2016 UTC Conference for the Southeastern Region

Knoxville Tennessee • March 31–April 1

Southeastern University Transportation Centers

Southeastern Transportation Center

EVTC
Electric Vehicle Transportation Center

NCTSPM

ABC UTC

ASAP
Accessibility and Safety for an Aging Population

NCITEC
National Center for Intermodal Transportation for Economic Competitiveness

NCTR at CUTR

STRIDE | Southeastern Transportation Research, Innovation Development and Education Center

Director's Welcome

THE UNIVERSITY OF TENNESSEE KNOXVILLE
COLLEGE OF ENGINEERING

On behalf of the Region 4 University Transportation Centers and the University of Tennessee, Knoxville, we are delighted to welcome you to the 2016 UTC Conference for the Southeastern Region. The conference theme is Safety, Mobility & Sustainability, and the sessions are structured to present our region's most recent accomplishments in these areas.

We have worked hard to make this conference a venue to bring together faculty, students, practitioners, and public agencies in the southeast to showcase recent achievements and collaborations. The innovative program promises to be a fast-paced and engaging opportunity to share where we've been and where we're going in transportation research, education, and technology transfer. In particular, this event emphasizes the contributions our students are making to the many-faceted field of transportation.

Such a conference is never a solitary effort. Each UTC in the Southeastern Region shared their ideas and experiences to make this happen. We greatly appreciate the contributions of these conference sponsors:

- Southeastern Transportation Center
- Electric Vehicle Transportation Center
- National Center for Transportation Systems Productivity and Management
- Center for Accelerated Bridge Construction
- Center for Accessibility and Safety for an Aging Population
- National Center for Intermodal Transportation for Economic Competitiveness
- National Center for Transit Research
- Southeastern Transportation Research, Innovation Development and Education Center

We thank them for their generosity and strong commitment to transportation research, innovation, education, and workforce development. In addition, we are thankful to the many speakers and other volunteers who assisted in making this conference a success.

Finally, we want to thank UTK's College of Engineering for its enduring support of the UTC Program, in both our region and the nation.

Welcome to Knoxville and enjoy the conference!

Dr. Stephen H. Richards, Director
Southeastern Transportation Center

Ms. DeAnna Flinchum
Co-Director

Conference Speakers

John Schroer

Commissioner, Tennessee Department of Transportation

John Schroer was appointed Commissioner of Transportation by Governor Bill Haslam in January 2011. During his tenure, Commissioner Schroer has made safety a priority, creating new programs and initiatives such as Quick Clearance, Protect the Queue, and the nation's first Traffic Incident Management Training Facility. Under Commissioner Schroer, TDOT has remained debt-free and has saved taxpayers more than $457 million dollars by reexamining and reducing the scope of projects from wants to needs. With current funding challenges, he is focused on the difficult and expensive task of preserving and extending the life of our existing transportation infrastructure. On the national level, Commissioner Schroer serves as the chairman of the prestigious Standing Committee on Finance and Administration of the American Association of State Highway and Transportation Officials (AASHTO).

Paul Trombino III, P.E.

Director, Iowa Department of Transportation

President, AASHTO

Paul Trombino was appointed director of the Iowa Department of Transportation in May 2011. He had previously served at the Wisconsin Department of Transportation for 17 years. Trombino is the 2015-2016 President of the American Association of State Highway Transportation Officials (AASHTO); is a member of AASHTO Executive Committee; Chair of the AASHTO Subcommittee on Transportation Communication; is Vice Chair of the Transportation Research Board Executive Committee; and active in the State Strategic Transportation Initiatives (SSTI) group. Trombino holds a Bachelor of Science degree in Civil Engineering from the University of Wisconsin, Milwaukee and a Bachelor of Science degree in Economics from the University of Wisconsin, Madison.

Tiffany A. Jackson, CAE

Director of Chapter Development and Membership, WTS

Tiffany A. Jackson is a Certified Association Executive (CAE), with over 18 years of experience working for global non-profit associations. She joined WTS International in November 2012 as chapter development director and had the added role of membership director in 2015. Her focus is on working in all areas of membership and to fully develop and enhance successful WTS Chapters. She also leads all efforts to identify markets for new chapter growth potential. Prior to joining WTS International she was the Global Member Development Manager for ASQ Global, a subsidiary of the American Society for Quality (ASQ). Tiffany has travelled and conducted business for associations in 25 different countries including: Argentina, Brazil, China, India, Malaysia, Peru, Turkey, Singapore, South Korea, UAE, UK, and Qatar. She is passionate about the work she does with non-profit associations and is driven by helping association leaders achieve their vision for maximum success.

Conference Speakers

Lori Pflughaupt

Recruitment Coordinator, Iowa Department of Transportation

Lori Pflughaupt is the Recruitment and Retention Coordinator for the Iowa Department of Transportation and also serves as the Executive Assistant to the Director. She has worked for the Department since 2006 in a variety of offices including Driver Services, Research and Technology and Employee Services. Pflughaupt holds a Bachelor of Arts degree in Advertising from Iowa State University.

Jurek Grabowski, P.E.

Research Director, AAA Foundation for Traffic Safety

In 2010, Jurek Grabowski joined the AAA Foundation for Traffic Safety as the Research Director, where he manages large scale projects in the Foundation's research portfolio. As an injury epidemiologist specializing in new methodological procedures, Jurek is interested in crash causation and outcomes, with an emphasis on risk factor identification and policy intervention. Grabowski's good management has led to the selection and approval of such projects as teen licensing studies, older driver safety studies with the University of Columbia and UMTRI, and in-car technologies studies with MIT. His passion lies in better understanding distracted drivers and their safety impact on real world driving.

Day 1 - Morning

7:30–8:30 AM **Registration & Breakfast**

8:30–9:30 AM **Welcome and Introductions**
Auditorium
Stephen H. Richards, STC Director, University of Tennessee
Steven Jones, STC Technology Transfer Director, University of Alabama

9:30–10:30 AM **Plenary Session**
Auditorium
John Schroer, Tennessee Transportation Commissioner
Paul Trombino III, AASHTO President & Director of Iowa DOT

10:30–11:00 AM **Break**

11:00–12:00
Concurrent Podium Sessions
Rooms 413 A-B-C

Room 413A

SAFETY

- Xuehao Chu, University of South Florida: *Socio-Demographic and Cultural Factors and Differential Safety Performance*
- Raghavan Srinivasan, Highway Safety Research Center, University of North Carolina Chapel Hill: *Development of Crash Modification Functions Using Data from Empirical Bayes Before-After Studies*
- Mahdi Pour-Rouholamin, Auburn University: *Comprehensive Analysis of Wrong-Way Driving Crashes on Alabama Interstates*

Room 413B

MOBILITY

- Nikiforos Stamatiadis, University of Kentucky: *Guidelines for Road Diet Conversions*
- Yazmin Valdez-Torres, Florida State University: *Aging Populations and Transit Oriented Development: Socioeconomic, Demographic, and Neighborhood Trends from 2000 and 2010*
- Virginia Sisiopiku, University of Alabama Birmingham: *Analysis of Employee Commuting Patterns at the University of Alabama at Birmingham Campus*

Room 413C

SUSTAINABILITY

- Doug Kettles, University of Central Florida: *Electric Vehicle Fleet Implications and Analysis*
- Andy Graettinger, University of Alabama: *Recycled Material Web Map: Promoting Sustainability in Transportation Projects*
- Mohammad Marafuzzaman, Mississippi State University: *Managing Congestion in a Multi-Modal Transportation Network under Biomass Supply Uncertainty*

Day 1 - Midday

12:00–1:30 PM
Dining Room

Lunch

1:30–3:15 PM
Auditorium

Joint Thematic Presentations
Steven Jones, emcee

- Chris Cherry, University of Tennessee & Steven Jones, University of Alabama: *Transportation Research in Developing Countries – A World of Contrasts and Opportunities*
- Maranda McBride, North Carolina A&T State University & Despina Stavrinos, University of Alabama Birmingham: *Psychosocial Factors Related to Distracted Driving Among Teens: New and Emerging Trends*
- Alex Hainen, University of Alabama & Michael Hunter, Georgia Institute of Technology: *Successful Signal Management—What We Wish We Knew*

3:15–3:45 PM

Break

3:45–4:30
Concurrent 3-Minute Thesis Competitions
Rooms 413 A-B-C

Room 413A

SAFETY

- Shannon Michelle Oram Wittig, University of Alabama Birmingham: *Time matters: Parental supervision predicts teenagers' driving style*
- Fatemeh Baratian-Ghorghi, Auburn University: *New Methods to Quantify the Effects of Red-Light Camera*
- Kweku Brown, Clemson University: *Too Close to Home? An Investigation into Crash Proximity Relative to Driver Residences in South Carolina*
- Kwaku Boakye, University of Tennessee: *I Wear My Seatbelt, Do You? An Analysis of Seatbelt Use by Drivers and Passengers*
- Jun-Hau Wang, University of Central Florida: *Comprehensive safety analysis on crash modification factors at intersections*
- Nabarjun Vashisth, Clemson University: *Road Safety Assessment and Test Application of iRAP along National Route 3 in Haiti*
- Qing Cai, University of Central Florida: *Comparative Exploration of Zonal Systems and Count Models for Macroscopic Crash Analysis*

Day 1 - Midday & Evening

Room 413B

MOBILITY

- Michael Armstrong, University of Florida: *A Methodology for Evaluating Interactions between Surface Streets and Freeway Diverge Segments for Application in the Highway Capacity Manual*
- Samantha Khazraeian, Florida International University: *Detection of Freeway Incidents Based on Vehicle Acceleration Measurements Using Connected Vehicle Data*
- Gowtham Cherukumalli. Clemson University: *Handling Traffic for Major Events: Optimizing Traffic Cops*
- Erin Lammers, University of Kentucky: *Applicability of Zipper Merge Versus Early Merge in Kentucky Work Zones*
- Sarath Chandra Worthy, Clemson University: *A Low Cost Alternative for Traffic Data Collection at Intersections*
- Samwel Zephaniah, University of Alabama: *Analysis of Crash Congestion Impact on Interstate Mobility*
- Xi Zhao, Clemson University: *An Automated Traffic Surveillance System with Aerial Camera Arrays: Data Collection with Vehicle Tracking*
- Abhay Lidbe, University of Alabama: *Analysis Techniques for Evaluating the Implementation of Adaptive Traffic Signal Control Systems*
- Bumjoon Bae, University of Tennessee: *A scalable force terrain model for microscopic simulation of connected and autonomous transport*

Room 413C

SUSTAINABILITY

- Alireza Shams, Clemson University: *Highway Cross-Slope Measurement Using Mobile Laser Scanning Data*
- Ahmed Hattab, University of Alabama Birmingham: *Drive-by Bridge Damage Inspection*
- Afshin Famili, Clemson University: *GIS Based Spatial Analysis of Pedestrian Crashes: A Case Study of South Carolina*
- Deja M. Jackson, University of Florida: *The Influence of Urban Form on Sustainable Transportation Practices*
- Laura Matney, Clemson University: *Optimizing Parking Allocation for Clemson Football Games Using the Hitchock Algorithm in a GIS*
- Yang Zhang, University of Tennessee: *Let your big data talk to each other*
- Kofi Adanu, University of Alabama: *Stakeholder Driven Process for Sustainable ITS Planning*

4:30–5:30 PM

BREAK

Plaza

Seatbelt Convincer Demonstration

Demonstration of an instrumented vehicle for driving data acquisition

5:30–6:30 PM

Poster Session & Reception

Atrium

6:30–until

Dinner & Open Mic Talks

413 Dining Hall

Steven Jones, emcee

Day 2 - All Day

7:30–8:30 AM
Atrium

Breakfast

8:30–10:00 AM
Auditorium

- 3-Minute Thesis Competition: Best in Show
  (emceed by Steven Jones, University of Alabama)
- Lori Pflughaupt, Iowa DOT Recruitment Coordinator: Workforce Development
  (introduced by Shashi Nambisan, University of Tennessee)
- Tiffany Jackson, Director of Membership and Chapter Development: Women in Transportation Seminar (introduced by Jennifer Ogle, Clemson University)

10:00–10:45 AM
Atrium

Networking Break & Student Organization Showcase

10:45–11:15 AM
Auditorium

Cross-Cutting Session
Peter Kelle, Louisiana State University: *Performance Measurement and Simulation of Intermodal Freight Transportation*

11:15–12:00 APM
Auditorium

Updates from UTC Directors

- Atorod Azizinamini, Accelerated Bridge Construction University Transportation Center, Florida International University
- David Block, Electric Vehicle Transportation Center, University of Central Florida
- Lily Elefteriadou, Southeastern Transportation Research, Innovation, Development and Education Center, University of Florida
- Michael Hunter, National Center for Transportation Systems Productivity and Management, Georgia Institute of Technology
- Steve Richards, Southeastern Transportation Center, University of Tennessee
- John Sobanjo, Center for Safe and Accessible Transportation for an Aging Population, Florida State University
- John Usher, National Center for Intermodal Transportation, Mississippi State University
- Joel Volinski, National Center for Transit Research, University of South Florida

12:00–1:30 PM
413 Dining Hall

Lunch & Keynote Address
Jurek Grabowski, Director of Research, AAA Foundation
(introduced by Reginald Souleyrette, STC Research Director, University of Kentucky)

1:30

Conference Wrap Up & Adjourn
Steve Richards

1:30–4:00 PM
Room 400

Special workshop: (pre-registration required)
Behzad Aghdashi, North Carolina State University
Dynamic Software Tool to Assess the Value of Active Traffic Management (ATM) Strategies in a Freeway Facility Context

Poster Presentations

MOBILITY

Chandra Gorthy, Sarath, Clemson University, *A Low Cost Alternative for Traffic Data Collection at Intersections*

Kidando, Emmanuel, Florida A&M University, *Causal Inference on Travel Time Reliability: A Comparison of Potential Outcomes and Causal Diagrams*

Azizi, Leila, Florida International University, *Comparison Real-time Travel Time Prediction Methods*

Fartash, Homa, Florida International University, *Utilization of the HCM Urban Facility Procedures for the Estimation and Real-Time Prediction of Travel Time with Consideration of Rain Impacts*

Khazraeian, Samaneh, Florida International University, *Modeling Adaptive (Traffic Responsive) Ramp Metering in Macroscopic Simulation Environment*

Massahi, Aidin, Florida International University, *Improved Model for Estimating Incident Impact on Urban Street Travel Time with Consideration of Upstream Intersection Capacity Reduction*

Shahadat Iqbal, Md, Florida International University, *Simulate Bluetooth Travel Time from Vehicle Trajectory Data*

Kocatepe, Ayberk, Florida State University, *Transportation Accessibility Assessment Of Critical Facilities: Aging Population-Focused Case Studies In Florida*

Saroj, Abhilasha, Georgia Institute of Technology, *Sensitivity Analysis of Vehicle Blocking Behavior on Intersections*

Baston, Bob, University of Alabama, *A Spreadsheet Tool for Queue Predictions at Temporary Work Zones*

Hainen, Alex, University of Alabama, *High-Resolution Controller Data Performance Measures for Optimizing Diverging Diamond Interchanges and Outcome Assessment with Drone Video*

Hainen, Alex, University of Alabama, *Roundabout Critical Headway Measurement Based on Hi-Resolution Event-Based Data from Wireless Magnetometers*

Lidbe, Abhay, University of Alabama, *Determinants of Road Accident Deaths in Urban and Rural India*

Lidbe, Abhay, University of Alabama, *Comparing the Performances of Different Arterial Corridors with Varying Traffic Characteristics under TOD and SCATS Traffic control using Microsimulation Technique*

Samwel Zephaniah, University of Alabama, *Operational Case Study of a Diverging Diamond Interchange in a Closely-Spaced Coordinated Network*

Lwambagaza, Lina, University of North Florida, *Modeling Older Drivers Behavior on Merging Ramps*

Chu, Xuehao, University of South Florida, *Determining Statistical Equivalence of Manual and Automated Methods for Data Collection*

Boggs, Alexandra, University of Tennessee, *The Role of Headway Distribution and Capacity on Interstate 40 Lane Management*

Wali, Behram, University of Tennessee, *Heterogeneity Assessment of Incident Durations– A Comparison Fixed and Random Parameter Regression Models*

Dahai, Pankaj, University of Tennessee, *An Examination of the Influence of Travel Information on Route Choice*

Ling, Ziwen, University of Tennessee, *What is Commercial Motor Vehicle Driver Parking Perceptions and Attitude to Smartphone Technology? A study in the Southeast United States*

SAFETY

Baratian-Ghorghi, Fatemeh, Auburn University, *Devising a Fine Structure for a Red Light Camera Violation*

Wang, Jin, Auburn University, *Effects of Median Widths on Wrong-Way Incidents on Multilane Divided Highways*

Brown, Kweku, Clemson University, *Safety Planning - Analysis of the Socio-Economic and Demographic Characteristic of At-Risk Driver Residential Areas in South Carolina*

Brown, Kweku, Clemson University, *The Influence of High Schools on Teen Driver Behavior and Crash Involvement in South Carolina*

Poster Presentations

Brown, Kweku, Clemson University, *Too Close to Home? An Investigation into Crash Proximity Relative to Driver Residences in South Carolina*

Shams, Alireza, Clemson University, *Highway Cross-Slope Measurement Using Mobile Laser Scanning Data*

Omidvar, Aschkan, Florida A&M University, *Understanding the Factors Affecting the Frequency and Severity of Aging Population-involved Crashes in Florida*

Greenwood, Aaron, Georgia Institute of Technology, *Modeling Comprehension of Work Zone Traffic Control*

Shaw, Faaiqa, Georgia Institute of Technology, *Modeling Perceived Complexity of Static Roadway Environments*

Adanu, Kofi, University of Alabama, *Comparison of DUI and Speeding among Weekend and Weekday Single-vehicle Crashes*

Adanu, Kofi, University of Alabama, *Analysis of College Football Gameday-related Traffic Crashes – A Case Study of Tuscaloosa, Alabama*

Dye, Daniel, University of Alabama, *Evaluation of Ticketing Aggressive Cars and Trucks Enforcement in Alabama: 2010-2014*

Lidbe, Abhay, University of Alabama, *Analysis of Deaths due to Road Crashes in Urban and Rural India using Seemingly Unrelated Regression*

Ozelim, Luana, University of Alabama, *Socio-Demographic and Cultural Factors Affecting Crash Frequency and Severity in Alabama*

Ozelim, Luana, University of Alabama, *Income as an Indicator of Road Safety Variability in Alabama*

Shake, Brittnay, University of Alabama, *Integrating Multiple Linear Referencing Methods into a Web-Based GIS for Crash Mapping*

Oram Wittig, Shannon Michelle, University of Alabama Birmingham, *Time matters: Parental supervision predicts teenagers' driving style*

Wu, Jiawei, University of Central Florida, *Pedestrian-Vehicle Conflict Analysis at Signalized Intersections Using Micro-Simulation*

Green, Eric, University of Kentucky, *Development and Prioritization of Highway Intersections in Kentucky Using the Highway Safety Manual Methodologies*

Kazi, Obaidur, University of Kentucky, *A Data-Driven Approach to Analyze the Impact of Crash*

Wang, Teng, University of Kentucky, *3D Infrastructure Condition Assessment for Rail Highway Applications*

Kitali, Angela, University of North Florida, *The Effect of Age on Pedestrian Injury Severity – Case Study of Florida*

Chu, Xuehao, University of South Florida, *Difference and Variability in Traffic Fatality Rates between Southeast and Other Regions; Comparing Traffic Injury Rates between Southeast and Other Regions: A Decomposition Approach*

Boakye, Kwaku, University of Tennessee, *Impacts of Click It-Or-Ticket Campaign and Saturation Patrol Interventions on Nighttime Seatbelt Use: A Pilot Study in East Tennessee*

Kamrani, Moshen, University of Tennessee, *Location Based Driving Volatility and its Implications for Highway Safety – An Innovative Methodological Inquiry*

Wali, Behram, University of Tennessee, *Exploring Regimes in Driving Behavior and Associated Factors by Using Basic Safety Messages Transmitted between Connected Vehicles*

Zhang, Meng, University of Tennessee, *Exploring Warning Information for Extreme Lateral Movement by Using Basic Safety Messages Data Collected From Connected Vehicle*

Zhang, Meng, University of Tennessee, *Structuring and Integrating Data to Explore Multi-Level Correlates of Driving 1 Volatility*

SUSTAINABILITY

Famili, Afshin, Clemson University, *Geostatistical Analysis of Mobile Source Emissions: A South Carolina Case Study*

Famili, Afshin, Clemson University, *GIS Based Spatial Analysis of Pedestrian Crashes: A Case study of South Carolina*

Poster Presentations

Jia, Jianmin, Florida International University, *Estimation of the Total Cost of Bridge Construction for use in Accelerated Bridge Construction Selection Decisions*

Baek, Minsoo, Georgia Institute of Technology, *Cost Control Strategies for Highway Projects*

Dong, Xinjun, Georgia Institute of Technology, *Field Validation of Wireless Sensing Devices on a Pre-stressed Concrete Highway Bridge*

Ilbeigi, Mohammad, Georgia Institute of Technology, *Analyzing and Forecasting Uncertainty in the Price of Asphalt Cement in Transportation Projects*

Ilbeigi, Mohammad, Georgia Institute of Technology, *Financial Valuation of Material Price Adjustment Clauses in Transportation Projects*

Jay Lindly, University of Alabama, *Transportation Institute for Underrepresented High School Students*

Hattab, Ahmed, University of Alabama Birmingham, *Drive-by Bridge Damage Inspection using Optimization Algorithm*

Sisiopiku, Virginia, University of Alabama Birmingham, *Green/Sustainability Design and Rating Systems: Development of an Educational Module*

Kettles, Doug, University of Central Florida, *Electric Vehicle Fleet Implications and Analysis*

Kontou, Eleftheria, University of Florida, *Socially Optimal Replacement of Conventional Vehicles with Electric Vehicles for the U.S. Household Fleet*

SAFETY & MOBILITY

Baran Ulak, Mehmet, Florida A&M University, *Investigation of Significant Factors Affecting Aging Involved Crashes: A Causal and Spatial Case Study in Northwest Florida*

Fartash, Homa, Florida International University, *Performance of Rectangular Rapid Flashing Beacons (RRFBs) at Midblock Pedestrian Crossings*

Sufian Talukder, University of Alabama, *Preliminary System Design for Traffic Signal Performance Measures*

SAFETY & SUSTAINABILITY

Kettles, Doug, University of Central Florida, *Automated and Connected Vehicles Technology Assessment*

Alley Swain, Kristen, University of Mississippi, *Toxic Transportation Spills: Invisible or Ignored?*

Notes

University Transportation Centers

in the

Southeastern Region

Southeastern Transportation Center

- University of Tennessee (lead)
- University of Alabama
- University of Alabama Birmingham
- University of Central Florida
- University of South Florida
- University of Kentucky
- North Carolina A&T State University
- University of North Carolina-Chapel Hill
- Clemson University

Electric Vehicle Transportation Center

- University of Central Florida (lead)
- University of Hawaii
- Tuskegee University

National Center for Transportation Systems Productivity and Management

- Georgia Institute of Technology (lead)
- Georgia Transportation Institute
- Florida International University
- University of Central Florida
- University of Alabama at Birmingham

Center for Accelerated Bridge Construction

- Florida International University (lead)
- University of Nevada-Reno
- Iowa State University

Center for Accessibility and Safety for an Aging Population

- Florida State University (lead)
- Florida A&M University
- University of North Florida

National Center for Intermodal Transportation for Economic Competitiveness

- Mississippi State University (lead)
- University of Denver
- University of Mississippi
- Louisiana State University
- Hampton University

National Center for Transit Research

- University of South Florida (lead)
- Florida International University
- North Dakota State University
- Texas A&M University
- University of Illinois at Chicago

Southeastern Transportation Research Innovation Development and Education Center

- University of Florida (lead)
- Auburn University
- Florida International University
- Georgia Tech
- Mississippi State University
- North Carolina State University
- University of Alabama at Birmingham
- University of North Carolina – Chapel Hill