

Contents

Director's Corner	2
Research News	2
Get to Know: Kelly Clifton	3
News from around OTREC	4
Education News	6
Visiting Scholar Program	6
Conference Highlights	7
Upcoming Opportunities	7
Advisory Board Profile	8

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OTREC is a National University Transportation Center and is a partnership between Portland State University, the University of Oregon, Oregon State University and the Oregon Institute of Technology

Confronting a Changing Northwest Climate

Researchers from Portland State University (Dr. Miguel Figliozzi), Oregon State University (Dr. Philip Mote and Dr. Jason Ideker) and University of Alaska – Fairbanks (Dr. Ming Lee) have begun work on the Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska. The project is sponsored by The Region X Transportation Consortium, which is comprised of the four Departments of Transportation and the four University Transportation Centers from Alaska, Idaho, Oregon and Washington. The research will address the potential impacts of climate change and their associated adaptation opportunities throughout the region.

The states in the Pacific Northwest and Alaska share interconnected travel networks for people, goods, and services that support the regional economy, mobility, and human safety. The rising costs of building and maintaining reliable transportation infrastructure place tremendous pressure to deliver resilient transportation systems. Regional climate change has and will continue to affect the physical condition and serviceability of these networks. Yet the nature of the changes and their potential impacts on the regional transportation system and its use are very poorly understood.



Adapting to climate change includes facing floods like this one, which closed I-5 in late 2008 (WSDOT Aerial Photo).

The research team will conduct a preliminary assessment of the risks and vulnerabilities climate change poses to the surface transportation infrastructure system in the Pacific Northwest and Alaska region.

The project will:

- increase information regarding the risks and vulnerabilities of transportation infrastructure;
- highlight research needs and tools;
- provide relevant information and assistance to transportation planners, designers, and decision makers for the region.

Contributed by John MacArthur, the project's Principal Investigator.



OTREC Launches Light Rail Transit Training Series

In partnership with Portland State University, TriMet and David Evans and Associates, OTREC is pleased to announce the first in a series of professional development short courses that deal with aspects of light rail transit systems. The first course, Light Rail Facilities Design, will be offered in Portland on May 11th and 12th. The course is based on real-world examples and inside access to the Portland light rail and streetcar systems. It features instructors who are actively involved in the design, construction and operation of light rail systems. See www.otrec.us/lrt for agenda and registration information.

Research News

Examining Oregon's Medically At-Risk Driver Program: Oregon is one of six states with mandatory physician reporting requirements for drivers with significant medical impairments. In 2003, the state revised its Medically At-Risk Driver program to cover a wider range of cognitive and functional impairments. PSU Professor James Stratham's project examined the new program. The study involved

two sections. First, the researchers performed an assessment of the safety risk posed by drivers whose licenses were suspended after the DMV received a physician's report on their condition. The second part of the study involved interviews with program stakeholders, including primary care physicians, providers of driving assessment services, and program administrators. <http://otrec.us/project/80>

Driver Characteristics (Sample Size)	Mandatory Referral (1,556)	Voluntary Referral (910)	Oregon Drivers (18,604)	
Age Group	35 & Under	4.3%	10.9%	33.4%
	36-55	11.6%	25.5%	36.6%
	56-75	23.9%	29.8%	21.4%
	76 & Over	60.2%	33.8%	8.6%
	Mean Age (years)	73.0	62.4	46.4
	Median Age (years)	78.9	66.0	45.1
Gender	Male	61.3%	60.1%	52.8%
	Female	38.7%	39.9%	47.2%
Residence	Urban	69.6%	69.6%	76.9%
	Rural	30.4%	30.4%	23.1

Dr. James Stratham (PSU) compared the crash risks of drivers who merited mandatory or voluntary referral to Oregon's atrisk driver program.

Expanding PSU's Bicycle and Pedestrian Design Curriculum: This educational project took students at PSU beyond the lecture hall and library. Dr. Lynn Weigand expanded the bicycle and pedestrian design curriculum at PSU by turning an existing three-credit course

into a five-credit course with an applied lab. The new course gave students the opportunity to apply the knowledge they gained in class to real projects in their community. Working in teams, the students developed projects that focused on improving bicycle and pedestrian connections to the PSU campus. The course received excellent reviews from the students, and the department recognized the course's value by offering it again the following year. <http://otrec.us/project/279>

Does transportation to school affect families' housing choices? Dr. Yizhao Yang's project examined the relationships between school transportation, neighborhood walkability, and where families choose to live. The study involved a 5,500-household survey of families with children attending selected public schools in Eugene, OR. In general, parents did consider school transportation in the process of

Director's Corner

In June of 2009, USDOT, HUD and EPA announced an historic Interagency Partnership for Sustainable Communities, which sets forth six livability principles that will help guide coordinated policy: Provide more transportation choices; promote equitable, affordable housing; enhance economic competitiveness; support existing communities; coordinate policies and leverage investment; and, value communities and neighborhoods.

At an event at PSU in February, HUD Secretary Shaun Donovan (pictured here with OTREC's Hau Hagedorn) announced a new HUD Office of Sustainable Housing and Communities, and emphasized the need to improve access to both affordable housing and transportation options. A few days earlier, President Obama released a proposed budget that included \$527M for DOT sustainable communities initiatives, including a new livability office.

This new partnership presents a great opportunity for OTREC and our community partners. Our theme of integrated transportation and land use, healthy communities, and advanced technologies embodies the six livability principles. You can see this by looking at some of the projects we have already funded. Given this unprecedented federal partnership, OTREC's request for proposals (RFP) for 2010-11 is placing an emphasis on projects that support this new federal priority.



In consultation with our Board of Advisors, and in response to issues raised by faculty, we made a number of other changes in this RFP. First, to help build longer-term research and educational capacity at OTREC universities, we are soliciting proposals for strategic programmatic initiatives. These initiatives go beyond a single project, and emphasize collaboration between campuses and external partners. Second, we are accepting proposals for up to two years of funding, though the second year is contingent upon federal funding and the Investigator's performance during the first year of the project. I am looking forward to the proposals that will be submitted by the April 9th deadline.

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deciding where to live. Unfortunately, housing opportunities around schools and in walkable communities are often limited. Dr. Yang's project suggests a need for greater coordination between community land use planning and school planning. The study also points to the value of continuing to educate the community about safe and active transportation options to school. <http://otrec.us/project/184>

New Pavement Design Procedure

Assessed: Tensile strain, or strain from heavy loads, causes pavement to crack. But innovations in pavement design aim to reduce such damage. Currently, the Oregon Department of Transportation (ODOT) is in the process of adopting a new pavement design procedure. This involves examining data from existing pavement to predict how much cracking will likely occur in the new pavement. Analysts have already made predictions about how much tensile strain will occur in the new pavement using a procedure known as layered elastic analysis. Dr. Todd Scholz's project gathered key data in order to assess the validity of these predictions. <http://otrec.us/project/155>

University Students Design a New Bicycle Shelter for Their Community:

designBridge is a student-based organization at the University of Oregon that exposes students to real architectural and planning projects in their community. The organization promotes students' engagement in their community while providing them with professional experience that will benefit them in their careers. In this project, led by Professor Nico Larco, the students of *designBridge* undertook the design and construction of a new transportation shelter for Roosevelt Middle School in Eugene, OR. The project results include not only the completion of the shelter, but also the continued development of a service learning program that can effectively address small community, transportation-related needs. <http://>

otrec.us/project/247

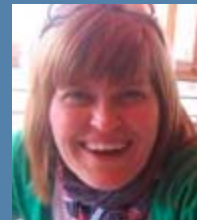
Telling Oregon's Transportation Tales: In 1974, Oregon adopted statewide land use planning goals. These goals shifted planning efforts away from freeway-building toward investment in alternative forms of transportation. Since then, Oregon has been a leader in pushing back against car-centric landscapes and lifestyles. In this project, Professor Carl Abbott and Sam Lowry of Portland State University traced the history of land use planning in Oregon from 1890-1974. One of the project's aims is to make transportation planning relevant and compelling to a broad audience. To do so, Abbott and Lowry gathered stories and information from a wide range of sources who enthusiastically shared their knowledge of transportation history. <http://otrec.us/project/138>

New Visions for Suburbia: Suburban multifamily housing makes up the fastest-growing housing market in the country. Townhouses, condos and apartment complexes bring density to suburbia. They are also often located close to commercial areas. For these reasons, they offer the potential for active transportation and mixed-use development. Yet this potential rarely becomes a reality. Professor Nico Larco's project explores why inaccessible, disconnected forms of suburban multifamily development dominate. The project draws on interviews with architects, planners, developers, and property managers of developments in four states. It proposes ways in which current practices might shift in order to create more livable, less congested, and multimodal suburban communities. <http://otrec.us/project/152>

Got Results?

Final reports for 28 OTREC projects (out of 109 funded so far) are available for download: <http://otrec.us/reports.php>

**Get to know:
Kelly Clifton, PSU**



Dr. Clifton joined the faculty of PSU in January 2010 following a "Green Transportation Faculty" search made possible by the Miller Foundation's Sustainability Challenge Grant to PSU. She earned her PhD in Planning from the University of Texas at Austin.

What is your current position and what are some highlights?

I am an associate professor in Civil and Environmental Engineering and am enjoying the opportunity to focus on sustainability and the interdisciplinary nature of "green transportation." I came from the University of Maryland where I had a joint appointment in Planning and the National Center for Smart Growth Research and Education. As a teacher, I like the interaction between engineering and planning students, especially when they go from a masters degree in one discipline to a Ph.D. in the other.

How and when did transportation become a focus for you?

Professionally speaking, a mentor at the University of Arizona led me to transportation, but I only discovered planning because it followed Planetary Sciences in the academic catalog. But as a child, my family took a lot of road trips and I was always fascinated by the landscapes and how cities could be so different from each other.

Dr. Clifton taught Transportation and Health (CE 610/510) and Transportation and Land Use (USP 570) in her first quarter at PSU.

News from Around OTREC

Portland State University



OTREC Director Jennifer Dill of PSU's Nohad A. Toulan School of Urban Studies and Planning

Some notable progress with regard to transportation education at PSU:

Professors Ellen Bassett and Jennifer Dill are partnering with the City of Portland to examine the parking issues surrounding infill development. The topic has been the focus of their Planning Methods I and II courses this year, which are required of all Master of Urban and Regional Planning students. The students conducted parking counts, interviewed residents, businesses, apartment managers, and other affected parties, and surveyed residents. The findings will help the City understand the implications of their zoning code, which allows infill development near transit to be built without additional parking.

The Transportation Seminar Series has also been going strong. The winter quarter kicked off with a presentation by FTA Region 10 Administrator Rick Krochalis on the federal livability initiative. Another highlight of the term was Randy McCourt, who recently completed a three-year term as International Director of ITE and also recently was named President of his firm, DKS Associates. McCourt described a recent study for the Oregon DOT that examined various innovative strategies to address congestion and safety on Oregon Route 217 in Washington County.

Looking ahead, Dr. Ashley Haire will be teaching a new course, Sustainable Transportation Engineering, in the spring quarter. The course focuses on several aspects of sustainability as it relates to transportation, including greenhouse gas mitigation techniques, emissions and particulate matter production and dispersion, financial sustainability, and adaptation strategies to prepare our transportation infrastructure systems for climate change.

University of Oregon



Professor Marc Schlossberg of UO's Public Policy, Planning and Management Program

The Sustainable Cities Initiative kicked off a new program, "Sustainable City Year," which directs coursework from

across the UO campus to a single city in order to help that city more quickly transition to more sustainable practices (including transportation). So far this year, 24 classes, 15 professors, 7 disciplines and 100,000 hours have been directed toward the City of Gresham. Gresham City Manager Erik Kvarsten noted that "this partnership will give students firsthand knowledge of what it is like to do this type of work given some of the challenges local governments in Oregon face today."

Professor Schlossberg and Ken Kato of the UO InfoGraphics Lab are about to roll out an iPhone mobile GPS app that will allow people across the country to easily evaluate walking and biking conditions in their communities. OTREC has funded Schlossberg's work on this, first with a research grant and then with a technology transfer grant.

In other research news, Prof. Nico Larco is developing a best practices guidebook on multifamily developments and active transportation. A team of UO faculty is completing a collaborative effort with faculty from the University of North Carolina regarding community design, transportation and health.

The student-run Bike Loan program at the UO has received permanent funding from the central administration. The two-year-old program has received statewide environmental awards and national recognition. Through the program, which cannot keep up with demand, students make a fully refundable \$65 deposit in exchange for a bike, basket, helmet and lock.



Oregon State University



Oregon Institute of Technology



Professor Chris Higgins of OSU's School of Civil and Construction Engineering

Armin Stuedlein, Ph.D., has joined the faculty of Oregon State University as an Assistant Professor of Civil and Construction Engineering. He earned his doctorate in civil engineering from the University of Washington, M.S. from Syracuse University and B.S. from SUNY College of Environmental Science and Forestry. He entered the field of transportation working on the Interstate 15 Reconstruction Project in Salt Lake City, Utah, in 2000. Since that time, Dr. Stuedlein's transportation research has ranged from site characterization, reliability of piled foundations and ground improvement to the tallest, mechanically stabilized, earth walls in the western hemisphere at Sea-Tac International Airport. Dr. Stuedlein's latest research, which is funded by the ODOT, addresses the design and analysis of pipe ramming projects.

In the research arena, Oregon State faculty members Karen Dixon, Ida van Schalkwyk and Robert Layton of the School of Civil and Construction Engineering received the K.B. Woods Award for the best paper in the area of design and construction of transportation facilities. Their paper, "Balancing Urban Driveway Design Demands Based on Stopping Sight Distance," will be published in *Transportation Research Record*. The award was presented on January 11, 2010, in conjunction with the Thomas B. Deen Distinguished Lecture at the TRB Annual Meeting in Washington, D.C. The paper analyzed appropriate design geometrics to provide adequate sight distance for safety at driveways, considering those with and without bicycle lanes. The research results demonstrated the value of bicycle lanes in providing enhanced sight distance. The authors offer recommendations regarding the relationship of bicycle lanes, parking, and speed limits.



Professor Roger Lindgren of OIT's Department of Civil Engineering

Students who are taking Advanced Pavement Engineering (CIV574) this term are involved in a series of mini research projects with hands-on experiment design and execution, including:

- indirect tension testing on porous and traditional hot-mixed asphalt concrete;
- compressive strength testing on soil stabilized with fly ash and Portland cement;
- freeze thaw effects on porous concrete pavements;
- comparison of traditional concrete slabs vs. pre-cast concrete pavers for commercial parking lots.

The ITE Student Chapter is sponsoring a field trip to Knife River Resources in Medford for a tour of their warm mix and hot-mixed asphalt pavement production facilities. The Chapter also sponsored a professional lecture series presentation by Mr. Greg Halsted of the Portland Cement Association. Mr. Halsted spoke about the cement stabilization of soils for roadbed construction and the sustainability of concrete as a road building material.

Keep up with OTREC!
RSS feed at otrec.us/news.php

 www.facebook.com/otrec

 www.twitter.com/otrec

Education and Technology Transfer

Student News



The University of Oregon hosted the 2009 Region X Student Conference on November 13th.

This winter witnessed several exciting multi-campus events for students. November featured the annual **Oregon ITE Traffic Bowl** with student competitors from PSU, OSU and OIT as well as the Universities of Portland and Washington. The PSU Vikings came away with the victory and OSU claimed third place. Also in November, LiveMove hosted the annual **Region X Student Conference** at the UO in Eugene. The theme was "Moving People" and Jim Whitty (ODOT, pictured bottom right in the collage above) was the keynote speaker. In February, students from PSU and OSU attended the biennial **Northwest Transportation Conference** in Corvallis. **Shaun Bready (BSCE '10) of OIT** reports several students attended the Oregon Asphalt Paving Conference in late February. The theme of the conference was "Quality Sustainable Asphalt Today and Tomorrow" and there were sessions on reducing greenhouse gases during the asphalt manufacturing process. Students also had an opportunity to meet with a prospective new member of the civil engineering faculty. **Kyle Taniguchi (BSCE '10) of OSU** writes that students started the winter term with a potluck dinner and board game night. In January, fellow student Hong Zhu presented a poster at the TRB Annual Meeting in Washington,

D.C. The group helped raise money for the Oregon Food Bank and had several social events, including a showing of the movie, "High-Tech Monorails." **UO's Price Armstrong (MPA '10)** says that LiveMove members have been busy attending conferences: a "Cutting Carbs" workshop on greenhouse gas emissions from transportation in December; TRB in January; and, the Northwest Transportation Conference in February. One student, Anya Dobrowolski, attended the National Scenic Trails Conference with support from LiveMove and the U.S. Forest Service. LiveMove has also kicked off a Transportation Speaker Series with Lane Transit District's GM Mark Pangborn (1/21) and Lane COG Transportation Manager Andrea Riner (2/25). **Rolando Melgoza (MSCE '10) of PSU** writes that STEP hosted two career-oriented events in November: one with DKS Associates (Portland, OR) and one with FHWA's Federal Western Land Highway Division (Vancouver, WA). But the big highlight of the winter was the TRB Annual Meeting. Twenty-one students traveled to D.C. for the conference and presented a total of 20 peer-reviewed papers. In February, STEP members collaborated with Oregon ITE to collect data outside the REI store in Portland.

OTREC's Visiting Scholar Program

OTREC's Visiting Scholar Program was established to help bring prominent academic and practicing professionals to Oregon to enhance the educational opportunities of graduate and undergraduate transportation students. It has been used extensively to bring guest speakers for PSU's weekly Transportation Seminar Series (see www.cts.pdx.edu for more information). Recent Visiting Scholars include Joan Walker (UC Berkeley), Rick Krochalis (FTA) and Rick Willson (Cal Poly Pomona).



Dr. Walker's talk, "The Power and Value of 'Green' in Promoting Sustainable Travel Behaviors," presented the hypothesis that variables related to environmental consequences may be as influential as travel time and cost in determining travel behavior.



Rick Krochalis, who is the Region 10 FTA Administrator, kicked off the winter quarter with an extremely timely talk on "Regional Implications of the Federal Livability Initiative."



Dr. Willson's visit included a presentation at the 2010 Northwest Transportation Conference on 2/11 as well as his PSU seminar on 2/12. His talk, entitled "Transit Oriented Development 2.0," highlighted both strengths and weakness of existing TOD investments.

For more information about these groups and their activities:

http://otrec.us/student_groups.php



Conference Highlights

The Transportation Research Board (TRB) Annual Meeting is always a highlight of the year and this was no exception. A dozen OTREC faculty presented their research and OTREC students also attended in large numbers. It was exciting to see OTREC's founding director, Dr. Robert Bertini, active in his new role as Deputy Administrator of USDOT's Research and Innovative Technology Administration (RITA). Another highlight was the Council of UTCs banquet on Saturday night, when OTREC Student of the Year Nathan McNeil (Portland State, MURP, 2010) was honored.

On the lighter side, the Region X reception was held on Monday night, hosted by OTREC and its regional siblings: NIATT, TransNow, and AUTC. The turnout was incredible and we got a great picture of the Oregon "delegation."

TRB announced that the theme of next year's annual meeting will be "livability" and OTREC aims to showcase the work that many faculty are doing in this area (see <http://livability.otrec.us> for more).

The biennial **Northwest Transportation Conference** was held in February at

Oregon State University in Corvallis. Several presentations were made by OTREC faculty and students. Kudos to ODOT and the Kiewit Center for Infrastructure and Transportation for putting on a great conference and covering so many interesting topics!



Oregonians at TRB relaxed at a reception hosted by OTREC and the other Region X UTCs.

Upcoming Opportunities & Links



PSU's **Center for Transportation Studies** hosts a seminar every Friday.

Watch seminars live over the web or later through the archive. For more information, including upcoming topics, visit www.cts.pdx.edu/seminars/



The **Kiewit Center for Infrastructure and Transportation** offers traffic safety workshops.

For upcoming events, please visit <http://kiewit.oregonstate.edu/workshops.html>



Mark your calendars now for the 2010 Oregon Transportation Summit: Friday, September 10th at Portland State University. The Summit will again be held in partnership with local chapters of APA, WTS and ITE. Questions and suggestions are welcome: askotrec@otrec.us



Rail-Volution will be held in Portland on October 18-21. There are many opportunities to get involved in the planning of this unique event.

For more information:

- www.railvolution.com
- info@railvolution.com



Building Livable Communities with Transit

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Advisory Board Profile: Mike Baltes, Federal Transit Administration

Mike is the Director of the Office of Technology at the Federal Transit Administration (FTA) at the US Department of Transportation (USDOT) in Washington D.C. In this role he oversees a number of research and institutional areas, including rail operations and maintenance, rail technology, safety (both bus and rail), UTCs, TCRP, and work force development. He was previously the ITS Program Team Leader for FTA's Office of Research, where he was responsible for a broad portfolio of transit ITS research and demonstration projects. He also served as FTA's technical lead on USDOT's Urban Partnership Agreement and Congestion Reduction Demonstration initiatives, for which he received a Gold Medal Award from then USDOT Secretary Mary Peters. Prior to joining FTA, Mike worked as senior re-



search faculty at the Center for Urban Transportation Research (CUTR) in Tampa, FL (his hometown) for almost 15 years. While at the CUTR, Mike was instrumental in the creation and operation of the National Bus Rapid Transit Institute. Mike is widely published in both academic and non-academic transportation-related journals, periodicals, and other publications. He has also authored dozens of technical reports. In addition to several academic boards, he is a long-standing member of several Transportation Research Board committees and serves on APTA's BRT Task Force and Standards committee. He holds both undergraduate and graduate degrees from the University of South Florida.

OTREC is a National University Transportation Center sponsored by the U.S. Department of Transportation's Research and Innovative Technology Administration Website: www.otrec.us Email: askotrec@otrec.us

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