



MOBILITY INNOVATION CENTER

2022 Annual Report

mobility@uw.edu

W **COMOTION**
Your Innovation Partner

New beginnings



We began 2022 with a sense of determination to build on lessons learned during the COVID-19 pandemic and optimism for better days and the road ahead. The Mobility Innovation Center continues to be a helpful and valuable partner for transportation recovery efforts in the region, illuminating next steps in the new normal.

This year we have developed and shared insights into post-pandemic commute travel, first with scenario modelling that's been useful to transit service providers, and more recently with the Seattle Commute Study, which netted more than 73,000 respondents! This data and analysis will yield insights for travel into downtown Seattle. Our final report will be delivered by spring 2023.

We're looking toward the future and leveraging new tools for a cleaner, smarter transportation system. In partnership with King County Metro, Sound Transit, and Seattle City Light, we launched a project to explore how to electrify mobility hubs to provide charging for all. Slated to begin next year is a proof-of-technology project that uses real-time sensors to feed a digital model of the I-90 floating bridge. It has the potential to help agencies make the most of this innovative approach for operations and preservation of their assets.

Mobility solutions that help us today and position our region for tomorrow require an interdisciplinary approach, and we are excited for new efforts and partnerships on the horizon. The Mobility Innovation Center is proud to welcome new collaborators from the University of Washington's College of Built Environments, the PacTrans university research consortium, and private industry players such as Bentley Systems and T-Mobile. We are now a member of the Downtown Transportation Alliance, coordinating with local stakeholders in the business community. And recently the Mobility Innovation Center joined the Washington Autonomous Vehicle Cluster (WAV-C) to bring about the most advanced and innovative solutions in maritime autonomous vehicles.

Our work is driven by the dedication of our academic faculty, supporters, and contributors in private industry, nonprofits, and the public sector—and a shared commitment to a more sustainable, equitable future for regional mobility. We have achieved so much together this year, and I look forward to continuing our journey into the future.

A handwritten signature in blue ink that reads "B. Treece".

Barton G. Treece, III, PTP
Director
Mobility Innovation Center at the University of Washington



Mobility Innovation Center at the University of Washington since 2016

BY THE NUMBERS



24
Collaborators



12
UW departments



26
Projects launched

The Mobility Innovation Center brings together the knowledge, talents, and expertise of the University of Washington with partners from private and public sectors to solve real-world challenges facing our transportation system.

UW and Challenge Seattle united in 2016 to establish a multidisciplinary research center that is committed to advancing our region's economy and quality of life by helping to build the transportation system of the future. Within this "center for social good" model, UW researchers collaborate directly with industry partners to scope implementation-ready projects.



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at the
UNIVERSITY of WASHINGTON

Commuting post-pandemic



As the region emerged from the COVID-19 pandemic, there were questions about the “new normal” for commuting. The Mobility Innovation Center remained a partner connecting the best of UW-led research to understand and navigate the changes in the transportation system.

Return to Offices scenario modelling: Jeff (Xuegang) Ban and his team developed models based on insights from transportation providers, employers, and transit riders. This showed a range of change on transit routes and corridors that agencies like King County Metro used for their service planning.

Seattle Commute Study: Qing Shen and Anne Vernez Moudon redeveloped the Seattle City Center survey to capture new trends for commuting into downtown Seattle. Over 73,000 people took the survey! The findings include drive alone rates for specific sites, and insights into other types of trips and motivating factors. The final report will be delivered to Commute Seattle in spring 2023.

A promotional graphic for the Seattle Commute Survey. It features a QR code in the top left corner. The main text reads "Seattle Commute Survey" in a bold, blue font. Below this, there is a photograph of three women walking and talking on a city street. A blue banner overlaid on the photo says "Take the survey: https://bit.ly/seattle-commute-survey". At the bottom, there are logos for "Supported by: CHALLENGE SEATTLE" and "MOBILITY INNOVATION CENTER UNIVERSITY OF WASHINGTON". To the right, it says "In partnership with:" followed by logos for "Seattle Department of Transportation" and "WSDOT".



Seattle Commute Study goes national!



In November, Mobility Innovation Center Director Bart Treece and Commute Seattle Executive Director Kirk Hovenkotter presented preliminary findings from the study and insights into the creation of the project at the Association for Commuter Transportation (ACT) Travel Demand Management Forum in Atlanta.

Attendees included private industry, non-profits and public agencies. As a result, there are discussions for deploying the survey tool in other part of the country!



Steve Wheeler · 2:24 pm
ACT TDM Forum
Best presentation/session of the event! Both you and Kirk kept audience attention and presented valuable data.



High-speed rail report



During the latter half of 2022, Jan Whittington, Director of the Urban Infrastructure Lab, and Associate Professor at the UW College of Built Environments, led a research investigation into high-speed rail projects around the world and domestically to understand why some succeed, and others struggle.



The report, to be published in January 2023, is intended to help guide agencies and decision makers as they begin early work on a line to connect British Columbia, Washington, and Oregon.



W COLLEGE OF BUILT ENVIRONMENTS
UNIVERSITY of WASHINGTON

KEEPING IT ON THE TRACKS

High-speed Rail Success
and Lessons Learned

REPORT



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Mobility Innovation Center draws interest around the world



Delegation visits to the University of Washington came back after a hiatus the past couple of years.

The Mobility Innovation Center and CoMotion drew the interest of groups from the Swedish Royal Academy of Science and Engineering, and the Denver Leadership Exchange.

Both presented great opportunities to share successes, learn from one another, and identify new partnerships for future collaborations.

(Top right) Paula Hammond, Vice President for National Transportation at WSP USA and MIC Advisory Board Member presented to the Denver Leadership Exchange, Friday, Sept. 24.



Presented to:
The Royal Swedish Academy
of Engineering Sciences
Sept. 15, 2022
Bart Tenen, PTP, btenen@uva.edu
Director
Mobility Innovation Center

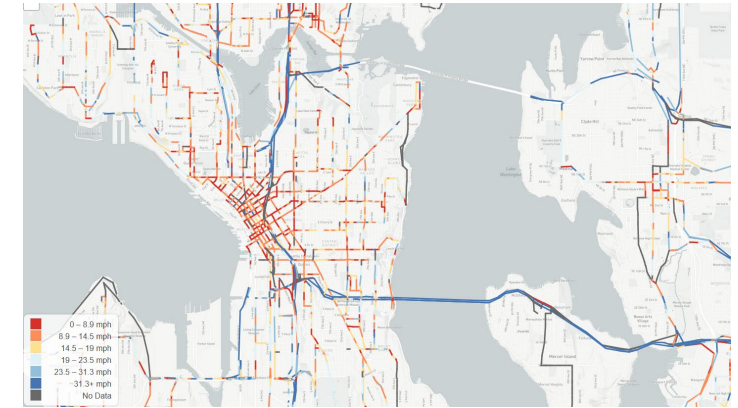


Mobility Innovation Center in the news!



Commuter study indicates pandemic patterns likely won't change quickly in the Seattle metro area

A UW study demonstrates that it could be several years before commuting traffic return to pre-pandemic levels.



TECHNOLOGY > MISCELLANEOUS

Mobility Innovation Center: Next generation transit data leads the way to better bus trips

The project team developed a prototype tool to visualize real-time data feeds from King County Metro and Sound Transit buses to find potential surface street improvements.

University of Washington (UW) researchers used evolving bus data technology to pinpoint trouble spots on surface streets across an entire bus network and their work paves the way for others to follow.

Initiated by the UW Mobility Innovation Center and led by Dr. Don MacKenzie of the UW Sustainable Transportation Lab, the project team developed a prototype tool to visualize real-time data feeds from King County Metro and Sound Transit buses. The data identifies slowdowns, which indicate areas to look at for potential surface street improvements. Known as "TransitVis," the project information and playbook are now available online.

PacTrans Partnership

The Mobility Innovation Center strives to be a better conduit between transportation research and partners in private enterprise and the public sector. To improve these connections, this year the center formed a new partnership with PacTrans, the university transportation research center, a consortium led by Yinhai Wang at the University of Washington department of Civil and Environmental Engineering.

With the Mobility Innovation Center housed in CoMotion, and the increased emphasis on technology transfer outside the university, this alliance will help innovations commercialize and implement new discoveries.

MIC Director Bart Treece co-chaired the annual PacTrans Conference this year, with support from center partners.



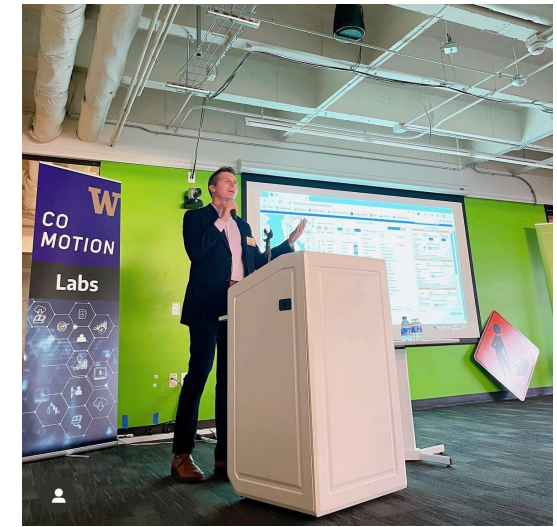
(From left to right) Yinhai Wang, Wei Sun of AI Wayson (a UW startup), MIC Director Bart Treece, PacTrans Deputy Director Cole Kopa



(On left) Loreana Marciante moderates a panel discussion on the Infrastructure Investment and Jobs Act (IIJA) at the PacTrans Conference in October. She leads Transportation Technology - Mobility, Equity, Climate for HNTB and is an MIC Advisory Board Member.



Virtual Coordination Center – Ready to Roll!



Emergency responders can work better together during an incident that disrupts regional transportation with the Virtual Coordination Center now built and deployed!

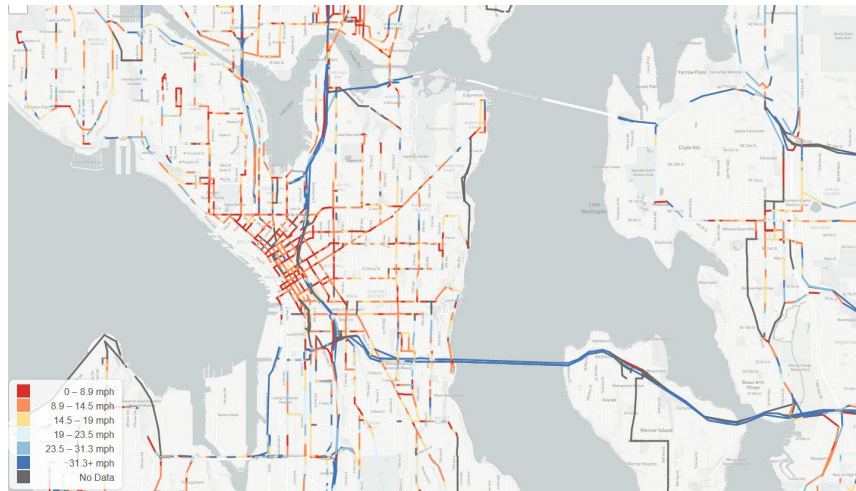
The team worked with public agencies and industry partners to create a functioning prototype that has integrated data streams and celebrated the occasion during the “VCC Ready to Roll” event in October.

None of this would be possible without the commitment and support from our public and private sector partners. Future iterations of the VCC produced over the life of the federal grant will include increased situational awareness tools, such as the integration of additional real-time data like travel times, traffic flow data, weather; automatic alerts to designated agency personnel when a major incident occurs; and coordinated regional response plans such as pre-planned detour routes. Teams from the University of Washington will evaluate the new system from October 2022 to September 2023 as outlined in the federal grant agreement.

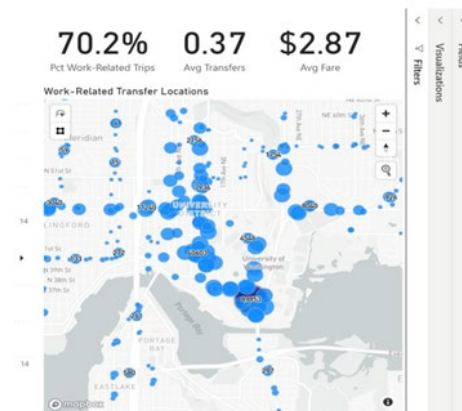
Using data to improve transportation

Data can help drive decisions but only if presented in a way that's useful. This is where universities can be a strong and supportive partner.

In recent Mobility Innovation Center projects, researchers have successfully taken data from transit agencies to gain better insights about how people are using the system, where people are getting on and off trains and buses. Also, where transfers are taking place and between which routes, and whether transit is providing equitable transit service to residents of low-income areas.



Transit Corridor Performance Study: Led by Don MacKenzie the project team used next-generation open-source bus data to visualize transit network performance at the level of individual street segments, and to identify chronic slow spots for further evaluation by transit agencies and city partners to improve reliability.



ORCA Data Business Intelligence: ORCA cards generate a significant amount of data, but it's not easy for a transit agency to process what's available to see where people are coming from and going. Researchers Ryan Avery and Mark Hallenbeck from TRAC have been working diligently within the ORCA policy to visualize data while ensuring privacy of users to help with service planning. The dashboard for transit agencies is now available and new data is being entered into the system.

Partners in Innovation

With the Mobility Innovation Center housed in CoMotion, the one-stop shop for innovation at UW, there are natural opportunities to leverage existing programs to develop and foster an emerging industry startup ecosystem.



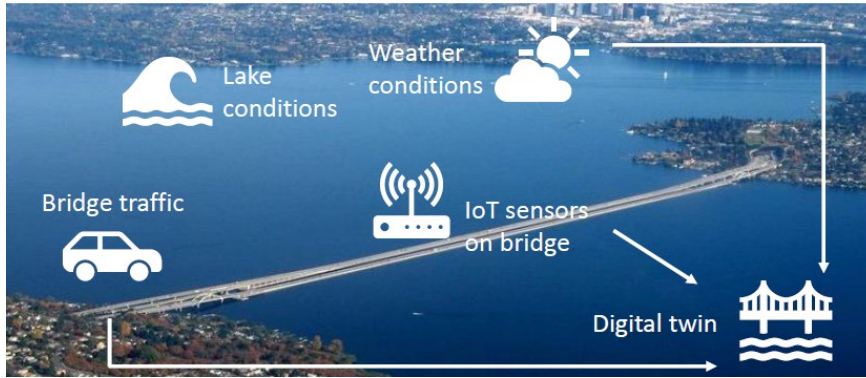
The MIC developed a concept for a “Mobility Tech Incubator Hub” at CoMotion’s Startup Hall to bring together a community of innovators to solve mobility problems, align research for technology needs and growth, and develop the workforce capable of addressing transport challenges.

The incubator will connect with innovators, both from the UW and outside the campus community, to support their journey in developing mobility solutions using emerging technology that’s on a path toward commercialization.

The center is working with potential sponsors to bring this program to life.



New initiatives in 2023



Digital Twin: Digital twin technology, which uses real-time sensors placed on a physical structure to feed a computer model, has the potential to provide better infrastructure insights. Using the Interstate 90 Homer Hadley floating bridge between Seattle and Mercer Island, the Mobility Innovation Center has developed a proof-of-technology project to evaluate the benefits, limitations, and tradeoffs that an agency or agencies could expect using Internet of Things (IoT) digital twin technologies for asset management, maintenance, and operations. Proposal out for WSDOT research funding, potential start in Q1. Partners include Microsoft, Bentley Systems, and T-Mobile.

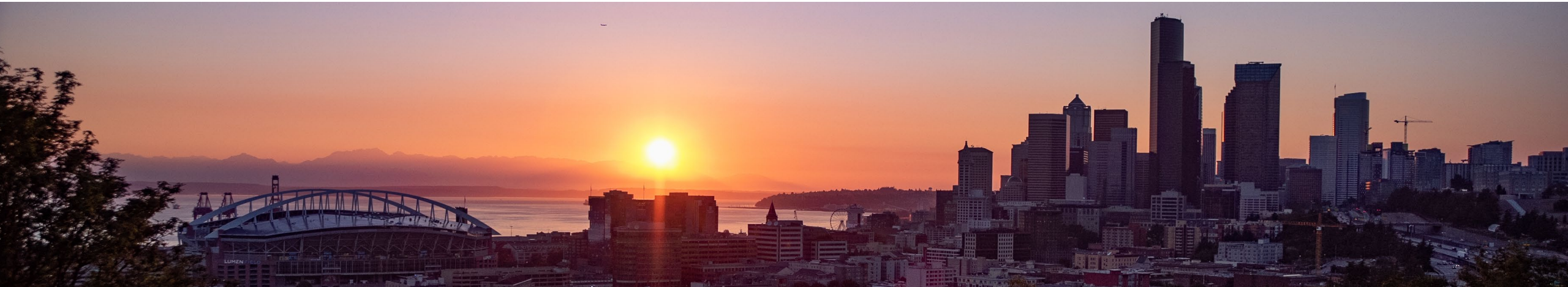
In December 2022, the Mobility Innovation Center launched a new project led by Jan Whittington, Hyun Woo “Chris” Lee, and Rachel Berney to help King County Metro with its plans to convert existing facilities (like park-and-rides) into mobility hubs. These locations will provide electric charging for buses, light-duty vehicles, and micro mobility devices like e-bikes and scooters. Burien Transit Center will be our case study area.

Electrified mobility hubs can be a game changer. They remove barriers to electric vehicle adoption by providing new community resources and transportation connections. Utility providers become, in part, the new gas station, and the transit agency shifts from operating buses to being a bridge to a more sustainable, inclusive future. Sponsors include King County Metro, Sound Transit, Seattle City Light, and Challenge Seattle.



Courtesy: CoMotion UK

A shared vision



To ensure a robust economy and quality of life for the region, Seattle needs an integrated transportation system that is reliable, safe, environmentally sustainable, forward looking, equitable and accessible.

The Mobility Innovation Center brings together the knowledge, talents, and expertise of the University of Washington and private and public sector partners to solve real-world challenges facing our transportation system.

To accomplish our vision, everyone must be part of the solution.

The center is truly grateful for the support of our partners. We look forward to continuing our progress into the new year and beyond!



Thank you!



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