

TRANSPORTATION RESEARCH CENTER *Newsletter*

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FALL 2009

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The [UVM Transportation Research Center \(TRC\)](#) is a hub for innovative and interdisciplinary research, education and outreach on sustainable transportation system solutions.

The TRC serves as the host of the [National University Transportation Center \(UTC\)](#), funded by the [U.S. Department of Transportation](#).



TRC Opens Transportation Air Quality Lab

Last spring, after a protracted effort from a handful of dedicated researchers, the UVM Transportation Air Quality Lab (TAQLab) was finally opened. The new laboratory is a critical piece of the puzzle for researchers at the University of Vermont who are studying vehicle emissions.

Two brand-new 2010 Toyota Camrys were delivered to the TAQLab on Wednesday, September 30th. Both cars are adorned with a colorful "wrap" depicting blue skies, puffy clouds, green fields, and the helpful phrase: "Tailpipe Emissions Testing Vehicle". The cars look alike, but there is one major difference between them. Vehicle one has a standard combustion engine. Vehicle two is a gasoline/electric hybrid vehicle.

[Read on](#)

Graduate Scholars 2009-2010

Graduate student research assistantships of \$28,000 were granted for the academic year 2009-2010 to the following UVM graduate students:

Cassandra Gekas, CDAE
 Nate Belz, CEMS - CE
 Jonathan Dowds, RESNR
 Eric Garza, RESNR
 Diana Colangelo, MPA
 Lance Jennings, MPA
 Terrence Barrett, CEMS - CE
 Jonathan Maddison, MPA

These students work as research assistants (RAs) for 20 hours per week on transportation research related to the Center's theme. Students may be in any graduate program within UVM's colleges or schools. Find out more by visiting Graduate Studies.

New Transportation Energy Report

The Vermont Clean Cities Coalition, funded by the US Department of Energy and the Vermont Department of Public Service, has released the [2009 Vermont Transportation Energy Report](#), which presents data on fuel consumption, vehicle purchases, expenditures on transportation, and travel behavior. These data can be used as a basis for policy discussions and initiatives. [Full story](#)

Summer Brown Bag Series: a Success!

The 3rd annual "brown bag" series, addressing critical issues in transportation, was attended by 230 over the summer. TRC staff, faculty and students presented 12 topics for discussion including:



- **"Tailpipe Emissions & Public Knowledge: Informed or Ignorant Public?"** (Tom Macias, Sociology)
- **"On the Road with the Test Van: Second-by-Second Vehicle Emissions in Vermont: Summer 2009"** (Karen Sentoff and Mitch Robinson, Environmental Engineering)
- **"Gas Tax Increases: Political Suicide or Visionary Leadership?"** (Richard Watts, TRC)
- **"PHEVS: Why the US Cannot Meet President Obama's Goal of 1 Million by 2015"** (Jon Dowds, Rubenstein School of Natural Resources & the Environment)

TRC Seminars - Fall '09

"The Relationship of Housing and Community Development to Transportation"

Sue Minter, VT Legislator/Dept. of Housing and Community Affairs
October 21 - 1:00 to 2:30 pm - Terrill 308



Community and Transportation: an Analysis of the Role of Roundabouts"

Dr. Per Garder, University of Maine
November 5 - 12:00 to 1:00 pm - Think Space, Farrell Hall

"Lessons Learned: Results from the Pedestrian and Bicycle Safety and Mobility International Scan"

Jon Kaplan, VTrans Bicycle & Pedestrian Coordinator
Co-presented with the Vermont Chapter of ASLA
November 10 - 5:30 to 6:30 pm - Silver Maple Ballroom, Davis Center

"Social Equity, Community and Transportation"

Phil Hammerslough, Transportation Advocate and Carmen George, Good News Garage
November 11 - 1:00 to 2:30 pm - Terrill 308

"Transportation Planning and Community Development in Urban Areas"

Dr. Elizabeth Deakin, City and Regional Planning, UC Berkeley
November 18 - 1:00 to 2:30 pm - Jost Foundation Room, Davis Center

[More information](#)

Summer Transportation Institute (STI) 2009

Nineteen Vermont high school students gained firsthand experience on the importance of safe driving as part of the [Summer Transportation Institute \(STI\)](#). Since motor vehicle crashes are the leading cause of death for Americans aged 15 to 20, and teenagers are involved in 3 times as many fatal accidents as other drivers, these workshops were particularly relevant for the participants.



To get a sense of the debilitating effects of alcohol, and especially the dangers involved with driving under the influence, students paired up and tried to accomplish normally easy tasks—such as walking in a straight line, sitting in a chair or applying lipstick—while wearing "Fatal Vision" goggles. The special goggles are designed to simulate the vision impairment that accompanies different blood alcohol content levels.

The students met Inspector Rick Moore and his assistant, a Labrador Retriever named "Canine Duke," who has worked as a drug-sniffing dog for over nine years. Duke was led to a location with five sealed boxes, one of which contained a half pound of marijuana, and commanded to find the drugs. The students were delighted by Duke's friendliness, as well as his usefulness.

The UVM STI is funded by the Federal Highway Administration and the Vermont Agency of Transportation. The Institute aims to provide awareness to high school students on transportation careers, along with the complex transportation system upon which we all rely. More information about STI.

Dr. Brian Lee joins the staff of TRC

The TRC is pleased to announce that [Dr. Brian Lee](#) joins the staff this fall as assistant professor in transportation systems in the School of Engineering. Dr. Lee is a joint appointment between the School of Engineering and the TRC, which will be funding Dr. Lee's research program as part of a U.S. Department of Transportation (DOT) grant to the TRC.

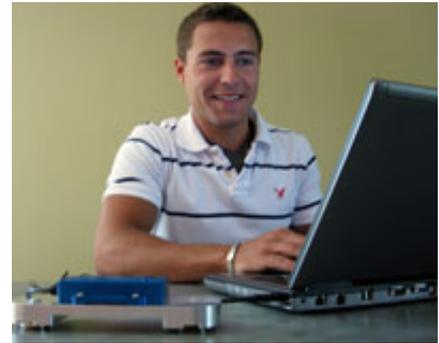
According to Dr. Lisa Aultman-Hall, TRC Director, "Dr. Lee's work will be key to advancing transdisciplinary, cross-campus research programs around transportation systems as they relate to the environment, the economy and public health."

Dr. Lee received his Ph.D. in urban design and planning from the University of Washington in 2009, his MS degree in civil and environmental engineering from Northwestern University in 2003, and his Bachelor of Applied Science in civil engineering from the University of British Columbia in 2001. He is an international researcher with expertise in agent-based analysis and empirical modeling. Lee also has keen interests in multimodal transport, and a record of interdisciplinary collaborations on policy-relevant projects.



Focus on Grad Studies

The following is a conversation with Nathan Belz, a graduate student with the TRC whose work on the project "[Characterizing Older Driver Behavior for Traffic Simulation and Emissions Modeling](#)" involves using a SENSAR GP2x 3-Axis Accelerometer/Tilt Meter. This device will be mounted on top of a vehicle and used to measure speed, acceleration and deceleration, and global positioning.



Q - What is your project all about?

A - The objective of this research is to characterize the second-by-second driver behavior of older drivers in order to accurately account for the lead-vehicle dynamics of the aging population in traffic simulation and emission models. Field data on actual routes will be collected using in-vehicle instrumentation from 20 drivers in Burlington, VT. Trends and differences in speed and acceleration/deceleration data while drivers are not constrained by a vehicle in front of them will be explored.

Q - What inspires you about this research?

A - This research is like a stepping stone for my dissertation work on roundabouts. The techniques and instrumentation I am applying here will be similar to those I use to develop a capacity model for single-lane roundabouts and ultimately quantify the emissions reductions from the conversion of a signalized or stop-controlled intersection to a roundabout.

Q - What impact could this research have on peoples' lives?

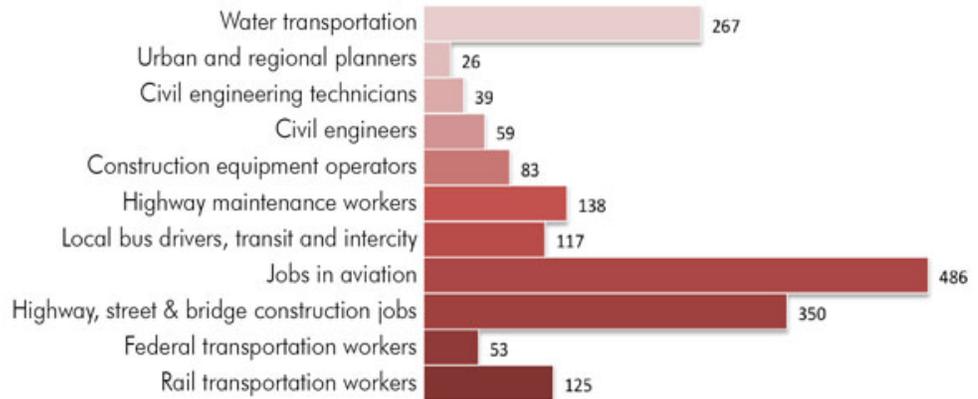
A - Obtaining second-by-second driving behavior is particularly important because of the variability present in the driving style of individuals - many models currently make the unrealistic assumption that people drive continuously at the speed limit between two given points. This research aims to identify the natural fluctuations that are occurring in driving behavior and, in doing so, improve the way that this behavior is reflected in current simulation models. Implications of this would be, for example, allowing for better planning and estimation of the advantages/disadvantages of transportation design alternatives.

Nate is from Readfield, Maine. He did his undergraduate and Master's studies at the University of Maine, where his advisor was Dr. Per Garder (coming to the TRC Nov. 5th-see our [fall seminar lineup](#) for more details!). Nate's UVM Ph.D. advisor is Dr. Aultman-Hall.

Update on Workforce Development

The [TRC Transportation Education Development Pilot Program](#) (TEDPP) (funded by a grant from the Federal Highway Administration) is in the process of developing innovative programs to attract and retain skilled workers in the transportation sector of Vermont, New Hampshire and Maine. To illuminate the large impact that transportation has on the economy and the environment, the team developed the "[Transportation Industry Fact Sheet](#)" which will be used nation-wide as a reference for partners in the upcoming projects on the grant. Here are a few of the many surprising facts listed.

Transportation-related jobs (in thousands):



Transportation-related goods and services accounted for more than 10 percent-over \$1 trillion-of US Gross Domestic Product (GDP). In 2006, federal, state and local expenditures on transportation totaled \$199.4 billion.

Twenty million Americans are currently employed in transportation-related jobs, with careers as diverse as civil engineering, architecture, piloting of planes and ships, management of transit systems, planning transportation services, and design of intelligent transportation systems.

If you like, you can [view a PDF of the newsletter](#). Your feedback and suggestions are always welcome.

Sincerely,

[Kim Mercer](#), TRC Communications Coordinator

