



April 2023

TRAC e-News: Delivering Research Results!

The Washington State Transportation Center ([TRAC](#)), conducts transportation research through collaborative partnerships among WSDOT, the University of Washington (UW), and Washington State University (WSU).

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University Transportation Centers

PacTrans receives \$15 million renewal funding from USDOT



The [Pacific Northwest Transportation Consortium](#) (PacTrans) has received a five-year [renewal of \\$15 million from USDOT](#). PacTrans is one of ten regional University Transportation Centers (UTCs) across the U.S. It is housed within the UW Department of Civil and Environmental Engineering (CEE) and led by [Yinhai Wang](#). Many of its projects are conducted in cooperation with or with matching funds from TRAC projects and WSDOT. As the UTC for federal Region 10, PacTrans represents Washington, Oregon, Idaho, and Alaska. In partnership with universities in those states, PacTrans supports a variety of transportation research related to advancing mobility, including technology transfer, and education and

workforce development. Beyond its core mission of improving the movement of people and goods through the region, the center will work toward two overarching strategic goals: economic strength and global competitiveness. Secondary goals are equity, transformation, and safety.

The USDOT funded additional centers at other institutions that will also benefit from the leadership of UW and WSU faculty. These are

- Center for Understanding Future Travel Behavior and Demand, housed at University of Texas Austin. UW lead: [Cynthia Chen](#).
- Innovative Bridge Technologies/Accelerated Bridge Construction University Transportation Center, housed at Florida International University. UW leads: [Marc Eberhard](#) and [John Stanton](#).

- Connected Communities for Smart Mobility Toward Accessible and Resilient Transportation for Equitably Reducing Congestion (C2Smart), housed at New York University. UW lead: [Jeff Ban](#).
- Rural Equitable and Accessible Transportation Center, housed at Florida A&M University. UW lead: [Angela Kitali](#), UW Tacoma.
- Environmentally Responsible Transportation Center for Communities of Concern (ERTC3), housed at University of Missouri Kansas City. WSU lead: [Xianming Shi](#).

[Read more...](#)

Multimodal Transportation

Evaluation of tactile closed crossing indicators

Research team: [Anat Caspi](#) (UW) | [Jay Wells](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsor: WSDOT

Ongoing: Although tactile paving surfaces can be used to convey important information to visually impaired pedestrians about their environment, pedestrian crossing closures are still indicated solely by official signs. Currently there are no low maintenance, cost effective, industry standard treatments. In partnership with Seattle DOT and The Lighthouse for the Blind, WSDOT is testing a proof-of-concept application for tactilely indicating closed pedestrian crossings in a Seattle neighborhood. For this project, researchers will take advantage of that pilot test to evaluate such treatments and to develop a set of guidelines that WSDOT can use to determine their frequency, their best locations, and the types of surface treatments and materials that should be used. [Read more...](#)



Pavement

Using LCA to reduce embodied carbon in pavement infrastructure at WSDOT



Research team: [Steve Muench](#) (UW) | Kim Schofield (WSDOT) | Curt Turgeon (Minnesota DOT) | Zhanping You (Michigan Tech U) | [Karen Strauss](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsors: Federal Highway Administration | WSDOT

Ongoing: The 2022 FHWA Climate Challenge called for state departments of transportation and other public sector stakeholders to explore the use of life cycle assessment (LCA) and environmental product declarations (EPDs) as a standard practice to inform more sustainable pavement material and design

selection and to quantify the emissions and impacts of those practices. EPDs are transparent, objective reports that communicate what a product is made of and the life cycle environmental impacts of that product. LCA

and EPDs are needed to credibly inventory carbon and determine greenhouse gas emissions. In response to the Climate Challenge, and in collaboration with the Minnesota DOT and Michigan Technological University, this study is working to meet three research objectives: 1) train WSDOT and industry personnel about carbon emissions measurement and reduction, 2) collect life cycle assessment data on WSDOT paving projects, and 3) enable WSDOT to include EPDs in project procurement processes and specifications. Integrating these into WSDOT standard practices will be a critical step in decreasing the carbon footprint of its transportation infrastructure. [Read more...](#)

Technology Transfer

PacTrans Summer Youth Transportation Program

Research team: [Yinhai Wang](#) (UW) | [Jia Li](#) (WSU) | [Pam Vasudeva](#) (WSDOT) | [Jackie Bayne](#) (WSDOT) | [Doug Brodin](#) (WSDOT)

Sponsor: WSDOT

Ongoing: Although the preparation and training of a workforce to support an efficient transportation system has always been important, today's new challenges, such as quickly changing technologies and environmental sustainability, make the need for transportation workforce development more pressing than ever. The objective of the Summer Youth Transportation Program will be to provide high school students, including but not limited to young minorities, women, and disadvantaged individuals, an awareness of careers in the transportation industry to encourage them to pursue a vocation in transportation. The project leads will make all necessary preparations to present the course at both the UW and WSU over summer 2023. [Read more...](#)



Transportation Planning

2022 Seattle Commute Survey



Research team: [Lamis Ashour](#) (UW) | [Qing Shen](#) (UW) | [Anne Vernez Moudon](#) (UW) | [Barton Treece III](#) (UW)

Sponsors: Commute Seattle | Challenge Seattle | Pemco Insurance | BECU
[Report](#)

Completed: The Washington State Commute Trip Reduction law requires worksites with 100 or more full-time employees to conduct a biannual commute survey. Commute Seattle has led this

survey work since 2010, and in partnership with the Downtown Transportation Alliance, it has used the results

to measure progress toward the city’s mobility goals. In 2022, Commute Seattle joined with the UW’s Mobility Innovation Center and the Department of Urban Design and Planning to improve and expand upon the survey and evaluate current transportation systems. The survey was conducted between October and December 2022. It received 64,355 overall responses. It captured post-COVID insights into Seattle area commuter trip choices and motivators, as well as trip origins and destinations. The results give transportation planners a clearer picture of travel trends in relation to demographic groups, employment types, and housing. [Read more...](#)

Equity in planning

Research team: [Bethany Gordon](#) (UW) | [Faris Al-Memar](#) (WSDOT) | [Jon Peterson](#) (WSDOT)
Sponsor: WSDOT

Ongoing: To help increase equity in transportation planning, this project will seek to determine key performance indicators that measure the effects of transportation projects on vulnerable populations, overburdened communities, and tribes. The researchers will comb the literature for both leading indicators and the performance metrics to measure them. Given those leading indicators, the researchers will survey planners to gather further information about strategies that have been or could be used to address equity issues. This information will be organized into a Table of Equity Strategies, with literature review data presented at the census tract level and community engagement data presented at the county level. Planners will be able to use the resulting information in determining how to approach equity in their transportation projects. [Read more...](#)



WSDOT toll equity



Research team: [Mark Hallenbeck](#) (UW) | [Tyler Patterson](#) (WSDOT) | [Doug Brodin](#) (WSDOT)
Sponsor: WSDOT

Ongoing: WSDOT uses roadway tolling to manage demand on I-405, SR 167, SR 99, and SR 520 and to fund megaprojects. While tolls are true “user fees,” they can be a significant expense to roadway users, and therefore they raise serious equity concerns. Although work by the UW Data Science for Social Good program provided insight into the equity of the tolling program on I-405’s

Express Toll lanes, little is known about the equity impacts of WSDOT’s other toll facilities. This project will help WSDOT better understand the current use of its toll facilities, and it will examine how the combination of household income and tolling fees affect the use of state roadways. Researchers will also provide insight into

how costs and benefits associated with toll facilities are distributed and will provide a baseline of use against which changes in economic or policy conditions can be measured. [Read more...](#)

Webinar Wednesdays

WSDOT's [Research & Library Services Office](#) hosts *Webinar Wednesdays*, a series of one-hour webinars that encourage implementation and foster innovation. Each webinar showcases a research project presented directly by the experts and whose results could eventually be implemented statewide.

[Sign up here](#) for webinar announcements and registration information. [Previous webinars are available for access here.](#)

Upcoming webinars:

[Environmental DNA: From knowledge to action – May 10, 2023 \(1:30-2:30 pm PDT\)](#)

DNA is constantly shed into the environment by organisms. Collecting and analyzing water samples for eDNA offers a promising way to survey aquatic species in a consistent and scalable manner, to assess and monitor project impacts on biological communities.

[Tidal fish passage – June 7, 2023 \(10:30-11:30 am PDT\)](#)

This research was undertaken to help fill gaps in current technical guidance related to fish passage barrier assessments in tidal environments. The findings will help facilitate the effective design of structures in intertidal settings, including culverts, to support the migration of salmon and steelhead.

TRAC e-News will be delivered about three times a year. For more information about TRAC and the groundbreaking work we are doing, please visit our [Current Projects](#) and [Research News](#) pages. A downloadable, pdf version of [this newsletter](#) is also available.

For contact information, follow these links:

- [WSDOT Contacts](#)
- [UW Contacts](#)
- [WSU Contacts](#)

The Washington State Transportation Center (TRAC) is a cooperative, interdisciplinary transportation research agency. Its members, the Washington State Department of Transportation (WSDOT), Washington State University (WSU), and the University of Washington (UW), formed TRAC in 1983 to coordinate transportation research efforts—both state and commercial, public and private—and to develop research opportunities both nationally and locally. TRAC acts as a link among government agencies, university researchers, and the private sector.

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