



ISSUE 24 | SPRING 2019

### University Transportation Center Newsletter

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### PacTrans has Strong Turnout at ASCE ICTD 2019

In June, seven faculty and student researchers from PacTrans attended the American Society of Civil Engineering (ASCE) International Conference on Transportation (ICTD) and Development in Alexandria, Virginia. ICTD, organized by the Transportation and Development Institute (T&DI), is ASCE's flagship conference in transportation and development. This year's theme was *Engineering Smart Mobility for the Smart City*.

This three-day conference of technical programs featured six plenary sessions which included national leaders from ASCE, T&DI, government agencies, universities, and private industry discussing core conference themes. The program also covered deeper technical content on multiple topics and modes in transportation and development through eight concurrent tracks. Speakers included a unique blend of invited technical experts and academic leaders in podium presentations. In addition, a dedicated poster session provided the opportunity for attendees to learn about cutting edge research in smart cities and smart mobility with direct access to the authors. The program also included a variety of special events such as the Younger Members' sessions on "The Best Advice I Ever Received" and a 3-Minute Pitch Competition, along with a wonderful icebreaker reception, T&DI Technical Committee Meetings, and T&DI's Annual Awards Banquet. The conference concluded with two technical tours, one at FHWA's Turner Fairbanks facility and one at the Reagan National Airport.

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### **NEWS AND EVENTS**

#### ASCE ICTD 2019 CONTINUED

Representatives from PacTrans included:

PacTrans Director, **Yinhai Wang**, was the immediate past co-chair for the conference and the current president of T&DI. He gave a welcome address during the first plenary session, moderated two technical sessions, and had a poster in the poster session.

PacTrans Associate Director, **David Hurwitz**, moderated a technical session and presented a poster in the poster session.

PacTrans Assistant Director, **Cole Kopca**, attended the conference.

PacTrans faculty researcher, **Kevin Chang**, attended the conference and presented a poster in the poster session.

PacTrans faculty researcher, **Cynthia Chen**, attended the conference and presented research in a technical session.

PacTrans student researcher, **Zi Yuan Pu**, attended the conference and presented a poster in the poster session.

PacTrans student researcher, **Meixin Zhu**, attended the conference and presented research in a technical session.

This is the second consecutive year that PacTrans has had a strong presence at this annual conference. It is a great venue for our researchers to present their work to industry and fellow academics. Next year's conference will be held in Seattle, WA, and co-chaired by WSDOT Secretary, Roger Millar, and PacTrans Director, Yinhai Wang.

# Second Annual Mobility Summit of University Transportation Centers

Last April, PacTrans Assistant Director, Cole Kopca, traveled to Washington D.C. to take part in the Mobility 21 UTC hosted Mobility Summit of University Transportation Centers.

This one day event focused on *Improving the Mobility of People and Goods*, and brought together representatives of government, industry, and academia from all disciplines and touch transportation and mobility issues.

The University Transportation Centers each had an opportunity to discuss current research efforts and there were two panels – one on opportunities and challenges to improve the mobility of people, and the other on opportunities and challenges to improve the mobility of goods – where government and industry leaders got to share with academia, all of the gaps and opportunities for future research in this space.

During lunch, we had the opportunity to hear a keynote address from Diana Furchtgott-Roth, the newly nominated Deputy Assistant Secretary for Research and Technology at the USDOT Office of Research, Development & Technology.



#### Gonzaga University Faculty Member Receives Outstanding Educator Award

Gonzaga University faculty member and representative to the PacTrans Board of Directors, Rhonda Young, P.E., received the Institute of Transportation Engineers (ITE) Western District
Outstanding Educator Award at the ITE Western District Meeting in Monterey, CA late last June.

This award recognizes an educator who shows creativity in teaching and takes measures to spark student interest in the transportation profession, and encouragement for student endeavors. This award was received last year by David Hurwitz, Associate Professor and PacTrans Associate Director at OSU.

Young has been a transportation educator for 17 years and currently holds the position of Chair and Professor in the Department of Civil Engineering at Gonzaga, which she has been at since 2015. Young also acts as the ITE faculty advisor at Gonzaga.

Prior to starting her academic career, Young spent 10 years as a consulting in the transportation field.

Her current research is focused on Connected Vehicle Technology and how it can be used to navigate roadways under variable weather conditions.

### **NEWS AND EVENTS**

# **Conference of Minority Transportation Officials Careers in Transportation Conference**

Last April, PacTrans Assistant Director, Cole Kopca, attended the Careers in Transportation Conference hosted by the Conference of Minority Transportation Officials (COMTO) at the Downtown Seattle Public Library.

This half day event featured a conversation with Phil Washington, CEO of LA Metro, who spoke about many of the issues they face with future workforce and several of the most innovative strategies that he has been implementing to try and address those concerns, "40% of our workforce is currently at retirement age and 70% will be at retirement age within the next 10 years."



We also heard from Maud Daudon, Executive Leader of Career Connect Washington who spoke in depth about their efforts to provide opportunities through new career paths. She described our classical career path as a very linear and inflexible path from all education to all career. She then talked about a more "braided" pathway that connects students to the career opportunities around them, starting earlier in their schooling. She spoke about how they have involved government, industry, and every level of education to begin creating programs that are more flexible for students for whom the classical path does not work.

The final component of the day included a panel with Rob Gannon, General Manager of King County Metro, Joe Lawless, Assistant Chancellor for Strategy & Assessment at the UW Tacoma, and Marilyn Strickland, President and CEO of Seattle Metropolitan Chamber of Commerce. Each spoke about and reiterated the coming challenges with regard to future workforce from their respective perspectives and some of the ways their institutions are attempting to address those concerns.

### **Hurwitz and DeFazio talk Transportation at UO**

Last April, PacTrans Associate Director at OSU, David Hurwitz, took part in professor Marc Schlossberg's Bicycle Transportation course at the University of Oregon, where they were joined by U.S. Rep. Peter DeFazio, along with other UO students, faculty members, and transportation researchers.

DeFazio is the House Transportation and Infrastructure Committee chairman and a UO alumnus. Dr. Hurwitz and the Springfield Democrat were joined at this event by UO's director of the Environmental and Natural Resources Law Center, Heather Brinton; computer science professor, Stephen Fickas; psychology professor, Elliot Berkman; and planning, public policy, and management professor, Rebecca Lewis.

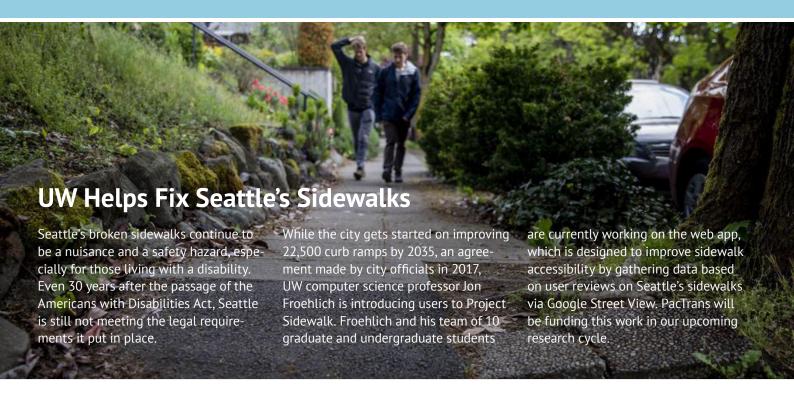
Students posted questions on topics ranging from privacy concerns, to climate change, to the surprising acceptance of electric scooters, to the psychological and structural barriers that keep more travelers from walking or biking to their destinations.



"One thing that's exciting to me is a year ago, people weren't even talking about scooters as a form of transportation," Hurwitz said, according to Around the O. "Here's a mode of transportation that

didn't exist a year ago and now they represent tens of millions of trips in the U.S., revealing a massive preference for a new way to travel for trips under two miles. Our challenge is to help cities understand how to capitalize on the opportunities and challenges scooters present in terms of street design, policy, equity and safety.

### RESEARCH HIGHLIGHTS



### Drivers Saved from High Wind Blow-Over along I-80

PacTrans PI and Professor of Civil Engineering at Gonzaga University, Rhonda Young, was the star of a recent episode of AASHTO's Snow and Ice Pooled Fund Cooperative Program (SICOP).

On this episode of the podcast, titled, "Is the wind blowing in Wyoming? High wind blow-over hazard warning," Young was brought in to discuss how up and coming CV technology can be utilized to improve roadway operations during adverse weather conditions.

Young also highlighted the work she had previously presented at last year's Transportation Research Board Annual Meeting in relation to the USDOT Connected Vehicle Pilot Deployment Project, which is currently being applied along Interstate 80 through Wyoming.

The project uses Pikalert, a system developed by the National Center for Atmospheric Research. It is designed to process CV data and alert drivers

with high wind blow over hazard warnings in times of less than ideal weather conditions.

Pikalert also has the ability to provide actionable alerts to TMC operators, and forecast weather and "now-cast" surface conditions. The system has proven to be particularly helpful to commercial traffic on I-80.

Since its deployment, Pikalert has had numerous real-world impacts. Fleet managers and drivers along I-80 have experienced safer, more swift travel with an increase in the amount, timeliness, and quality of information

they are receiving from the system. WYDOT has also seen a decrease in the number of crash induced road closures, enhanced data collection, and more efficiency in emergency management procedures as a result of this implementation.

The USDOT has since decided to continue to support the advancement of CV technologies and encourages other DOTs to invest in this open source project.

You can listen to the full podcast by clicking here.



### **STUDENTS**

### Two Students from PacTrans Universities Selected for Eno Conference

OSU Doctoral student, Dylan Horne, and UW Ph.D. candidate, Gabriela Giron, were two of just 20 students in the entire nation selected to attend the Eno Future Leaders Development Conference, which took place early last June in Washington D.C.



In Corvallis, OR., Horne is the leader of the Benton County Statewide Transportation Improvement Fund committee, as well as the chair of the Corvallis Bicycle and Pedestrian Advisory Board.

"The conference is the next step in my journey as a transportation leader, advancing my understanding of national transportation decision makers and policy," Horne told OSU's School of Civil and Construction Engineering blog.

At UW, Giron is involved with the Urban Freight Lab, where she is a research assistant, and the Supply Chain Transportation & Logistics Master's degree program, for which she is a teaching assistant, all while pursuing a Ph.D. in Transportation Engineering at UW.

The Eno Center for Transportation (Eno) was founded in 1921 by William Phelps Eno, who advocated for safe mobility during his career by ensuring that traffic control and traffic engineering as a professional discipline was accepted and recognized.

# Sustainable Transportation: A Conversation with Regional Leaders

With so much attention currently focused on improving mobility, accessibility, and livability in Washington State, transportation agencies, professionals, and policy-makers may find it difficult to meet sustainability goals.

Sustainable Transportation: A Conversation with Regional Leaders, hosted by the American Public Works Association (APWA) UW Chapter, the Institute of Transportation Engineers (ITE) UW Chapter, and UW Planning Student Association, and sponsored by PacTrans, was held late last May.

With major funding packages at the state and regional levels being passed in the form of this year's Washington State transportation package and Sound Transit 3 in 2016, leaders are now challenged with seeing these projects through on time and under budget. However, this task is faced with difficulty as construction costs continue to rise and the complexity of project delivery increases.

All the while, county and city leaders are also trying to meet aggressive sustainability goals by encouraging density and alternative methods of transportation on top of trying to increase and improve mobility.

Sound Transit CEO Peter Rogoff, King County Executive and UW MUP Alum Dow Constantine, WSDOT Deputy Director for Regional Transit Coordination and UW CEP Alum Celeste Gilman, UW Evans School Alum Senator Steve Hobbs, and King County Councilmember Claudia Balducci were in attendance as speakers on the panel. The group of professionals shared their thoughts on how to balance these sustainability targets with goals such as regional economic development.



### **STUDENTS**



# UW Concrete Canoe Team competes in regional and national competitions

UW's Concrete Canoe Team took home first place when they competed in this year's ASCE Pacific Northwest Regional Concrete Canoe Competition, held April 12-13. The competition was hosted by Saint Martin's University in Lacey, WA.

Teams were judged in four different categories: design paper, final product, oral presentation, and race points. The UW team was placed first in the design paper and final product categories, and placed third for oral presentation and race points.

Up against 13 other schools, the UW managed to land on top and earn themselves a spot at ASCE's National Concrete Canoe Competition, which took place from June 6-8.

At the national competition, hosted by the Florida Institute of Technology in Melbourne, FL, the UW team placed 11th overall.

Congratulations to the team for their achievements and efforts!

### **Oregon State ITE is on the Move**

Spring is always a busy season for the Oregon State ITE Chapter, and this year was no exception. Students from the chapter traveled throughout the state, country, and world to share their research and learn new ideas.

The term started with the chapter taking a tour of a BNSF railyard to learn about rail engineering and the fast-paced work environment it is. Later that afternoon, the tour progressed to the Operations Room of TriMet, the regional public transit service provider, where students got a glimpse into the many modes of service and interconnectivity of the system.

A month later, four students traveled to the Netherlands to compete in the Student Safety Technology Design Competition sponsored by the National Highway Traffic Safety Administration (NHTSA), where they placed in the top five internationally.

Their product: an intelligent mobile application that can predict vehicle damage and injuries sustained in a collision, then automatically send that information to first responders.

The term finished off at the 2019 ITE Western District Annual Meeting where the chapter competed in the ITE Student Traffic Bowl and earned numerous awards and accolades for the success of their student chapter.



### **STUDENTS**

### Real-World Operations and Logistics: BNSF and TriMet Tours

Over a dozen OSU ITE and the OSU American Railway Engineering and Maintenance-of-Way Association (AREMA) members toured the Vancouver, WA BNSF rail-yard and TriMet Operations Headquarters. The BNSF tour focused on why safety is paramount in rail and why engineering in freight rail is fast-paced and high-stakes by nature. Students also toured a locomotive cabin and watched the operation of a turn-table.

TriMet generously gave students an inside access to its Operations Room, where routing information and ITS systems run in real-time to serve the Portland area. Students learned about route operations and maintenance challenges, and how modes under TriMet's umbrella of services are interconnected. Students also rode TriMet's brand new Orange Line to observe the innovative rail, station, and intersection designs.

# **Student Safety Technology Design Competition: International Finalists**

OSU ITE was one of three teams representing North America in an international transportation safety design competition held in the Netherlands, and placed in the top five internationally. At the competition, the team of four pitched their product and demonstrated a prototype to transportation officials from around the globe.

Their product: an intelligent mobile application that can predict vehicle damage and injuries sustained in a collision, then automatically send that information to first responders. The team is now looking into the business feasibility of developing the prototype further.





### **OSU ITE at the Western District Meeting**



OSU ITE had a great showing at the ITE Western District meeting with half a dozen members in attendance and numerous awards. The student chapter was awarded 2nd place for both the Western District Student Chapter of the Year and Western District Student Chapter Website.

### **EDUCATION AND WORKFORCE DEVELOPMENT**

#### **Integrated Modeling to Address Energy Impacts of Emerging** Travel Modes with Paul Waddell



This past May PacTrans was honored to receive a talk from Paul Waddell as our 2019 Spring Regional Transportation Seminar. The emergence

of TNCs and AVs as well as last mile technologies such as shared scooters are rapidly disrupting the transportation industry. How will these emerging modes affect VMT and energy consumption? How will they affect longer-term adaptations related to residential and workplace location choices, auto ownership and other dimensions of urban life?

These are some of the questions that motivated the SMART Mobility project, funded by the Department of Energy. This talk by Paul Waddell, professor of city and regional planning at UC Berkeley, describes emerging research on integrated modeling intended to support this research agenda. It addressed in particular some of the computation challenges in integration of models for long-term analysis.

Paul Waddell teaches and conducts research on modeling and planning in the domains of land use, housing, economic geography, transportation, and the environment. He has led the development of the UrbanSim model of urban development, now used by

Metropolitan Planning Organizations and other local and regional agencies for operational planning purposes in a variety of U.S. metropolitan areas such as Detroit, Houston, Phoenix, Salt Lake City, San Francisco, and Seattle, as well as internationally in a growing list of cities in Europe, Asia, and Africa.

His current research focuses on the assessment of the impacts of land use regulations and transportation investments on outcomes such as spatial patterns of real estate development and prices, travel behavior, emissions, and resource consumption. He is also working on ways to engage public participation in making complex policy choices.

### Modeling Increasing Pressure on the Curbside, and Insights from Popular Music into Whether we've Fallen out of Love with the Car with Scott Le Vine



Last June. Dr. Scott Le Vine, from the Transpo Group, joined the students, staff, and faculty members of UW in the HUB to share research

covering two very distinct themes.

He first presented the "Topology" research project, which is motivated by the growing demands that emerging forms of mobility (ride hailing, parcel delivery, etc.) are imposing on the curbside.

This research, being undertaken in collaboration with the National Renewable Energy Laboratory, aims to develop models of competition for curbside

space, to ultimately provide network managers with decision support capabilities. Le Vine discussed early-stage development of models of curbside space allocation inspired by urban geography's Bid-Rent Theory.

Second, he presented work motivated to address a major gap in research into mobility trends: whether the structural trends of stabilization (and in some instances, declines) in young adults' car access and usages in the 2000s are due primarily to traditional factors impacting personal mobility (economics, demographics, spatiality, etc.) or a cultural shift of decreasing affinity towards the automobile.

He presented a unique effort to evaluate whether popular music lyrics - as a proxy for culture over the past six

decades - demonstrate systematic trends in frequency of referencing the automobile or the sentiment (positive, negative, etc.) towards it.

Le Vine is a transportation planner splitting his time between the Transpo Group, where he is helping launch the Seattle-headquartered firm's East Coast practice, and the State University of New York (SUNY) at New Paltz, where he is a tenure-track Assistant Professor. He is a Trustee of the UK's sharedmobility trade body, "CoMoUK," and holds visiting research affiliations with Imperial College London and China's Southwest Jiaotong University. His recent research covers shared-mobility, trends in personal mobility, and various aspects of vehicle automation.

### **EDUCATION AND WORKFORCE DEVELOPMENT**

### **Pactrans Associate Director Billy Connor Teaches Young Students** about Civil Engineering

CSET director and PacTrans Associate Director at the University of Alaska, Fairbanks (UAF), Billy Connor, was in attendance at the annual Kids2College event, held on Friday, April 12.

Kids2College is a program that brings college awareness to kids more early on and fosters a community in which more individuals are motivated to pursue a higher education. The program is supported by the Sallie Mae Fund, which allows schools and community groups to participate in the national curriculum and training for free.

At the event, Connor had the opportunity to engage with 5th and 6th grade students from the Alaska Gateway School District and Salcha Elementary School, introducing them to the idea of a career in engineering, and explaining the importance of civil engineering to maintain safe and efficient transportation in our world.

During his presentation, Connor shared with the students the concepts of friction and safe stopping distances. Afterwards, the students all participated in an activity that calculated the friction coefficients on ice, gravel, and pavement. Based on their findings, they were able to determine at what distance each surface required a driver to stop.

The children were aided by students in the Department of Civil and Environmental Engineering (CEE) at UAF. The UAF students made the necessary measurements to further ensure safety.







#### Young students practice problem solving at UW Discovery Days

Many of our consortium universities offer some sort of platform for reaching out to elementary, middle, and high school aged students to expose them to the many opportunities in engineering and to raise interest in STEM education and careers. At the University of Washington, this platform is called Engineering Discovery Days. Each year, this two-day event offers students and faculty from all UW engineering departments the opportunity to share their work with students, teachers, families, and the community, while featuring hands-on and interactive activities that demonstrate the exciting work of engineers.

This year's Discovery Days were held Thursday, Apr. 25 and Friday, Apr. 26. PacTrans hosted our annual booth which featured Rush Hour, a game that combines problem solving with the overarching theme of mobility in transportation. Also present was the PacTrans sponsored student Hyperloop team and several of the labs in Transportation Engineering.

### **TECHNOLOGY TRANSFER**

# Dr. Kevin Chang leads "Introduction to Variable Speed Limits" webinar



Late last May, PacTrans PI, Dr. Kevin Chang, Ph.D. and P.E., led a webinar titled, "Introduction to Variable Speed Limits", sponsored by ASCE Continuing Education and the Transportation and Development Institute (T&DI).

This webinar was designed to teach professionals about variable speed limits (VSL),

flexible limitations on the speed at which motorists can drive on the road depending on the conditions. How VSL can be used to manage and improve the safety and operations of our travel environment was a major topic of discussion.

Through this webinar, engineers, planners, agencies, and individuals with any knowledge of transportation were given the chance to discuss how VSL affect a roadway's operation impacts, and identify what it is that contributes to VSL systems, while highlighting the potential benefits of using VSL, and considering outreach and education as important pieces in project implementation success.

Additionally, this webinar helped participants develop a better understanding of VSL, and why and when to consider a particular treatment.

The past, present, and future of VSL was defined, with an explanation of the necessary technology, the pros and cons of that technology, and what it takes to successfully implement that technology.

Dr. Chang is a professional engineer and has been teaching since 2013, first as an affiliate assistant professor at the University of Washington, then later taking on his current position as associate professor in the Department of Civil & Environmental Engineering at the University of Idaho.

With more than 15 years of experience in transportation project management and design; traffic safety and operations; and transportation planning, Chang will share his knowledge of the transportation realm with webinar participants.

Chang previously worked with the King County Department of Transportation in Seattle, WA, as a traffic engineer, prior to his current position at the U of I. As a traffic engineer, Chang was responsible for supervising and managing neighborhood transportation plans, implementing livable communities, pedestrian and school safety programs, and a variety of other non-motorized projects. In the past, Chang has worked with over 15 school districts and 70 elementary, middle, and high schools.

Chang also spent a year acting as board president for the Washington State Section of ITE, was chair of the TRB School Transportation Subcommittee, and a certified Safe Routes to School National Course Instructor. Additionally, Chang is a strong advocate for civic engagement and in the past, has volunteered his time by serving as a board member for several non-profit community organizations.

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### **About Pacific NW Transportation Consortium**

The Pacific Northwest Transportation Consortium (PacTrans) is the Region 10 University Transportation Center (UTC) established in January 2012 with funding from the US Department of Transportation (USDOT).

PacTrans is a combined effort of transportation professionals and educators from the University of Washington (UW), Oregon State University (OSU), the University of Alaska Fairbanks (UAF), the University of Idaho (UI), Washington State University (WSU), Boise State University (BSU), and Gonzaga University (GU). With two active centers focusing on both Safety and Mobility, PacTrans serves as an engine and showcase for research, education, and workforce development in the Pacific Northwest.

The goal of PacTrans is to create an environment where consortium universities and transportation agencies within Region 10 work together synergistically. The PacTrans program focuses on the USDOT-identified priority of Improving

the Mobility of People and Goods. This priority includes the following nonexclusive topic areas:

- Increase access to opportunities that promote equity in connecting regions and communities, including urban and rural communities;
- Smart cities;
- Innovations to improve multimodal connections, system integration, and security;
- Assistive technologies for those with physical or cognitive disabilities;
- Data modeling and analytical tools to optimize passenger and freight movements;
- Innovations in multi-modal planning and modeling for highgrowth regions;
- Novel (non-traditional or alternative) modes of transport and shared use of infrastructure; and
- Regional planning and setting of transportation priorities.

The Pacific Northwest offers a unique blend of opportunities to examine a variety of transportation issues, including those related to urban centers, rural communities, diverse geographic features (e.g., coastal plains, mountain ranges), and a growing population of pedestrians and bicyclists. This diversity makes the Pacific Northwest a natural laboratory in which to investigate transportation solutions that are applicable both locally and nationally.

PacTrans is dedicated to collaborating with transportation agencies, companies, and research institutions to jointly develop safe and sustain-able solutions for the diverse transportation needs of the Pacific Northwest.

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