The Year in Review

We’ve had another productive and exciting year! In the last year, transportation engineering faculty and students have been the recipients of prestigious awards and research grants, presented at conferences across the country, and conducted cutting edge research on transportation safety, emissions, freight, active transportation, public health, and many other areas. This report captures a snapshot of events and highlights in the 2011-2012 academic year.

Total # of grants received in 2011-2012: 18

Total grant funding received: $2,004,087

Number of conferences attended by PSU students and faculty: 14

Number of conference presentations given by PSU students and faculty: 76

Number of students who attended the Transportation Research Board Annual Meeting (TRB) in Washington D.C.: 28

Latest news and up-to-date information can be found at the ITS Lab web NEWS section

The hard-working crew from the Transportation Group, Spring 2012.
Around the World

Dr. Monsere attended VeloCity 2012 in Vancouver, B.C., where he presented his research and sampled bike share fleet from systems of D.C., Montreal and Minneapolis.

A welcome banquet for the Sustainable Cities Initiative, including Dr. Clifton, during their visit to Beijing and Chengdu.

Dr. Figliozzi and 4 students attended the Advanced Systems of Public Transport conference in Santiago, Chile.

Dr. Bertini and Dr. Furth (Northeastern Univ.) enjoy a comfortable ride in the Delft town square during our joint exchange course.

Dr. Figliozzi and Alex Bigazzi participated in the IEEE Forum on Integrated and Sustainable Transportation Systems (FISTS) in Vienna and Dr. Figliozzi participated in the VII City Logistics Conference in Mallorca, Spain.
In August 2009, Dr. Bertini began a leave of absence from PSU in order to serve as Deputy Administrator of the Research and Innovative Technology Administration (RITA) at the U.S. Department of Transportation (DOT). In that role he was responsible for helping to run a 700-person agency charged with driving innovation and coordinating research across all modes of transportation at the DOT and beyond. He also had the opportunity to serve as acting director of the Intelligent Transportation Systems (ITS) Joint Program Office (JPO), which was a dream come true given his background in ITS research and education. In addition to the ITS JPO, RITA also includes the Bureau of Transportation Statistics (BTS), which is in sync with Dr. Bertini’s passion for robust transportation data and performance measures; the office of Research, Development and Technology (RD&T) which funds university transportation centers, advanced research and coordinates research across the modes; the office of Positioning, Navigation and Timing, which coordinates civil GPS policy for the nation; the Volpe Center in Cambridge, MA; and the Transportation Safety Institute (TSI) in Oklahoma City.

During his time at RITA, Dr. Bertini selected three main initiatives. The first was collaboration, where he worked within RITA, across the DOT, externally with key stakeholders and also internationally, to improve collaboration and cooperation. At the global level, Dr. Bertini was involved in partnerships with Japan and the European Union related to connected vehicle research initiatives. The second was sustainability—where Dr. Bertini worked with the RITA team internally to bring sustainable business practices to the offices of RITA, and also with leadership across the DOT to improve the sustainability of the agency and its programs. He also pushed to include sustainability in research programs, including the AERIS program under the ITS JPO. Finally, workforce development was the third pillar that Dr. Bertini focused on, including the education and training of RITA and DOT employees, but more broadly the encouragement of a more diverse workforce and the preparation and encouragement of the next generation of transportation leaders.

In 2011, Dr. Bertini returned to PSU as a Professor of Civil and Environmental Engineering and began a one-year sabbatical with the Department of Transport and Planning within the Faculty of Civil Engineering and Geosciences at the Delft University of Technology in the Netherlands. Bertini also worked one day per week with TrafficQuest, which is a center of excellence for traffic management that is a collaboration between TU Delft, the Rijkswaterstaat, and TNO in the Netherlands. During this year, Bertini worked with Delft colleagues to publish a booklet on the Future of Traffic Management, as well as a booklet asking the question, “Can We Control Traffic.” Bertini also worked with professors, Ph.D. students, master’s students and some undergraduates on their research projects, and helped make connections for them with U.S. researchers and employers. Bertini had the chance to see a lot of the Netherlands via bicycle, including Den Haag, Rotterdam, Amsterdam, the region of Friesland, and many others. Being in Europe, Bertini also had the opportunity to travel to other countries for transportation conferences, including the Intelligent Vehicle Symposium, where he delivered a keynote address in Spain, a visit to the Laboratoire d’Ingénierie Circulation Transports (LICIT) which is part of the Ecole Nationale des Travaux Publics de l’Etat (ENTPE) and L’Institut français des sciences et technologies des transports, de l’aménagement et des réseaux (IFSSTAR, formerly INRETS) as well as the Universite de Lyon. He visited the Universität der Bundeswehr München in Germany as well as the European Commission’s Joint Research Center in Italy. From both personal and professional perspectives, this year abroad helped expand the cooperation between the ITS Laboratory at PSU and other international research centers.
Modeling Our Future

Dr. Kelly Clifton
Associate Professor of Civil and Environmental Engineering

It’s been another productive year for my research group and the Oregon Modeling Collaborative at Portland State University as we focus on the links between transportation and land use and the data and tools needed to support our work. There was a lot of research activity but the most notable highlight was finishing three research projects. First, Alex Bigazzi (CEE 2013) and I wrapped up a project with ODOT that considers the impact of advanced drive train technologies and ITS and operational improvements on fuel consumption and integrates our findings into GreenStep, the greenhouse gas estimation tool. Second, Metro and OTREC funded a project to develop a method to adjust the trip generation rates from the Institute of Transportation Engineers for urban context and local conditions. Kristina Currans (CEE 2012), Christopher Muhs (CEE 2013) and I presented our findings to Metro and assembled them in a final report. Third, the year ended with the completion of the study the Economic Impacts of Bicycling, a project funded by OTREC, the City of Portland and Portland Development Commission. This much anticipated report demonstrated that bicyclists and pedestrians are competitive consumers, often spending as much or more than consumers who use the automobile.

The highlight of the year was the incredible international travel – I visited Canada, China, Australia, and Chile to present work and engage with scholars and practitioners from around the world. In Canada, I attended the first World Symposium on Transport and Land Use Research and subsequently was elected to chair the society of the same name (http://wstlur.org) for a three year term. The organization is a newly formed group that aims to provide a forum for exchange of scholarly ideas across a broad range of disciplines and spatial scales about the links between transportation and land use. In August, I traveled to Beijing and Chengdu, China with the Sustainable Cities Initiative with colleagues from the University of Oregon. September found me presenting a paper on travel and weather at the Australasian Transport Research Forum. The International Steering Committee on Travel Survey Conferences held their 9th conference in Puyehue, Chile. I presented PSU research on travel surveys, chaired a workshop on understanding social context and served on the board.

Finally, this year’s Friday Transportation Seminar in the spring quarter was organized around a theme – introducing modeling to the broader community. Sessions included a non-technical explanation of modeling, the four-step and activity based models, integrated models, greenhouse gas estimation tools, and a look towards a sustainability goals. Sessions were well attended with great audience participation.
Integrating With Practice

Dr. Christopher Monsere
Associate Professor of Civil and Environmental Engineering

My research agenda broadly covers the area of multimodal transportation safety; management and dissemination of large transportation datasets; and improvements in transportation operations. My co-investigators, MS and Ph.D. students and I have made continued progress this year in all three areas. Further, we’ve secured funding to continue our research themes in the upcoming year.

First, there is no doubt that urban cycling infrastructure is undergoing a revolution. Recognizing the compatibility of the bicycle with short trips common in urban areas and the relatively low-cost of providing infrastructure, U.S. cities are designing and installing cycling-specific infrastructure at a surprising pace, aided by the publication of the NACTO Urban Bikeway Design Guide. The facility designs will make cycling safer, easier and more efficient, particularly for those cyclists less willing to tolerate interactions with traffic. Our work is helping inform these designs—our recent research evaluating “bike boxes” is featured in the NACTO guide. Our work was only the second large-scale study to investigate bike boxes worldwide. Will Farley (MSCE 2012) is completing the second phase of this research, studying in detail when in the signal cycle conflicts are being mitigated. This past year we were part of a team that extended our methodology first applied in Portland to evaluate innovative bicycling facilities in Washington D.C. The team, led by Kittelson and Associates, Inc. produced arguably the most comprehensive evaluation of bicycling facilities in the US to date. Finally, Joel Barnett (MSCE 2013) helped wrap up a project evaluating advance curve warning signs and we published the final report calibrating the Highway Safety Manual for Oregon with Karen Dixon at Oregon State University.

We’ve again made some significant enhancements to the PORTAL archive, adding information on pedestrian activity, bicycle and arterial count stations, and Bluetooth travel time monitors. Ph.D. student Sirisha Kothuri has helped spearhead these developments, aided by Carl Olson (MSCE 2012). Chengxin Dai (MSCE 2013) is very near to wrapping up efforts to provide an interface to the weigh-in-motion data provided to us by the Oregon Department of Transportation (ODOT). We should have data visualizations online soon. We will have archived every truck passing a working WIM scale since 2005.

In operations, our work has strong ties to safety. Dr. Figliozzi, Sara Thompson (MSCE 2013) and I are working with ODOT to provide operational guidance for bicycle-specific traffic signals. We are looking at signal head placement, lens arrangement, compliance, accelerations, braking reactions — a whole host of data elements. With Dr. Hurwitz at Oregon State University, Kirk Paulsen (MSCE 2013)and I are studying the safety effects for pedestrians of 4 and 3-section flashing yellow arrows using OSU’s driving simulator. Finally, MSCE student Sam Monsef is helping us work with Oregon State University, Oregon DOT, and Metro to add length-based vehicle classification to the freeway and arterial networks.

The upcoming year looks equally busy with projects in all three areas for a variety of sponsors. We look forward to telling you about it next year!

Dr. Monsere’s research on bike boxes is featured in the new National Association of City Transportation Officials (NACTO) Bikeway Design Guide.
Summer 2012 has marked the end of a year filled with outstanding accomplishments by undergraduate, masters, and PhD students as well as the conclusion of my fifth academic year at PSU. The reputation of the Transportation Group and my student research assistants continues to soar by earning prestigious academic awards and expanding placement across prominent transportation consulting firms. Alex Bigazzi (MSCE 2011, PhD 2014) received the prestigious 2011 Milton Pikarsky Memorial Award in the Science & Technology-MS category, for the best 2011 Master level transportation in the USA; this innovative research focused on the relationships between emissions, traffic, and congestion. Wei Feng (PhD, 2014) obtained the Best Paper Award at 2011 ITE Western District Annual Meeting for work on transit operations. Courtney Slavin (MSCE 2012) received both the 2011-12 PSU College of Engineering Outstanding Community Engagement Award and the College of Engineering Commendation Award for her work with the City of Portland and TriMet (regional public transportation agency) for the study of adaptive traffic signals performance on the congested Powell multimodal transportation corridor (see below photo). Powell is a joint project with Dr. Monsere.

In terms of job placement, Eric Albright (MSCE 2013) joined the IBI group continuing his work on Transit Signal Priority; Brian Davis (MSCE 2013) joined Lancaster Engineering after working on electric vehicles and priority traffic signals; Kaveh Shabani (MEng 2012) joined HDR and is continuing his work on freight modeling; and Courtney Slavin (MSCE 2012) joined DKS and is continuing her work evaluating transportation corridors and improvements.

The 2011-12 academic year was also a productive year in terms of research output with 16 papers published in peer-reviewed transportation journals and many more published conference proceedings in my five areas of research: emissions and air quality, electric and new vehicle technologies, freight and logistics, non-motorized transportation, and traffic-transit operations (research papers can be found here). Our work is also being presented at international forums and I am proud that five of my students actively participate in international conferences: IEEE Forum on Integrated and Sustainable Transportation Systems, Vienna, Austria (Bigazzi, Figliozzi); 11th International Conference of Chinese Transportation Professionals, Nanjing, China (Feng, Figliozzi); VII City Logistics Conference, Mallorca, Spain (Figliozzi); and Conference on Advanced Systems of Public Transport, Santiago, Chile (Albright, Feng, Moore, Slavin, Figliozzi). Our international presence is also boosted in 2012 by visiting professor Yong Jing Kim from Inha University (Korea) and my reciprocal visit to Korea to teach summer courses and foster research collaborations in the areas of transportation and logistics.

Thanks to our partnerships and continuing support from the National Transportation Center housed at PSU, the Oregon Department of Transportation, the City of Portland, and TriMet, we are well positioned to continue our upward trajectory in 2013 and beyond.
Alex Bigazzi, a CEE PhD student (advisor Dr. Miguel Figliozzi), won the prestigious 2011 National Student Pikarsky Award in the Science & Technology-MS category. These awards are given annually to graduate students in Transportation for the best PhD Dissertations, MS Theses and MS/ME Reports. Bigazzi’s thesis was titled, “Traffic Congestion Mitigation as an Emissions Reduction Strategy.” His research analyzed the potential for long-term pollution emissions reductions through congestion mitigation, illuminating both the many drawbacks of this approach and the areas of greatest potential.

Todd Johnson, CEE 2011, served as a National Parks Foundation Transportation Scholar from June 2011 to July 2012. Johnson spent the last year working for Arches National Park, where he conducted a feasibility study for a shuttle service between Moab and the park.

From left to right, Dr. Kelly Clifton, Sara Morrissey, MURP ’12, Courtney Slavin, CEE ‘12, and Dr. Miguel Figliozzi. Morrissey and Slavin were presented with Portland State University’s President’s Award for Outstanding Community Engagement off campus. Slavin was also awarded the Portland State University Commendation Award for academic excellence.
Clockwise from top left: Carl Olson, CEE 2012, explains his poster to Chris Muhs, CEE 2013, during the Student-run Region X ITE Conference in Portland; Katherine Bell, CEE 2013, presents a poster during the WTS Annual Conference; Between sessions at the Transportation Research Board 91st Annual Meeting in Washington, D.C., students try out the city’s new bike share program; Michael Ahillen, MURP 2012, and Sara Morrissey, MURP 2012, encounter Transportation Secretary Ray LaHood at TRB.
The Students in Transportation Engineering and Planning (STEP) organize events, brown bags, social hours and field trips throughout the year for graduate students in engineering and planning. More photos and information can be found on their blog, http://psu-step.blogspot.com or the group's website http://step.groups.pdx.edu/

**Gingerbread Columbia River Crossing Competition**
Just before winter break, students competed for the best transit-oriented confection!

**Transit Hike**
Step-ers reached a trailhead in the gorge by mass transit.

**Urban Olympics**
Costumes, slow races, a scavenger hunt and a video contest: after only two years, this ice-breaker field day has become a hallowed tradition.

**Traffic Bowl**
STEP competes for the annual transportation trivia title.

**Port of Portland Tour**
On Friday the 13th, STEP members visited the T6 terminal at the Port of Portland, where they met with the operations director.
Alumni Highlights

**Meead Saberi K, M.S., Civil and Environmental Engineering, 2010**

After graduating from Portland State University in 2010, Meead moved to Illinois to pursue his PhD at Northwestern University in Evanston. Since arriving at Northwestern, he has worked on several exciting projects, including incorporating weather in travel models, and the Green Lane project (a plan to build protected bike lanes in six American cities including Chicago and Portland).

Of PSU’s ITS lab, Saberi said, “The students at the ITS Lab were amazingly friendly. We were not only classmates or colleagues but also good friends. I hope the ping pong table is still there... If one day I become a lab director, I will definitely buy a ping pong table, as it helped the friendships grow and kept the lab happy.” Portland was the first place that he visited in the U.S. and Dr. Bertini was the first person he met. He assures current students, “You have made one of the best choices in your life by coming to study at PSU and experience life in Portland.”

**Nikki Wheeler, M.S., Civil and Environmental Engineering, 2010**

Currently, Wheeler is working for the Massachusetts Department of Transportation (MassDOT) as a Civil Engineer. This construction season, she is working as a field engineer on a neighborhood reconstruction and street-scape project. When the construction season is over, she will return to the Project Development section as a design engineer. Of her education here in Portland, Nikki glows, “PSU’s engineering department prepared me in so many ways! My research at PSU helped me to develop strong project management, presentation, and technical writing skills that I will continue to use for the rest of my career. Additionally, my coursework allowed me to engage with professional engineers and planners. My adviser (Dr. Figliozzi) encouraged me to present at conferences and to publish. I couldn’t have asked for a more well-rounded experience!” Her advice to current students: “Schedule informational interviews before graduation! I found interviews to be helpful for meeting people when I moved to Massachusetts. Ultimately it was an informational interview that helped me to land my current position.”

**Chris Pangilinan, B.S., Civil and Environmental Engineering, 2004**

After graduating from Portland State University, Pangilinan completed his Masters of Science in Transportation at the Massachusetts Institute of Technology. He has interned at the Chicago Transit Authority and worked for DKS Associates in Oakland, California, the United States Department of Transportation in Washington, D.C., and at the San Francisco Municipal Transportation Agency (SFMTA), where he is today. The projects that he has been most excited about are the ones that have been innovative and have had an immediate impact on the public.

“PSU’s engineering department gave me a great education and opened many doors for me,” Pangilinan says. “In addition to the fundamental transportation engineering principles I learned, and still use today, I had the opportunity to work as an undergraduate researcher in Dr. Robert Bertini’s intelligent transportation systems laboratory. While at the lab, I was able to learn the art of research, present at conferences, and meet people in our industry who 8 years later I still look up to as mentors. Much of my current success I can trace back to my time at Portland State.” His advice to students: “Never stop learning - always be keeping up with the latest research and innovative practices from around the country and around the world.”
Portland, Oregon is famous for its multimodal transportation system. Why not come to Portland State University and study Transportation Engineering? Portland is a hub for advanced transportation research conducted at Portland State University in close partnership with renowned transportation agencies and firms. We have vibrant Master’s and Ph.D. programs with full funding (tuition plus a stipend) available for top students, energetic and committed faculty, we are part of a university transportation research center (OTREC @ PSU), have a modern building, and a wonderful downtown Portland location!

Apply by January 7, 2013 for priority consideration online at http://pdx.edu/cee/graduate-degrees-application-process

For the second year, our students participated in the joint PSU/Northeastern University summer program on Sustainable Multimodal Transportation Engineering Applications and Innovations in the Netherlands. This year Dr. Bertini worked with Peter Koonce and Prof. Peter Furth on the course. Eight PSU students participated in the two week program based in Delft which was a wonderful opportunity to learn about and explore how the Netherlands’ multimodal transportation system is planned, designed, built and managed. We will be offering the opportunity again this summer of 2013!

Profile: International Exchange Student

Our transportation group regularly hosts international exchange students. Thibaud Barrel was a visiting student from Lyon, France (at PSU May until Sept. 2011). Thibaud worked at the ITS lab and finishing his Master’s degree in Engineering (advised by Dr. Figliozzi) and was part of Powell Boulevard Multimodal Research Project (Figliozzi-Monsere). Thibaud described his experience saying “I was at PSU for 4 months discovering Portland and being part of a wonderful research team. This experience abroad was great for me culturally and professionally, especially to help me find a job when the PSU summer internship was completed; these were my last months as a student!”

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