Fourth International Symposium on
Naturalistic Driving Research
August 25-28, 2014
welcome
The National Surface Transportation Safety Center for Excellence (NSTSCE) and the Virginia Tech Transportation Institute (VTTI) would like to welcome you to the Fourth International Symposium on Naturalistic Driving Research.

We have developed what we believe to be a dynamic, interactive and very informative symposium over the next few days. We trust that you will gain a greater understanding of our naturalistic driving research, as well as the research that is being done internationally in this area, and leave with a commitment to similar goals as expressed by our stakeholders.

Thank you,
NSTSCE Stakeholders and VTTI
**Symposium Host**

The National Surface Transportation Safety Center for Excellence (NSTSCE) at the Virginia Tech Transportation Institute (VTTI).

**Mission**

NSTSCE was established by the Federal Public Transportation Act of 2005 to develop and disseminate advanced transportation safety techniques and innovations in both rural and urban communities.

The mission of NSTSCE is defined as using state-of-the-art facilities, including the Virginia Smart Road, to develop and test transportation devices and techniques that enhance driver performance, evaluate the roadway environment and infrastructure-based safety systems, examine driver impairment issues, and address safe mobility for vulnerable road users.

**Goals of the Center**

**Goal 1:** Identifying age-related deficiencies in driving performance and developing methods and countermeasures to mitigate the associated risks

**Goal 2:** Understanding the role fatigue plays in crashes of both heavy and light vehicles and developing and evaluating countermeasures to reduce fatigue-related traffic incidents

**Goal 3:** Improving the nighttime roadway visual environment through the assessment of behavior, establishment of visibility needs, and control of adverse lighting effects

**Goal 4:** Developing a greater understanding of driver decision making and performance during normal driving through imminent crash situations in urban, rural, and freeway driving environments

**Goal 5:** Developing and evaluating new devices and techniques for enhancing driver performance
NSTSCE Stakeholders

Federal Highway Administration

Federal Motor Carrier Safety Administration

General Motors

Travelers

Virginia Department of Transportation / Virginia Center for Transportation Innovation and Research

Virginia Tech Transportation Institute

Thank you to our sponsors!
Kenneth M. Leonard was named the Director of the U.S. Department of Transportation (USDOT) Intelligent Transportation Systems Joint Program Office (ITS JPO) in December 2012. He is a member of Federal government’s Senior Executive Service.

Mr. Leonard has over 30 years of Federal government and private sector leadership experience providing solutions in transportation, energy, investment decision making, defense, environment, regulatory affairs, and information systems. He joined the ITS JPO from the Federal Motor Carrier Safety Administration (FMCSA), where he served as a Senior Policy Advisor and Director of the Office of Analysis, Research and Technology. While there, he provided executive leadership and direction in improving FMCSA’s project effectiveness and efficiency.

Previously, Mr. Leonard served as Federal Aviation Administration (FAA) Director of Aviation Weather, led the FAA’s Technology Development Office and was manager of Investment Analysis. While at the FAA, he provided strategic direction, advancing cornerstone aviation weather enterprise systems and emerging technologies in support of the USDOT’s Next Generation Air Transportation Systems initiatives.

While serving in the private sector, Mr. Leonard provided management oversight of complex and innovative research and development programs involving multibillion-dollar projects. Additionally, he developed strategies to improve standard business practices and reduce program cost risks. Mr. Leonard is a graduate of the George Washington University School of Public and International Affairs, where he earned a bachelor’s degree in international economics and completed graduate-level studies in economics and finance.
Ann M. Brach is the Director of the Second Strategic Highway Research Program (SHRP 2) at the Transportation Research Board (TRB). She is responsible for overall direction of interdisciplinary research in the following areas: the role of driver behavior in highway safety; renewal of aging infrastructure; congestion mitigation; and collaborative decision-making in highway planning.

Prior to becoming the director, Dr. Brach served as the deputy director of SHRP 2 in which she oversaw the development of the largest-ever naturalistic driving study. In addition, she has conducted studies of funding trends, congressional earmarking, and stakeholder involvement in Federal transportation research programs.

Before coming to TRB, Dr. Brach was Research and Technology Program Manager at the Federal Highway Administration, and Chief of the Research and Technology Division of the Maryland State Highway Administration. She received a bachelor’s degree in civil engineering from Northeastern University and a master of science and Ph.D. from the Massachusetts Institute of Technology, where she focused on management of research and innovation in the construction industry. She is a registered Professional Engineer in the Commonwealth of Virginia.
Monday, August 25, 2014 - SHRP 2 Data InSight Workshop

7:45 a.m.  Workshop participants needing transportation to the Virginia Tech Transportation Institute (VTTI) – meet in lobby of The Inn at Virginia Tech for shuttle
8:00 a.m. – Registration for Workshop/Symposium and Continental Breakfast  
VTTI Main Lobby*
9:00 a.m. – Workshop I: SHRP 2 Data InSight  
Lead Organizer: Mike Mollenhauer, VTTI  
VTTI Organizing Committee: Jon Antin, Behnido Calida, Jon Hankey, Joel Kady, Suzie Lee, Lei Li, and Miguel Perez  
Location: VTTI Interchange Room*  
Lunch at VTTI; provided with workshop registration*
4:00 p.m. – Registration  
5:30 p.m.  The Inn at Virginia Tech – Latham Foyer (Under the Grand Staircase)
5:00 p.m. – Workshop concludes – Break at VTTI
5:30 p.m.  Monday workshop participants only – meet at front entrance of VTTI to leave for dinner off-site
6:00 p.m. – Dinner – Hahn Horticulture Garden*
7:30 p.m.  Monday workshop participants only

Tuesday, August 26, 2014 - Symposium Day 1

7:30 a.m. – Registration  
The Inn at Virginia Tech – Latham Foyer (Under the Grand Staircase)
Continental Breakfast  
Assembly Hall of The Holtzman Alumni Center at the Inn at Virginia Tech
8:00 a.m. – Welcoming Remarks – John P. Capp, NSTSCE Chairman; Director, Global Safety Strategy & Vehicle Programs, General Motors Global Product Development

*Activity not held at The Inn
8:15 a.m. – 10:00 a.m.  The Promise of Naturalistic Driving Realized: Evidence from the Naturalistic Teenage Driving Study
Moderator: Bruce G. Simons-Morton, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

An Overview of Methods and Key Findings from the NTDS
Presenter: Bruce G. Simons-Morton, NICHD

Variability in Crash/Near-Crash Risk Among Novice Drivers
Presenter: Feng Guo, VTTI

The Effects of Cortisol Levels on Novice Driver Crash/Near-Crash Risk
Presenter: Marie Claude Ouimet, University of Sherbrooke

The Prevalence and Risk of Secondary Task Engagement with Novice Drivers
Presenter: Charlie Klauer, VTTI

Predictors of Crash Risk for Novice Drivers
Presenter: Johnathon Ehsani, NICHD

The Synergy Between Naturalistic Driving and Statistical Methodological Development: What Statistics Can Teach Us About Driving and Vice Versa
Presenter: Paul Albert, NICHD

10:00 a.m. – 10:15 a.m.  Continuous Break sponsored by Bendix

10:15 a.m. – 11:45 a.m.  Don't Look Now: NDS Distraction Methods and Findings
Moderator: Chris Hayes, Travelers
Discussant: Daniel Glaser, General Motors

Re-use of FOT Data to Assess the Frequency and Impact of Distracted Driving
Presenter: Andreas Landau, Wuerzburg Institute for Traffic Sciences (WIVW GmbH, Germany)
Co-authors: Barbara Metz, Volker Hargutt

Drivers’ Visual Behavior When Using Hand-Held and Hands-Free Cell Phones
Presenter: Gregory M. Fitch, VTTI
Co-authors: Richard J. Hanowski, Miguel A. Perez

Examination of Drivers’ Cell Phone Use Behavior at Intersections by Using Naturalistic Driving Data
Presenter: Shan Bao, University of Michigan Transportation Research Institute (UMTRI)
Co-authors: Huimin Xiong, Kazuma Kato, James Sayer

A Complex Driving Scenario for Describing Safety-Critical Event Causation
Presenter: Naomi Dunn, VTTI
Co-authors: Jeffrey S. Hickman, Richard J. Hanowski

11:45 a.m. – 12:00 p.m.  Continuous Break sponsored by Bendix

12:00 p.m. – 1:00 p.m.  Lunch with Keynote Address
Speaker: Ken Leonard, Director, Intelligent Transportation Systems Joint Program Office
Latham AB

1:00 p.m. – 1:30 p.m.  Coffee, Tea & Pastries – Networking Session sponsored by Bosch
Latham Foyer

*Activity not held at The Inn*
1:30 p.m. – 3:00 p.m.  
**International NDS Progress and Lessons Learned**  
**Moderator:** John P. Capp, General Motors  
**Discussant:** Feng Guo, VTTI

Advances in UDrive, the First Pure European Naturalistic Driving Study, Compared to Previous European FOT  
**Presenter:** Guillaume Saint Pierre, Institut français des sciences et technologies des transports, de l’aménagement et des réseaux (IFSTTAR), France

Canadian Naturalistic Driving Study  
**Presenter:** John Pearson, Council of Deputy Ministers Responsible for Transportation and Highway Safety, Canada

Shanghai Naturalistic Driving Study  
**Presenter:** Shou-en Fang, Tongji University, China

Data and IRB Issues in International Naturalistic Driving Study  
**Presenter:** Suzie Lee, VTTI

3:00 p.m. – 3:30 p.m.  
Continuous Break sponsored by Bendix

3:30 p.m. – 5:00 p.m.  
**Using NDS to Improve the Health and Safety of Professional Drivers**  
**Moderator:** Steven K. Smith, Federal Motor Carrier Safety Administration  
**Discussant:** Matthew S. Thiese, Rocky Mountain Center for Occupational and Environmental Health, University of Utah School of Medicine

Evaluating the Sleeper-Berth Provision: Preliminary Investigation into Usage Characteristics and Safety-Critical Event Involvement  
**Presenter:** Susan A. Soccolich, VTTI  
**Co-authors:** Myra Blanco, Richard J. Hanowski

Can Cab Engineering Create Passive Improvements in Driver Sleep, Health, and Fuel Efficiency?  
**Presenter:** Josef Loczi, Ergonomics and Driver Health & Wellness  
**Co-author:** Ryan Olson

Examining the Relationship between Drug Use and Involvement in a Safety-Critical Event  
**Presenter:** Matthew C. Camden, VTTI  
**Co-authors:** Susan A. Soccolich, Jeffrey S. Hickman, Richard J. Hanowski

Evaluation of Feedback to Truck Drivers to Increase Safe Driving Behaviors: Preliminary Findings  
**Presenter:** Jennifer Bell, Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health

5:00 p.m. – 5:30 p.m.  
Break

5:30 p.m. – 7:30 p.m.  
**Reception and Poster/Demonstration Session**  
*Latham Ballroom*

**Sweets sponsored by Lytx**

**MERITOR WABCO**  
Safety Strong. Efficiency Smart.  
The Panjammers band sponsored by Meritor WABCO

*Activity not held at The Inn*
Poster Presentations

Senior Fitness-to-Drive Evaluation Using Naturalistic Driving Data  
**Presenter:** Jon F. Antin, VTTI  
**Co-authors:** Feng Guo, Youija Fang

Personality and Crash Risk  
**Presenter:** Fearghal O’Brien, NICHD  
**Co-authors:** Johnathon P. Ehsani, Bruce G. Simons-Morton, Kaigang Li, Jessamyn G. Perlus

Extending Naturalistic Driving Research to the Patrol Car: A Pilot Project  
**Presenter:** Teena Garrison, Center for Advanced Vehicular Systems, Mississippi State University  
**Co-author:** Daniel Carruth

Analysis of Driver Behavioral Adaptation to the Lateral Drift Warning System  
**Presenter:** Adam Lawrence Greenstein, Maryland State Highway Administration

Using Naturalistic Data for Forward Collision Warning Design: Population Distributions of Time to Collision from the 100-Car Study  
**Presenter:** Kristofer D. Kusano, Virginia Tech  
**Co-authors:** Jade Montgomery, Hampton C. Gabler

Naturalistic Driving as a Tool to Better Understand the Self-Management of Driving of Older Drivers With and Without Visual Impairment  
**Presenter:** Ioni Lewis, Centre for Accident Research and Road Safety – Queensland (CARRS-Q)  
**Co-authors:** Joanne Wood, Philippe Lacherez, Mark King, Amy Schramm, Barry Watson

Successful Elements in a Health and Wellness Program for Commercial Motor Vehicle Drivers  
**Presenter:** Erin Mabry, VTTI  
**Co-authors:** Jeffrey S. Hickman, Richard J. Hanowski

Naturalistic Cycling Studies: What Are They, and How Do They Relate to Naturalistic Driving Research?  
**Presenter:** Tibor Petzoldt, TU Chemnitz  
**Co-authors:** Marco Dozza, Katja Schleinitz, Julia Werneke

Analysis of Mean Trip Speed of Motorcycle Riders  
**Presenter:** Cameron S. Rainey, VTTI  
**Co-authors:** Shane B. McLaughlin, Sherry L. Williams

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**Wednesday, August 27, 2014 - Symposium Day 2**

7:30 a.m. – 8:00 a.m.  
**Continental Breakfast**  
*Assembly Hall of The Holtzman Alumni Center at the Inn at Virginia Tech*

8:00 a.m. – 8:15 a.m.  
**Welcoming Remarks – Thomas A. Dingus, Director, VTTI**

*Activity not held at The Inn*
8:15 a.m. –
Ongoing Novice Driving Studies
Moderator: Thomas A. Dingus, VTTI
Discussant: Ruth Shults, Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

Why Conducting In-Depth Naturalistic Riding Study?... Examples from Rider Trainees and Novices in France
Presenter: Stéphane Espié, IFSTTAR
Co-authors: Samuel Aupetit, Flavien Delgehier, S. Bouaziz

Using Naturalistic Driving Data to Examine Age and Gender Differences on Seat Belt Use
Presenter: Shan Bao, UMTRI
Co-authors: Huimin Xiong, James Sayer, Mary Lynn Buonarosa

Naturalistic Assessment of the First 10 Hours of Driving: The Supervised Practice Driving Study
Presenter: Johnathon Ehsani, NICHD

Teenage Driver Cellular Phone Use During the First Months of Driving
Presenter: Janet Creaser, University of Minnesota

9:45 a.m. –
Continuous Break sponsored by Smartmicro

10:00 a.m. – 11:15 a.m.
Student Paper Session
Moderator: James Hedlund

Assessment of Psychophysiological Characteristics of Drivers Using Heart Rate from SHRP 2 Face Video Data
Presenter: Abhijit Sarkar, VTTI
Co-authors: Zachary R. Doerzaph, A. Lynn Abbott

Crowd-sourced Connected-vehicle Warning Algorithm using Naturalistic Driving Data
Presenter: Alexandria M. Noble, VTTI
Co-authors: Shane B. McLaughlin, Zachary R. Doerzaph, Thomas A. Dingus

Naturalistic Drive Cycles Analysis and Synthesis for Pick-up Trucks
Presenter: Zifan Liu, Clemson University

11:30 a.m. – 12:30 p.m.
Lunch with Keynote Address sponsored by SHRP 2
Speaker: Ann Brach, Director, SHRP 2
Latham AB

12:30 p.m. – 1:00 p.m.
Coffee, Tea & Pastries – Networking Session sponsored by Bosch
Latham Foyer

*Activity not held at The Inn
1:00 p.m. – 2:30 p.m.

**The Road Perspective: Infrastructure Applications**

**Moderator:** Catherine McGhee, Virginia Department of Transportation (VDOT) and The Virginia Center for Transportation Innovation and Research (VCTIR)

**Discussant:** Carol Tan, Turner-Fairbank Highway Research Center

A Systemic Framework for Studying Traffic Crash Sequence Using Naturalistic Driving Study Data

**Presenter:** Craig P. Thor, Federal Highway Administration (FHWA)

**Co-authors:** Ken Wu, Paul P. Jovanis

Using NDS Video Data to Evaluate the Impact of Offset Left-Turn Lanes on Gap Acceptance Behavior

**Presenter:** Karin Bauer, MRIGlobal

**Co-author:** Jessica M. Hutton

Time Series Analysis of Driver Behavior on Curves

**Presenter:** Bo Wang, Center for Transportation Research and Education (CTRE), Iowa State

**Co-authors:** Shauna Hallmark, Nicole Oneyear

LiDAR: Another Potential Data Source

**Presenter:** Leslie Harwood, VTTI

**Co-author:** Zachary R. Doerzaph

2:30 p.m. – 2:45 p.m.

**Continuous Break sponsored by Smartmicro**

2:45 p.m. – 4:45 p.m.

**The Future: Innovative Techniques in Data Extraction and Analysis**

**Moderator:** Lincoln Cobb, FHWA

**Discussant:** Shane B. McLaughlin, VTTI

Automated Drive Analysis of Naturalistic Driving Studies with Looking-out Video

**Presenter:** Pujitha Gunaratne, Toyota Technical Center

**Co-authors:** Sujitha Martin, Eshed Ohn-Bar, Ravi Satzoda, Mohan Trivedi

Constructing a Distracted Driving Dataset

**Presenter:** Justin M. Owens, VTTI

**Co-authors:** Linda Angell, Jon Hankey, James Foley, Kazutoshi Ebe

Video-Based Measure Of Driver Heart Rate For Naturalistic Driving Data

**Presenter:** Jonny Kuo, Monash University Accident Research Centre (MUARC), Monash University, Australia

**Co-authors:** Sjaan Koppel, Judith L. Charlton

Video Based Validation of a Maneuver Classification Algorithm for Naturalistic Driving Data

**Presenter:** Andreas Landau, WIVW GmbH, Germany

**Co-authors:** Volker Hargutt, Barbara Metz

Weighted Feature Extraction for Driving Maneuver Recognition: A Study using Naturalistic UTDrive Data

**Presenter:** Yang Zheng, University of Texas at Dallas

**Co-authors:** Amardeep Sathyanayana, John H. L. Hansen

Data Mining for Driver Behavior in Normal Driving

**Presenter:** Laurette Guyonvarch, LAB Renault – PSA Peugeot Citroën, France

**Co-authors:** Michel Lutz, Cyril Chauvel, Françoise Josseuma, Anne Guillaume

4:45 p.m. – 5:00 p.m.

**Concluding Remarks – Thomas A. Dingus, VTTI**

*Activity not held at The Inn*
5:00 p.m. – Symposium Concludes – Break for Thursday workshop participants
5:30 p.m.

5:30 p.m. Thursday workshop participants only – meet in the lobby of The Inn at Virginia Tech to leave for dinner off-site

6:00 p.m. – Dinner – Lane Stadium*
8:00 p.m. Thursday workshop participants only

Thursday August 28, 2014 - SHRP 2 Data InDepth Workshop

7:45 a.m. Workshop participants needing transportation to VTTI – meet in lobby of The Inn at Virginia Tech for shuttle
8:00 a.m. – Continental Breakfast
9:00 a.m. VTTI Main Lobby*
9:00 a.m. – Workshop II: SHRP 2 Data InDepth
5:00 p.m. Lead Organizer: Miguel A. Perez, VTTI
VTTI Organizing Committee: Behnido Calida, Joel Kady, Charlie Klauer, Suzie Lee, and Julie McClafferty
Location: VTTI Interchange Room*
Lunch at VTTI; provided with workshop registration*

*Activity not held at The Inn
Connecting to the wireless network at the Inn at Virginia Tech

1. Left click on the “Start Menu”
2. Left click “Control Panel”
3. Open “Network Connections”
4. Open “Wireless Network Connection”
5. Click “Enable”
6. Click “View Available Wireless Networks”
7. Select the “Hotel” Wireless Network
8. Click OK
9. Close all windows and open your web browser
Notes
Please look for information as it becomes available and plan to join us for the Fifth International Symposium on Naturalistic Driving Research in 2016!