OTREC
OREGON TRANSPORTATION RESEARCH AND EDUCATION CONSORTIUM

OTREC • NEWS

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Contents

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

UO Studies Sustainable Suburbs

Livable communities are places that achieve economic prosperity, environmental quality, and social equity – the "three Es" of sustainability. In terms of transportation, they are places where transportation modes other than driving are viable for activities such as walking or biking to school. The built environment of a livable community yields lower greenhouse gas emissions, reduced dependence on foreign oil, and improvements in public health (which are associated with lower health care costs).

Multifamily Housing in Eugene, Oregon

At the University of Oregon, Prof. Nico Larco is investigating the fact that, since 1970, suburban multifamily housing has been the largest growing housing market in the United States, with one in four suburban units being part of a multifamily unit. Today, there are about 9 million units in the United States, with another 5 million projected in the next 20 years.

With 15 to 30 units per acre, suburban multifamily housing is often used to create a buffer between single family housing and nearby arterials and commercial areas. In the worst cases, this has been done in a way that limits connectivity and increases auto dependence. In the best cases, the adjacencies have enabled walking and biking and truly livable communities.

The National American Housing Survey tells us that residents of suburban multifamily housing are more than three times as likely to walk or bike to work than their single family home counterparts (3.5% vs. 1.1%). They are also four times as likely to use transit (6.6% vs. 1.5%) and twice as likely to carpool (15.2% vs. 7.3%).

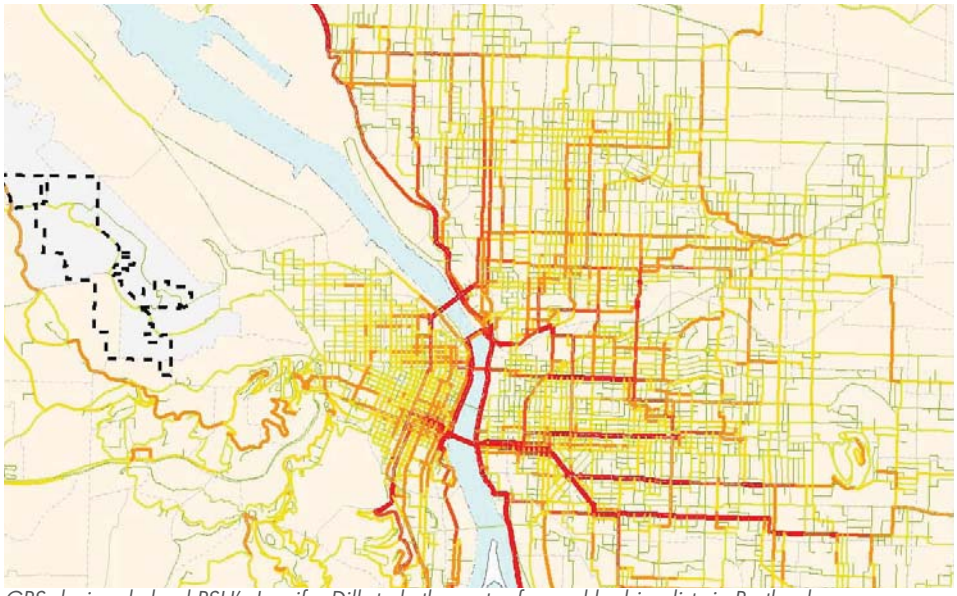
Prof. Larco's research has examined case studies in Oregon, Arizona, Massachusetts, and Florida. He has found that residents' behavior differs distinctly—in favor of livability—from the expectations of the planners, architects, and developers responsible for creating these communities. He has also found that certain attributes, such as connectivity, significantly increase a community's livability.

Research News

In its first three years, OTREC has funded 65 research, 12 education and 9 technology transfer projects. The five projects described here were completed recently. Final reports are available for these and others at www.otrec.us.

Methodology Refined for Assessing Bridges: Currently, the Oregon Department of Transportation uses Wave Equation Analysis of Piles (WEAP) software to predict the load capacity of bridge piles, which takes into account the geotechnical properties of the surrounding soil. However, AASHTO has begun mandating the use of Load Resistance Factor Design (LRFD) techniques to evaluate bridge reliability, which models the effects of peak load factors on the known characteristics of bridge designs and default soil characteristics. While the LRFD techniques allow rapid and reliable bridge design, the default parameters dictate a much more conservative (and thus expensive) bridge design than the WEAP analysis did. In their investigation, Professors Smith and Dusicka compared the costs of bridges designed using WEAP analysis to those designed with the default LRFD method, and established a statistical justification based on WEAP analysis for changing the "resistance factor" parameter for Oregon applications.

Improving Travel Time Estimates: Prof. Tufte's project addressed the problem of the reliability of travel time esti-



GPS devices helped PSU's Jennifer Dill study the routes favored by bicyclists in Portland

Director's Corner
Guest Column

Oregon is a large and diverse state and OTREC is committed to transportation research and education programs that serve the state from border to border. As OTREC's southernmost partner, the Oregon Institute of Technology (OIT) strives to address the transportation needs of the largely rural regions of southern and eastern Oregon. While traffic congestion tends to be the dominant issue in metropolitan regions, rural regions are faced with less obvious challenges.

Those of us living east of the Cascades are annually faced with difficult winter road conditions. Recently, OTREC researchers have partnered with the Oregon Department of Transportation (ODOT) to evaluate road ice detection and warning systems that provide drivers on mountain passes with advanced notice of slippery roads. OIT students had a chance to collect data and play in the snow - all in the same day!

The smaller cities and towns of Oregon, like most in rural America, grew in size in the age of the automobile. The resulting car-centered transportation network poses challenges for bicyclists and pedestrians. The OIT Student Chapter ITE has been hosting a number of seminars to promote pedestrian friendly design methods to both students and local transportation officials.

I encourage each of you to engage with the transportation faculty and students at each of the OTREC partner universities.

Professor Roger Lindgren
OTREC Associate Director, OIT

mates. ODOT is interested in providing traveler information via a variety of means, including variable message signs, but there is concern that estimates must be trusted by travelers to be useful. Therefore, the accuracy of predictions is paramount. Dr. Tufte compared data from over 500 trips by probe vehicles to travel time estimates generated by loop detectors. She found that, overall, Portland area estimates were good (11.4% absolute error) and did not exhibit bias towards over- or under-estimating travel time. The report does express concern about particular freeway segments in the Portland area though and recommends the use of portable and temporary detectors to maintain the quality of estimates in the event of detector outages.

Understanding Cyclists' Travel Behavior: It is a policy goal of many governments to encourage bicycling to reduce congestion, promote public health, and increase social equity. While many surveys have been conducted about what factors might make the public more likely to ride a bicycle, there is very little data showing which investments actually do impact people's propensity to cycle. Prof. Dill's study attempted to fill that gap by tracking frequent cyclists' route choice over 9 months in 2007 using GPS devices. From this data, Prof. Dill was able to determine which facilities were most attractive to various subgroups, such as women and new cyclists. The attractiveness of different classes of facilities (such as bike lanes and bike paths) was measured by looking at cyclists' propensity to travel out of their way to use them.

Participatory GIS Opens the Doors of Planning: There is increasing interest in concepts such as livability, walkability, and healthy communities, and how they intersect with transportation and urban form. But despite communities' investments in these areas, measuring success or failure remains a challenge. Quantifying factors such as sidewalk width, sidewalk quality, and character of the parking strip buffer would be a momentous task for an agency, even if quantifying them would capture everything you needed to know. Professors Schlossberg and Larco sought to address this difficulty in their project, using Public Participatory GIS (PPGIS). Schlossberg and Larco created four PPGIS applications to collect data at public forums on safe routes to school, bicycle safety, accessibility, and street walkability. These tools allowed them to tap local knowledge to record relevant, geographically-coded data about the quality of the built environment from different perspectives.

New Course on Road Ecology: Through one of OTREC's education grants, Prof. Sytsma developed a course on road ecology, which is concerned with the impact of the transportation system on the natural world – from the spread of invasive species to the effects of runoff. The class was offered to students at Portland State University in the spring quarters of 2007 and 2008, with 26 students enrolled. The curriculum was constructed around the book Road Ecology: Science and Solutions, edited by Richard Forman and published in 2002. Guest lectures by practitioners and several field trips helped the students make connections between the classroom and real world applications. One field trip took the students to Wilsonville, where the Boeckman Road Extension employed such mitigation techniques as permeable pavement, wildlife passages, and an amphibian wall.

Full reports at otrec.us/research.php

Get to know: Jason Ideker, OSU

Dr. Ideker joined the faculty of OSU in the fall of 2008 to teach and conduct research related to concrete durability. He did his undergraduate work at the Georgia Institute of Technology and then earned his masters and PhD from The University of Texas.

What is your current position and what are some highlights?

I'm an assistant professor and Oregon State was a great fit for me because there is a lot of support for me to be innovative with my research, which focuses on concrete durability. Concrete research may not sound too exciting (my friends say my job is "playing with dirt") but the current focus on sustainability and green building makes this a vital time for innovation through concrete, especially for transportation infrastructure.

How and when did transportation become a focus for you?

When concrete became a matter of intellectual curiosity, I was more interested in innovative materials and durability, which led me more towards civil engineering in general and transportation infrastructure, specifically. There have been remarkable innovations in the last twenty years so it's great to be doing research at Oregon State leading toward the next wave of innovation.

Dr. Ideker is teaching CE 526, "Advanced Concrete Materials," this quarter. You can read the complete interview at http://otrec.us/newsletter.php

News from around OTREC

Portland State University

OTREC Director Robert L. Bertini of PSU's Department of Civil and Environmental Engineering and School of Urban Studies and Planning

In research news, several Portland State faculty and students presented their work at the 50th Annual Transportation Research Forum in March, which was held in Portland and co-sponsored by OTREC. Among them, Prof. Miguel Figliozzi presented "A Study of Transportation Disruption Causes and Costs in Containerized Maritime Transportation." Also, OTREC received one of about a dozen awards given in the first round of funding from the James F. and Marion L. Miller Foundation, whose $25 million challenge grant to Portland State University is devoted to sustainability.

In education news, Zachary Horowitz (M.S., Civil and Environmental Engineering, 2007) won the Neville A. Parker Award for Outstanding Non-thesis Master's Degree Paper in Policy and Planning from the Council of University Transportation Centers (CUTC). His research, "Freight Railroad Capacity Alternatives in the Pacific Northwest: An Analysis of Class I Cooperation in the Columbia River Gorge," examined the impact of freight railroad traffic volumes in the Pacific Northwest, which are rapidly increasing toward capacity.

In the technology transfer arena, PSU's Center for Transportation Studies hosted another interesting and diverse set of weekly transportation seminars in the winter quarter. Through the Visiting Scholars Program, OTREC sponsored the visit of Robin Chase on March 13th. Ms. Chase was the founder of ZipCar and her presentation emphasized the ways that resource sharing and open source collaboration are valuable in combating climate change. Archived video and podcast are available for Ms. Chase's and all other CTS seminars at *www.cts.pdx.edu/seminars.htm*.

University of Oregon

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

In education news, UO is extremely proud of some students who have recently won some prestigious awards. Public Policy, Planning and Management masters candidate Sara Schooley was selected as an Eno Fellow and will attend the Eno Leadership Conference in May. The student team of Sarah Coates, Joy Gipson, Matt Peterson, Ray Neff, Ryan Ojerio, Andrea Sparks, and Tracy Rogan received the American Institute of Certified Planners' Student Project Award for Contribution of Planning to a Contemporary Issue for their work on the Eugene Bicycle and Pedestrian Strategic Plan. UO Bike Loan program founder and undergraduate Environmental Studies and PPPM major Briana Orr won the Oregon Campus Compact's award for community service and sustainability.

In the research arena, Professors Marc Schlossberg and Nico Larco, along with PSU's Prof. Jennifer Dill and 12 other top bicycle planning researchers gathered in Colorado to identify future research needs in that field. Larco is also working in partnership with Oregon DOT and the Transportation Growth Management program to develop statewide model codes for connectivity and suburban multifamily housing. Prof. Mark Gillem won a national award for his sustainable redesign of Fort Lewis in Washington State. Schlossberg's paper, "Participatory GIS and Active Transportation: Collecting Data and Creating Change," was accepted for publication in Transportation Research Record and he was selected as a Fulbright Scholar to teach and research sustainable transportation at the University of Sheffield (UK).

Oregon State University

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

At the end of February, 80 members of the OSU Civil Engineering Junior Class visited Portland on their annual field trip. The two-day trip spent time visiting two active ODOT infrastructure construction sites (I-5/Delta Park Project north of downtown and the MLK Boulevard Viaduct Reconstruction). The students also visited a variety of public agency engineering offices, including: Port of Portland (PDX), PGE, TriMet, ODOT, Multnomah County, and US Army Corps of Engineers. They also visited several private engineering firms: CH2MHill, HDR, Degenkolb, DKS, Kittelson, KPFF, Murray-Smith, David Evans and Associates, and Hoffman Corporation.

Professor Michael Scott is a 2009 winner of the American Society of Civil Engineering's prestigious Croes Medal. The Croes Medal was established by ASCE in 1912 in honor of John James Robertson Croes, who served as president of ASCE in 1901. The Croes Medal is a national ASCE publication award and recognizes a paper for its merit as a contribution to civil engineering science.

OTREC Associate Director Chris Higgins was showcased in the "This is my job" feature of the March 2009 issue of Popular Mechanics. The accompanying text drew in readers by noting that Dr. Higgins has "destroyed more bridges than any flood or earthquake." A link to the interactive online version is available at *www.otrec.us*.

Oregon Institute of Technology

Professor Roger Lindgren of OIT's Department of Civil Engineering

OIT received a piece of good news in early April when the State Board of Higher Education voted to approve its proposal to offer a Master of Science in Civil Engineering (MSCE) degree. The degree will emphasize course offerings in structural and transportation engineering. This greatly enhances opportunities for students and working professionals in southern Oregon. The offering represents OIT's first graduate-level transportation degree and OTREC's ninth. The consortium will be an integral part of this new degree through a sharing of curricula among the member universities and through graduate student research opportunities.

Looking ahead to this summer, OIT is partnering with the National Park Service to examine vehicular and pedestrian traffic issues at Crater Lake National Park. The program is designed to give young women in middle and high school an introduction to transportation and to achieve USDOT's goal of attracting a larger and more diverse number of students to the fields of transportation study. The participants will partner with planners and engineers from OIT and the National Park Service so that they can witness first hand some of the job opportunities available in transportation.

Keep up with OTREC!

otrec.us/news.php
has frequent updates and
RSS subscription option

Education and Technology Transfer

Student News

PSU Road Ecology students visit the amphibian wall and deer fence installed at the Boeckman Road Extension

Raul Avelar (PhD '11) of OSU writes that the student group there helped to inaugurate Kearney Hall, which is the LEED-certified renovation of historic Apperson Hall and is now home to the Kiewit Center for Infrastructure and Transportation. Members led tours through the new facility and discussed the Transportation Program and ITE Student Chapter. Later in the month, the group held a recruiting meeting with juniors who are taking their first transportation course. The group also hosted Peter Koonce (Kittelson Associates, OSU BSCE '95) who talked about careers in transportation engineering and summer internships. **Lisa Dierksen (MSCE '09) of PSU** reports that members of Students in Transportation Engineering and Planning (STEP) - along with some curious faculty – went on a preview ride of the new Westside Express Service commuter rail. Members of STEP also participated in the Second Annual Engineering Discovery Showcase, an event for high school students. Students who traveled to Washington, DC for TRB also got to meet Congressman David Wu. STEP hosted career development events with Oregon DOT on February 3rd and Kittelson & Associates on February 16th. **Timothy Brass (MCRP '09) of UO** writes that members of LiveMove have collaborated with another student group to start a monthly "Environmental Professors Speaker Series." The group has also helped restart Bicycle Appreciation Days as a monthly event, during which students provide free tune-ups and more. Also on the theme of bikes, members of LiveMove participated in the City of Eugene's annual Bicycle and Pedestrian Summit and hosted well-known adventure cyclist Willy Weir for an on-campus presentation. **Eric Leaming (BSCE '09) of OIT** sent us an update shortly before graduating and heading off to start his career with Oregon DOT – congratulations, Eric! The main highlight for the ITE Student Chapter at OIT was participating in the 17th Annual Traffic Bowl Competition in November, along with PSU, OSU, University of Portland and the University of Washington.

For more information about these groups and their activities:
http://otrec.us/student_groups.php

New Staff Profile: Jon Makler

Jon joined the OTREC team in early January to manage the Education and Technology Transfer program. The program goals focus on transportation students throughout the consortium, the courses and degrees available to them and their research opportunities, as well as the dissemination of OTREC faculty members' research and professional development opportunities for partners outside of academia. Jon is excited for these goals to be primary in his job description.

Since moving to Oregon in 2005, Jon has worked for the City of Portland as a senior planner and capital project manager, including nearly two years in which he was loaned to Metro's Transportation Planning Department. Technology transfer was a significant element of that assignment and Jon was involved with organizing a number of workshops and trainings for transportation practitioners during that time.

Jon has been involved with University Transportation Research twice before. From 1998-2000, while earning his M.S. from the Massachusetts Institute of Technology, he joined a team studying transportation and air quality in Mexico City. From 2001-2004, he worked as a research project manager with the Taubman Center for State and Local Government at Harvard's Kennedy School of Government.

Conference Highlights

OTREC was well represented at the **Transportation Research Board's 88th Annual Meeting**, which was held in Washington, DC in January. The Region X Consortium hosted a reception on Sunday night and in the days that followed, OTREC faculty and students presented in over 30 sessions. In late February, OSU's Gail Achterman and PSU alumnus Matt Berkow participated in a seminar panel at PSU to share some of the conference highlights.

A session of OTREC-related research was extremely well attended at the annual **Public Interest Environmental Law Conference (PIELC)** at the University of Oregon in February. This gathering is the premier conference for environmental law in the country. The session titled "Restructuring Cities, Suburbia, and Society to Meet Energy and Environmental Challenges" was chaired by OTREC Associate Director Marc Schlossberg and included presentation by OTREC faculty Nico Larco and Mark Gillem.

OTREC helped sponsor the **50th Annual Transportation Research Forum**, which was held in Portland in March. OTREC/OSU faculty B. Starr McMullen served as conference chair and OTREC sponsored the Keynote Speaker Daniel McFadden, 2000 Nobel Prize recipient in Economics, who presented "Sociality, Rationality and the Ecology of Choice." The program included presentations by OTREC/PSU faculty (Miguel Figliozzi, Kristin Tufte and Robert Bertini) and graduate students (Meead Saberi, Alex Bigazzi and Wei Feng).

OSU's Starr McMullen (left) and Nobel Prize-winning economist Dan McFadden (right) at the Transportation Research Forum in March

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 **Initiative for Bicycle and Pedestrian Innovation** has two workshops coming up: Bicycle Boulevard Fundamentals (5/14) and Comprehensive Bicycle and Pedestrian Design and Planning (6/22-26). Visit *www.ibpi.usp.pdx.edu* to learn more.

The **Kiewit Center for Infrastructure and Transportation** offers traffic safety workshops For upcoming dates and topics, please visit *http://kiewit.oregonstate.edu/workshops.html*

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This newsletter is online with additional links available.
www.otrec.us/newsletter.php

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Advisory Board Profile: Susie Lahsene

J. Susie Lahsene is the corporate transportation and land use policy manager for the Port of Portland, Oregon. She manages land use policy and transportation capital strategy and fund acquisition for the Port's transportation system, terminals and industrial land base. She chairs the National Academy of Sciences Transportation Research Board (TRB) Freight Modeling subcommittee, is past chair of the NAS conference on Freight modeling and is the recent past chair of TRB's Urban Freight Transportation Committee. She is chair of Oregon's Statewide Freight Advisory Committee, founding member of the Portland Chapter of the Women's Transportation Seminar and 2003 WTS Woman of the Year. Ms. Lahsene holds a B.A. in urban studies and a master's in urban and regional planning, both from the Virginia Polytechnic Institute and State University, and an M.B.A. from the University of Portland. She has published several articles on freight mobility, including "Urban Freight Movement: What Form Will It Take?" in Transportation Research Record (2000) and "New Economy, New Vision for Transportation: Prominent Role for Intermodal Freight?" in TR News (2001).

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: otrec@pdx.edu

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