Public transportation can play key role in addressing social isolation in older adults

Social isolation, particularly among older adults, is a key social determinant of health. Social isolation and loneliness lead to poorer health outcomes, greater health care spending, and even greater mortality. According to new U of M research, public transportation is one promising avenue to mitigate these concerns by connecting people to resources, community

Virtual CTS research conference explores transportation equity

This year's annual CTS Transportation Research Conference is moving online because of the COVID-19 pandemic. Instead of convening on campus in Minneapolis, we will be hosting the event virtually on November 5, 2020. We'll miss the chance to see our stakeholders in person, but the health and safety of our attendees, speakers, and staff is our top priority.
Women often have different transportation needs, and face different transportation challenges, than men. Women frequently have personal security concerns in dark or deserted transit areas, need to make multiple short stops as part of their commutes, and travel during off-peak hours for part-time jobs such as those in the caregiving sector. However, these disparities are largely unaddressed in transportation plans and policies, and specifically in comprehensive city plans.

For her master’s thesis, Humphrey School of Public Affairs graduate Ania McDonnell studied gender disparities in transportation and crafted recommendations for cities—some that could be used now.

“We know gender is an important factor to consider in transportation planning and policy, but many planning processes do not explicitly address gender issues,” says McDonnell, who earned her Master of Public Policy degree in May. She is now a policy analyst with Flaherty and Hood in St. Paul. (Her paper advisor was Frank Douma, director of the State and Local Policy Program at the Humphrey School.)

In her review of previous research, McDonnell found that a number of factors contribute to transportation disparities among different groups of people. For example, women generally take on a greater share of household tasks and care-related travel, which often results in the need for “trip chaining.” Also, many women hold part-time jobs, especially in the caregiving sector, and may need to take transit in non-peak hours.

For her analysis, McDonnell selected four cities in the Twin Cities metro area—Minneapolis, Bloomington, Little Canada, and Centerville—and assessed how their 2040 comprehensive plans address gender and transportation disparities. Local governments in the metro area are required to create these plans every 10 years for the Metropolitan Council.

“City comprehensive plans are good measures because they are a forward-looking snapshot at the goals and aims of a city,” McDonnell says.

Her analysis included a word search of gender-disparity-related terms in the city plans, with words such as safety, mobility, accessibility, gender, woman, binary, childcare, and lighting. The terms were then matched with policies within the comprehensive plans to determine how the plans address (or do not address) gender disparities.

“My analysis found some strong policies—for example, Bloomington encourages transit providers to establish reverse commute service—while other policies were broad, vague, and in need of refinement,” she says. “In addition, none of the plans include the term ‘gender’ at all, pointing to a lack of gender considerations.”

Based on the findings, McDonnell then crafted six recommendations for cities:

• Collect city-level transportation data that is disaggregated by gender.
• Perform a gender and equity review of comprehensive plans before releasing them for public comment.
• Provide transportation vouchers—such as taxi vouchers or vanpool reimbursements—to women or individuals in caregiving roles who are receiving Temporary Assistance for Needy Families.
• Partner with transit agencies to allow “night stops” in which a person can ask the bus driver to pull over between stops; the driver would only open the front door to ensure no one follows the person off the bus.
• Connect school, daycare, and workplace land use through zoning and tax incentives.
• Prioritize tax incentives for employers to create transportation service between high-unemployment neighborhoods and areas of employment.

“These policies are just the tip of the iceberg,” McDonnell says. “Ultimately, I’d like to see cities add expertise in identifying and addressing gender and other demographic disparities—to help plan and deploy a more welcoming transportation system.”

McDonnell presented her research at a June meeting of the Minnesota Gender and Transportation Research Collaborative, an advisory group that she and Douma convened to identify and promote research related to gender and equity in transportation. The collaborative is working with U of M researchers and other organizations in these efforts.
Traffic, transit data paint a picture of COVID-19 impacts

Gathering, sharing, and analyzing data is important in traffic and transit management. It is even more so in the midst of the COVID-19 pandemic: a fast-moving threat that must be met with well-informed cooperation.

To address this need, the CTS Research Councils convened online in June for a webinar on the pandemic’s effects on transportation. Researchers and traffic professionals from state and Twin Cities metro agencies were invited to present and weigh in on the issues.

Statewide, there were significant changes to traffic patterns in response to the virus. Mike Hanson from the Minnesota Department of Public Safety noted a 30 to 50 percent drop in traffic volumes on all roadways within the state immediately following the March 27 stay-at-home order.

“This is kind of a mixed bag for those of us in the traffic safety industry,” Hanson said. “[With] less cars [and] less traffic, we were seeing less crashes.” Crash severity, however, went up, potentially because decreased traffic congestion and the misperception of decreased law enforcement led to more high-speed violations on the roads.

The Twin Cities metro experienced drastic changes in how often people left the house. Using privacy-protected, aggregated spatial data from smartphones, computer science and engineering professor Shashi Shekhar found that from early March to April, visits to many places (except grocery and hardware stores) sharply declined. Visits to restaurants and bars increased in May, however, raising disease transmission risks.

A presentation by Ashley Asmus and Jonathan Ehrlich from the Metropolitan Council expanded on this research, explaining how the council launched a survey in May to gather more granular details about who was traveling and why.

Teleworking, for example, has become more common than driving in households making more than $50,000 a year: of those surveyed, 54 percent telework, 33 percent drive, and 10 percent have become unemployed. In contrast, in households making less than $50,000 annually, 36 percent drive, 24 percent telework, and 34 percent are unemployed.

“So when we’re talking about supporting continued telework in our region,” Asmus said, “we need to be really conscious about the groups and people that we’re leaving out of that story.”

Metro Transit has had to grapple with the effects of the pandemic very directly. The agency has been implementing passenger limits—10 people to a 40-foot bus—and rearranging schedules to accommodate changed demand.

“How can we maintain mobility for those who need it?” asked Eric Lind, manager of research and analytics at Metro Transit. “Clearly, people still need to get around.”

Assistant Professor Alireza Khani from the Department of Civil, Environmental, and Geo-Engineering (CEGE) discussed his development of a mathematical simulation that can analyze the relative risk of traveling on buses. Using multiple data sources—including automatic passenger counters—he calculates how long riders tend to stay on a bus and how many people they might encounter. This allows him to gauge the relative COVID-19 risk of a given route at a given time of day. The research is sponsored by the Office of the Vice President for Research COVID-19 Rapid Response Grants and the CEGE department.

The seminar is archived for viewing on the CTS website.
Despite the global pandemic, a handful of university students still found a way to gain valuable work experience in transportation-related internships with CTS partners Ramsey County and MnDOT.

Five Ramsey County All-Abilities Transportation Network interns, including three from the U of M, worked in different parts of the county—public works, community economic development, and parks and recreation. In a typical summer, Ramsey County also brings the interns and their supervisors together for learning opportunities, such as tours of transportation facilities.

“This summer, due to COVID, we moved all our programming online,” says Frank Alarcon, coordinator of the program. “While we missed the opportunity to connect in-person, the cohort still was able to connect and learn from each other and guest speakers during these online activities.”

In fact, this was the first time interns—or any county staff—have worked fully remotely. “We’ve been very impressed with the quality of their work and proficiency communicating their work products,” Alarcon adds. “Virtual meetings have actually allowed them to participate in a greater variety of county projects and initiatives than would have otherwise been possible.”

As a result, three Humphrey School graduate planning students have obtained substantial real-world experience. Katie Emory presented research to department leaders about implementation of red pavement markings for bus rapid transit projects. Caroline Ketcham presented case studies of transit-oriented development planning around the country. Mathias Hughey, in a dual-degree program also studying landscape architecture, has been reviewing as-built plans and verifying conditions on-site at Ramsey County parks.

“The internship has provided insight into the management of natural resources within parks,” Hughey says. “A highlight from my summer experience was participating in the osprey banding, where a group of stakeholders come together to monitor the local osprey populations.”

At MnDOT, in addition to the pandemic, a hiring freeze also complicated the internship program, according to coordinator Denise Hals. “Two of the many challenges this summer were the hiring process and teleworking,” she says. “We were originally set to hire 20 students but ended up with 2.”

The two students, both from the U of M, worked mostly outdoors with the MnDOT bridge maintenance and inspection office assisting crews as they work to meet federal inspection requirements.

“I’ve really been enjoying getting to know the metro area better and learning about the different types and components of bridges and how they work and deteriorate over time,” says Zoe Jeske, a University junior studying civil engineering with an emphasis in structures. “As far as COVID-19, I think that we’ve adjusted well. We’re extremely mobile, which gives us the flexibility to work in the field as well as from home. This has helped us work more efficiently and has allowed me to be able to visit some extra bridges for a wider variety.”

Amanda McCann, a University senior in civil engineering also focusing on structures, has found opportunities at MnDOT, too, among the special challenges presented by the pandemic. She particularly appreciates the first-hand experience bringing to life what she’d recently learned in school. “I just finished my concrete class where we got to calculate how to design a concrete structure,” she says. “It was also nice to be able to meet professional engineers in the same field as me and get to hear about their experience as well.”

Both McCann and Jeske feel their experience at MnDOT has helped provide a solid foundation for a career in bridge engineering, with perhaps grad school also on the horizon. Each especially values the professional connections they’ve developed during this unusual summer.

The MnDOT internship program is in its ninth year, and the Ramsey County program is in its third year.
Researchers at the University of Minnesota Duluth’s Natural Resources Research Institute (NRRI) have identified a waste rock that is almost a perfect replacement for gravel. That has Tom Nemanich, owner of Mesabi Bituminous, pretty excited. The depleting natural gravel resources had him a bit concerned. “It’s basically getting to where we’ll have to start trucking it in from somewhere and that’s expensive,” he says. “You always want to use what’s close by.”

Back in 2007, NRRI geologists identified a potential high-quality aggregate between the magnetite ore layers targeted for mining. For the taconite industry, this would be waste rock that would need to be moved out of the way to access the desired ore. As an aggregate, it’s a marketable resource. (Their findings were the result of a major research effort led by the NRRI’s Donald Fosnacht and Lawrence Zanko that explored the development and marketing of Iron Range aggregate materials for Midwest and national transportation applications.)

This year in late May, Mesabi Bituminous Inc. began hauling out the rock they’re calling Mesabi Select, from a pit owned by Optimal Mining, Inc. The Mesabi Select will be processed and used in road projects all over the Iron Range.

Swapping out taconite waste rock for gravel isn’t straightforward. Nemanich explained that quality testing for bituminous (bitumen is the liquid binder that holds together asphalt) is based on the specific gravity of the aggregate material. Specific gravity defines how many cubic yards of asphalt can be made per ton of aggregate. Typical taconite waste rock’s specific gravity can be all over the map, which makes it difficult to use. Natural gravel is pretty consistent. The waste rock that Nemanich is hauling out—the Mesabi Select—has a consistent, lower specific gravity that makes a quality asphalt.

“Identifying this aggregate is a huge benefit that could open up to something much bigger,” Nemanich says. “It’s helped our business significantly.”

Tom Gardner, an agent for Optimal Mining, credits NRRI for identifying the high-quality aggregate—and his daughter Rachel and her master’s degree focus on sustainability—for educating him in “by-product synergy.” She pointed her father to the work NRRI was doing to identify uses for taconite by-product.

“We’re grateful for the opportunity to allow Mesabi Bituminous to haul out the aggregate and put the rock to good use,” Gardner says. “It’s a great example of by-product synergy and supports mining sustainability efforts. Truly a win-win-win.”

Zanko, now a senior research program manager, and other NRRI researchers have also been exploring the use of taconite mixtures for pothole and pavement repair. Several projects have been funded by MnDOT and the Minnesota Local Road Research Board in recent years, and work is continuing to further refine mixing methods and applications (see CTS Catalyst, May 2020).

(By June Breneman, adapted with permission from NRRI Now e-news, July 2020.)
amenities and events, and one another.

“As the proportion of older adults in American society increases, we must design solutions to increase the continued integration of older adults into their community,” says Carrie Henning-Smith, an assistant professor at the U’s School of Public Health and the project’s principal investigator. “Public transportation is one critical component of those solutions, especially for older adults who do not have access to private transportation or who are unable to drive.”

While the focus of this work was not on COVID-19, the current pandemic makes these issues even more urgent, she adds. “The risk of social isolation is heightened as people socially distance, and the logistics of providing and funding safe transportation are more complex than ever.”

Others on the research team included Christina Worrall (senior research fellow) and Madelyn Klabunde (research assistant) at the State Health Access Data Assistance Center in the School of Public Health, and Professor Yingling Fan of the Humphrey School of Public Affairs.

The project was funded by the National Center for Mobility Management. “NCMM recognizes the importance of this topic and the need to raise awareness on key related issues,” says Amy Conrick, NCMM director. “We will use the research paper to inform future stakeholder engagement, programs, and policy.”

The researchers used two data-collection approaches: a literature review and interviews with content experts and representatives of select programs. They found that access to and use of public transportation vary dramatically for different subgroups of older adults: gender, age, income, disability status, ethnicity, and location all make a difference.

For example, in rural and suburban communities, “limited transportation access and the inability to travel outside of county boundaries on public transit routes are major barriers,” says Henning-Smith, who also serves as deputy director of the U’s Rural Health Research Center.

The research team also identified three case examples (Minnesota’s Dakota Area Resources and Transportation for Seniors, or DARTS, and one each in Nevada and Virginia) that together illustrate several common ingredients for success. These include cross-sector collaboration, and patience in generating it; diverse funding streams; affordability; the ability to be nimble in terms of repurposing staff and resources or piloting program tweaks; and knowing who the client is and what the client needs.

Based on its findings, the team offers three sets of recommendations. One set involves expanded collaboration: improving collaboration between transportation and public health at the community level, and increasing involvement and coordination by state agencies to align efforts among transportation, aging services, and health.

Another set of recommendations focuses on operational improvements. The researchers advise expanding publicly funded options for transportation, including a variety of options that are affordable, convenient, attractive, safe, and accessible for all older adults. “We also recommend broadening the focus of transportation’s purpose beyond medical transportation to include destinations for social purposes—libraries, community centers, theaters,” Henning-Smith says.

A consistent theme from the research is a need to increase older adults’ knowledge of public transit systems and reduce stigma about using them. “For some people, this relates to a fear of getting lost, concerns about safety, and a lack of trust in the system,” Henning-Smith says. “Others don’t know what services are available to them or how the transportation options work, or think systems are for someone else.”

The last set of recommendations describes additional research needs, including gathering and incorporating community input. “Our team believes urgent and coordinated action is needed to ensure that all older adults have equitable access to destinations that support their well-being,” Henning-Smith says.

Of people aged 60 and older, 15% do not drive a vehicle and 6% don’t have access to one.

—National Aging and Disability Transportation Center and KRC Research, 2018
The online event will feature two plenary sessions, described below, and two sets of concurrent sessions on topics including connected and automated vehicles, COVID-19 impacts, bicycle and pedestrian safety, transit innovations, winter maintenance, and more. A complete event schedule, registration details, and technology information is available at cts.umn.edu/events/conference/2020.

Opening Plenary: Addressing Minnesota’s Transportation Inequities and Disparities

The COVID-19 pandemic and the death of George Floyd have brought new attention to racial inequities and disparities in many sectors of our society, including transportation. The transportation system helps provide connection (to family, friends, colleagues, faith) and access (to jobs, health care, education, food), but it does not meet these critical needs equally for all people.

Before we discuss how transportation can and should transform to address these disparities, we must first acknowledge where we have been and where we are today. What are our values and hopes for what will change about the transportation system and what will stay the same? This panel discussion aims to bring those values and hopes to the forefront, so they may guide us as we strive to make Minnesota’s transportation system more equitable for all.

Moderators:
• Gina Baas, Associate Director, Engagement and Education, CTS
• Kathy Quick, Associate Professor, Humphrey School of Public Affairs

Panelists:
• Tawanna Black, Founder and Chief Executive Officer, Center for Economic Inclusion
• Yingling Fan, Professor, Humphrey School of Public Affairs, University of Minnesota
• Jason Hollinday, Co-chair, Advocacy Council for Tribal Transportation and Director of Planning, Fond du Lac Reservation
• Theresa Thompson Nix, Field Manager, Move Minnesota
• Charlie Zelle, Chair, Metropolitan Council

Afternoon Plenary: Where Do We Go From Here?

2020 started off like a nightmare of biblical proportions—droughts, fires, floods, and a pandemic that has gripped the planet. The response from governments, companies, and communities to the COVID-19 pandemic has impacted our way of life as well our local, regional, and global transportation systems with sudden and extraordinary speed. Transportation system providers have experienced free-fall declines in customers, revenues, and support. The resulting pressure to reduce service, delay repairs, or even shut down operations altogether has thrown these systems into worst-case scenarios and uncharted territory against a backdrop of rising social equity concerns.

In this presentation, Timothy Papandreou will discuss how these combined forces are compelling us to reexamine the status quo. Papandreou will also explore how current circumstances are offering us a once-in-a-lifetime window to re-imagine the transportation system and use practical and proven innovation to move it towards a more resilient, equitable, and seamless experience.

Papandreou is the founder and CEO of Emerging Transport Advisors, which provides strategic guidance to companies, investors, startups, and governments on the active, shared, electric, connected, and automated transport transition. He is a trusted thought leader in both technology and government with extensive global experience in the movement of people and things.
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New approach could help cities address gender equity in transportation plans