



# PacTrans



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## IN THIS ISSUE

### PAGE 1

U.S. Transportation Secretary Anthony Foxx Visits University of Idaho

### PAGE 2

PacTrans Sponsors TransOvation Workshop

PacTrans Regional Transportation Seminar: Dr. Michael Cassidy

### PAGE 3

Dr. Ahmed Abdel-Rahim Chosen to Lead UI's NIATT

Dr. Dan Work Visits PacTrans STAR Lab, Presents Seminar

### PAGE 4

PacTrans Outreach Project Published

### PAGE 5

2014 PacTrans Regional Transportation Conference

The IOUs of Safety – Infrastructure, Operations, and Users

### PAGE 6

Region 10 Student Conference

### PAGE 7

PacTrans-Sponsored Transportation Seminar

Dr. Yafeng Yin Speaks on Advanced Parking Management

New Green Stormwater Research Facility Developed by OSU PacTrans Faculty

### PAGE 8

Meet our 2015 PacTrans Fellows

### PAGE 9

Kristian Henrickson Named PacTrans Student of the Year

UI Students Recognized at Conference

### PAGE 10

UI Student Brett Seely Wins Scholarship

Clean Snowmobile among Projects Presented at "Snapshot Day"

### PAGE 11

OSU Students Successfully Defend Dissertations

OSU Student Jennifer Warner Wins Thesis Competition

## U.S. Transportation Secretary Anthony Foxx Visits University of Idaho

The U.S. Department of Transportation Secretary, Anthony Foxx, visited the University of Idaho in early October to meet with NIATT students and even tried out the Vandal Formula Hybrid Race Car, which won the 2014 National Formula Hybrid Competition. The car was sponsored in part by USDOT University Transportation Centers (UTC) Tier 1 grant (DTRT12-G-UTC17) awarded to the TranLIVE consortium led by NIATT.

Foxx said he was visiting to have a discussion with the future of transportation and that is what he did. NIATT students took turns asking him questions in a roundtable style forum. Questions included vision for transportation over the next 30 years with safety, alternative fuels, careers, and more.



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## PacTrans Sponsors TransOvation Workshop



The fourth annual Dr. J. Don Brock TransOvation Workshop was held November 17 – 19, 2014 at Microsoft Corporate Headquarters in Redmond, Washington. Transportation design and construction professionals gathered to hear from private sector and government thought leaders, learn how Microsoft is impacting

infrastructure, and discuss the potential impact of big data and other technological and social changes on transportation over the next 15 years. PacTrans was pleased to be a co-sponsor of this important event.

Greg Nadeau, acting administrator of the Federal Highway Administration, and Ross Smith, director of test at Microsoft, delivered the keynote presentations at the TransOvation Workshop. Lynn Peterson, secretary at the Washington State Department of Transportation, Kirk T. Steudle, director of the Michigan Department of Transportation, and several other industry leaders also presented and shared their vision and experience on big data applications in transportation.

Dr. Yin Hai Wang, PacTrans director, presented in the “Big Data, New Technologies and Transportation Infrastructure” panel and discussed the challenges and opportunities for transportation professionals in harnessing big data.

## PacTrans Regional Transportation Seminar: Dr. Michael Cassidy from UC Berkeley

*Dr. Michael Cassidy is Chancellor’s Professor of Civil and Environmental Engineering at UC Berkeley, and Director of the University of California Center on Economic Competitiveness in Transportation.*

PacTrans hosted Dr. Michael Cassidy of UC Berkeley, professor and director of the Region 9 University Transportation Center funded by US Department of Transportation, on November 5 for his lecture entitled “Lessons Learned from Spatiotemporal Studies of Freeway Carpool Lanes.”

Virtually all cities of the world are plagued by cross-modal conflicts on roadways. Our best hope to make cities more sustainable, explained Dr. Michael Cassidy, will be to tackle the low-hanging fruit of segregating distinct travel modes on roadways into their own reserved lanes. While bus lanes and carpool lanes are not new, Dr. Cassidy looked at freeway carpool lanes

as case studies to examine how reserved lanes can be used to segregate distinct travel modes in ways that are Pareto improving, and mistakes made in practice that can diminish the effectiveness of reserved lanes.



Freeway carpool lanes are often met with controversy, as concerns exist that underuse of such lanes can lead to congestion. To truly understand the impact of underused carpool lanes on congestion, Dr. Cassidy asserted that spatiotemporal data must be analyzed. Spatiotemporal study shows that a continuous-access carpool lane triggers reductions in vehicle lane-changing maneuvers, and the reduced lane-changing can “smooth” and increase bottleneck discharge flows in a freeway’s regular lanes. Even underused carpool lanes

continues on page 4



## Dr. Ahmed Abdel-Rahim Chosen to Lead UI's National Institute for Advanced Transportation Technology



University of Idaho College of Engineering announced October 21 the selection of civil engineering professor and PacTrans Board of Director member Ahmed Abdel-Rahim as the permanent director of the National Institute for Advanced Transportation Technology (NIATT). Abdel-Rahim has

been serving as interim director since the spring and has been an active NIATT researcher since 2000.

“Ahmed brings a rare combination of excellent research credentials and discerning leadership skills to the NIATT directorship,” said Jon Van Gerpen, associate dean for research in the College of Engineering. “I have been impressed with his problem-solving skills and willingness to collaborate.”

Abdel-Rahim’s research focuses on traffic operation and controls, transportation systems, modeling, highway design and traffic safety, and, most recently, security and survivability of transportation infrastructure.

Since 2009, Abdel-Rahim has been a part of 25 externally funded research projects totaling over \$2 million in awards, 18 of which he has led as principle investigator. Abdel-Rahim’s research has been funded by a wide range of organizations including the National Cooperative Highway Research Program, Federal Highway

Administration, Idaho Transportation Department and the U.S. Department of Transportation.

In addition to his role as NIATT director, Abdel-Rahim also serves as the director for the U.S. Department of Transportation’s for Livability by Integrating Vehicles and the Environment, or TranLIVE, a \$6.8-million university research consortium led by the University of Idaho which includes partners such as Old Dominion University, Syracuse University, Texas Southern University and Virginia Tech University.

Abdel-Rahim is also the recipient of the College of Engineering’s outstanding faculty award in 2010 and the University of Idaho’s midcareer award in 2012.

Abdel-Rahim also coordinated a recent visit to UI by U.S. Secretary of Transportation Anthony Foxx, underscoring that NIATT has made the campus a focal point for developing, implementing and deploying 21st-century transportation solutions not only for the state and region, but for the nation.

“Ahmed is a proven leader and mentor,” said College of Engineering Dean Larry Stauffer. “As interim director he has provided terrific leadership, and I expect this to continue now that he is the permanent director, continuing to develop the college’s reputation for excellence in transportation research and education.”

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## Dr. Dan Work Visits PacTrans STAR Lab, Presents Seminar



On November 11, Dr. Dan Work, assistant professor in Civil & Environmental Engineering and research assistant

professor at the Coordinated Science Laboratory at the University of Illinois at Urbana-Champaign, visited the PacTrans STAR Lab. Dr. Work met with Dr. Yinhai Wang, PacTrans

director, to learn more about the research program and activities. While at the lab, Dr. Work also presented a seminar, “Estimating traffic incidents and quantifying resilience to events,” that outlined new approaches to monitor traffic in the presence of incidents and events.

Dr. Work received his master’s and Ph.D. from the University of California, Berkeley, each in civil engineering. Work was a guest researcher

at Microsoft Research, Redmond in 2010 and a visiting researcher at Nokia Research Center, Palo Alto from 2008-2010. His research interests are control, estimation, and optimization of transportation systems, mobile sensing, and inverse modeling and data assimilation.

## PacTrans Regional Transportation Seminar: Dr. Michael Cassidy from UC Berkeley continued from page 2



can decrease both the people-hours and the vehicle-hours traveled by smoothing cross-modal conflicts.

Dr. Cassidy also demonstrated how certain practices, due to the friction effect, can degrade the effectiveness of carpool lanes. Citing a California policy to improve carpool-lane speeds, spatiotemporal traffic data demonstrated that the mandate to evict certain hybrid vehicles from carpool lanes caused expanded queues in regular lanes during the rush. This, in turn, slowed vehicles in adjacent carpool lanes.

*“Spatiotemporal study shows that a continuous-access carpool lane triggers reductions in vehicle lane-changing maneuvers, and the reduced lane-changing can “smooth” and increase bottleneck discharge flows in a freeway’s regular lanes.”*

## PacTrans Outreach Project Published in the Journal of Transportation Safety and Security

The PacTrans Outreach Project, a multi-institutional project including partners from all five PacTrans Universities, was recently accepted for publication in the *Journal of Transportation Safety and Security*. The article was titled, “*Improving Teenage Driver Perceptions Regarding the Impact of Distracted Driving in the Pacific Northwest*,” and includes two graduate student co-authors, Mafruhatul Jannat from OSU and Erika Miller from UW.

# 2014 PACTRANS REGIONAL TRANSPORTATION CONFERENCE

## October 17, 2014

During a day packed with the latest research and innovation in transportation safety, over 170 attendees gathered at the University of Washington on October 17th for the 2014 PacTrans Regional Transportation conference. Participants came from across the Northwest, representing transportation agencies, universities, and private organizations from Alaska, Oregon, Idaho, and Washington.

Dr. Yin Hai Wang, director of PacTrans, welcomed conference-goers in his opening remarks and previewed the comprehensive line-up of speakers and dynamic sessions. He also highlighted the importance of technology transfer, particularly in light of this year's theme in designing safe infrastructure, safe operations, and safe users.

Dr. John Milton, director of Enterprise Risk and Safety Management at Washington State Department of Transportation (WSDOT) joined Dr. Wang in opening the conference. Dr. Milton discussed Target Zero, Washington's Strategic Highway Safety Plan, and the value of partnering with PacTrans for both research and implementation. "What you do saves lives and reduces crashes," Dr. Milton said. "These discussions are where gems are started, where research discussions become reality."

Over the day, some of the brightest minds in transportation discussed how research, technology, education, and a changing workforce function in improving traffic safety and lives.

## Keynote Speaker

PacTrans was pleased to welcome John Campbell, research leader at Battelle's Center for Human Performance and Safety, to deliver the keynote session. Dr. Campbell discussed the SHRP 2 Naturalistic Driving Study (NDS), the largest naturalistic driving study ever conducted, comprised of over 3,100 drivers and 2.5 million trips. The data from this study presents a variety of opportunities and benefits for researchers and practitioners to improve future roadway design and traffic safety, including a better understanding of baseline driving behaviors and unsafe behaviors and traffic events.



Clockwise: Dr. Yin Hai Wang, Dr. John Milton, John Campbell

*“Dr. Campbell discussed the SHRP 2 Naturalistic Driving Study (NDS), the largest naturalistic driving study ever conducted, comprised of over 3,100 drivers and 2.5 million trips.”*



# REGION 10 STUDENT CONFERENCE

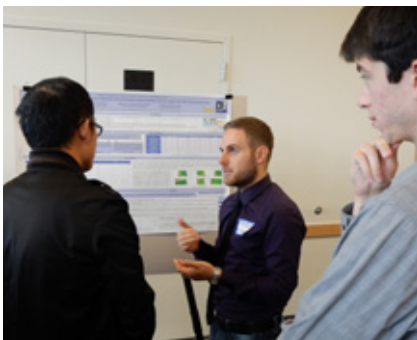
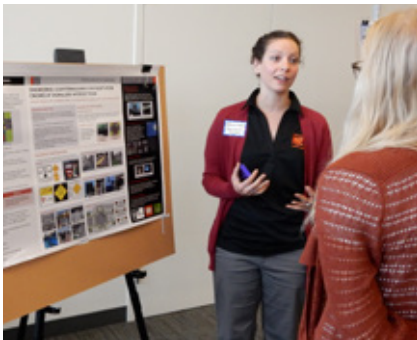


## October 18, 2014

On Saturday, October 18th, transportation students assembled at the University of Washington for the Region 10 Student Conference. Jointly sponsored by PacTrans and the UW student chapter of the Institute of Transportation Engineers, students from Region 10 (Alaska, Idaho, Oregon, and Washington) learned about new transportation research occurring in the Pacific Northwest and how to prepare for success in the professional world of transportation engineering.



Wayne Kittelson, the Founding Principal of Kittelson & Associates and member of the PacTrans External Advisory Board, delivered the keynote speech on career opportunities in engineering. Kittelson explained that there are many factors to consider when selecting a career pathway, including the work environment and whether it is private or public. While compensation is an important consideration, individuals should weigh whether their core values are a good match with those of the potential organization. Also important to look for in an organization is one that encourages employee growth and development, maintains an open communication environment, and provides a network of mentors and resources, all the while challenging staff with a variety of experiences. Kittelson left students with this charge: "Don't let the boundaries of the organization you work in become the boundaries of your profession."



Mark Hallenbeck, Director of the Washington State Transportation Center (TRAC), led an engaging session on successful communication in engineering and planning. We all have different styles of communication and speaking, Hallenbeck explained; where communication really comes into play is convincing the client that you are uniquely suited to the job. Hallenbeck also emphasized that no matter how good your work is, if you can't communicate it, people will not value it. Students came away from the presentation with practical speaking tips and an understanding of how to appropriately target their communication to the audience.

The poster session gave students the opportunity to share their research and learn from each other. The diverse topics ranged from social media use after natural disasters to engineering intersection to prevent right-hook crashes at intersections.

The final session of the day brought two industry representatives, Carmen Kwan of Fehr and Peers and Tom Le of DKS Associates, to answer questions from students about their experience in the workforce. Le and Kwan gave useful advice and insight into how they broadened their skill set, how they approached the job search, and what can set a job candidate apart from others.

(L-R) Jennifer Warner, Ruimin Ke, and Xiangyang Guan pose with their winnings from the student poster competition.



# PACTRANS-SPONSORED TRANSPORTATION SEMINAR

Dr. Yafeng Yin presented his talk, “Modeling and Analysis of Advanced Parking Management for Traffic Congestion Mitigation,” at the University of Washington on December 15 for a PacTrans-sponsored transportation seminar. In this talk, Dr. Yin discussed how the proliferation of smart phones provides tremendous opportunity for addressing parking management. Current applications direct drivers to real-time availability and price information for parking spaces, and even allow users to reserve spaces. Dr. Yin also outlined a game-theoretical approach to examine the competition for downtown parking spaces, and parking reservation and temporal travel patterns of downtown areas.

His talk attracted over forty participants from local agencies, companies, and research institutes. Parking management using mobile phone and other information technologies plays an important role in congestion mitigation in metropolitan areas.

Dr. Yin is an associate professor at the Department of Civil and Coastal Engineering and the director of Transportation Research Center, University of Florida.

He works in the areas of transportation systems analysis and modeling, and has published over 70 refereed papers in leading academic journals. He is the Editor-in-Chief of Transportation Research Part C and serves on the editorial boards for another five transportation journals such as Transportation Research Part B. He is also a member of Transportation Network Modeling Committee of Transportation Research Board. Dr. Yin received his Ph.D. from the University of Tokyo, Japan in 2002, his master’s and bachelor’s degrees from Tsinghua University, Beijing, China in 1996 and 1994 respectively. Prior to his current appointment, he worked as a postdoctoral researcher at University of California at Berkeley between 2002 and 2005. Between 1996 and 1999, he was a lecturer at Tsinghua University.



## New Green Stormwater Research Facility Developed by OSU PacTrans Faculty

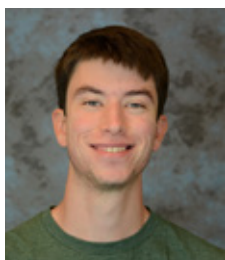


A ribbon cutting ceremony celebrated the new OSU-Benton County Green Stormwater Infrastructure Research (OGSIR) Facility on October 16 in Corvallis, Oregon. A three-celled stormwater research facility, it allows for field-scale experiments and testing on green infrastructure such as raingardens and bioswales. The cells enable testing of various stormwater treatment technologies and treatment of a variety of stormwater contaminants, and capture pollutants including tractor leaks, fuel tank spills, raw asphalt, and parking lot sediments.

The research facility was funded in part by PacTrans and is associated with the PacTrans project, “Improving sustainability of urban streets via rain gardens – How effective are these practices in the Pacific Northwest?” led by Meghna Babbar-Sebens (PI) and Arturo Leon (co-PI).

## Meet our 2015 PacTrans Fellows

As part of PacTrans' mission to bring talented professionals into the transportation field, PacTrans provides funding to students seeking transportation-related graduate degrees each year.



**Michael Corwin** is originally from Raleigh, North Carolina. He attended North Carolina State University for his undergraduate study in Civil Engineering. His work experience began as an undergraduate research assistant at the Institute for Transportation Research and Education, where

he assisted in a wide variety of transportation-related research projects. Michael also performed research for Science Applications International Corporation, where he worked in the Saxton Transportation Operations Laboratory near Washington, DC. Before attending the University of Washington, he interned with Kittelson & Associates in Fort Lauderdale, FL for the summer. Currently, he is gaining experience in the public sector, with WSDOT in the Tolling Division.

Michael has a wide variety of interests in transportation, including operations, safety, and transit. He plans on focusing on ITS applications to solve various problems in these areas. Upon earning his Master's degree in Civil Engineering, Michael plans on working in the private sector with a transportation consulting firm.



**Ryan Hughes** graduated with a Bachelor's of Science in Civil Engineering with honors from Saint Louis University (SLU) in Saint Louis, MO in the spring of 2013. He recently finished a year service with the Jesuit Volunteer Corps where he volunteered as

a full time staff member at Cristo Rey Brooklyn High School, a small Catholic school in Brooklyn, NY that serves low income youth. Ryan is passionate about transportation planning, urban development, and the social justice issues related to both. He is currently working as a transportation planning and engineering intern with Fehr & Peers in downtown Seattle. He has experience working in corporate sustainability, hydraulics and hydrology, and transportation planning. Although originally from Louisville, KY, exploring new cities is one of Ryan's favorite activities, and Seattle has kept him busy doing just that.



**Kelly Fearon** is from Gaithersburg, Maryland and she received her undergraduate degree in Civil Engineering from the University of Delaware. She has worked for the Gaithersburg Public Works Department and Maryland State Highway in the Inspection Division. She

also worked on designing stormwater management plans last summer for Stantec. Currently, she is working as an intern for WSDOT Tolling Division. She is primarily interested in the planning aspects of transportation and hopes to find a job in this field after graduating. In her free time she likes to read and hike.



**Jackson Lester** is originally from Lexington Kentucky, and received a Bachelor of Science in Economics from Tulane University in 2012. He has been living in Park City, Utah for the past two years working as a ski instructor. In the summer of 2014, Jackson led

a 71-day cycling and volunteer trip of 34 volunteers from Portsmouth, NH to Vancouver, BC, with a non-profit group called Bike and Build to benefit affordable housing charities.

He is working on his Master's in Civil Engineering in Transportation at the University of Washington and is particularly interested in public transit. Currently Jackson is interning with Washington State Ferries to publish a worldwide ferry service comparison document of financial and operational measures for the 2015 Washington State Legislative Session. Jackson plans to graduate in August of 2015 and hopes to work as a consulting engineer specializing in urban transportation revitalization projects. In his free time he enjoys cycling, travel, and eating ice cream, sometimes all at the same time.



## Kristian Henrickson Named PacTrans Student of the Year



University of Washington PhD student Kristian Henrickson is the 2014 PacTrans University Transportation Center Student of the Year. The award is given to students for accomplishments in technical merit and research, academic performance, and professionalism and leadership. His nominator stated that

Kristian is “a very determined and dedicated young man” whose analytical skills and collaborative research experience have “well prepared him to be a future leader in transportation.”

Kristian is a graduate research assistant at the UW Smart Transportation Applications and Research Laboratory (STAR) Lab, directed by Dr. Yin Hai Wang, and he also serves as the lab manager. Kristian completed his

undergraduate degree in Civil Engineering at the University of Idaho, where he worked as an undergraduate research intern with the National Institute for Advanced Transportation Technology under the direction of Dr. Ahmed Abdel-Rahim. His major research fields include traffic sensing, sensor data management, and data quality control. In his first two years at the UW, Kristian has been very active in research, teaching, and outreach. Kristian has contributed to a number of research projects at the STAR Lab on topics including traffic safety, network analysis, and data quality control. He has also been visible in the academic and professional communities, giving talks and technology demonstrations at conferences and developing collaborative research with other northwest universities.

## UI Students Recognized at 21st Annual Conference on Rural Public and Intercity Bus Transportation

Civil Engineering students Christopher Bacon, Riannon Heighes, and Brett Seely (pictured with Dr. Kevin Chang, UI CE Assistant Professor on right) have won paper competitions administered by the National Conference on Rural Public and Intercity Bus Transportation. Each student received a cash prize and travel funds to attend the conference October 26-29, 2014 in Monterey, California. This year’s conference theme was “Setting Our Course for the Future.” Students were asked to envision four alternative perspectives for our transportation future: a vision of continued growth, one of disciplined or constrained growth, a future of decline and collapse, or one of transformation.

Christopher participated in the graduate student research paper competition. His paper, entitled “Real-Time Information Projecting Towards the Future,” received second place honors and focused his research on how GPS-tracking on city busses could make a positive impact in the future.

Riannon and Brett competed in the undergraduate student essay competition, finishing in first place and second place, respectively. Riannon’s paper, titled, “A Future of Transformation for Public Transit in Rural



Christopher Bacon, Riannon Heighes, and Brett Seely (pictured with Dr. Kevin Chang, UI CE Assistant Professor on right)

Communities,” discussed “several significant transformations that must occur in order to ensure the survival of public transportation in rural communities.”

Brett chose to “draft [his] 2030 vision of rural and intercity bus transportation into a hypothetical city council planning meeting set in the future.” This distinctive approach, he says, was intended to “emphasize how innovation needs public involvement and support to come to fruition.”

## UI Student Brett Seely Wins Coral Sales Company/ Douglas P. Daniels Scholarship



On November 11, Brett Seely was awarded the Coral Sales Company/Douglas P. Daniels Scholarship during a dinner at Sangria Grill in Moscow. Brett is currently pursuing his M.S. in Transportation Engineering and expects to graduate this spring. The scholarship, which was originally created in 1987, is intended for Transportation Engineering students at universities around the Pacific Northwest. Coral Sales Company, established in 1979, specializes in traffic products and highway safety. The company supplies material throughout the Pacific Northwest and calls for its Coral Sales Scholars to “excel in both leadership and interpersonal communications.”

This is Brett’s first time receiving the scholarship, and he plans to use it to defray the cost of schooling as well as for potential travel expenses in the spring (when he has narrowed down his job hunt). “I am honored to have received this award and am happy to join the network of past recipients,” says Brett. During the award dinner, Brett, his guest Gabby Eddings, the President of Coral Sales Company Diane Daniels Grant, Regional Sales Manager Tom McFarlane, and four civil engineering professors from UI discussed current issues in the transportation industry, Brett’s future plans, and Coral Sales Company’s role in the market.

## Clean Snowmobile among Projects Presented at “Snapshot Day”

On October 14, more than 120 students on over 30 capstone design teams shared the current status of their two-semester learning projects during “Snapshot Day.” Snapshot Days take place throughout the year, allowing students and faculty alike to see the progression of students’ interdisciplinary projects.

Crystal Green and Dillon Savage (pictured above) are currently in the first semester of work on their project, “Efficient and Clean Turbo Two-Stroke.” Both Green and Savage have worked with NIATT before as team members on the nationally recognized clean snowmobile team (supported by PacTrans), as

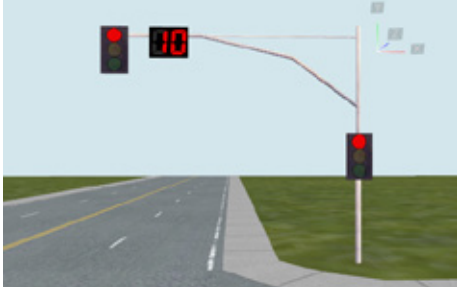
well as undergraduate interns. Now participating in their first Snapshot Day, both are looking forward to checking in throughout the year and are excited to be working on a NIATT project, which they say are highly sought after. “[NIATT projects] are usually the cooler projects. They’re usually harder, but they usually have a lot of... interest for involvement,” says Savage.

Savage and Green also noted that students working with NIATT (on teams as well as capstone projects) have had good luck with staying in their field. A good deal of engineers have gone to work for Polaris, says Savage. “In recent years we’ve had

a lot more go that way, and I think they have been pleased... with the quality of the engineers they’re getting from here, though the program... and the weight of our engineers over there are holding a lot more...push.”



## OSU Transportation Engineering Graduate Students Successfully Defend Dissertations



Dr. Mohammad Rabiul Islam conducted two experiments, an online survey and a driving simulator study. The online survey focused on driver comprehension of and preferences towards TSCT, whereas the simulator study recorded driver response to virtual TSCT. The online survey resulted in an overall comprehension rate of 82%, which is reasonably close to the ANSI Z535.3 standard threshold for traffic control devices. The driving simulator study identified benefits regarding safety and efficiency. The presence of red signal countdown timers resulted in 0.72 seconds reduction in the first headway. In presence of green signal countdown timers, drivers' probability to stop at the onset of the circular yellow indication in dilemma zones increases by approximately 13%. These results are suggestive of an improvement in intersection performance, and with proper field validation, the application of TSCT

may well be recommended at signalized intersections in Oregon.

Dr. Mafruhatul Jannat's research provided improved understanding of RH crash causal factors during the latter portion of the green phase through an online survey and driving simulator experiment. From the 209 self-reported online survey responses, it was found that 78% of bicyclists were unaware of their stopping position with respect to stopped vehicles queued at an intersection during a red indication, and 19% of motorists ( $n = 246$ ) reported that they would not yield to the adjacent bicyclist approaching from behind if they were detected in rear-view or side-view mirrors. The driving simulator experiment ( $n = 51$ ) investigated RH crash causal factors related to the motorist and built environment using three different motorist performance measures: i) visual attention, ii)

situation awareness (SA) and iii) crash avoidance behavior. Motorists' visual attention measure revealed that in the presence of oncoming vehicular traffic, motorists spent the majority of their visual attention looking at the oncoming traffic that posed immediate hazard to them and failed to detect a bicyclist approaching from behind. Motorists' SA measure indicated that motorists detect a bicyclist riding in their forward field of view more successfully than a bicyclist approaching from behind in the vehicle's blind spot. Motorists' crash avoidance behavior revealed that 92% of 26 observed crashes occurred with a bicyclist approaching from behind in the vehicle's blind spot and oncoming vehicles were present in 88% of those crashes. Also, 81% of observed crashes occurred due to inadequate surveillance.

## OSU Student Jennifer Warner Wins First Place at the Three Minute Thesis Competition



On September 15, 2014, twelve students from the Oregon State University School of Civil and Construction Engineering attended the annual Oregon Transportation Summit in Portland, hosted by the Oregon Transportation Research and Education Consortium and Portland State University. The summit brought together Oregon's academic and transportation professionals to advance the state of the field by accelerating new research into practice and by shaping the agenda for future research. OSU's trip was highlighted by graduate student Jennifer Warner's first-place finish in the Three-Minute Thesis Competition for her presentation on "Right Hook Crash Mitigations."



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# SAVE THE DATE: PACTRANS EVENTS

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*2015 Western Association of State Highway Transportation Officials  
(WASHTO) Annual Conference*  
**July 19 -22, 2015**  
**The Boise Center, Boise, ID**

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