

TRANSPORTATION RESEARCH AND EDUCATION CENTER

2022

. **ANNUAL REPORT**



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ABOUT TREC

THE TRANSPORTATION RESEARCH AND EDUCATION CENTER (TREC) AT PORTLAND STATE UNIVERSITY

TREC is an interdisciplinary center that elevates the voices and expertise of a wide range of backgrounds to provide transportation insights for vibrant communities. We support collaborative research and education programs for our faculty, partners, community members, and students. TREC is home to the USDOT-funded National Institute for Transportation and Communities (NITC), the Initiative for Bicycle and Pedestrian Innovation (IBPI), the Portland, Oregon Regional Transportation Archive Listing (PORTAL), BikePed Portal, and other transportation grants and programs. We produce impactful research for transportation decision makers, expand the diversity and capacity of the workforce, and engage students and professionals through education and participation in research.



THE PEOPLE

TREC STAFF MEMBERS

Jennifer Dill, Director
Hau Hagedorn, Associate Director
Becca Bornstein, Events & Office Coordinator
Basem Elazzabi, Senior Research Associate
Lacey Friedly, Communications Coordinator
Tammy Lee, Transportation Data Program Administrator
John MacArthur, Sustainable Transportation Program Manager
Nathan McNeil, Research Associate
Joe Broach, Research Associate

PORTLAND STATE UNIVERSITY RESEARCHERS

Kelly Clifton	John MacArthur
Jennifer Dill	Nathan McNeil
Peter Dusicka	Randy Morris
Miguel Figliozi	Diane Moug
Aaron Golub	Amy Parker
Arash Khosravifar	Thomas Schumacher
Sirisha Kothuri	Martin Swobodzinski
Gerardo Lafferriere	Avinash Unnikrishnan
Jenny Liu	David Yang
Amy Lubitow	Marisa Zapata

FROM THE DIRECTOR



JENNIFER DILL, PhD, DIRECTOR OF TREC

An annual report provides an opportunity to pause for a moment and reflect on the breadth and impacts of TREC's work. What our students, faculty, researchers, and staff do continues to amaze me. TREC plays a vital role in PSU's mission as an urban-serving research university by supporting transportation research and education across campus. In addition to our federally-funded center, the National Institute for Transportation and Communities, over the past five years, PSU researchers have been awarded nearly \$2 million per year in external transportation-related grants and contracts. The 39 researchers involved in these projects represent a wide range of disciplines: civil engineering, urban studies and planning, sociology, psychology, economics, education, geography, environmental science, and more. This depth of expertise has allowed us to engage in interdisciplinary projects, such as teaming up with PSU's Homelessness Research and Action Collaborative (HRAC) on three national research projects on homelessness and transportation.

Through this external funding, we support students at all levels. We introduce high school students to transportation careers, provide community-engaged classroom and paid research experiences to PSU undergraduate and graduate students, offer continuing education

to professionals around the world, help community members learn how to effectively engage in transportation decision making, and work with university faculty to make classes on their campus more multimodal.

This report highlights a few examples of this work from 2022—work that would not be possible without the stellar TREC team, colleagues across campus, and our many community partners. I'm looking forward to our continued collaboration!

CONTACT US

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TREC's offices are located in the Fourth Avenue Building at PSU: 1900 SW Fourth Ave, Suite 175.



SINCE 2017

TREC BY THE NUMBERS



17,580

people that have attended
TREC's professional
development and student
group events



\$2.5M

in UTC funding to PSU principal
investigators for research, education
and technology transfer projects

\$989K

in scholarships to students studying
transportation

8,521

reports downloaded
between April 1–September
30, 2022



TREC supports PSU

projects awarded
to PSU PIs

39

105

PSU students involved in research
and student group activities, and
supported through scholarships

unique PSU
PIs funded

25

TREC's projects are collaborative

16

Multidisciplinary

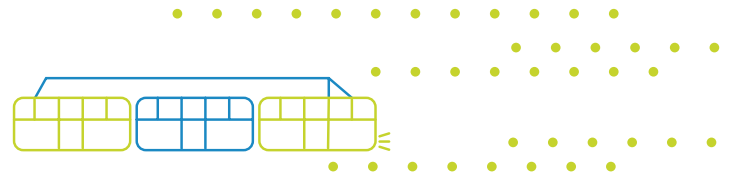
21

Multiple
Investigators

11

Multiple
Universities

PROGRAM HIGHLIGHTS



IBPI PROFESSIONAL DEVELOPMENT

Comprehensive Bikeway Design and Faculty Workshops



Our Initiative for Bicycle and Pedestrian Innovation (IBPI) program hosted two summer workshops this year. The faculty workshop, **Integrating Bicycle and Pedestrian Topics into University Transportation Courses**, trained eight university instructors to incorporate active transportation into existing courses and gave them curriculum resources to expand their bike/ped classroom topics.

Comprehensive Bikeway Design, aimed at planners and engineers, saw 18 professionals attend this year from all over the country. Two attendees used what they learned to update Cincinnati, Ohio's 2022 Bike Plan, and others are bringing their summer training to implement infrastructure projects in their own home states.

SUSTAINABLE TRANSPORTATION STUDY ABROAD

Bringing Home International Inspiration



A group of nine transportation students traveled to Denmark and Sweden in 2022, to meet with planners and engineers and get a feel for on-the-ground transportation in Copenhagen and Stockholm.

"I wanted to see Scandinavia's multimodal sustainable infrastructure in action, to increase my knowledge so I can improve transportation design in my work as an engineer," said PSU student Phil Armand, who also works as an engineer for the Portland Bureau of Transportation.

Since the study abroad course began in 2011, 80 students have taken the course, exploring the transportation contexts of various nations including Sweden, Denmark, and the Netherlands. "Learning from others, experiencing other places and experimenting with new ideas are the foundation of the transportation profession," said course instructor John MacArthur, who will lead the course once more to Denmark in 2023.

BETTER BLOCK PSU PROJECT PATHWAY

PSU Students Use Their Skills to Help the Community



In the spring of 2022, PSU civil engineering students designed bike/ped improvements near Hood River Middle School. Using their work, project champion Megan Ramey, Hood River County School District's Safe Routes to School Manager, was able to secure Oregon Department of Transportation (ODOT) grant funding to support a bike train and walking bus for middle school students.

The design options provided by the PSU transportation students aim to improve bicycle and pedestrian safety and accessibility in what is currently a high-risk area for students. Students at the middle school will also have the opportunity to participate in the redesign of infrastructure near their school.

RESEARCH IMPACTS

How is TREC changing the way things are done in the transportation industry?

Data Fusion to Estimate Network-Wide Bicycle Volumes



PIs — Sirisha Kothuri, Joe Broach, Nathan McNeil, PSU; Kate Hyun and Stephen Mattingly, University of Texas at Arlington

Sponsor — National Institute for Transportation and Communities (NITC)

Partners — Oregon DOT, Virginia DOT, Colorado DOT, Central Lane MPO, Portland Bureau of Transportation, District DOT, Utah DOT

Traditional bicycle counters provide data for sections of the bike network. While limited in location, they count everyone who bikes by. Meanwhile, GPS & mobile data can geographically cover the entire transportation network, but that data only represents those travelers using smartphones or GPS. In this project, researchers fused traditional and emerging data sources together to derive bicycle volumes for an entire transportation network. Combining traditional count methods with new, crowdsourced data yields much better accuracy than either data source could provide alone. The findings indicate that rather than replacing conventional bike data sources, big data sources like Strava and StreetLight make the old “small” data even more important.

At ODOT we just adopted ‘Bicycle Miles Traveled’ as a new key performance measure, and we need a way to measure it. This project very much helps to fill the gap on how we’re going to do that. This research ... could lay the groundwork for how agencies monitor bicycle activity.

Josh Roll
Research Analyst & Data Scientist
Oregon Department of Transportation

Improved Methods to Evaluate Travel Time Reliability



PIs — Avinash Unnikrishnan, Miguel Andres Figliozi and Subhash Kochar; PSU

Sponsor — NITC and Oregon DOT

Travel time reliability is a key metric that significantly affects people’s travel behavior. Researchers Avinash Unnikrishnan, Subhash Kochar and Miguel Figliozi of PSU’s Maseeh College of Engineering and Computer Science developed an improved method for determining the confidence interval of travel time reliability metrics. They used a highway corridor in Portland, Oregon as a case study to evaluate their method, and found that it compared favorably with other methods of evaluating the confidence interval of travel time

reliability metrics. The method they developed can be used to arrive at practical estimates of changes in traffic, which can help transportation agencies maintain consistent travel times across a roadway network.

Updating the ODOT Safety Investigation Manual



PIs — Christopher Monsere, Sirisha Kothuri, Jason Anderson, PSU; David Hurwitz, Oregon State University (OSU)

Sponsor — Oregon Department of Transportation

Researchers at PSU and OSU updated the Oregon Department of Transportation (ODOT) Safety Investigation Manual. The team revised and expanded worksheets used in the safety analysis process and prepared videos, slide decks, and case study examples to help train ODOT employees and those from other agencies around the state on current best practices. In addition to providing a comprehensive procedure for safety investigations at intersections and highway segments, the manual includes checklists and procedures for a variety of field and office safety assessments. A consistent approach to safety investigation is critical to ODOT’s Transportation Safety Action Plan (TSAP), which aims to eliminate fatal and serious injuries entirely by 2035.

Active Transportation Return on Investment Study



PIs — Jennifer Dill, Jenny Liu, Marisa Zapata, PSU

Sponsor — Oregon Metro

Led by PSU in partnership with Metro, this study looked at twelve projects constructed in the Portland region from 2001–2016. These “2040 Catalyst Projects” were evaluated to determine how active transportation investments affected the local economy. Overall, the research team found positive effects on business activity in the retail and food sectors: 75% of the project locations saw measurable economic gains after active transportation infrastructure was implemented. Those that did not see gains tended to be in areas with higher automobile traffic speeds. Investments are more likely to reach their full potential when they reduce the effects of an auto-oriented environment, provide transit options, and create comfortable places for walking.

Navigating Urban Spaces: Wayfinding for Visually Impaired Pedestrians



PIs — Martin Swobodzinski, Amy Parker, PSU

Sponsor — NITC

Partners — American Printing House for the Blind, PSU Digital City Testbed Center

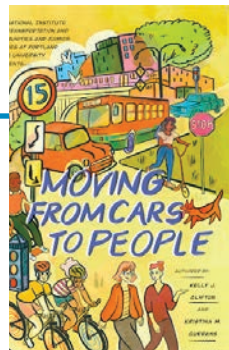
Navigating an unfamiliar place is uniquely challenging

Data-driven policy and strategy are critical to meeting transportation goals. Where there is insufficient or incomplete data, there can be no effective solutions. This is why at TREC we've focused our research efforts over the years on filling data gaps, and why we house two national data clearinghouses: PORTAL and BikePed Portal.

for people with disabilities. People with blindness, deaf-blindness, visual impairment or low vision, as well as those who use wheelchairs, can travel more independently with the aid of effective wayfinding technology. Through focus groups, case studies, and an in-person structured wayfinding experience, this research found tactile maps to be a very useful resource. An accessible mobile app, "Goodmaps," also showed promise. PSU is one of the first spaces in the Northwest to be outfitted with Goodmaps. Environments that support safe, confident mobility have been linked with improved employment outcomes, access to higher education, and quality of life.

Innovative Communication: A Transportation Comic

PIs — Kelly Clifton, PSU; Kristina Currans, University of Arizona
Sponsor — NITC
Partners — South Tabor Neighborhood Association, University of Arizona



A new transportation comic, "Moving From Cars To People," illustrated by PSU MFA student Joaquin Golez in collaboration with the Comics Studies Program, offers a succinct and fun introduction to a complicated topic: how the built environment in the US came to be designed for cars and what we can do about it. When important policy questions involving transit, parking, or zoning show up on a ballot, not everyone is fully aware of the tradeoffs involved. It's in everyone's interest for the public to have a working knowledge of the conversation around sustainable transportation.

BikePed Portal: Developing a Data Dashboard for the Washington, DC Metro Area



PIs — Hau Hagedorn, Tammy Lee, PSU;
Sponsor — National Park Service (NPS)
Partners — Virginia Tech, University of North Carolina Highway Safety Research Center (HSRC)

Bike data from the Washington, DC area is coming to BikePed Portal, the national nonmotorized data clearinghouse maintained by TREC. With funding from a National Parks Service Cooperative Ecosystem Studies Unit, Virginia Tech and the University of North Carolina Highway Safety Research Center teamed up with PSU data specialists to create a new dashboard for Washington, DC data. Previously, a planner looking to see the latest biking numbers for the nation's capital would have to look at info from several jurisdictions. The new data dashboard lets a user see all the DC bike data together in one place.

Launching A Community Transportation Academy



PIs — Nathan McNeil, PSU; Keith Bartholomew, University of Utah
Sponsor — NITC
Partners — University of Utah, Utah Transit Authority (UTA), Wasatch Front Regional Council, Utah Department of Transportation, Salt Lake County, Salt Lake City Transportation Division, Portland Bureau of Transportation

How can community members become more engaged in transportation decision making? Success requires some familiarity with how civic processes work. Community Transportation Academies provide a basic technical understanding of how a region's transportation system operates. Drawing on the decades-long success of the Portland Traffic and Transportation Course, the Wasatch Transportation Academy at the University of Utah was piloted in 2022 in the Salt Lake City region. The first class consisted of 49 community members from around the Salt Lake City region.

How Can E-Bike Purchase Incentives Grow the E-Bike Market?



PIs — John MacArthur, PSU; Christopher Cherry, UT-Knoxville; Luke Jones, Valdosta State
Sponsor — NITC, PeopleForBikes

Electric bicycles (e-bikes) offer a promising solution to reduce the greenhouse gas impact of a region's transportation system. Communities looking to encourage sustainable transportation can use the E-Bike Incentive Programs of North America Tracker to identify the most effective type of incentive for their region. The tracker includes over 50 current, past and proposed e-bike incentive programs in North America, including statistics and details. In 2021 Congressman Jimmy Panetta (D-Carmel Valley) and Congressional Bike Caucus Chairman Earl Blumenauer (OR-03) cited this study when they introduced the Electric Bicycle Incentive Kickstart for the Environment (E-BIKE) Act to encourage the use of electric bicycles.

This was so helpful. I was able to convince my colleagues to support our first ever e-bike incentive program! Huge win! Our program will service the entire tri-county region of the Monterey Bay.

Wendy Root Askew
 District 4 Supervisor
 Monterey County, California



TRANSPORTATION

Portland State University shapes transportation professionals who, in turn, shape cities across the world. Below are some achievements of PSU students this year.



Cameron Bennett, Civil Engineering

Cameron received an Eisenhower Fellowship, NITC scholarship and Kramer Fellowship. He served as a graduate research assistant (GRA) and ITE-STEP president.



Trevor Luu, Urban/Regional Planning

Trevor is a recipient of the IBPI Active Transportation Scholarship and Alta Planning + Design Scholarship. He currently works as a Planner at Alta Planning + Design.



Darshan Chauhan, Civil Engineering

Darshan received a NITC scholarship. He worked as a GRA and served as treasurer of ITE-STEP. He now works as a Senior Data Scientist for Walmart Global Tech.



Jiahui Ma, Urban/Regional Planning

Jiahui worked as a GRA supporting Jennifer Dill and Nathan McNeil on Road User Compliance research as well as analyzing data for a "Breaking Barriers to Bike Share" project.



Jai Daniels, Urban/Regional Planning

Jai received a NITC scholarship and worked as a GRA with John MacArthur on a Transportation Recovery Plan for the Regional Disaster Preparedness Organization (RPDO).



Prabhu Marappan, Computer Science

Prabhu is a software engineer looking to solve engineering and data problems. He worked as a GRA supporting transportation data programs PORTAL and BikePed Portal.



Peter Domine, Urban/Regional Planning

Peter is a recipient of the Walter H. Kramer Endowed Transportation Fellowship.



Nick Meusch, Urban/Regional Planning

Nick received a NITC scholarship and served as VP of Communications for ITE-STEP. Nick was also a 2021 American Public Transportation Foundation (APTF) scholar.



Lise Ferguson, Urban/Regional Planning

Lise is a recipient of the Walter H. Kramer Endowed Transportation Fellowship.



Laurel Priest, Urban/Regional Planning

Laurel received a NITC scholarship. She worked as a teaching assistant and GRA, and served the Portland Bureau of Transportation (PBOT) as a Community Service Aide.



Christian Galiza, Civil Engineering

Christian received a NITC scholarship and served as VP of communications for ITE-STEP.



Gabriel Quiñones-Zambrana, Urban Studies

Gabriel works as a GRA supporting the Better Block PSU Program and a variety of other projects. Before coming to PSU he worked as a Transit and Transportation Planner.



Cole Grisham, Public Affairs

Cole received a NITC scholarship. His doctoral work focuses on regional planning and policy in Tribal communities.



Caleb Susuras, Urban/Regional Planning

Caleb received a NITC scholarship. He has worked with the Denver Regional Council of Governments and the Denver Regional Mobility and Access Council.



Asif Haque, Urban/Regional Planning

Asif received a NITC scholarship and served as VP of events for ITE-STEP. He is a GRA serving the Portland Bureau of Transportation as a Community Service Aide.



Mouhamad Taha, Civil Engineering

Mouhamad received a NITC scholarship. He studies transportation via the PSU pathway program, which combines bachelor's and master's degrees in civil engineering.



Harrison Husting, Urban/Regional Planning

Harrison worked as a GRA supporting several TREC programs: Better Block PSU, the National Summer Transportation Institute, and research fellowship program TURF.



Huijun Tan, Urban Studies

Huijun received a NITC scholarship and worked as a GRA on new ways of connecting traditionally underserved communities to newly available transportation options.



Kyuri Kim, Urban Studies

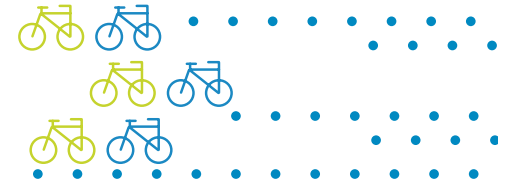
Kyuri is a recipient of the IBPI Excellence in Active Transportation Scholarship and the Nohad and Dirce Toulon Endowed Scholarship. She also worked as a GRA for TREC.



Valeria Tapia, Urban/Regional Planning

Valeria is a recipient of the IBPI Innovation in Active Transportation Endowed Scholarship.

EDUCATION



HIGH SCHOOL

SUMMER TRANSPORTATION CAMP FOR OREGON HIGH SCHOOLERS JULY-AUGUST

Our 2022 camp introduced 19 high school students to transportation career possibilities. They met with local practitioners and went on daily field tours of places like Multnomah County's bridges and TriMet's operations center. Five past students from the camp have returned to act as counselors, and many of our summer camp alumni have enrolled at PSU—several of whom we know are now studying engineering or other transportation-related fields.

UNDERGRAD

TRANSPORTATION UNDERGRADUATE RESEARCH FELLOWSHIPS (TURF) JUNE-AUGUST

This year a cohort of six undergraduate researchers worked with PSU faculty advisors on multimodal transportation projects: Taj Ali (University of Oregon), Liam Anthony (Cornell), Adri DeGuzman (Lewis & Clark College), Matthew Prak (Oregon State), and Jason Grajales and Taylor Ward (PSU).

2019 TURF fellows Abbey Ibarra, Garima Desai, and Lillie Nie co-authored an August 2022 article in the *Journal of Transport and Land Use*: "Congested sidewalks: Effects of the built environment on e-scooter parking compliance."

2018 TURF fellow Gabby Abou-Zeid, now a Transportation Data Specialist at ICF, worked with the Federal Highway Administration (FHWA) this year on a project examining parking cash-out as a strategy to curb emissions.

GRADUATE

TRANSPORTATION EQUITY BOOK CLUB

The ITE student chapter, Students in Transportation Engineering and Planning (STEP), launched a Transportation Equity Book Club. The first books chosen:

- 2022: *Bicycle/Race: Transportation, Culture and Resistance*, by Adona Lugo (Mobility Justice Advocate and Urban Sustainability Chair at Antioch)
- 2023: *Roadways for People: Rethinking Transportation Planning and Engineering*, by Lynn Peterson (Metro Council President and PSU Alum)

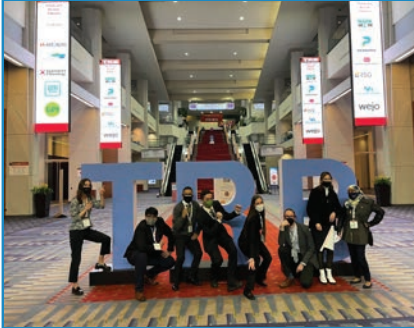
PROFESSIONAL

LIFELONG LEARNING AT PSU

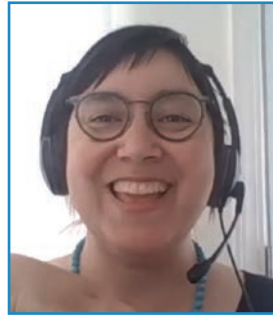
Two summer Initiative for Bicycle and Pedestrian Innovation (IBPI) workshops taught 26 professionals key concepts and strategies for improving active transportation in their communities. 31 webinars and seminars also offered a broad menu of online learning options for practitioners this year.



2022

**January 9-13**

PSU transportation researchers and students help shape the future of transportation for the nation in 23 sessions, committee meetings, and workshops at the 101st annual meeting of the Transportation Research Board (TRB).

**March 4**

Cultural Anthropologist Adonia Lugo presents a PSU seminar after STEP students read her book *Bicycle/Race: Transportation, Culture, & Resistance* in their inaugural transportation equity book club.

**June 3**

Street Perspective: A PSU Master of Urban and Regional Planning (MURP) team makes headlines with their plan to improve safety for houseless pedestrians.

February 23

TRB Aftershock event with YPT Portland: Members of the Portland Chapter of Young Professionals in Transportation and PSU students share the research they presented at the 2022 TRB Annual Meeting.

January 24

The Wasatch Transportation Academy holds its first class, based on the Portland Traffic & Transportation Course and funded by TREC's NITC program.

**April 20**

Rolling Stone mentions TREC e-bike research: "And let's not forget e-bikes!"

May 19

Better Block PSU projects are chosen & five new projects launch.

January 19

TREC's John MacArthur and civil engineering student Cameron Bennett launch a North American e-bike incentive tracker, a free online tool offering a detailed overview of existing e-bike incentive programs in the United States and Canada.

**March 4**

The 5th Annual Mobility Matters was hosted at PSU's Orientation and Mobility Program. Jennifer Dill led a panel to discuss "Case Studies on Accessibility and Inclusive Planning."

May 20

Nathan McNeil (PSU), Jamie Jeffrey & April Bertelsen (PBOT) & Jamie Snook (TriMet) present on the "Rose Lanes" transit priority lanes in Portland.





YEAR IN REVIEW



June 25

Professor Chris Monsere of PSU Civil Engineering is awarded the Branford Price Millar Award for Faculty Excellence.

September 30

Jennifer Dill participates in a panel along with Congressman Earl Blumenauer, Lyft, and the New Urban Mobility Alliance on Charging Ahead on Micromobility Policy

November 30

TREC Research Associate Nathan McNeil presents on the Transportation Academy project to the NHTSA Region 3 Leadership Meeting on Communications, Outreach and Engagement.

June 13

"Street Perspective," a PSU Master of Urban and Regional Planning (MURP) team of six students, makes national headlines with their plan to improve safety for houseless pedestrians.

June 18–July 2

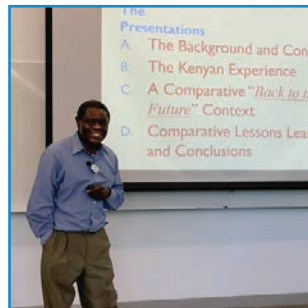
Study abroad students meet with Lars Ekman, senior advisor of traffic safety at the Swedish Transport Administration, and pioneer of the "Vision Zero" approach.

October 14

Celeste Gilman of WSDOT visits PSU to show how Washington is using Level of Traffic Stress goals to provide facilities that invite active transportation trips.

June 7

ScOOTing to Healthy and Safe Mode Choices: Our year's top webinar with 172 engaged viewers, hosted by Kristi Currans, Nicole Iroz-Elardo, and John MacArthur.



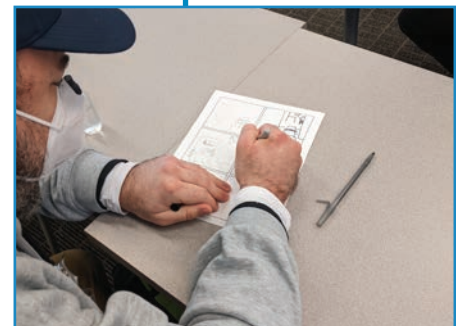
July 29

PSU Alum Francis Wambalaba visits PSU from the US International University of Nairobi, Kenya to share insights from his research on rideshare in developing countries.



August 24

PSU's ITE Student Chapter, Students in Transportation Engineering and Planning (ITE-STEP), wins the National ITE Student Chapter Momentum Award.



October 28

PSU Comics Studies and TREC host a "Research Into Comics" workshop for students & faculty, introducing the format as a means to communicate research results and concepts.





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Seminars and Webinars Held in 2022

Find them online at <https://trec.pdx.edu/events/archive>

PSU Student Research from TRB 2022 Annual Meeting
Mobility, Accessibility, and Resiliency of
Community-Dwelling Older Adults
Reckoning with Induced Vehicle Travel
Is Transit-Oriented Development Affordable for Low and
Moderate Income Households
Video-Image Processing Technology for Bikes and Pedestrians
Systemic Opportunities to Improve Older Pedestrian Safety
Stories from the Bike Equity Network
Exploring Data Fusion Techniques to Derive Bicycle Volumes on
a Network
Addressing Gendered Harassment and Women's Travel Needs
The Impact of Decentralizing Homeless Services on
Transportation and Mobility
Using E-Bike Incentive Programs to Expand the Market – Trends
and Best Practices
Why Your City Needs a Car Master Plan
Prioritizing Transit in Portland: Checking in on the Rose Lanes
Project
Safety Interventions for Houseless Pedestrians
Research In Shared Micromobility (Scooting to Healthy and Safe
Mode Choices)
Assessing Economic Impact of Disaster-Induced Transportation
Disruptions Using a University-Community Partnership
Framework
Rideshare Practices in Developing Countries vs Developed
Countries
Impacts of City-Level Parking Cash-Out and Commuter Benefits
Ordinances
Mobility for the People: Equity Requirements Across 239 US
Shared Micromobility Programs
Port of Portland's Marine Terminal 6 Contribution to Regional
Economic Development
Speed Management and Reduction in Portland, OR
Bringing Complete Streets to Reality in State Transportation
Projects
Community Transportation Academies: Rethinking Effective
Community Engagement Around Transportation Decision-
Making
How COVID-19 Changed Our Cities: Evidence from a Multi-
Wave National Survey

Freight Moves the Oregon Economy

System-level Risk Management of Transportation Structures and
Networks Moving From Probabilistic to Time-Based On-Time
Performance

The Next Wave of Abolishing Parking Mandates

Individual Wayfinding in the Context of Visual Impairment,
Blindness, and Deafblindness

Transforming Commercial Arterials into Bicycle Highways: Using
Count Data

Research Projects Completed in 2022

Find them online at <https://trec.pdx.edu/research>

Accessing Opportunities for Household Provisioning Post-
COVID-19

Active Transportation Return on Investment Study

BikePed Portal: Developing a Data Dashboard for the
Washington, DC Metro Area

Communicating Research through Comics: Transportation and
Land Development

Creating Data Fusion Techniques to Estimate Network-Wide
Bicycle Volumes

Do Travel Costs Matter? Using Psychological and Social Equity
Perspectives to Evaluate the Effects of a Low-Income Transit
Fare Program on Low-Income Riders

How Can E-bike Purchase Incentives Grow the E-bike Market?

Incorporating Bicycle Activity and Vehicle Travel Reduction from
Bicycle Infrastructure into Strategic Planning Tools

Integrate Socioeconomic Vulnerability for Resilient
Transportation Infrastructure Planning

Launching the Wasatch Transportation Academy

Marginalized Populations' Access to Transit: Journeys from
Home and Work to Transit

Navigating Urban Spaces: Wayfinding for Blind, Deafblind, and
Visually Impaired Pedestrians

New Mobility For All: Can Targeted Information And Incentives
Help Underserved Communities Realize The Potential Of
Emerging Mobility Options?

Pedestrian Wayfinding Under Consideration of Visual
Impairment, Blindness, and Deafblindness: A Mixed-Method
Investigation Into Individual Experiences and Supporting
Elements

PSU NITC Research Roadmap

Real-Time Stochastic Matching Models for Freight Electronic
Marketplace

Statistical Inference for Multimodal Travel Time Reliability

Updating ODOT Safety Investigation Manual