

# TPEC Advisory Board Update: September 2020



Thank you for your continued support of the TPEC program. As we noted in our June meeting, we are making an effort to highlight resilience and equity issues and impacts in our research areas this year in light of the COVID-19 pandemic and civil unrest following the death of George Floyd. We have made important strides in all three research areas and we are pleased to share the progress we have made and what we have in store for the coming months.

# A Warm Welcome to our Newest Advisory Board Members

The TPEC program has been fortunate to add new members to our Advisory Board. Jay Hietpas will take the place of Jon Huseby, who has stepped down after many years of valuable guidance and service to the TPEC program. [Jay Hietpas](#) is the Assistant Commissioner for Operations for the Minnesota Department of Transportation.

The new associate dean of the Humphrey School of Public Affairs, Catherine Squires, succeeds Carissa Slotterback, who has moved on to become dean of the Graduate School of Public and International Affairs at the University of Pittsburgh. [Catherine Squires](#) joins the Humphrey School from the University of Minnesota's College of Liberal Arts as a professor of Communication Studies.

Additionally, Nick Thompson, Director of Metropolitan Transportation Services, is currently representing the Metropolitan Council in Meredith Vadis' place.

Thank you for your commitment to the TPEC program. We look forward to meeting with you and the rest of the Advisory Board at our next board meeting. **Y g'j qr g'vq'lej gf wq'qwt 'pgzv' Cf xluqt { 'Dqctf 'b ggvlpi 'hqt 'Pqxgo dgt '4242.** We will be sure to stay in touch in the coming weeks as we organize this event.

# Research Area Updates:

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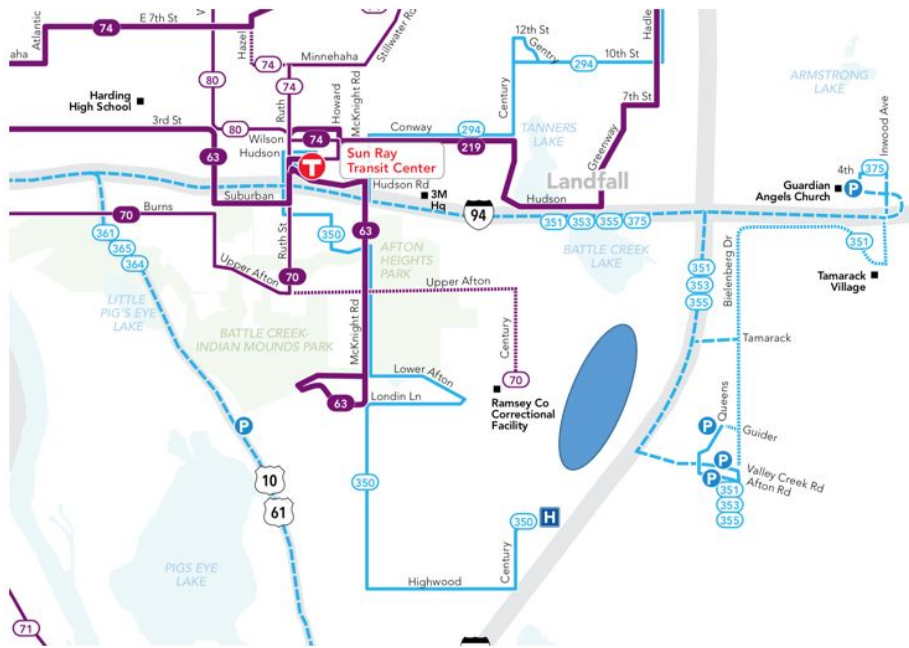
## Autonomous Vehicles in the East Metro

TPEC is conducting research on CAV implications in urban contexts with a focus on equity. Building on previous research and community discussions surrounding CAV opportunities in Greater Minnesota, this project seeks to understand the needs of transportation disadvantaged communities that have limited access to transportation due to level of income, ability, or service extent. Particular focus is given to such communities on Saint Paul's East Side, and explores whether CAV could be an appropriate solution. The research team has conducted structured interviews and hosted a virtual roundtable in May 2020 with public, private, and nonprofit human service providers in the East Metro, specifically program staff that have an understanding of the transportation needs of program clients. While this research is ongoing, select key findings include:

Limited access to personal vehicles, combined with transit service limitations (in terms of network coverage and service hours), inhibit transportation accessibility in the East Metro area (see figure below for an example of limited transit access to a major health care facility)

CAV deployment could be used for delivery, maintenance and other services - not just passenger services - to improve the quality of life for those who do not drive

Public policy needs to guide private development to address equity issues as CAV technology develops.



*The blue oval represents a major health care facility campus with limited transit access*

## Technology and Telecommuting

Amidst the COVID-19 pandemic, telecommuting has become increasingly dominant across the United States and the world. While the effects of COVID-19 are far-reaching and not yet understood in totality, there are several statistics already emerging that highlight the impacts of telecommuting on congestion. The research team seeks to study the impacts on congestion as well as the equity issues that arise from shifting employment online. So far, the research team has noted some initial staggering statistics of telecommuting related to environmental benefits, time saved, and socioeconomic and racial patterns of the population that have shifted to remote work:

Reduced commute time resulted in 890 million fewer miles traveled each day.

Economists estimate the reduction in miles traveled has led to an environmental externality cost-saving of \$184 million per day.

Though telecommuting has benefits, those who are able to telecommute are not equal across socioeconomic status and race. For example, 29.9% of White Americans are able to telecommute versus 19.7% of Black Americans and 16.2% of Hispanic Americans. Further, of those who have earned some college credits or an associate's degree, 24.2% of them are able to telecommute versus those who have less than a High School education, of which only 4.2% are able to telecommute.

The research team will build on this initial information by exploring several main questions regarding the overall impact of telecommuting, including:

Will telecommuting be the part of the “new normal?” To what degree will companies



continue to allow their employees the freedom to telecommute?

What will be the impact of this new normal (if any) on vehicle miles traveled and highway congestion?

What public policy strategies are needed to ensure that telecommuting continues to the level necessary to reduce trips and to either eliminate or significantly reduce peak period congestion?

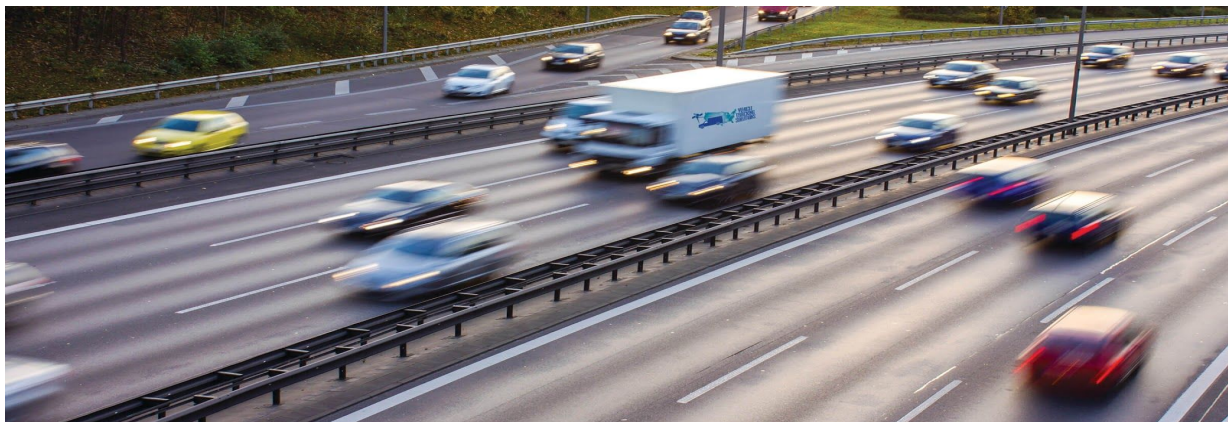
What are the long-term impacts on transportation investment needs and improvement of air quality?

## Upcoming from the Technology Research Area

The TPEC team plans to hold another CAV roundtable with key government stakeholders in the Twin Cities region that have collected data, planned for, or done work relating to CAV technology. Insights from this roundtable will help to inform research on urban CAV implications, including transportation access issues in the East Metro, potential CAV deployment opportunities, and policy implications.

Frank Douma was recently named the Co-Chair of the Connectivity and Data Committee of Minnesota's [CAV Innovation Alliance](#). The [Governor's Council on Connected and Automated Vehicles](#) established the CAV Innovation Alliance in May 2020 to coordinate statewide CAV related efforts.

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## Minnesota Transportation Finance Database

The [Minnesota Transportation Finance Database](#) (MTFD) is updated with the most recent data available. We included five new datasets:

Revenues from local option transportation sales taxes and excise taxes at the city level

Revenues from municipal vehicle excise taxes at the county level

Electric vehicles registered in Minnesota at the county level

State highway and bridge quality at the state level

Capitalized and maintenance costs at the state level

We are continuing conversations with staff at the Minnesota Department of Transportation to have access to more detailed data and collaborate on future data needs.

### **Featuring Data Visualization**

We updated data visualization for the Minnesota Transportation Finance Database. Currently, we have graphs and maps for several variables from the MTFD, as well as graphs using ratios created with variables from the database (per capita, per driver, etc.).

## Minnesota Roadway Funding: Revenue Sources and Distribution

The research team issued a white paper that details how roadway revenues are generated and distributed in Minnesota, as well as how funding mechanisms have evolved over time.

The largest sources of state roadway revenue are the state motor fuel tax, the registration tax (tab fee), and the motor vehicle sales tax. Smaller amounts of state transportation revenue are generated from sources such as the motor vehicle lease sales tax and auto parts sales taxes. The purchasing power of Minnesota's gas tax has declined since it was last adjusted between 2008 and 2013, but the state legislation has also increased the amount of dedicated highway funding sources in recent years.

Nearly all state roadway revenue passes through the Highway User Tax Distribution Fund (HUTDF) and flows to roadways under state, county, and city jurisdiction across the state. About 3 percent of the total motor fuel tax revenue is attributed to non-highway activities (such as operating all-terrain vehicles and motorboats) and is transferred to designated accounts within the Natural Resources Fund. Forty percent of the VMST proceeds are dedicated to the Transit Assistance Fund. Over \$2.3 billion was distributed from the HUTDF in 2019, guided by constitutional requirements.

Most local roadway funding comes from the general funds of counties, cities, and townships made up primarily of property taxes and special assessments. Local governments in Minnesota, particularly counties, also have some dedicated transportation taxes that raise roadway revenue such as local option sales taxes, excise taxes, wheelage taxes, and gravel taxes.

# Research on Taxing Ridesourcing Services

The research team issued a white paper on taxing ridesourcing services. The document was accepted for publication in the Transportation Research Record. We identified several states and cities that have implemented a fee or a tax levied on ridesourcing services and analyzed the revenue usages, pricing schemes, and the changes that have occurred. We also analyzed the perceptions around the fee/tax. We found the government and the taxi industry among those stakeholders that support the fee; and transportation network companies among those stakeholders that are against the fee. However, once implemented, there is potential for TNC companies to change their perceptions.

## Upcoming from the Finance Research Area"

### **Research on the Impact of COVID-19 on Transportation Finance**

The research team is developing multiple projects related to the impact of the COVID-19 pandemic on transportation finance and travel behavior. We are currently analyzing coverage of the pandemic's impact on state budgets to collect data about how states are responding to the new fiscal challenges. The team is also studying the pandemic's impact on vehicle miles traveled in Minnesota and exploring opportunities for expansion of that research.

### **Research on Blockchain Technology**

Bitcoin and other Cryptocurrency have been grabbing headlines for several years but there is less awareness about the underlying technology that supports this application called Blockchain. Blockchain technology has the potential to disrupt many industries including transportation and the ways in which governments conduct business.

We at TPEC believe that it is important to understand how this technology may impact the ways we conduct business and how Blockchain technology can be used and implemented. We are starting an effort to study Blockchain and we want to hear your thoughts about this research. We would appreciate your input regarding the direction of this important endeavor.

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## Medical Industry Cluster Research and Forum

TPEC recently completed two papers related to the medical device industry cluster and transportation. The first paper listed below has been submitted to the Transportation Research Board (TRB) for the Annual Meeting in January 2021. The second paper listed below has been submitted to the Hawaii International Conference on System Sciences for the 54th Annual Conference in January 2021.

### **O lppguvc'O gf lecnF gxleg'Uwr rnf 'Ej clp'cpf 'Vt cpur qt vclqp'Kó rdecvklpu**

The medical device industry cluster in Minnesota is essential to both the state's economic health and as a global center of innovation and production. One crucial component that enables growth and success in the cluster is transportation. The paper assessed the transportation linkages and the medical device industry's spatial development that benefits not just the seven-county Twin-Cities region but also Greater Minnesota. The research team utilized a geographic information systems (GIS) analysis to identify medical device "hot spots" and analyze surface transportation linkages to the airport with Plymouth, MN as a case study to demonstrate a "hot spot." The study concluded that first, the identification of hotspots is important in determining transportation investment opportunities. Further, the strength of the medical industry cluster in the state relies on multi-sector collaboration which could be efficiently achieved through the development of an advisory group of key stakeholders that includes transportation practitioners.

### **O lppguvc'O gf lecnF gxleg'Erwugt <Ur cvlcilNqecvklqp'cpf 'Ck 'Vt cpur qt vclqp'Kó rdecvklpu'**

This paper assessed the medical device industry's spatial development and air transport implications, both in terms of industry cluster location and distribution of products. The spatial



analysis showed that most medical device companies are located within the seven-county Twin-Cities region, but that industries linked to the medical device industry cluster are much more dispersed throughout the state. Regarding products created, the supply chain (export) of medical devices is highly dependent on Minneapolis-St Paul Airport (MSP), which plays a key role in their delivery of medical devices. Air Cargo analysis reveals the high value of medical device exports to various locations, while a case illustration of Mayo Medical Labs provided qualitative insight into just-in-time deliveries to support medical lab services."

### **Of recent work { 'Emerging' Hot spots "**

Later this fall, the TPEC team is planning to host a virtual Medical Industry Cluster Forum. Similar to the Medical Industry Cluster Forum hosted in November 2019, the purpose of the Medical Industry Cluster Forum will be to have a multi-sector discussion of the importance of the Medical Industry Cluster to Minnesota's economy. This year there will be an emphasis on data and information that will inform decisions by Medical Industry Cluster stakeholders. Also featured will be the impact the COVID-19 pandemic has had on the medical industry, particularly with regard to the medical device supply chain.

TPEC is planning to expand on this medical device industry cluster research by exploring the dynamics of Minnesota's medical device industry cluster hot spots. One such hot spot to be used as a case study is Plymouth, Minnesota. TPEC plans to conduct interviews with Plymouth medical device companies to learn about their supply chain, locational decisions, and transportation choices. Future research will involve further geospatial analysis of medical device industry hot spots and linked industries across Minnesota. Additionally, the research team plans to evaluate the implications of the COVID-19 pandemic on the medical industry cluster supply chain, and its impact on the state's economy.

## Upcoming Presentations

The [CTS Transportation Research Conference](#) will be held virtually on November 5, 2020. TPEC research will be featured in three presentations over the course of the conference.

The [TRB Annual Meeting](#) will take place virtually over a series of dates in January 2021. Accepted TPEC papers submitted to TRB are anticipated to be presented virtually.

The [Hawaii International Conference on System Sciences](#) will be held virtually between January 5-8, 2021. The conditionally accepted TPEC paper will be presented at a virtual session.

