



Semi-Annual Progress Report #2

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Signature of Submitting Official	

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1. Accomplishments

Major goals of the program

The Pacific Southwest Region (PSR) University Transportation Center (UTC) will serve Region 9 with a comprehensive, integrated program of research, education and technology transfer built upon the priority needs of the region: 1) closing access gaps, 2) increasing the sustainability and resilience of the goods movement system, and 3) expanding workforce opportunities. Our research program includes an important role for sustainability within each of those areas, and is tailored to address the US DOT strategic goals of **equity, economic strength and global competitiveness, and climate and sustainability**.

Our consortium of universities and community colleges, together with partnerships with state Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs), and industry leaders, forms a comprehensive, region-wide network. The University of Southern California (USC) leads the consortium. Partners include California State University Long Beach (CSULB); University of California, Berkeley (UCB); University of California, Davis (UCD); University of California, Irvine (UCI); University of California, Los Angeles (UCLA); University of Hawai'i at Manoa (UH); Northern Arizona University (NAU); Pima Community College (PCC); and University of Nevada, Las Vegas (UNLV). USC and CSULB are both partners in the METRANS Transportation Center, the entity that houses the PSR UTC.

Accomplishments under these goals

Our accomplishments are categorized under research, education, and outreach.

Administrative accomplishments

Tom O'Brien (CSULB) was appointed as an Associate Dean of the College of Professional and Continuing Education (CPaCE) in November 2023. Tyler Reeb was appointed as the Interim Executive Director of CITT at this time. O'Brien and Reeb have regularly scheduled meetings to ensure that the transition is smooth and the Center is presently working towards finishing the projects for which O'Brien is the Principal Investigator. O'Brien will remain the Director of the California LTAP for the foreseeable future. Reeb was appointed as the Center's Interim Executive Director in November 2023.

CSULB hired a new Project Manager, Lena Wild, who began working on March 4. CSULB also hired two new undergraduate research assistants.

Due to immigration challenges, **CSULB** Program Coordinator Patrick Schiwiek had to discontinue employment at CITT on January 4, 2024. The CSULB team is currently recruiting candidates to fill this position.

1) Research Accomplishments

The goal of our Center is to address regional issues, engage in transportation research that will transform both knowledge and practice while supporting US DOT strategic goals, and provide public policy advisement, technical assistance to state and local agencies, and innovative workforce development strategies. Our multi-modal, multi-disciplinary research program is organized around two themes, each with three sub-topics, and a topic that cuts across both themes:

Theme 1: Accessibility and Mobility for All

Topic 1.1: Accessibility for Underserved and Isolated Communities

Topic 1.2: Improving the Efficiency of the Mobility System

Topic 1.3: Broadening Access to Low/Zero Carbon Transport

Theme 2: Sustainable and Resilient Supply Chains

Topic 2.1: Addressing Environmental Justice Problems in the Goods Movement System

Topic 2.2: Goods Movement System Efficiencies and Resilience

Topic 2.3: Decarbonizing the Goods Movement System

Cross-Cutting Topic (applies to both Theme 1 and Theme 2): Access to Opportunity Through Strategic Workforce Development

Our research program has four parts: 1) research initiated and conducted by PSR faculty; 2) research conducted by researchers inside or outside PSR but within Region 9; and 3) a graduate research fellowship program, and (4) community-partnered research projects which pair PSR faculty and community organizations from the earliest stages of the research. The community-partnered projects, which are new in the BIL UTC, are intended to increase the research focus on equity and community needs and to accelerate technology transfer by working with communities and practice from the earliest stages of research conceptualization. The more traditional faculty-initiated projects are research that is still formative and hence not ready for community partnering at the earliest stages. As with the earlier FAST-Act PSR, we have reserved a small pool fund for a Region 9-wide solicitation with the purpose to promote broader participation across the states and territories. We found that helps PSR maintain vibrant links to scholars throughout Region 9.

Our Year 2 Pacific Southwest Region RFP for faculty research proposals closed on March 27. We received 33 proposals across our 10-university consortium. Of the 33 proposals, there are five cross-university proposals. The proposals were from 8 of our 10 PSR partner universities. We broadened our outreach to faculty and research staff members, and almost half of the proposals are from researchers who have not been funded by PSR before. The universities with the largest number of proposals are USC (8), UC Davis (7), and UC Irvine (6). Overall, this was a very healthy response. We are pleased that researchers across our universities are making links and collaborating.

The next step is an external peer review process. Each proposal will be reviewed by at least two and ideally three external referees. After external reviews are in, we work with each partner university, which will recommend projects at their university based on peer reviews. The final project selection is made by the PSR executive committee, which is comprised of lead faculty members at each university.

Table 1: New Projects

Note on Funding Sources: DOT= DOT funded

CT-PSR= Caltrans funds (for California partners), match funding source

LABC= Los Angeles Business Council, match funding source

Partner	Project No.	PI	Title	Funding Source
USC	PSR-23-06 TO 076	Cyrus Shahabi, John Krumm	Traffic Causality Analysis for Robust Road Freight	CT-PSR
USC	PSR-23-04 TO 074	Bora Gencturk, Botong Zheng	Development and testing of a novel anchor-profiled FRP jacket system for effective confinement of rectangular concrete columns	CT-PSR
USC	PSR-23-07 TO 077	Ketan Savla	Practical Performance Indices to Enable Ranking of Signalized Corridors	CT-PSR
USC	PSR-23-01 TO 079	Genevieve Giuliano	Impacts of e-commerce on warehousing and distribution in California	CT-PSR
USC	PSR-23-05 TO 075	Andre Comandon,	The Environmental Impact and Policy Implications of Supercommuting in the Northern California Megaregion	CT-PSR
UCLA	TO 080	Evelyn Blumenberg	The Equity and Policy Implications of Long-Distance Commuting in the Greater Los Angeles Region	CT-PSR
CSULB	PSR-23-08 TO 078	Tyler Reeb	Best Practices in Freight Technology Transfer	CT-PSR
USC	PSR-23-09	Marlon Boarnet, Genevieve Giuliano	Zero Emission Heavy Duty Trucks: An Analysis of California’s Advanced Clean Fleets Regulation	LABC
UCD	PSR-23-10	Caroline Rodier, Shashi Nambisan	Grassroots Shared Mobility Community-Partnered Project	DOT
CSULB	PSR 23-12	Theresa Gregor, Tyler Reeb	Tribal Transportation Oral History of Mobility: Understanding the Past to Improve Future Collaborations and Innovations	DOT
UCI	PSR-23-03 TO 073	Stephen Ritchie	Route-based Freight Activity Metrics along the California State Highway System through a Pilot Multi Sensor Fusion System	CT-PSR
UCLA	PSR-23-02 TO 072	Jiaqi Ma	Modernize Census Infrastructure Technology	CT-PSR

At present, **Tom O’Brien (CSULB)** is facilitating interviews with members of CITT’s network of transportation professionals, 15 total with five from each of three categories: highway construction managers and employers, highway construction workers and employees, and state department of transportation (DOT) representatives. Additionally, the CITT research team is conducting a literature review to document the highway construction workforce shortage nationally and in California.

Theresa Gregor (CSULB), with support from co-PI **Tyler Reeb (CSULB)**, utilized an oral history approach based on American Indian Studies disciplinary protocols and relationships to interview tribal leaders, workers, and key personnel engaging in tribal transportation and mobility work in San Diego County. San Diego County is home to 18 federally recognized Indian reservations governed by 17 distinct Tribal Nations. In 2007, the San Diego Association of Governments reached out to the Southern California Tribal Chairman’s Association (SCTCA), a regional nonprofit tribal consortium founded following the

American Indian Movement's activism to lobby for Indian Self-Determination (1974-1976), to establish a Memorandum of Understanding for SCTCA to become an advisory member of SANDAG's Board of Directors in addition to having representation on several other SANDAG committees, including the regional planning committee and the transportation committee. The interviews of tribal leaders, past and present, and key tribal stakeholders in San Diego, will be used to document gaps, lessons learned, best practices, and areas for improvement in the relationship and engagement that Tribes in San Diego have with regional county and city partners. Results will be presented to a convening of transportation leaders at a TRB sponsored Tribal Transportation Planning Summit, anticipated in Fall of 2024 in Southern California.

Student opportunities for research

Student support is an important component of research project selection. Highlights of how PSR has supported students:

USC presented the following work and supported three students to travel at the Transportation Research Board in January 2024:

- "Performance Evaluation of Ramp Metering under Different Traffic Measurement Scenarios," by M. Pooladsanj, Z. Li, K. Savla, and P. Ioannou
- "Exploring the Effects of Monetary and Time Cost on Travel Mode Choice: A Study of Transit and Ridehailing in California", authored by Marlon, Qifan, and Clemens Pilgram.
- "Use of Parcel Lockers and Travel Behavior" by Jaehyun Ha, Genevieve Giuliano, Robert Binder, and Andrea Holmes

USC presented the following eight projects and supported two students to travel to the Associated of Collegiate Schools of Planning conference in October 2023:

- "Computer-assisted Methods for Thematic Coding of Large-Scale Text Data in Urban Planning" by L. Madison, J. Harten and G. Boeing.
- "Improving the Accuracy of Intersection Counts and Density Measures of Urban Street Networks" by Y. Shou and G. Boeing.
- "Simulating Street Network Resilience and Robustness Around the World" by J. Ha and G. Boeing.
- "Where Greens Spaces are Efficient? Exploring Green Open Spaces Accessibility by Non-Motorized Transit Modes and Analysis of Street Networks Around Green Spaces" by D. Pugacheva and G. Boeing
- "Exploring the Effects of Monetary and Time Cost on Travel Mode Choice: A Study of Transit and Ridehailing in California" by Q. Shao, M. Boarnet and C. Pilgram
- "Leaving Gentrification Behind? The Geography of Moves Out of Gentrifying Areas in the San Francisco Bay Area" by A. Comandon, S. Rodnyansky and M. Boarnet.
- "New Open-Source Analyses of Transit Job Access and Transit Ridership" by J. Gross and M. Boarnet
- "Pathway Buffer Measures of Pedestrian Quality for the Entire United States" by C. Pilgram

For this period, **NAU** continued supporting undergraduate and graduate transportation students through paid internships, fellowships, as well as engage in outreach activities. Their big events were

attending TRB (three faculty and five students) and the PSR Annual Congress (three faculty and six students). The former trip was funded split between the BIL grant and the FAST Act grant. The latter trip was fully funded by the BIL grant. While at TRB, our group had a total of eight presentations at TRB, seven of which were on work funded by PSR.



NAU students and faculty at the 2024 PSR Annual Congress at UNLV, Las Vegas, NV (left)

Merging of Logistics program with the Transportation programs occurred at **PCC**. As of December 2023, the Center for Transportation Training is now the Center for Transportation and Logistics and the advanced program manager is now academic director. This will create more synergy between the programs and staff. PCC also had a course rewrite for LGM 102, Inventory Control and Materials Management, is in process.

Caroline Rodier (UCD) and her team kicked-off their PSR project, “Grassroots Shared Mobility Community-Partnered Project,” during the reporting period. The researchers met with Miocar (a non-profit electric carsharing service) and finalized the work plan and division of labor. Miocar has a California Air Resources Board Planning Grant to facilitate on-the-ground engagement, with supplemental assistance from UC Davis’s PSR grant. UC Davis is currently reviewing relevant planning documents, and are scoping a GIS analysis that will explore expected demand in communities of interest for shared mobility pilots, including e-carsharing, e-bikesharing, and subsidized Uber ridesharing.

UCI supported the 2023/24 PSR Caltrans match funding request for proposals anticipated to be released in February 2024 and on October 26th, 2023, UCI held its annual Graduate Colloquium. This year’s theme was Equity and the Future of Mobility. The event had 25 in-person and 47 virtual attendees and was moderated by ITS-Irvine Researcher Sarah Catz.

Mehmet Erdem led efforts on **UNLV’s** “Community Partnered Project” which is titled “An Examination of Transportation for Service Employees from Socio-economically Disadvantaged Populations in Las Vegas.” Professors Shashi Nambisan (Howard R. Hughes College of Engineering) and Billy Bai (William F. Harrah College of Hospitality) are the co-PIs on this project. The primary objective of this work is to examine key work-related transportation needs and challenges faced by service employees, especially those from socio-economically disadvantaged (SED) populations (lower wage earners), in the Las Vegas metropolitan area.

UCB administered the 2023-24 Call for Student Research. Awarded seven projects:

- Applying Racial, Health, and Mobility Equity to Transit Oriented Development: An East Oakland Case Study
- Proactively Planning for Safety: Equity Impacts of Reliance on Flawed Collision Data
- “Don’t Keep Us Out of the Revolution:” Understanding Desires for Accessibility for Autonomous Vehicle Rideshare in California
- Transit to California’s National Parks: An Assessment of Accessibility and Policy-Level Barriers
- Expanding Universal Mobility Benefit Programs as a Federal Social Welfare Strategy
- Incentivizing cycling for women from low-income communities in the Bay Area: Lessons from the Global South
- Tapping In: Using Open Loop Payments to Increase Financial Inclusion

Additional accomplishments

i. **Research dissemination**

UNLV hosted the 2024 PSR Annual Congress from March 11-12. The PSR Congress gathered transportation stakeholders from throughout the region together to share new research results, best practices, and education and training tools produced by PSR. It also serves as a major networking event to build a regional transportation community. Each year the Congress is hosted by one of the consortium schools, in partnership with consortium universities and government and industry partners. We open PSR Annual Congress attendance to scholars and students at any university in Region 9, in or out of PSR, to serve the region, and we collaborate closely with the practice community to be sure they have a role in and benefit from the PSR Annual Congress. This year’s annual congress drew approximately 112 attendees, which includes persons from Caltrans, local and state government, public and private industry, students and researchers. For more information about the PSR Congress, [click here](#). The detailed program is available [here](#).



Jiaqi Ma (UCLA), along with the UCLA Institute of Transportation Studies, has secured a \$7.5 million grant from the Federal Highway Administration. This funding will establish the Center of Excellence on New Mobility and Automated Vehicles at UCLA, aiming to delve into the effects of new mobility technologies and highly automated vehicles on the transportation system as they become widespread. Launched in November, the center will evaluate the long-term impacts of these advancements on various aspects such as land use, urban design, transportation optimization, equitable access to mobility, and municipal budgeting.



Tyler Reeb (CSULB) was appointed to the board of the California Transit Training Consortium (CTTC) in December 2023.

PCC represented the College at the Arizona Capitol Community College Day in Phoenix on January 30, 2024. Schools from the entire state were present. Pima drove one of our tractors for display to the event in Phoenix and attended Tucson High School Trade Fair February 2024 (picture below).



NAU presented work funded through this consortium at the following venues:

- Arizona Roads and Streets Conference, November 1st-3rd, 2023; Oro Valley, AZ
- North American Meetings of the Regional Science Association International, November 16, 2023; San Diego, CA
- Annual Meeting of the Transportation Research Board, January 12th-16th, 2024; Washington, DC
- PSR9 Annual Congress, March 11th-12th, 2024; Las Vegas, NV.
- 2023 ASCE/ASHE Annual Conference, September 28, 2023, Phoenix AZ.

Dissemination highlights

Completed final reports and research briefs are available on the PSR research website at <https://www.mettrans.org/mettrans-research>.

USC METRANS hosted four PSR funded METRANS Research Seminars during the reporting period. Recordings of the seminars are available via the links on the next page.

- Roadblocks, Rush Hour, Rainstorms: Can a Self-Driving Car Really Handle It All? Petros Ioannou, USC, University Professor of Electrical and Computer Engineering, Aerospace and Mechanical Engineering, and Industrial and Systems Engineering
- Clean Air for All: A Conversation with Chair Delgado from the South Coast Air Quality Management District, Vanessa Delgado, Chair, South Coast Air Quality Management District Board of Directors
- Resilient by Design: Simulating Street Network Disruptions Across Every Urban Area in the World, Geoff Boeing, USC, Assistant Professor of Urban Planning and Spatial Analysis
- A Conversation with Uber’s Director of Global Policy for Cities and Sustainability, Shin-pei Tsay, Director of Global Policy for Cities and Sustainability, Uber

METRANS SPRING 2024
SPEAKER SERIES

March 20, 2024
12- 1 PM PST

CLEAN AIR FOR ALL: A CONVERSATION WITH SCAQMD'S CHAIR DELGADO

Zoom <https://usc.zoom.us/j/98793874966>

University Gateway Village (UGV), 100B

Vanessa Delgado

South Coast Air Quality Management District is responsible for controlling air quality for all of Orange County, urban portions of Los Angeles, Riverside, and San Bernardino counties, impacting the quality of life of over 16.8 million people. The Governing Board adopts policies and regulations to promote clean air in the region. Vanessa Delgado was sworn onto the Governing Board in May 2019, after serving as a State Senator and Mayor of the City of Montebello. Join Chair Delgado on January 24 and learn more about AQMD's regulatory work!

RSVP VIA QR CODE OR LINK BELOW:
<https://forms.gle/m6x3H2pfboLz8fa8>

Lunch will be provided.

METRANS Reimagining the future of transportation Pacific Southwest Region UTC

METRANS FALL 2023
SPEAKER SERIES

November 2, 2023
12- 1 PM PST

Zoom <https://usc.zoom.us/j/98793874966>

Ralph and Goldy Lewis Hall (RGL) 100

Geoff Boeing

RESILIENT BY DESIGN: SIMULATING STREET NETWORK DISRUPTIONS ACROSS EVERY URBAN AREA IN THE WORLD

Street networks allow people and goods to move through cities, but they are vulnerable to disasters like floods, earthquakes, and terrorist attacks. Well-planned network design can make a city more resilient and robust to such disruptions, but we still know little about worldwide patterns of vulnerability, or worldwide empirical relationships between specific design characteristics and resilience. This study quantifies and measures the vulnerability of the street networks of every urban area in the world then models the relationships between it and street network design characteristics. To do so, we simulate over 2.4 billion trips across more than 8,000 urban areas in 178 countries, while also simulating network disruption events representing floods, earthquakes, and targeted attacks. We find that disrupting high-centrality nodes severely impacts network function. All else equal, networks with higher connectivity, fewer chokepoints, or less circuitry are less vulnerable to disruption. We argue that these design characteristics offer high leverage points for street network resilience that planners should emphasize when designing or retrofitting urban networks.

Dr. Boeing received his Ph.D. in City and Regional Planning from the University of California, Berkeley. Prior to joining the Price School, he was an Assistant Professor of Urban Informatics and Planning at Northwestern University's School of Public Policy and Urban Affairs. His research revolves around city planning, urban form, data science, and urban informatics. Recent projects have focused on 1) the nature and character of urban street networks around the world, and 2) how spatial technologies and their data shape housing markets and our understanding of affordability. He is published in journals such as Environment and Planning A.

RSVP VIA LINK BELOW:
<https://forms.gle/SUXUSeRA9dRCbtj1A>

METRANS Reimagining the future of transportation Pacific Southwest Region UTC

During the reporting period, four UCD Friday Seminars were supported by PSR. Recordings of the seminars are available [here](#).

UCI continued its PSR-supported seminar series highlighting PSR work and PSR-related work from external researchers. Seminars this reporting period included:

- 1/19/24 - Longitudinal Trajectories and Outcomes of Teens that Ride with Impaired Drivers & Drive Impaired (presented by Federico Vaca)
- 11/17/23 - Early Findings of Consumer Interest in Bi-directional & Smart EV Charging (presented by Matt Dean)
- 11/3/2023 - Provably Safe and Human-like Car-following Model for Automated Vehicles (presented by Wenlong Jin)

UNLV hosted a transportation seminar series. The goal of these seminars is to alert, engage, excite and motivate students to pursue educational and career opportunities in transportation. For this, the seminars aim to alert students to societal needs, challenges, and opportunities in the transportation domain, address current and emerging trends in practice and research, and highlight transportation related programs and initiatives. The seminars featured speakers from academe, government, private practice and non-profit organizations. They attracted attendees from many academic disciplines – well

beyond engineering. They have also led to students seeking internship and research opportunities in transportation.

Media coverage

PSR researchers are regular contributors to various national media outlets.

Mobility Matters is a podcast series at **CSULB** dedicated to addressing mission-critical issues facing the professionals who design, develop, operate, and maintain mobility systems. CITT Interim Executive Director Tyler Reeb hosts the series and each episode features insight from trade and transportation experts from various sectors. The podcast did not produce any new episodes during this reporting period, but has scheduled future episodes for later this year. Two Mobility Matters podcast episodes will be recorded in partnership with Advanced Media Production in the College of Professional and Continuing Education (CPaCE) in June and July of 2024.

In December 2023, Marlon Boarnet (**USC**) was quoted in the L.A. Times in March 2024 on the passage of Measure HLA, which will require implementation of a network of bus and bike lanes and pedestrian improvements. Boarnet spoke to the national significance of that measure.

<https://www.latimes.com/politics/story/2024-03-05/2024-california-election-los-angeles-city-measure-hla-results>.

In December, 2023, Boarnet (**USC**) was quoted in the L.A. Times on the opening of a \$2 billion toll lane project in Orange County. <https://www.latimes.com/california/story/2023-12-01/new-express-lanes-in-orange-county-open-on-405-freeway>

Tyler Reeb (**CSULB**) was quoted in the L.A. Times on the impact of Red Sea turmoil on the San Pedro Bay Ports in January 2024. <https://www.latimes.com/business/story/2024-01-12/us-strikes-yemen-are-los-angeles-long-beach-ports-ready-for-cargo-surge>

Genevieve Giuliano (**USC**) was quoted in the San Diego Union Tribune on the impact of climate change on San Diego's coastal rail corridor. <https://www.sandiegouniontribune.com/communities/north-county/story/2023-12-11/climate-change-imperils-san-diego-countys-coastal-rail-corridor-panelists-say>. Giuliano was also quoted in the L.A. Times about LAX's People Mover rail link.

<https://www.latimes.com/california/story/2024-03-29/lax-people-mover-likely-delayed-until-2025>

ii. Plans for next reporting period

The next reporting period is April 1, 2024 through September 30, 2024.

USC will launch the Transportation Pathways Program with an estimated program launch date in July of 2024, additional details in the following section. We also plan on selecting and funding year 2 research project and will continue with seminar series.

CSULB will work with CPaCE to hire a Grants Coordinator as a shared position between stateside and Center operations. It is expected that this position will be installed by mid-2024.

NAU plans to use funds to fund a graduate research fellow this coming Fall, undergraduate research interns, and student and faculty travel for dissemination, outreach, and workforce development.

Regarding outreach, NAU plans to continue in-school K-12 presentations on transportation engineering as part of the Flagstaff Festival of Science In-School Speaker Series.

UH plans to issue and move forward on internal grants. Report on published articles and activities associated with PSR funding.

UCB expects to complete seven student research projects from the 2023-24 Call for Student Research, plan for the 2025 PSR Annual Congress and host seminar series in Fall 2024.

Pima plans to explore the creation of a Logistics Fast Track program. This would be a short term, noncredit program built with industry input in order to create short pathways resulting in credentials and student entry into the workforce. (This is a holdover from last reporting period.)

UCLA plans to publish Issue 12 of Transfers Magazine in Summer 2024. Additionally, UCLA will plan the 2024 UCLA Lake Arrowhead Symposium which will return to Lake Arrowhead, CA on October 13-15, 2024. The theme of this edition will be "Mega Events, Major Opportunities." This Symposium presents a distinctive opportunity to delve into the methods through which cities can optimize the positive legacies stemming from events such as the Olympics and Paralympics, or the World Cup. The focus lies on strategies to prioritize long-term importance over immediate urgencies and adopting intelligent planning approaches to extend benefits beyond the duration of the event itself. Key areas of consideration include sustainability, housing, vibrancy, and equity.

PSR funds will be used to support **UCD** Friday Seminars during the next reporting period. Two seminars have been identified so far for the Spring 2024 quarter. These will be available for the public to watch live (remotely), as well as afterwards as a recording.

CSULB will begin their Transportation Planning Professional Certificate+. It is a new training program that teaches skills demanded by employers in both public and private transportation organizations but not normally taught in traditional urban planning programs. Topics include data visualization, modeling principles for non-modelers, mastering the public hearing, project management and budgeting, grant writing, and working with diverse communities. Audience: 10-20 professionals and community members per year.

UCI plans to host a Colloquium on The Future of Traffic Safety. This will feature a keynote by Dr. Toks Omishakin, Secretary, California State Transportation Agency. UCI will also plan, recruit participants for, and execute the Transportation Research Immersion Program (TRIP). The TRIP program has been expanded to include space for participation by local community college and high school students. UCI will recruit participants until May 2024 or until we have no space remaining.

UNLV will continue to work on the two ongoing projects: An Examination of Transportation for Service Employees from Socio-economically Disadvantaged Populations in Las Vegas, and the develop algorithms and computational tools to model policy and operational approaches related to roadway traffic operations. Further, Dr. Brendan Morris will lead the efforts that are synergistic with the NSF REU "Smart Cities" grant.

B. Educational Accomplishments

Student Programs

i. Workforce development

PSR offers many ongoing workforce development programs that have been written about in-depth in past SAPRs. These programs include: **Commercial Driver License (CDL) Training** (PCC), an innovative Truck Driver Training Program that reaches out to a rural/tribal audience to provide the training and certifications necessary to start a career; **Southern California Workforce Development Needs Assessment for Supply Chain and Transportation Industries** (CSULB), identifies existing and future workforce skills gaps for middle-skill occupations in southern California’s supply chain and transportation chain industries; **Academy of Global Logistics (AGL)** (CSULB), this collaborative partnership combines academic curriculum with industry-led training to support academic and career development for high school students; **AZTrans** (NAU), supports STEM outreach activities that provide exposure to transportation to K-12 students and members of the public. Those are continuing with the BIL PSR UTC.

ii. Education and Workforce Development goals for next reporting period

During the next reporting period, PSR partners will continue to administer degree and non-degree training programs to a broad array of students. We will continue the PSR seminar series at USC, UCD, UCI, and UCLA. Seminars will continue to be offered in a hybrid format.

USC METRANS is working on developing the Transportation Pathways program and will launch the program during the next reporting period. This new program will provide students, counselors, educators, and community leaders with information and resources on education pathways available at PSR institutions in order to draw diverse students into transportation careers. The program’s primary component will be the Transportation Pathways website which will include information and resources on transportation-related degree and non-degree programs available across the PSR consortium. Additional resources such as financial aid and admissions information from each institution will also be provided for students. The website will highlight the experiences of current transportation students, researchers, and industry experts through videos and anecdotal quotes.



A screenshot of the pilot Transportation Pathways web page under development, which will be a portal for information on transportation degrees and careers for middle and high school students.

C. Outreach Accomplishments

PSR conducts many outreach efforts that have been described in past SAPRs. Ongoing outreach activities include: **CSULB CITT Center Updates**, bimonthly e-blasts to industry/academia consisting of brief articles covering relevant Center activities with a focus on the freight sector and workforce development;

Logistics Peer Exchange (CSULB), a peer exchange on best practices in regional freight planning and coordination; **METRANS on the Move** (USC), this is a weekly e-newsletter written and produced by USC students with staff guidance; **Mobility Matters** (CSULB), a CITT podcast series dedicated to addressing mission-critical issues facing the professionals who design, develop, operate, and maintain mobility systems.

METRANS News: During this past reporting period, USC METRANS and CSULB continued the newsletter issues with newsletters in October and December of 2023 and January, March, and April 2024. The monthly newsletters are an example of transformative research. METRANS News also summarizes METRANS research, education, and outreach, including coverage of NCST- and PSR-funded projects and activities. It is distributed to 2201 scholars, students, staff at Caltrans, USDOT, UTCs and faculty throughout the U.S., to federal, state, and local public and private agencies, and to industry. The average opening rate was 38.23%, compared to 27% during the previous reporting period. This is generally consistent with Constant Contact's overall average of 35%. The range for a good open rate is 15-25%, and the newsletter's open rate slightly exceeds this range. The monthly newsletters are archived [here](#).

Marlon Boarnet (**USC**) spoke on a panel hosted by USC Gould School of Law on LA's transportation planning in advance of the Olympics. Other panelists included Conan Cheung, Chief Operating Officer of LA Metro, and Karim Webb, chair of the board of directors of Los Angeles World Airports. Boarnet also spoke, on the topic of California's zero emission truck regulations, at the Los Angeles Business Council's infrastructure symposium in December, 2023, which also featured former Los Angeles Mayor Antonio Villaraigosa.

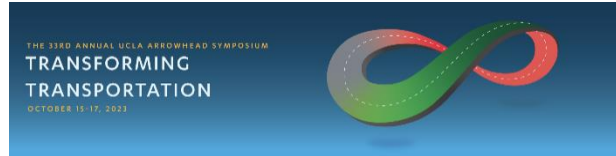
CSULB published seven eblasts thus far during the reporting period. The average open rate was 42.34%. Going forward, CITT will plan to publish one eblast a month, as opposed to the previous goal of two eblasts a month.

The focus of information dissemination for both **USC** and **CSULB** emphasizes LinkedIn over other forms of social media. Our key audience is mostly active on LinkedIn and the content of our outreach is most appropriate for that audience. As a result, CITT has concentrated its efforts towards cultivating a LinkedIn audience. Accordingly, CITT uses LinkedIn to disseminate eblasts and shorter snippets of video content, such as samples of the Town Hall stream. This seems to have been successful: From October to March 2023, CITT's LinkedIn page following grew by 113% (without the use of advertisements or sponsored content).



Transfers Magazine: During this period, Transfers Magazine began recruiting and editing for the 12th issue of the magazine, currently slated for a summer 2024 publication date. The articles under consideration come from authors representing UCLA, UC Berkeley, NAU and UC Irvine. The Circulator blog published various posts highlighting student achievements, including profiles on the students of the year. The Transfers team continues to create a social media content calendar to maintain promotion of the issues throughout the full period between issues, and has developed short videos as another means of expanding the magazine's audience. The goal of the magazine is to translate the research of faculty, staff, and students at the PSR campuses into highly accessible content for an audience of elected officials, transportation planners, members of the media, and the general public.

UCLA hosted the annual UCLA Lake Arrowhead Symposium on the Transportation - Environment - Land Use Connection which was held October 15-17, 2023. The theme was titled “Transforming Transportation” which covered solutions for professionals, elected officials, and advocates working on transportation and regional planning issues. Over the 2.5 days, participants explored how governments can overcome obstacles to deliver a transformed transportation system. Participants were able to learn more about piloting projects, visions for equitable transportation, and governance approaches to building transformative transportation. The conference was attended by 170 guests. More information can be found on the symposium website at www.uclarrowheadsymposium.org.



FED Talks

Since October 2020, **UCLA** has assembled professors and graduate students to discuss and present new research and best practices around public transit, transportation finance, innovative mobility, infrastructure, housing, and much more in a Forum for Education/Engagement and Discussion (FED). The lunchtime talks were attended by students, faculty, staff, and partners of the institute and PSR research over the reporting period. The impact of these talks has been a stronger community of researchers (Faculty, staff, and PhD Students) to share ideas and research that could strengthen PSR research in the future.

CSULB hosted its annual State of the Trade and Transportation Industry Town Hall Meeting on November 17 at the Pointe Conference Center on the campus of California State University, Long Beach (CSULB). The theme of the 2023 Town Hall was *Decarbonization: Truth, Consequences and Hard Choices*. The 2023 Town Hall opened with a documentary film followed by a roundtable panel discussion addressing decarbonization challenges across the supply chain.

i. Outreach plans for the next reporting period

The PSR Advisory Council advises specifically on PSR, met in March 2024 at the PSR Annual Congress, and will reconvene in July to link our stakeholders to research projects selected for funding. Members of the PSR Advisory Council include representatives from state DOTs, MPOs, local governments, tribal organizations, transportation service providers, non-profit organizations, and the goods movement industry. See a list of advisory council members [here](#). The METRANS Advisory Board, which advises METRANS on all its activities extending beyond PSR, will convene next in July also. The **Transfers Magazine** will be released this summer, <https://transfersmagazine.org/>.

2. Participants & Collaborating Organizations

Participants contribute to the work of the PSR through financial or other support, or directly in research, education, or technology transfer. Collaborating organizations participate in Center activities, provide advisement, or support the center.

A. Financial support

Over the course of the grant, these are among the entities who provided match funding for PSR research projects:

- California Department of Transportation (Caltrans)
- Los Angeles Business Council (LABC)

B. Other support

The following organizations provide or have provided in the past (e.g. Fast Act UTC) indirect or in-kind support to PSR:

- **California:** AECOM (Los Angeles); Alliance for Community Transit; Amtrak Capitol Corridor; California Energy Commission (CEC); California Transit Association; Caltrans Office of Earthquake Engineering, Analysis and Research; City of Anaheim; City of Anaheim; City of Davis; City of Santa Clara; Cool Davis; Council of Supply Chain Management Professionals (CSMCP); Fehr & Peers; Foothill Transit; Gateway City Council of Governments; Governor's Office of Business and Economic Development (GO-Biz); HDR; International Longshoremen and Warehousemen's Union (ILWU) Local 13; Investing in Place (Los Angeles); Kiwi Inc.; Long Beach Transit; Long Beach Unified School District; Los Angeles Department of City Planning; Majestic Realty; MetroLink; Nixon Peabody; Orange County Transportation Authority (OCTA); Port of Los Angeles; San Francisco Metropolitan Transportation Commission; San Francisco Municipal Transportation Agency; Santa Clara County Assessor's Office; Southern California Association of Governments (SCAG); Southern California Edison; Toole Design Group; Tree People/Climate Resolve (Los Angeles); UC Davis Feminist Research Institute; UC Davis Policy Institute for Energy, Environment, and the Economy; UC Davis Road Ecology Center; UC Institute of Transportation Studies (UC-ITS); Watson Land Company; Yusen Terminals LLC
- **Arizona:** Arizona Board of Regents, Chamberlin Group, Pima Association of Governments, Northern Arizona University, Southern Arizona Anti-Trafficking United Response Network (SAATURN)
- **Hawaii:** National Disaster Preparedness Training Center (NDPTC), University of Hawaii
- **Others:** Federal Highway Administration; King County Metro (Seattle, WA); staff from state DOTs in California, Colorado, Maine, Minnesota, Nevada, and Virginia.

Additional Support

PSR has a tremendous network of partners. Additional supporters include: **Council of University Transportation Centers (CUTC)**, Thomas O'Brien (CSULB) completed his tenure as president of CUTC and Genevieve Giuliano (USC) is a past president and past executive committee member, and Susan Handy (UCD) is a member of the board; **Institute of Transportation Studies (ITS)** (UCD, UCI, UCLA), provides match funding and other resources; **MetroFreight Center of Excellence** (USC, CSULB), METRANS is the home of the Volvo Research and Education Foundation (VREF) Center of Excellence on urban freight and offers many opportunities for international collaboration and partnerships; **National Center for Sustainable Transportation (NCST UTC)** (UCD, USC), strengthens and expands our work in sustainable freight transport; **Southwest Transportation Workforce Center** (CSULB), provides significant infrastructure and professional capacity in support of workforce development programs for PSR; **The Center for International Trade and Transportation** (CSULB), uses its media and social media channels to

announce events and other opportunities to a network of students and industry and government partners; **TuSimple** (PCC), offers program support and priority hiring to graduates; **UCLA Lewis Center for Regional Policy Studies**, provides workspace and matching funds researchers and staff at UCLA ITS; **Velodyne Lidar** (UCI), provided a donation of two LiDAR units that are supporting current graduate student fellowship and faculty research projects. The following **METRANS Associates** provide additional financial support: LA Metro, Majestic Realty, Port of Long Beach, , Metrolink, Southern California Association of Governments, WSP USA, Los Angeles World Airports, San Diego Council of Governments and Nixon Peabody.

C. Collaborations

PSR has an extensive network of collaborations with academic, public and private organizations. Many of these have been described in past SAPRs. Ongoing collaborations include: **Arizona Technology Park** (PCC), seeks to bring economic developers and academic researchers together to attract autonomous vehicle manufactures to southern Arizona; **Florida Atlantic University** (UH), engages in collaborative research on the use of visualizations to improve the understanding of sea level rise Impacts to transportation in FL and HI; **Maricopa Association of Governments** (NAU), continues to work on pilot evaluation projects with the **University of Arizona**; **Oregon State University** (NAU), partners on two research projects funded by the **Oregon Department of Transportation**; **University of Antwerp** (CSULB), developing an executive workshop that address pharmacological supply chains including the rollout of vaccines in the City of Long Beach.

USC partners with:

- The Los Angeles Business Council (funding) and several industry partners (knowledge supporting, partners include the Harbor Trucking Association and trucking firms) on research into California’s Advanced Clean Fleets zero-emission truck regulation.
- The World Bank Global Transportation Group
- The California Air Resources Board
- The Southeast Los Angeles Collaborative
- And, though the METRANS Associates Program and wider knowledge and technology transfer interactions, a range of entities including: The Gateway Cities Council of Governments, the City of Los Angeles, L.A. Metro, the Southern California Association of Governments, the San Diego Association of Governments, the Ports of Long Beach, Los Angeles, Hueneme, and San Diego, Los Angeles World Airports, and several other public, private, and non-profit entities.

UNLV is partnered with the following organizations:

- MGM Grand Hotel and Casino Group in Las Vegas, Nevada. Partner’s contribution to the project (identify one or more): in-kind contributions – facilitate engagement with employees (the target audience) by encouraging them to participate in the surveys
- The Regional Transportation Commission of Southern Nevada in Las Vegas, Nevada. Partner’s contribution to the project (identify one or more): in-kind contributions – access to relevant data, project reports.
- Nevada Resorts Association in Las Vegas, Nevada. Partner’s contribution to the project (identify one or more): in-kind contributions – facilitate engagement with employers.

- Culinary Workers Union Local 226. Partner’s contribution to the project (identify one or more): in-kind contributions – input into developing the questions to include in the survey of SED employees, access to SED employees to conduct the survey relevant data.

CSULB is partnered with the following organizations:

- California State Transportation Agency (CalSTA)
- World Bank
- International Association of Maritime Economists (IAME)
- California Air Resources Board (CARB)
- Governor’s Office for Business (GO-Biz)
- Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLITT)
- Intermodal Association of North America (IANA)
- IANA Expo Sept 2023: provided support to allow 50 students in the Port of Long Beach Academy of Global Logistics to attend the 2023 Intermodal Expo. CITT, as part of its work with the Port on the project, coordinated the student experience during the conference including having high school students shadow undergraduate students taking part in a case study competition.

NAU is partnered with the following organizations:

- MAG (Maricopa Association of Governments). They have an ongoing partnership with MAG is ongoing, and we are currently working with them on scope for two new emerging technologies product evaluations.
- Phoenix: They are working on a task order to provide guidance to the city on implementation of LPIs (Leading Pedestrian Intervals) and other signalized intersection pedestrian treatments across the city. Additionally, we expect to begin work during the next period on a new task order to assist the City with configuration and evaluation of an Advanced Traffic Management System.
- They are still working on coordinating with the City of Prescott with the goal of establishing an IGA between the city and NAU. These efforts are still ongoing.
- NAU has maintained our established relationship with the Arizona Institute of Automated Mobility (IAM). The IAM was established by the Arizona Governor in 2018 to provide technical guidance and coordination aimed at fostering the implementation of automated mobility across Arizona.
- NAU and Metroplan, the planning organization for the Flagstaff region, have finalized an IGA to allow Metroplan to hire NAU for engineering services and research work. At this point, we expect to start our first project on this, a corridor study of West Route 66 in Flagstaff, during the next reporting period.
- Dr. Gehrke and Dr. Smaglik also recently partnered with Dr. Geoff Boeing at University of Southern California on a proposal submission entitled “Identifying Infrastructure Impediments to Increased Communitywide Cycling Activity” in response to the PSR9 UTC (Year 2) RFP.

At **UH**, they are collaborating with:

- Lisa Staes, Director, Center for Urban Transportation Research – Lead Institution on the C-STTAR (Center for Surface Transportation Testing and Academic Research) consortium. Lead P.I. on Consolidated Rail Infrastructure and Safety Improvements (CRISI) for the Federal Railroad

Administration - Comprehensive Approach to Promoting Railroading Careers and Developing the Current Rail Industry Workforce. UH is a Co-PI on this project.

- Dr. Hilary Nixon, Deputy Executive Director, Mineta Transportation Institute, San Jose Institute – Lead P.I. on Consolidated Rail Infrastructure and Safety Improvements (CRISI) for the Federal Railroad Administration - Climate Change and Extreme Events Training and Research (CCEETR) program. UH is a Co-PI on this project.
- Ruben Pena, Director of Government Surface Transportation; Boris Nejikovskiy, Special Advisor; Eric Sherrock, Senior Engineer; Eric Magel, R&D Manager - ENSCO is the recipient of the contract to manage the Transportation Technology Center, a US DOT Federal Railroad Administration (FRA) center. Working on Hydrogen Transport Futures projects with ENSCO.
- Deborah Matherly and Patricia Bye of MIRTA, LLC on Transportation Research Board, ACRP 04-29 Transportation Emergency Response Application (TERA): Migration Options Beyond 2020, and on proposed research for the Federal Rail Road Administration’s Broad Agency Announcement titled “Derailment Evacuation Planning: Knowledge Management to Action. UH is a subcontractor on the Transportation Research Board, ACRP 04-29 Transportation Emergency Response Application (TERA): Migration Options Beyond 2020 project, and the lead on the “Derailment Evacuation Planning: Knowledge Management to Action” proposal.

At **UCLA**, they are collaborating with:

- City Fabrick at Long Beach, CA on the project, “The Permeable Freeway: Reforming The Freeway Barrier to Close Gaps & Facilitate (Re)Connected Communities. (Hudson Handel)”
- Siskiyou County Local Transportation Commission at Los Angeles on the project, “Siskiyou County LTC: Transit Revitalization Recommendations (Mia Lewis)”
- Kounkuey Design Initiative at Los Angeles on the project, “Assessing the Adequacy of Shade and Lighting at Bus Stops in Los Angeles (Monisha Reginald)”
- Office of Council member Bob Blumenfeld on the project, “Los Angeles' ADU Ordinance & Its Impact on Neighborhoods in the Greater Western San Fernando Valley (Miles Cressy)”
- Southern California Association of Governments on the project, “Transitioning Transportation Pilot Projects into Long-term Programs (Josephine Dine)”
- US Environmental Protection Agency, Office of Community Revitalization at New York on the project, “Rochester's Inner Loop Freeway-to-Boulevard Project: A Case Study (Carolyn Pugh)”
- Los Angeles Department of Transportation (LADOT) on the project, “Enhancing Mobility and Access for Carless/Car-Deficient Household in Los Angeles (Alyssa Suzukawa)”

UCD is currently collaborating with:

- California Department of Transportation
- California Air Resources Board
- Miocar

3. Outputs

PSR outputs include publications, reports, papers, presentations, media, and others. Our target for peer-reviewed publications is 5 per year; our target for presentations is 10. During this reporting period, we have produced **25 peer-reviewed** journal publications and **52 presentations**.

A. Websites

The [PSR website](#) is the central, authoritative source of information regarding our center. Our consortium members also maintain additional sites that contain information relevant to PSR's research and activities. Some of these sites are:

- CITT (CSULB): <https://www.cpie.csulb.edu/center-for-international-trade-and-transportation>
- CITT Articles: <https://ww2.cpie.csulb.edu/news/citt-news/citt-in-the-news>
- eScholarship (UCD, UCI, UCLA): <https://escholarship.org/>
- ITS-Davis: <https://its.ucdavis.edu/>
- METTRANS: <https://www.mettrans.org/>
- NAU PSR UTC: <https://in.nau.edu/aztrans/psr-region-9/>
- NAU's Cyclist Routing Algorithm for Network Connectivity (<https://rc.nau.edu/cranc>)
- PCC's Center for Transportation Training has a facebook, instagram and twitter page: [@pcctruckdriver for all](#)
- Transfers Magazine (PSR flagship publication): <http://www.transfersmagazine.org/>
- UC Davis Feminist Research Institute: <https://fri.ucdavis.edu/>
- UC Davis Policy Institute for Energy, Environment, and the Economy: <https://policyinstitute.ucdavis.edu/>
- UC Davis eScholarship: <https://escholarship.org/uc/itsdavis>
- UCI ISERT conference: www.its.uci.edu/isert2020
- UCI seminar series: www.its.uci.edu/seminars
- UCLA ITS YouTube channel: <https://www.youtube.com/c/UCLAInstituteofTransportationStudies/>
- UCLA ITS: <http://www.its.ucla.edu>
- UCLA Lake Arrowhead Symposium: <http://www.uclaarrowheadsymposium.org>
- UCLA Transfers Magazine: <http://www.transfersmagazine.org>
- Open access to UCLA Institute of Transportation Studies reports, capstone projects, and policy briefs: https://escholarship.org/uc/ucla_its
- UH website (includes posts on PSR research): <https://ndptc.hawaii.edu>
- UH Twitter: <https://twitter.com/disasterctr>
- UH Facebook: <https://www.facebook.com/disasterctr>
- UH LinkedIn: <https://www.linkedin.com/company/18472899/admin/feed/posts/>

B. New methodologies, technologies, or techniques

Nothing to report.

C. Other products

Nothing to report.

4. Outcomes

PSR’s goal is to effectively and efficiently move research to practice so that new knowledge can be shared, acted upon, and contribute to a more efficient, sustainable, and equitable transportation system. We achieve our goal through technology transfer activities: events, communications, training, and client-based research. We define outcomes as any changes made to the transportation system, or its regulatory, legislative, or policy framework, resulting from research and development outputs.

The PSR Annual Congress at **UNLV** drew advisory council members and please refer to dissemination activities for **USC** outcomes.

The fall 2023 **UCLA** Lake Arrowhead Symposium included over 170 attendees, including scholars, practitioners, and public sector leaders. Attendees report that this annual event provides a deeper understanding of emerging trends and best practices for transportation leaders. The outcomes include overall strengthening of the transportation system including infrastructure and policy. The follow-up event, the UCLA Downtown Los Angeles Forum, allowed for reflection and dissemination of knowledge shared during the fall Arrowhead symposium to over 130 new guests.

Student Awards

Monisha Reginald, a UCLA ITS graduate student, received the honor of “Pacific Southwest Region 9 (PSR) Outstanding Student of the Year” in January 2024 for her considerable experience shaping the strategic vision of research projects for Boston’s Transit Agency. She spent five years working at the Massachusetts Bay Transportation Authority (MBTA) as the manager of statistical research. She specialized in integrating automated data sources with survey data to understand transit rider’s demographics, travel behavioral, and satisfaction with services.



Women in Transportation Studies Scholarships

Over the last decade, the Los Angeles chapter (WTS-LA) has granted scholarships exceeding half a million dollars to aspiring high school, community college, undergraduate, and graduate female students, with many having affiliations with UCLA. These scholarships not only provide financial assistance but also facilitate increased engagement with WTS-LA and valuable networking opportunities with transportation experts.



A few of the commercial driver license (CDL) graduates' photos and stories at **PCC** are below:



Ivan S., a proud Pascua Yaqui tribal member, passed his Class A CDL on December 15, 2023 (left) and Maya S. passed her Class A CDL on January 26, 2024 (right).

Though the final report is still in press, **NAU** expect the outcomes of the project “Prioritizing Bicyclist Safety and Mobility: Which Guidance Do I Use?” as well as the disseminations listed above to provide guidance to practitioners in selecting various guidance documents for use in selecting designs for bicycle infrastructure.

UNLV’s transportation seminar series attracted attendees from many academic disciplines – well beyond engineering. They have also led to students seeking internship and research opportunities in transportation.

Scholarly Awards:

Nothing to report.

5. Impacts

PSR defines an impact as that which influences the transportation system, or society in general, such as reduced fatalities, decreased capital or operating costs, community impacts, or environmental benefits. The journey of generating outputs and impacts is uncertain and happens over time. Our contributions are judged by the PSR Advisory Council and measured as significant or not significant. PSR’s research products are made [available to the public](#).

USC submitted three high impact projects to US DOT:

- “Data-driven Feedback Control of Urban Traffic Systems with Performance Guarantees” by USC PI Ketan Savla. The project focused on pre-timed traffic signals, which are static and do not reply to traffic conditions.
- “Closing the Gap: A Comparative Study of Transportation Accessibility” by USC PI Genevieve Giuliano. This research conducted by PI Genevieve Giuliano, addresses the critical issue of transportation accessibility for individuals with disabilities in both urban and rural settings, with a focus on Los Angeles County and Tulare County in California. Approximately 25.5 million

Americans with disabilities face significant barriers to travel outside their homes, impacting essential aspects of life such as healthcare, employment, housing, and social interactions.

- “The Implications of Freeway Siting in California” by UCLA PI Anastasia Loukaitou-Sideris and UCD PI Susan Handy. The project used new qualitative and deep quantitative research methods to quantify and describe in detail the historical impacts of freeways on communities of color in four California cities and areas: Pasadena, Pacoima, Sacramento, and San José.

With respect to outreach activities, **NAU** continued to make available a recorded presentation on transportation engineering for use in the Flagstaff STEM City Nights series and the Career Exploration Series. Finally, AZTrans faculty have volunteered to provide in-school presentations to local K-12 students every academic year. During this reporting period, they had one significant K-12 outreach event: Dr. Russo along with two graduate students presented to three middle school classes at Sinagua Middle School in Flagstaff, AZ (approximately 70 students total) in December 2023. The presentations included an introduction to the different disciplines of civil engineering, details on the type of work transportation engineers do, and included several hands-on in-class activities related to transportation engineering. A photo of this outreach event is shown below.



UCD provides and will continue to support, via PSR, to the WTS UC Davis Student Chapter, the fourteenth WTS student chapter founded nationwide, to help women network and advance their professional careers.

6. Changes/Problems

Changes in approach and reasons for change

Nothing to report.

Problems and delays encountered during the reporting period

Nothing to report.

Change of primary performance site location

Nothing to report.

7. Special Reporting Requirements

Nothing to report.

8. Appendix A

This appendix includes lists (non-exhaustive) of PSR researchers' publications and presentations from the current reporting period.

Publications

Peer-reviewed journal publications

1. Boarnet, M. G., Shao, Q., & Pilgram, C. A. (2024, January 5). Monetary cost, time cost, and mode choice: Transit and ridehailing in California. *Transportation Research Part D: Transport and Environment*, 130, 104149. Pergamon. <https://doi.org/10.1016/j.trd.2024.104149>.
2. Boeing, G., & Ha., J. 2024. Resilient by Design: Simulating Street Network Disruptions across Every Urban Area in the World. *Transportation Research. Part A, Policy and Practice*, 182. <https://doi.org/10.1016/j.tra.2024.104016>.
3. Carlsson, J. G., Liu, S., Salari, N., & Yu, H. (2024). Provably Good Region Partitioning for On-Time Last-Mile Delivery. *Operations Research*, 72(1), 91–109. <https://doi.org/10.1287/opre.2021.0588>.
4. Fitch-Polse, D., Mohiuddin, H., & Jaller, M. (2023). Policies and Strategies for Cargo Bike Goods Movement in California. UC Davis: Institute of Transportation Studies. <http://dx.doi.org/10.7922/G2KK994C>.
5. Handy, S.L., Grajdura, S., Sun, R., Barbour, E., Barajas, J.M., Martelo, M.J., D'Agostino, M., & Circella, G. (2023). Post-Covid Transportation Scenarios: Evaluating the Impact of Policies. *California Air Resources Board and the California Environmental Protection Agency*. <https://ww2.arb.ca.gov/sites/default/files/2024-03/Research%20Contract%2020STC008%20Final%20Report.pdf>
6. Li, W., Zhong, H., & Boarnet, M. G. (2024, January 3). Effects of new transit lines on commuting: Evidence from restricted-use Census Bureau microdata. *Applied Geography*, 164, 103202. Pergamon. <https://doi.org/10.1016/j.apgeog.2024.103202>.
7. Li, Y., Tok, A.Y.C., Sun, Z., Ritchie, S.G., & Allu, K.R. (2023, June 1). LiDAR Vehicle Point Cloud Reconstruction Framework for Axle-Based Classification. *IEEE Sensors Journal*, 23(11), 11168–11180. doi: 10.1109/JSEN.2023.3235301.
8. Loukaitou-Sideris, A., Wasserman, J., Ding, H., & Nelischer, C. (2023, January 31). Homelessness on the Road: Reviewing Challenges of and Responses to Homelessness in State Transportation Environments. *UCLA Institute of Transportation Studies*. <https://doi.org/10.17610/T6DC77>.
9. Loukaitou-Sideris, A., Wasserman, J., Ding, H., & Nelischer, C. (2023, January 31). Homelessness in State Transportation Environments. *UCLA Institute of Transportation Studies*. <https://doi.org/10.17610/T6J603>.
10. Monteiro, F. V., & Ioannou, P. (2021). Safe Lane Change and Merging Gaps in Connected Environments. *16th IFAC Symposium on Control in Transportation Systems CTS 2021*, 54(2), 69–74. <https://doi.org/10.1016/j.ifacol.2021.06.011>.
11. Monteiro, F. V., & Ioannou, P. (2023). Safe autonomous lane changes and impact on traffic flow in a connected vehicle environment. *Transportation Research. Part C, Emerging Technologies*, 151, 104138-. <https://doi.org/10.1016/j.trc.2023.104138>.
12. O'Brien, T. & Olson, B. (2023, September 1). Equity in Learning Opportunities for Middle School Students: Connecting Communities and Transportation Through GIS. *Mineta Transportation Institute Publication*. <https://doi.org/10.31979/mti.2023.2247>.

13. O'Brien, T. (2023, December). Southern California Transit Training Consortium Online Training in Electrical Systems and Battery Electric Safety Training. *Davis, CA: National Center for Sustainable Transportation*. <https://doi.org/10.7922/G2862DTB>.
14. Pahwa, A., & M. Jaller. (2024). Evaluating private and system-wide impacts of freight eco-routing. *Transportation Research Part D: Transport and Environment, Volume 130*. <https://doi.org/10.1016/j.trd.2024.104170>.
15. Pike, Susie. (2023). A ridehailing access program for regional rail. *Case Studies on Transport Policy, Vol. 14*. <https://doi.org/10.1016/j.cstp.2023.101099>.
16. Reeb, T., Taylor, B., & Swarat, C. (2024). Talent Pipelines for the Fourth Industrial Revolution: How California PaCE Units Can Bridge Critical KSA Gaps. *Berkeley Center for Studies in Higher Education Research & Occasional Papers Series CSHE.SI.2023*.
17. San Diego Association of Governments. (2024, February). San Diego and Imperial Counties Sustainable Freight Implementation Strategy. *Final Report. San Diego, CA: San Diego Association Of Governments*. <https://www.sandag.org/projects-and-programs/goods-movement-planning/san-diego-and-imperial-counties-sustainable-freight-strategy>.
18. Smaglik, E.J., Phair, C.J., Eschen, A.M., & Russo, B.J. (2024, March). Prioritizing Bicyclist Safety and Mobility: Which Guidance Do I Use?. *ITE Journal*.
19. Smaglik, E.J., Phair, C.J., Eschen, A.M., & Russo, B.J. (2024, March). Prioritizing Bicyclist Safety and Mobility: Which Guidance Do I Use?. *ITE Journal*.
20. Sun, R. (2023). Statistical Learning for High-Dimensional Networked Data in Transportation Systems. *UC Davis*. <https://escholarship.org/uc/item/1nw754s6>.
21. Wang, B. S., Rodnyansky, S., Boarnet, M. G., & Comandon, A. (2024, January 1). Measuring the impact of COVID-19 policies on local commute traffic: Evidence from mobile data in Northern California. *Travel Behaviour and Society, 34*, 100660. Elsevier. <https://doi.org/10.1016/j.tbs.2023.100660>.
22. Waqas, M., & Ioannou, P. (2023). Automatic Vehicle Following Under Safety, Comfort, and Road Geometry Constraints. *IEEE Transactions on Intelligent Vehicles, 8*(1), 531–546. <https://doi.org/10.1109/TIV.2022.3177176>.
23. Waqas, M., Nuzzo, P., & Ioannou, P. (2024). Provably Safe Design Methodology for Automatic Longitudinal Control of Autonomous Vehicles. *IEEE Transactions on Intelligent Vehicles, 1–13*. <https://doi.org/10.1109/TIV.2024.3359611>.
24. Wasserman, J., Loukaitou-Sideris, A., Ding, H., & Nelischer, C. (2023, September 1). The Road, Home: Challenges of and Responses to Homelessness in State Transportation Environments. *Transportation Research Interdisciplinary Perspectives, 21C*. <https://doi.org/10.1016/j.trip.2023.100890>.
25. Yang, D., & Hyland, M. F. (2024). Electric vehicles in urban delivery fleets: How far can they go? *Transportation Research. Part D, Transport and Environment, 129*. <https://doi.org/10.1016/j.trd.2024.104127>

Other publications

Conference papers

26. Fitch-Polse, D., Mohiuddin, H., & Jaller, M. (2023). Policies and Strategies for Cargo Bike Goods Movement in California. *UC Davis: Institute of Transportation Studies*. <http://dx.doi.org/10.7922/G2KK994C> Retrieved from <https://escholarship.org/uc/item/6zq3384v>

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28. Gu, W., Dessouky, M.M., Pang, J.S., & Zhang, H.M. Traffic Equilibrium with Shared Mobility Services in a Coupled Morning-evening Commute Framework. *Transportmetrica A: Transport Science*.
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30. Reeb, T. D., & Park, S. (2023, February). *Trade and Transportation Talent Pipeline Blueprints: Building University-Industry Talent Pipelines in Colleges of Continuing and Professional Education* [Paper presentation]. Mineta Transportation Institute, San José, CA, United States. https://transweb.sjsu.edu/sites/default/files/2144-Reeb-Trade-Transportation-Talent-Pipeline-Blueprints_0.pdf.
31. Reeb, Tyler. (2024). "The Future of the Transportation Workforce Development Life Cycle Workshop." *Transportation Research Board Annual Meeting 2024*, Washington, D.C., United States.
32. Waqas, M., Monteiro, F. V., & Ioannou P. Trade-off Between Safety and Traffic Flow for Connected Autonomous Vehicles in the Presence of Traffic Signals. *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, Macau, China, 2022, pp. 2642-2647, doi: 10.1109/ITSC55140.2022.9922391.
33. Waqas, M., Murtaza, M.A., Nuzzo, P., & Ioannou, P. Correct-By-Construction Design of Adaptive Cruise Control with Control Barrier Functions Under Safety and Regulatory Constraints. *2022 American Control Conference (ACC)*, Atlanta, GA, USA, 2022, pp. 5140-5146. doi: 10.23919/ACC53348.2022.9867464.
34. Waqas, M., Naik, N. V., Ioannou, P., & Nuzzo, P. Contract-Based Control Synthesis with Barrier Functions for Vehicular Mission Planning. *2022 IEEE 61st Conference on Decision and Control (CDC)*. Cancun, Mexico, 2022, pp. 2216-2221. doi: 10.1109/CDC51059.2022.9992999.
35. Zhao, X., Liao, X., Wu, G., Boriboonsomsin, K., & Barth, M. Improving Truck Merging at Ramps in a Mixed Traffic Environment: A Multi-human-in-the-loop (MHuIL) Approach. *2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC)*, Bilbao, Spain, 2023, pp. 4297-4302, doi: 10.1109/ITSC57777.2023.10422261.

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37. Anastasiou, C., Krumm, J., & Shahabi, C. *Estimating mobility distributions from uncertain roadside sensor datasets* [Conference Presentation]. 2024 25th IEEE International Conference on Mobile Data Management (MDM). IEEE, 2024.
38. Flynn, J.A., Circella, G., & Venkataram, P.S. *Exclusion from Activities and Transportation Modes by Disability and Income: Results from a Survey in California*.

39. Gehrke, S.R., Allam, M.K., Martinez, A.E., Holliday, T.M., Russo, B.J., & Smaglik, E.J. (2024, January 7-11). *Cycling accessibility to employment, schools, and grocery stores in Arizona metropolitan regions* [Conference Presentation]. Transportation Research Board's 103rd Annual Meeting, Washington, D.C., United States.
40. Jain, A., Sanchez, J., Turner, K., Barajas, J., & Handy, S. (2024, January 9). *The Historical Impacts of Freeway Construction and Urban Renewal in Sacramento* [Conference Presentation]. Transportation Research Board's 103rd Annual Meeting, Lectern Session 3091: Planned Destruction and the Aftermath: From Freeway Revolts to Movement Toward Repair and Restoration. Washington, DC, United States.
41. McCullough, S. *Mobility Justice: A New Framework for Transportation Researchers and Professionals* [Conference Presentation]. Feminist Geography Conference.
42. McCullough, S. *Mobility Justice: A New Framework for Transportation Researchers and Professionals* [Conference Presentation]. American Association of Geographers.
43. Nocera, L., Anastasiou, C., Kim, S.H., Krumm, J., Giuliano, G., & Shahabi, C. (2024, March 11-12). *Validation of Freight Volume Modeling on Major Highway Links*. PSR Congress 2024, Las Vegas, NV, United States.
44. Raha, F. (G), Eschen, A. (U), Gehrke, S.R., Smaglik, E., & Russo, B.J. (2024, January). *Where to Implement Leading Pedestrian Intervals (LPIs): An Examination of Turning Vehicle-Pedestrian Crashes at Signalized Intersections* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.
45. Smaglik, E., Eschen, A. (U), Khadka, A (G), & Russo, B.J. (2024, January). *An Empirical Analysis of Fisheye Camera Intersection Traffic Detector Performance: Assessing the Potential Impacts of Camera Position and Lighting Conditions* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.
46. Smaglik, E., Phair, C. (G), Eschen, A. (U), & Russo, B.J. (2024, January). *Prioritizing Bicyclist Safety and Mobility: Which Guidance Do I Use?* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.
47. Yu, H. (2023). "Computational Geometric Partitioning for Vehicle Routing" (PhD thesis). University of Southern California.
48. Zhao, X., Liao, X., Wu, G., Boriboonsomsin, K., & Barth, M. (2024). *Improving Truck Merging at Ramps in a Mixed Traffic Environment: A Multi-human-in-the-loop (MHuIL) Approach*. TRB 2024, Washington, D.C., United States.
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50. Nambisan, S., Byzyka, J., Erdem, M., Bai, B., and Koneti, S. (2024, March 11-12). *Transportation Needs and Economic Opportunities of Socio-economically Disadvantaged Populations in Las Vegas Hospitality and Tourism Industry*. Pacific Southwest Region University Transportation Center 2024 Congress, University of Nevada, Las Vegas, Las Vegas, NV, United States.
51. Raha, F. (G), Eschen, A. (U), Gehrke, S.R., Smaglik, E., & Russo, B.J. (2024, January). *Where to Implement Leading Pedestrian Intervals (LPIs): An Examination of Turning Vehicle-Pedestrian Crashes at Signalized Intersections* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.

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54. Dennis, S., Pahwa, A., & Jaller, M. (2023, December 6-7). *Cargo Routing, Health Impacts, & Disadvantaged Communities*. University of California, Davis, Institute of Transportation Studies Sustainable Transportation Energy Pathways (STEPS+) Fall 2023 Research Symposium, Davis, CA, United States.
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56. Venkataram, P. (2023, December 6-7). *Disability, Activities, and Transportation*. University of California, Davis, Institute of Transportation Studies Sustainable Transportation Energy Pathways (STEPS+) Fall 2023 Research Symposium, Davis, CA, United States.
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58. Pike, S. (2024, March 11-12). *Gender effects on the access and use of regional rail*. 2024 PSR Congress, University of Nevada, Las Vegas, NV, United States.
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59. Islam, K.A., & Nambisan, S. (2024, March 11-12). *Driving Forward: Data-based Strategies for Better Road Safety Equity*. Pacific Southwest Region University Transportation Center 2024 Congress, University of Nevada, Las Vegas, Las Vegas, NV, United States.
60. Martinez, Y., & Bein, W. (2024, March 11-12). *Information Visualization for Exploring Road Traffic Congestion*. Pacific Southwest Region University Transportation Center 2024 Congress, University of Nevada, Las Vegas, Las Vegas, NV, United States.
61. Zahid, T., & Morris, B. (2024, March 11-12). *Combining Deep Traffic Prediction and Emission Estimation*. Pacific Southwest Region University Transportation Center 2024 Congress, University of Nevada, Las Vegas, Las Vegas, NV, United States.
62. Boarnet, M. G., Shao, Q., & Pilgram, C. A. (2023, October 19-21). *Monetary cost, time cost, and mode choice: Transit and ridehailing in California* [Conference Talk]. Association of Collegiate Schools of Planning. Chicago, IL, United States.
63. Boeing, G., & Ha, J. (2023, October 19-21). *Simulating Street Network Resilience and Robustness around the World* [Conference Talk]. Association of Collegiate Schools of Planning Annual Conference. Chicago, IL, United States.
64. Wasserman, J. (2023, March 18). *Homelessness on the Road: Reviewing Challenges of and Responses to Homelessness in State Transportation Environments*. Presented at the 2023 Pacific Southwest Region University Transportation Center Congress, Los Angeles, CA, United States.

65. Wasserman, J. (2023, August 9). *The Road, Home: Challenges of and Responses to Homelessness in State Transportation Environments* [Conference Presentation]. Bridging Transportation Researchers 5.
66. Hyland, M. (2023, September 26). *Caltrans Follow-up Report: Evaluating Mixed Electric Vehicle and Conventional Fueled Vehicle Fleets for Last-mile Package Delivery* [Online Presentation]. Inha University.
67. Gu, W., Zhang, M., Dessouky, M.M., & Pang, J.-S. (2023, October 15-18). *General Coupled Morning-Evening Traffic Equilibria with Rideshare and Ride-Hailing Services*. 2023 INFORMS Annual Meeting, Phoenix, AZ, United States. <https://cta-redirect.hubspot.com/cta/redirect/3449182/bf474905-597a-4bf3-beb6-2b12df475c87>.
68. Carlsson, J. (2023, October 17). *Data-Driven Delivery Zoning for Equitable Last Mile Logistics*. INFORMS Annual Meeting 2023, Phoenix, AZ, United States.
69. Gehrke, S.R. (2023, October 19). *Elevating excellence through impactful research. Invited presentation* [Keynote Speaker]. Flash Talk 3.0 at Northern Arizona University, Flagstaff, AZ, United States.
70. Smaglik, E., Gehrke, S.R., & Russo, B. (2023, November) *Bicycle Facility Design, Planning, and Safety: Recent Advancements and Insights* [Conference Presentation]. Arizona Roads and Streets Conference, Tucson, AZ, United States.
71. Gehrke, S.R. (2023, November 2). *Evaluation of transportation safety and security barriers in bicyclist accessibility* [Lectern Presentation]. American Council of Engineering Companies of Arizona's 72nd Roads & Streets Conference, Tucson, AZ, United States.
72. Gehrke, S.R. (2023, November 16). *Cycling accessibility to employment, schools, and grocery stores in Arizona metropolitan regions* [Lectern Presentation]. North American Meetings of the Regional Science Association International, San Diego, CA, United States.
73. Reeb, T. (2023, December 11). *Workforce Development with Eric Rensel* [Virtual Presentation]. Eric Rensel and Institute of Transportation Engineers (ITE). <https://www.linkedin.com/events/7137799828746457089/about/>
74. Reeb, T. (2023, December 14). *Cybersecurity and TSMO Virtual Peer Exchange* [Virtual Presentation]. National Operations Center of Excellence.
75. Boarnet, M. G., Shao, Q., & Pilgram, C. A. (2024, January). *Monetary cost, time cost, and mode choice: Transit and ridehailing in California* [Conference Talk]. 103rd Annual Meeting of Transportation Research Board. Washington, D.C., United States.
76. Campos, U. & Ghaffar, A. (2024, January). *Equitable Design of Shared E-Scooter and E-Bike Systems* [Conference Presentation]. 103rd Annual Meeting of Transportation Research Board. Washington, D.C., United States.
77. Raha, F., Russo, B.J., & Ryan, A. (2024, January). *Investigating the Impact of the COVID-19 Pandemic on Traffic Crash Injury Outcomes among Different Demographic Groups* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.
78. Raha, F.Y., Russo, B.J., and Gehrke, S.R. (2024, January). *Assessing the impact of vehicle type on pedestrian and bicyclist crash injury severity* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.
79. Holliday, T.M., Russo, B.J., & Gehrke, S.R. (2024, January). *Cyclist-involved crashes and level of traffic stress: Evidence from Arizona* [Conference Presentation]. 2024 TRB Annual Meeting, Washington, D.C., United States.

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82. Reeb, T. (2024, January). *Intermodal Freight and the Media: Why Getting the Story Right Matters* [Moderator]. Transportation Research Board Annual Meeting 2024. Washington, D.C., United States.
83. Wasserman, J. (2024, January 8). *Homelessness on the Road: Reviewing Challenges of and Responses to Homelessness in State Transportation Environments* [Conference Presentation]. 103rd Annual Meeting of the Transportation Research Board, Washington, D.C., United States.
84. Dennis-Bauer, S., Pahwa, A., & Jaller, M. (2024, January 9). *Cargo Routing, Health Impacts, and Disadvantaged Communities* [Conference Session]. Transportation Research Board's 103rd Annual Meeting, Lectern Session 3202: Health and Equity at the Heart of Transportation Planning, Policy, and Practice. Washington, DC, United States.
85. Ji, J., Chakraborty, D., & Jenn, A. (2024, January 10). *Leveraging Lessons Learned from the Tolling Industry to Implement Road-Usage Charge: A Mixed-Methods Study to Devise Sustainable Funding Mechanisms for Transportation Infrastructures* [Conference Presentation]. Transportation Research Board's 103rd Annual Meeting, Poster Session 4073: Transportation Demand Management, Tolling, and Congestion Pricing. Washington, DC, United States.
86. Boarnet, M. G., Shao, Q., & Pilgram, C. A. (2024, February). *Monetary cost, time cost, and mode choice: Transit and ridehailing in California* [Conference Talk]. 63rd Annual Meeting of Western Regional Science Association. Monterey, CA, United States.
87. Wei, D. & Giuliano, G. (2024, March 1). *Economic Analysis and Review of Commercial Vehicle Road User Charges* [Presentation]. California Transportation Commission.
88. Nambisan, S., Byzyka, J., Islam, K.A. & Gunindi, Z. (2024, March 11-12). *A Study of Electric Vehicles Ecosystem and Energy Demand Forecasts in Nevada*. Pacific Southwest Region University Transportation Center 2024 Congress, University of Nevada, Las Vegas, Las Vegas, NV, United States.

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89. Carlsson, J. (2024). Continuous Approximation Models with Temporal Constraints and Objectives. Pacific Southwest Region University Transportation Center. <https://doi.org/10.25554/QYYS-ZA80>
90. Chen, Q. (2024). Rapid and Accurate Assessment of Road Damage by Integrating Data from Mobile Camera Systems (MCS) and Mobile LiDAR Systems (MLS). *Pacific Southwest Region University Transportation Center*. <https://doi.org/10.25554/9HXW-3Y87>
91. Giuliano, G., & Wei, D. (2024). Implementation of Action 6 of CSFAP Phase 4 Tracking Economic Competitiveness. Pacific Southwest Region University Transportation Center. <https://doi.org/10.25554/GPWH-6P48>
92. Ioannou, P., & Waqas, M. (2023). Systematic and Provably Safe Design Methodology for Connected and Automated Vehicles. *Pacific Southwest Region University Transportation Center*. <https://doi.org/10.25554/4n72-ze78>

93. Jaller, M., & Pahwa, A. (2024). Sketch Planning Tool for Sustainable and Resilient Urban Goods Distribution: User Manual. Pacific Southwest Region University Transportation Center.
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