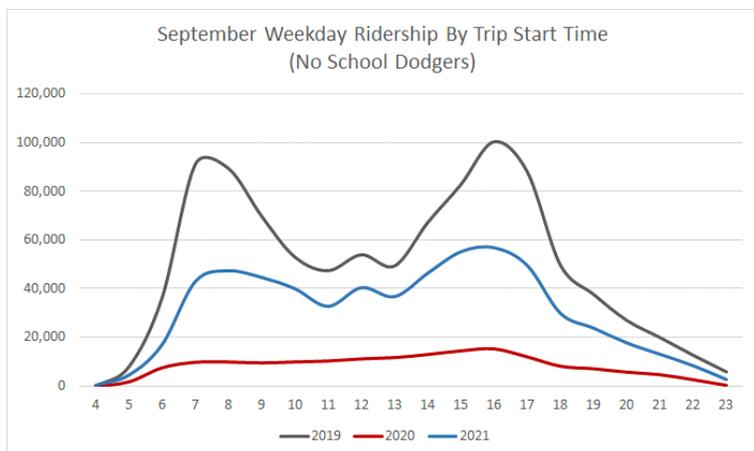


Figure 9 Hourly Passenger Load – Metro Transit

² <https://www.nhtsa.gov/press-releases/usdot-releases-new-data-showing-road-fatalities-spiked-first-half-2021#:~:text=An%20estimated%2020%2C160%20people%20died,leaving%20countless%20loved%20ones%20behind.>

illustrates that much of passenger reduction occurs during the peak hours – again possibly the result of increased telework.

Metro Transit service operates at about 80 percent of the revenue hours as pre-pandemic. The reduction in revenue hours is largely due to the shortage of drivers. Transit agencies and school bus services throughout the nation are having difficulty recruiting drivers. It is unlikely these revenue hours will increase prior to implementation of the Transit Network Redesign and/or Bus Rapid Transit.

Figure 11 shows riders per revenue hour – a measure of efficiency – which improved considerably - with hopes in the future it will equal values observed prior to 2020.

Fare revenue is anticipated to be similar to that collected in 2020, and still about 40 percent less than that collected in 2019. It is anticipated it will take several years to restore fare revenue to pre-pandemic levels. Fare revenues do not correspond directly to ridership because roughly half of Metro fare revenue is associated with unlimited pass programs through the UW and other employers. Those programs use a trailing four year average of ridership to calculate contributions. Therefore, those revenue from those programs did not drop in 2020 but in 2021 are being influenced by the very low 2020 ridership.

Figure 13 is taken from the Transit Network Redesign Existing Conditions report and illustrates where ridership dropped significantly (red) to where it dropped modestly (green) between 2019 and 2020. Ridership dropped the least in peripheral low income communities – most likely to house many essential workers and

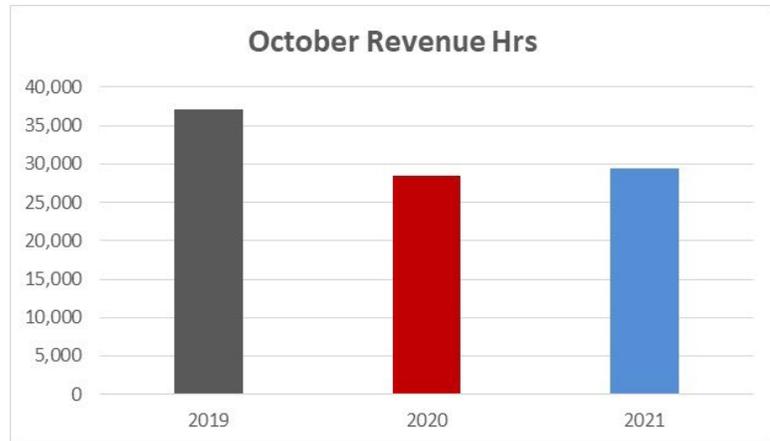


Figure 10 October Metro Transit Revenue Hours

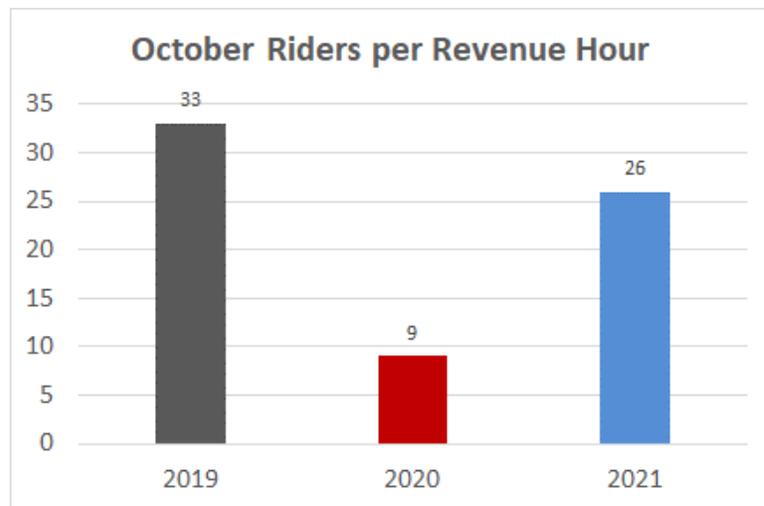


Figure 11 Riders per Revenue Hour

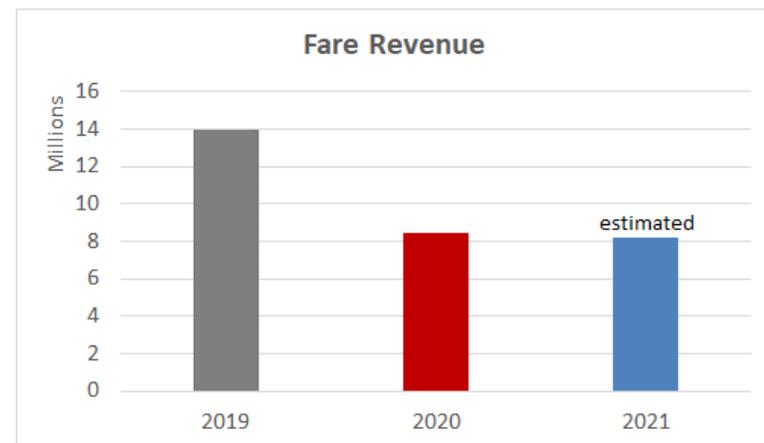


Figure 12 Fare Revenue

where people likely have fewer alternatives to transit. Many if not most pandemic-era transit users are likely essential workers with daytime hours, and people on non-work trips.

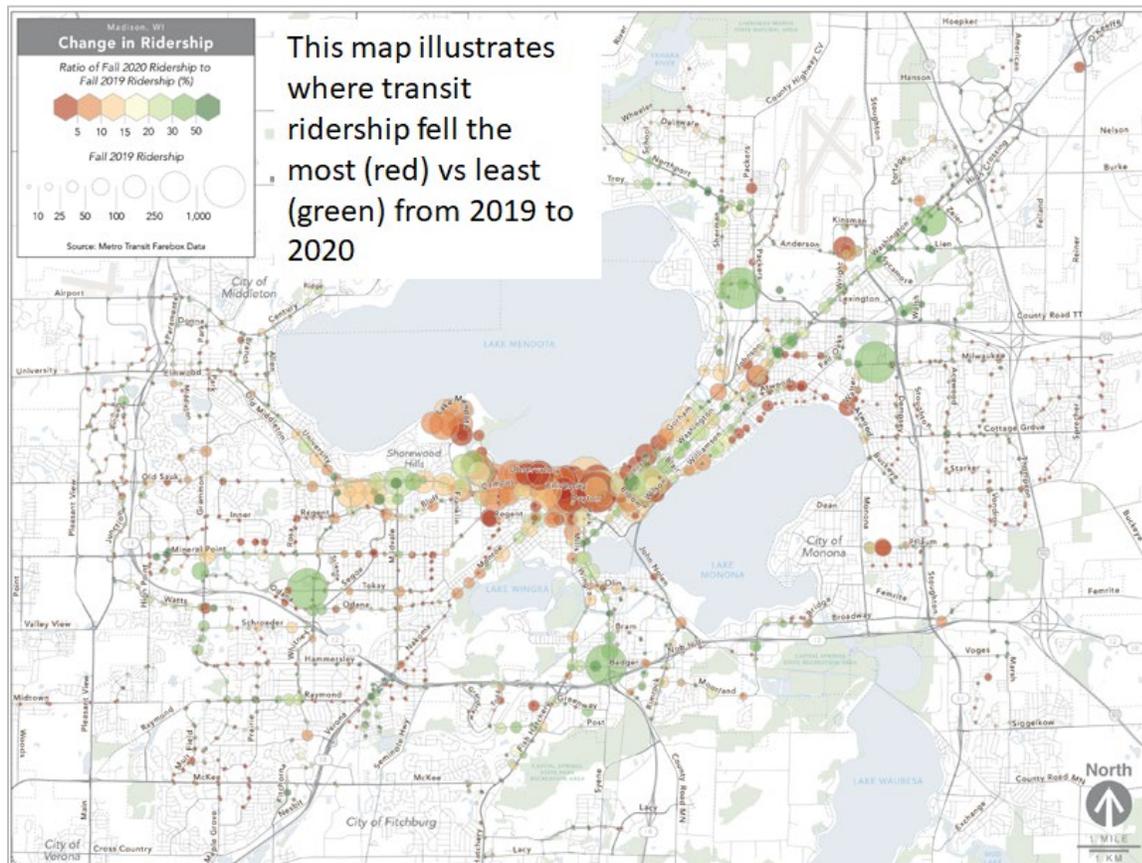


Figure 13 Transit Ridership Changes with Pandemic

PARKING

The effects of the Covid pandemic on the Parking Division follow the effects to Madison’s employment and retail establishments. The work-from-home policies of downtown employers as well as limited event schedule has substantially reduced both parking occupancy and parking revenues. Average peak parking occupancy increased modestly but is still only 60 percent of what in 2019. 2021 parking of revenues of \$8.5 million are slightly greater than those experienced in 2020, but still only half of what was collected in 2019. The greatest decrease in revenues came from garage parking. When looking a average peak garage occupancies, garages relying on government employment parkers (Wilson St) are showing the lowest occupancies.

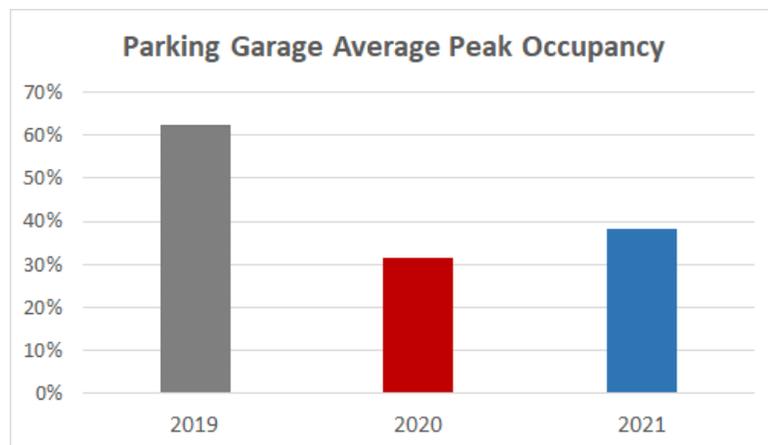


Figure 14 Average Peak Occupancy Parking Garages

With 2021 operating expenses of roughly \$11.8 million annually (without PEO expenses), the budget will draw from Parking reserves to meet expenses. A stronger recovery and increase in parking demand hopefully will reduce or eliminate the deficit in 2023 and beyond.

Parking enforcement is included in the 2022 Parking Division budget. Consequently we are providing some citation and expenditure data with this report. Revenue from citations is not an objective of Parking Enforcement, but rather compliance ordinances and achieving parking management objectives. However, citation revenue in 2021 is about 70 percent of what was collected in 2019.

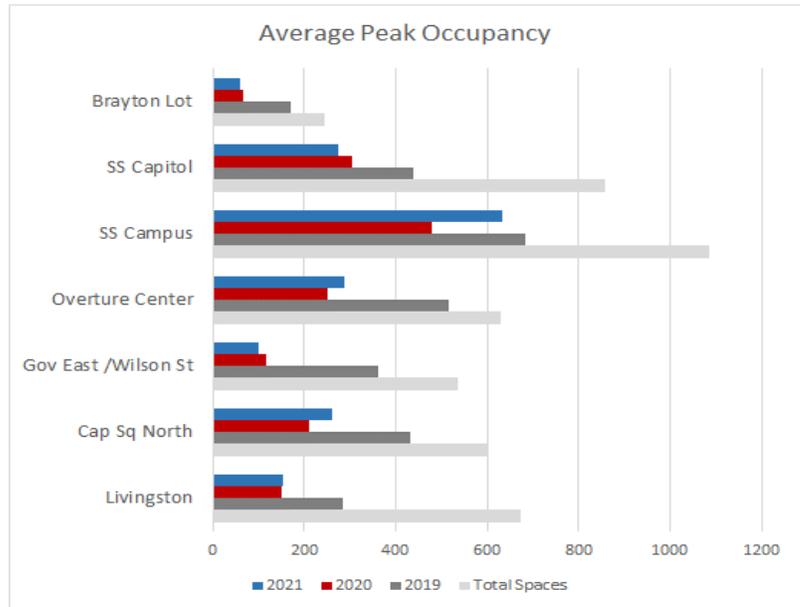


Figure 15 Average Peak Occupancy Garages

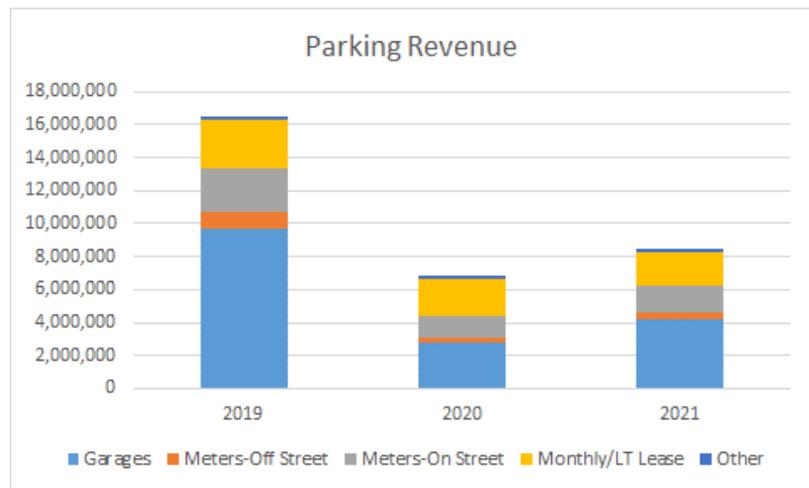


Figure 16 Parking Revenue



Figure 17 Parking Citation Revenue

OBSERVATIONS

As we are into the second year of the pandemic, we try and discern how the crisis will affect transportation patterns and how we should adjust our services and system to the “new” normal.

- Lower traffic volumes, particularly during peak periods. Unlike the recession of 2008, where decreased VMT was due to joblessness, unemployment currently is at historic lows. The pandemic introduced telework – which is unlikely to fully revert back to previous levels.



- The increased telework may allow transit service to rebalance, reducing the amount of extra peak hour service needed for workers with traditional hours. This could allow redistribution to evenings and weekends. A drawback of the telework could be reduced farebox revenues.

- The reduced peak hour volumes will allow street reconstruction projects to focus less on providing peak hour motor vehicle capacity. This also could provide more liberties in rebalancing the street spaces towards more sustainable transportation modes.



- The fee structure for parking garages will need modification. Less revenue is likely to occur from monthly passes for downtown workers – particularly in a marketplace with competition. There may be opportunities to create new products – such as 10 day monthly passes, for workers that partially work from home and partially from the office. Downtown housing units continue to increase – with many units approved within the last year. There may be a shift towards more overnight and weekend parking to support this housing increase.
- Traffic safety will probably continue to be a challenge. The decreased congestion has allowed higher speeds on City streets. However road rage and aggressive driving has risen dramatically throughout the nation during the pandemic. Much of this occurs where congestion is not a factor. It’s unclear how this type of driving behavior has spiked, but cities throughout the nation are trying to understand the phenomenon – and then how to address it.

OPPORTUNITIES

The Bi-partisan Infrastructure Law (BIL), also known as the Infrastructure and Jobs Act, was passed. This bill contains an unprecedented amount of funding for transit, passenger rail, pedestrian and bicycle improvements, and innovative safety improvements. It also changes the funding channels, providing cities a more direct path to obtaining federal funding. A key objective of 2022 and 2023 will be capturing as much of this federal funding as possible.

2021 TRAFFIC ENGINEERING EFFORTS

Traffic Engineering continued maintaining the City’s transportation network while advancing key initiatives. This involves considerable amount of coordination. For example, our City Traffic Engineer and Assistant City Traffic Engineer had over 1300 interactions with individual alders. There were over 5,200 workorders produced – many of which were direct responses to requests from our residents and businesses.

Vision Zero

Considerable effort was put forth in developing the Vision Zero Action plan, determining a methodology for identifying the High Injury Network, and using Vision Zero as a lens in selecting projects. Efforts included piloting a 20 is Plenty in two areas covering parts of four different neighborhoods, numerous speed limit reductions, and increasing/improving the City’s pedestrian and bicycle networks. Despite these efforts, traffic fatalities remained high, with unprecedented pedestrian and bicycle fatalities on East Washington Ave.

Figure 18 illustrates the Vision Zero projects completed in 2021.

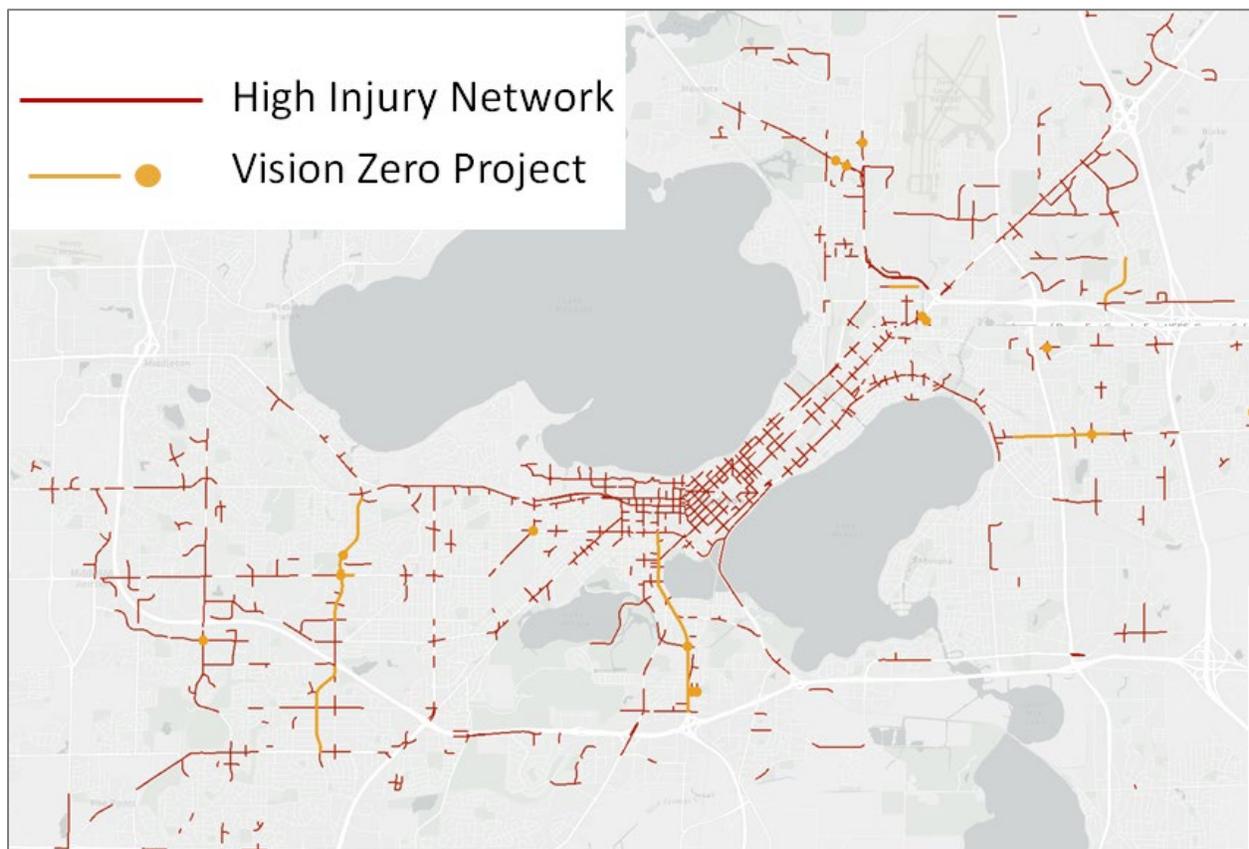


Figure 18 High Injury Network

Some of the Vision Zero projects include the following:

- Gammon Rd Corridor from Watts to Colony - Reduce speed limit from 35 mph to 30 mph, Re-timing 9 traffic signals along the corridor to promote reduced speed
- Park St & Badger Rd Intersection - Upgrade to continental crosswalks
- Park St & Buick St Intersection - Upgrade to continental crosswalks

- Highland Ave & University Ave - Install continental crosswalks, protected Left Turn with new controller
- East Washington Ave (Pinckney to Baldwin) - Upgrade all crosswalks to continental crosswalks, retimed 7 traffic signals along the corridor to promote speed reduction
- East Washington Ave (Baldwin to Marquette) – Retimed 6 traffic signals along the corridor to promote speed reduction
- East Washington Ave & Livingston St - Install bollards on median
- Speed reductions on East Washington Ave - Pinckney Street to Baldwin Street from 35 mph to 25 mph, Baldwin Street to Marquette Street from 35 mph to 30 mph, Milwaukee St from Stoughton Rd to Thompson reduce speed limit from 35mph to 25mph
- Prairie Rd from Raymond Road to Maple Grove Road - Reduce speed limit from 30 mph to 25 mph.
- Highland Ave & University Ave - Implement lead pedestrian intervals, Automatic pedestrian recalls, improved pedestrian signing

Complete Green Streets – *Imagine Madison Land Use and Transportation Strategy 8*

Traffic Engineering continued progress on the Complete Green Streets with Toole Design Group. Accomplishments include a draft modal hierarchy and context based street typology. A draft policy is anticipated for summer of 2022.



Figure 19 Possible Street Typology Categories

Improved and Expanded Pedestrian Bike Facilities – *Imagine Madison Land Use and Transportation Strategy 8*

Traffic Engineering continued to partner with City Engineering in expanding/improving the City’s pedestrian and bicycle network. Projects substantially completed in 2020 include:

The Pedestrian-Bicycle Enhancement Program funded 24 projects to make it easier and safer to walk and bike (some will be completed in 2022) and the Shared & Slow Streets program continued the seasonal cycletrack installation on Atwood Ave near Olbrich Park, signed West Shore and South Shore Bike Blvd as a Shared Street, and piloted traffic calming on Fisher St (planned future bike blvd).

In 2021, the City of Madison completed over 8 miles of new or improved bike network projects to increase the ease and safety of travel by bike. This includes the new [Garver Path](#) (shown above) connecting the Capital City Path at Sugar Ave to Milwaukee St as well as the long awaited [extension of the Demetral Path](#) at E Johnson St.

The [West Washington resurfacing project](#) provided an opportunity to extend the parking protected bike lane on Bassett St an additional block, improve the intersection at Basset & W Washington, and between Beford and Fairchild add new lane markings with a mix of buffered bike lanes and a shared bus/bike lane.

New development also brought opportunities to continue building new facilities in location such as the extension of Cedar St, City View Dr and the Village at Autumn Lake. Other projects with bike lanes added or improved include:



Figure 20 Intersection of Bassett St and W Washington Ave

- Odana Rd from W Platte to just west of Whitney Way
- Nelson Rd from High Crossing to Felland
- Milwaukee St from Fair Oaks to Schenk
- Gorham St from Baldwin to Brearly
- Kinsman Blvd from Wright to Stoughton
- Swanton from Milwaukee to Thompson
- Whitney Way from Old Middleton to Tokay

School Crossing Guards

The transfer of up to 60 full and part time staff from the Madison Police Department to Traffic Engineering occurred! Traffic Engineering is now excited to have these members as part of the team and have been working on integration of the program with other Traffic Engineering programs to better improve school zone traffic safety.



Figure 21 School Crossing Guards

Speed Control

Traffic Engineering continued creative measures to reduce nuisance driving and speeding – particularly on East Washington. This included weekend lane reductions as well as threshold treatments. A broader application of these measures will be tested in 2022.

LED Streetlight Conversion

LED streetlight conversion began in 2021 – with a pause in the summer due to staff shortages. The conversion will continue in 2022.

METRO TRANSIT 2021 EFFORTS

2021 was an extremely consequential year for Metro Transit.

Bus Rapid Transit – *Imagine Madison Land use and Transportation Strategy 2b*

The US DOT recommended Madison East-West Bus Rapid Transit for funding. This is a significant step in implementing BRT, and was unexpected just 8 months after we submitted our Small Starts application. Congress still needs to appropriate the funds, but this is huge step forward.

Madison City Council adopted a Capital Budget that appropriated Madison’s local share towards the BRT project. This also is a significant step towards implementation

Other key actions occurred, including enlisting a consultant project manager, a consultant construction manager, the selection of a shelter type, and progress towards 50 percent design.

Hopefully 2022 will see the completion of an environmental document, a construction funding agreement with FTA, and the letting of the first construction project.

Satellite Facility – *Imagine Madison Land use and Transportation Strategy 2a*

Metro Transit purchased the former FedEx facility on Hanson Road. This facility is equipped to handle motor vehicles/buses and is already being used for storage. A



Figure 21 Example Lane Reduction



Figure 22 Example BRT Station East Washington Ave



Figure 23 Metro Hanson Rd Satellite Facility

construction contract in 2022 will ready this facility for broader use, including the storage of 60-foot BRT buses.

Network Transit Plan – *Imagine Madison Land Use and Transportation Strategy 1a-c*

Jarrett Walker and Associates and Transportation staff started evaluating Metro’s current route structure and developed alternatives that address known deficiencies in the system. A draft plan for comment will be released in the first quarter of 2022, with adoption planned for late 2022.

Transportation Oriented Development Overlay – *Imagine Madison Land Use and Transportation Strategy 5a*

Madison’s Planning Division started revising with near-term implementation of the Transit Oriented Overlay – centered on high frequency transit such as BRT. They are aided with an FTA grant funding the effort. Transportation staff will complement this effort in 2022 through identifying and correcting pedestrian and bicycle gaps within the TOD overlay district.

Improvements to Metro’s Main Facility – *Imagine Madison Land Use and Transportation Strategy 2a (partial)*

Phase 1 and 2 repairs to Metro’s main facility at 1101 East Washington Ave were completed, and Phase 3A was initiated. These improvements – when totaled together amount to over \$30 million, include renovating 30 to 40 year old maintenance areas, providing gender equity in bathrooms and locker rooms, and rearranging bus flow and storage.

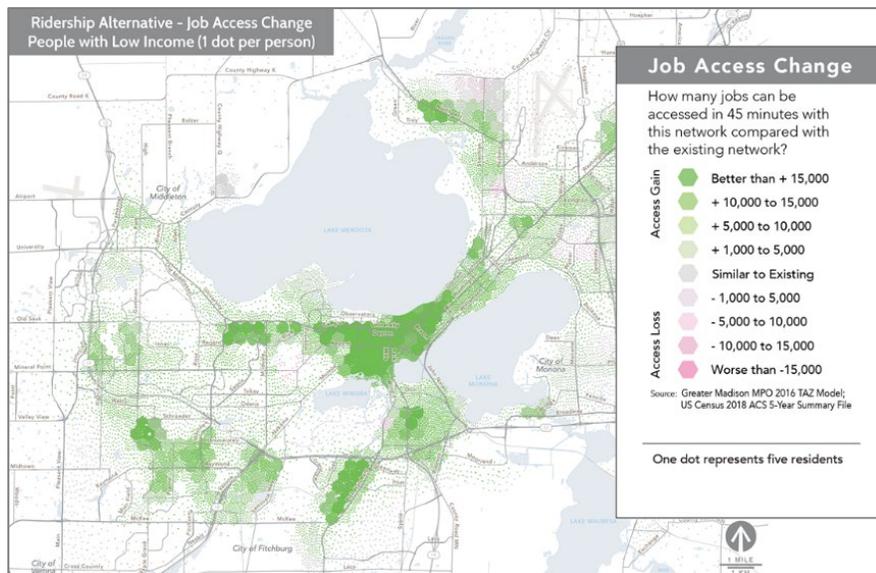


Figure 24 Example Job Access Change – Metro Transit Network Redesign

Technology Upgrade Investigations – *Imagine Madison Land Use and Transportation Strategy 9*

Metro Transit enlisted a firm to upgrade metro’s 15 year old vehicle tracking technology as well as other passenger counting technology. Deployment of the technology will begin in late 2022 and continue through 2023.



Figure 25 Metro Transit 1101 East Washington Ave Improvements

PARKING 2021 EFFORTS

Wilson Street Garage – *Imagine Madison Land Use and Transportation Strategy 9c (partial), 7 (partial)*

With the cold winter of 2021 – the fire suppression system in the garage released water and damaged several parts of the garage, including elevators and other equipment. A fair amount of effort was spent repairing mechanicals from the flooding and retrofitting the garage to prevent future flooding. On a positive note, the Stonehouse development above the garage was completed and opened.



Figure 26 Wilson Street Garage Repairs

Smart Meter Conversion – *Imagine Madison Land Use and Transportation Strategy 9c*

Parking finished its phased replacement of older parking meters with the newer IPS single space smart meters. These meters accept multiple types of payment, are equipped with current communications, and provide greater programming flexibility and data analytics to manage on-street parking occupancy and demand.

Transportation Demand Management and On-Street Parking– *Imagine Madison Land Use and Transportation Strategy 5c*

The Parking Division with Transportation has worked towards finalizing and a Transportation Demand Management (TDM) policy and ordinance. In other cities this type of ordinance has had the potential to substantially reduce motor vehicle travel. This initiative will reduce motor vehicle travel by requiring developers to incorporate measures that reduce traffic. Examples are transit subsidies, bike infrastructure, and carpool initiatives.



Figure 27 Smart Meter Conversion

State Street Campus Garage Mixed Use Development

While the Parking Division reserves are diminished, the Division will still explore the possibility of a public private partnership in the redevelopment of the State Street Campus parking garage. Alternate funding arrangements might still provide an opportunity to replace the aging garage, construct an inter-city bus terminal, and provide housing. Similar opportunities may be available with the implementation of BRT and the Brayton surface parking.



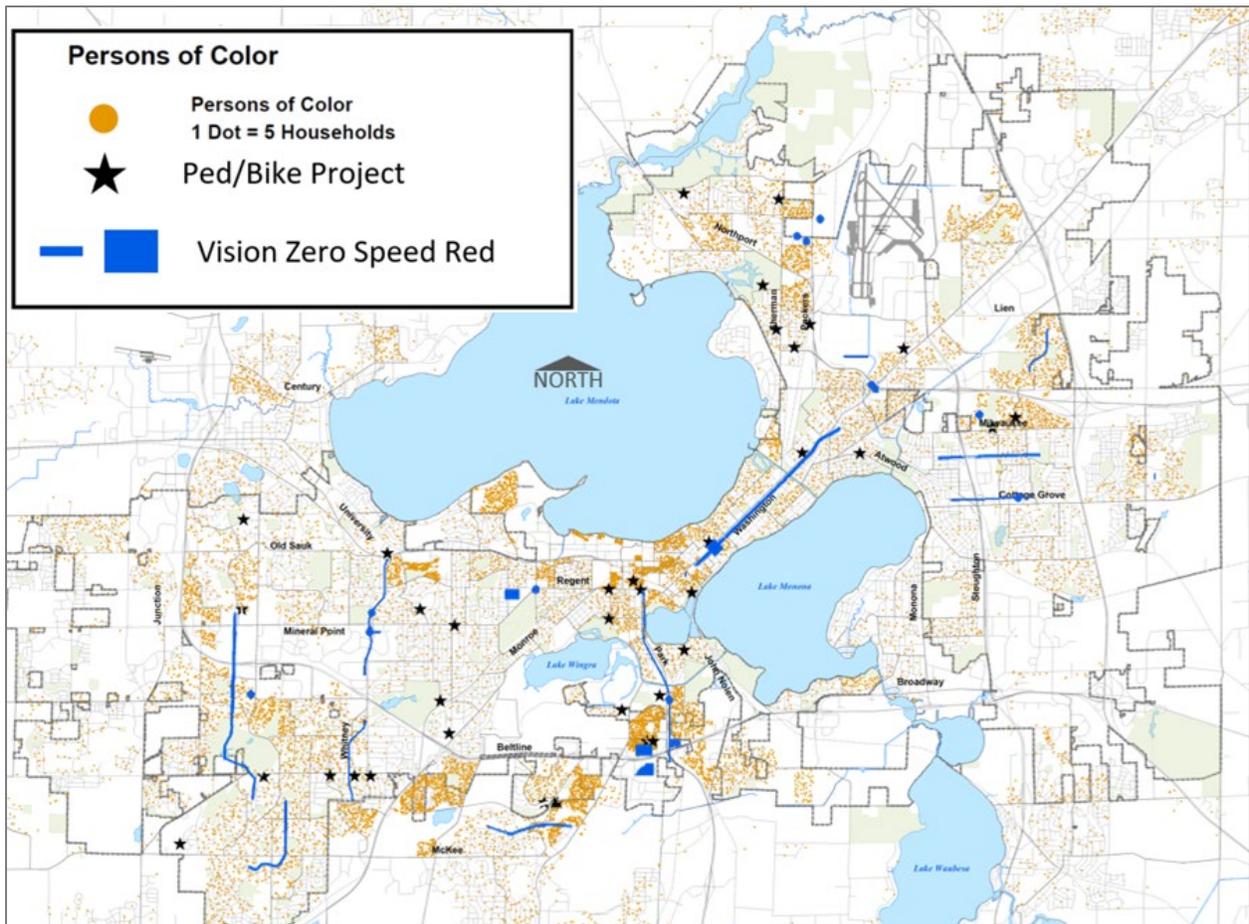
Figure 28 Parking Enforcement Vehicle

Parking Enforcement

In 2021 Parking Enforcement was formally moved from Madison Police Department to the Parking Division. Initial efforts focused on finding a facility to house both the officers and enforcement vehicles. Software transfer and other logistics will be a focus in 2022.

EQUITY

Efforts were made by Transportation to minimize impacts and distribute resources in a way that acknowledges Madison's communities of color and low income households. Traffic Engineering uses Neighborhood Resource Teams (NRT) to help identify potential pedestrian and bicycle projects in under-served neighborhoods. Staff also worked with the Madison Metropolitan School District community schools to identify projects to improve walking and biking. Equity focused criteria used to select projects include location within an NRT, minority population percentage and amount of low income housing units. Distribution and equity was also considered in the selection of Vision Zero projects, although with a less formal process. The following two graphics illustrate 2020 and 2021 Pedestrian and Bicycle Projects as well as Vision Zero projects in relation to Madison's communities of color as well as low income households.



As mentioned previously, the immediate response from Metro Transit had a larger impact on communities and individuals that are dependent on transit to access jobs and services. Recent service changes helped increase access, yet because of staff limitation, Metro remains unable to restore transit to 2019 service levels. The following two graphics illustrate Metro’s restored service in relation to communities of color and low income households. Equity will be a large consideration in the Transit Network Redesign.

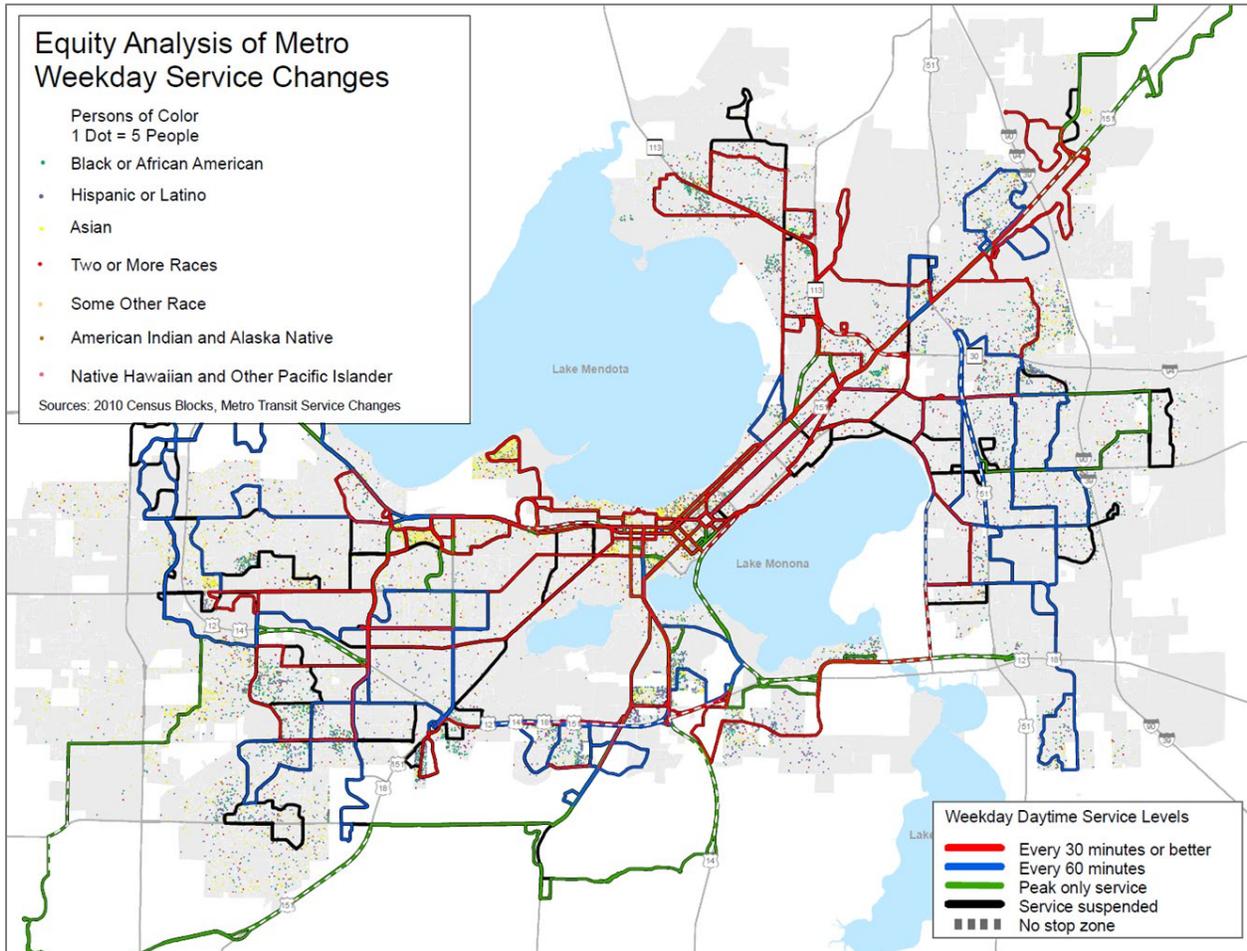


Figure 30 Equity Analysis of Weekday Service Changes

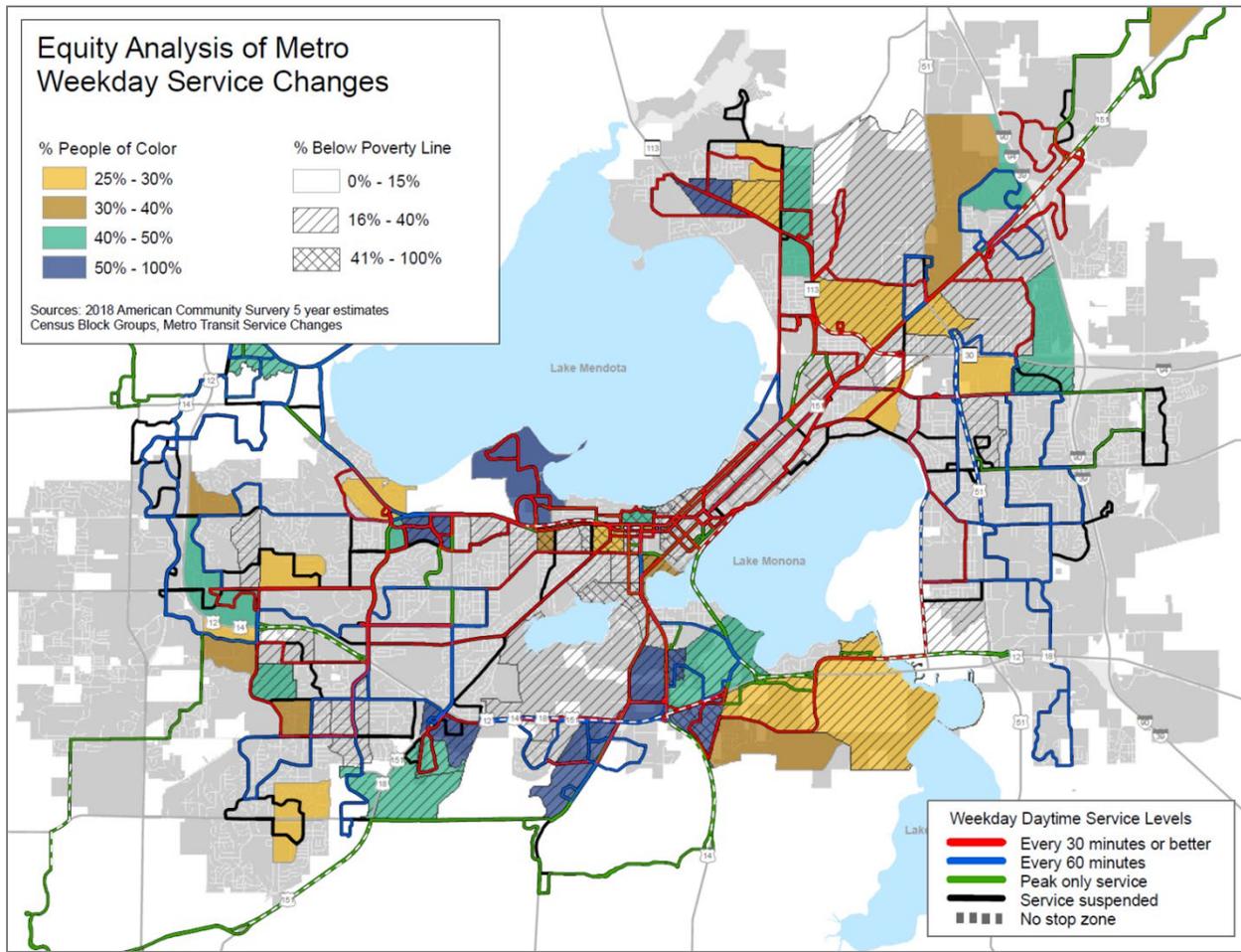


Figure 32 Equity Analysis Metro Service Changes