

## Program Progress Performance Report for University Transportation Centers

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## ACCOMPLISHMENTS

### *What are the major goals of the program?*

- To develop novel strategies for reducing congestion in the southeast and nationally by considering new technologies in vehicles, telecommunications, shared autonomy in transportation, driver/traveler behavior and financial constraints. To do this, we focus on five research thrusts: Technology, Management, Data, Design, and Users.
- To implement the research products developed from these strategies and to make them available to the practitioner community. The STRIDE Center continues to work closely with state DOTs in the region and other stakeholders via the Center's technology transfer, education and workforce development activities to disseminate the results of our work and facilitate implementation.

### *What was accomplished under these goals?*

- Year 1 and Year 2 projects are in various stages of progression and are closely being monitored by staff at the STRIDE Center through quarterly reports, email communication and phone calls. All STRIDE research projects (including cost-share) are posted at <https://stride.ce.ufl.edu/2017/03/2017-projects/>.
- During this reporting period we developed new metrics to assess the level and quality of the STRIDE Center's Technology Transfer activities. The metrics agreed upon are as follows: 1) two OUTPUTS as products (number of new or improved tools, technology, products, methods, etc.) and technical reports; 2) two OUTCOMES as body of knowledge (number of technology transfer trainings, workshops, webinars, etc.) and the number of professionals trained; and 3) two IMPACTS as stakeholders engaged to encourage adoption and the potential for implementation. Additional information on these is provided later in this report on pages 7 through 15.
- Based on the new STRIDE Center's Technology Transfer metrics and processes, various forms were modified and updated to reflect our new requirements when monitoring on-going projects. PIs and other STRIDE-affiliated researchers have been informed of these changes.
- Conference calls with individual PIs (and their teams) of the 28 ongoing projects at the STRIDE Center were held to discuss the technology transfer metrics described above and the respective project activities. These calls also discussed the researchers' efforts related to stakeholder engagement and the products to be derived.
- The Center has recently had its very first project from Year 1 completed (Project G – Transit in the Era of Shared Mobility, Dr. Kari Watkins, Georgia Institute of Technology), and we are implementing our new processes with the PI of this project. Upon the completion of each project, we schedule a meeting with the PI and discuss a) the project's metrics table, b) dates for scheduling a webinar or workshop, c) the 508 Compliance requirements for final reports, and d) the data repository requirements that the STRIDE Center has developed.
- STRIDE Hosted two distinguished speakers during this reporting period:
  - Dr. Carissa Slotterback, Associate Dean, Humphrey School of Affairs, University of Minnesota. Presentation title: "Advancing Collaboratively Engaged Research: Implication for Transportation Research Now and in the Future", December 6, 2018.
  - Dr. Yinhai Wang, Professor, University of Washington. Presentation title: "Artificial Intelligence Applications in Large-Scale Transportation System Analysis," February 28, 2019.
- A webinar on I-STREET titled "An Overview of the Real-World Testbed: I-STREET" was held on November 30, 2018. I-STREET is a multimodal real-world testbed developed by the University of Florida in collaboration with the City of Gainesville and the Florida Department of Transportation (FDOT). It aims to develop, implement, test, and refine advanced transportation technologies (such as autonomous and connected vehicles and adaptive signal control) to improve mobility and safety for our region and beyond. There are many projects associated with I-STREET that are funded by FDOT and serve as cost share projects for the STRIDE Center.

- STRIDE Project E (“Predicting Congestion: The Challenge of Shifting Travel Behavior on Estimating Trip Generation”) was featured during the TRB’s Transport and Land Development Committees webinar on “Innovation in Traffic Impact Assessment” on March 29, 2019.
- STRIDE participated in Transportation Camp South via its GaTech partner (Dr Kari Watkins). This event is an “unconference”, where sessions are proposed and led by attendees – bringing together thinkers and doers in the fields of transportation and technology for a day of learning.
- STRIDE provided in-kind support to this year’s WTS University of Florida Student Chapter Symposium which focused on “Big Data in Transportation”. The event was attended by students, faculty and staff and included a panel of experts from academia and the public sector. For more information, visit <https://www.transportation.institute.ufl.edu/2019/04/wts-florida-gator-student-chapter-hosts-9th-annual-wts-symposium/>.
- Faculty and staff from the STRIDE Center attended the 6<sup>th</sup> Annual UTC Conference for the Southeastern Region at Clemson University, October 21-25, 2018. STRIDE-funded research projects were presented either as posters or podium presentations. The conference was hosted by the Center for Connected Multimodal Mobility, a Tier-1 UTC. The conference included a combined on-site/online FREEVAL training related to Project I (Freeway Management for Optimal Reliability) to 20 transportation professionals. The conference website and agenda area available at <https://cecas.clemson.edu/C2M2/>.
- STRIDE research was featured at the ITS5C Summit in Jacksonville, Fla., in October 2019, via a workshop on “Managing Performance: From Active Transportation Management to Connected Vehicles”. The presenters were: Dr. Mohammed Hadi (FIU), Dr. Lily Elefteriadou (UF), Dr. Clark Letter (UF), Dr. Mike Hunter (GaTech), Mr. Thomas Chase (NCSU) and Mr. Md. Ahsanul Islam of UAB, who presented for his graduate adviser, Dr. Virginia Sisiopiku. Additional information on this session is included at <https://stride.ce.ufl.edu/2018/11/stride-research-presented-at-its5c-summit/>.
- The Center has established its External Advisory Board (EAB). Members include representatives from research offices at state DOTs in the region: Darryll Dockstader, FLDOT; David Jared, GDOT; Neil Mastin, NCDOT; Michelle Owens, ALDOT; Cindy Smith, MSDOT; and Robert Perry, SCDOT. We will continue to add other stakeholders from various agencies as necessary.
- In January 2019, during the annual TRB meeting in Washington, D.C., the STRIDE Center’s Internal Steering Committee (ISC) and the EAB met to discuss STRIDE-wide technology transfer activities and to solidify collaboration on this and other activities with state DOTs in the region.
- A STRIDE Student Poster Showcase/Competition was held during TRB. A total of 23 abstracts were submitted for this event, and posters were judged by members of the Center’s External Advisory Board. Three winning posters were selected:
  - Mary Wolf, UNC Chapel Hill, 1<sup>st</sup> Place, Poster title: *“Healthcare Transportation Services: Policy Shifts and the Influence of Shared Mobility”*
  - Abhilasha Jairam Saroj, Georgia Institute of Technology, 2<sup>nd</sup> Place, Poster title: *“Operational Evaluation of Do Not Block the Box Campaigns”*
  - Leila Azizi, Florida International University, 3<sup>rd</sup> Place, Poster title: *“Use of Connected Vehicle Data for the Estimation of Safety Performance Considering Emerging Technology”*

### **K-12 Outreach Activities**

- In the past 6 months the STRIDE Center has organized several K-12 activities at UF and consortium members have engaged in K-12 outreach at their respective universities. Below is a list of activities/updates to-date:
  - 1,400 students were engaged in transportation engineering outreach events and activities at the University of Florida, The Citadel, and the University of Alabama at Birmingham during the reporting period.

- The UF K-12 Coordinator implemented four different transportation outreach activities that included a STEM design activity (adapted from <https://www.jpl.nasa.gov/edu/teach/activity/touchdown/>), a middle school activity teaching complete street design, a reaction time activity for families to learn about bicycle and driver safety, and an early elementary activity about different modes of transportation. Activities were implemented at eight schools (Science Nights, Career Days) and a community event (UF Health Bicycle Rodeo) reaching 600 children and parents.
- The Citadel hosted 600 4<sup>th</sup> and 5<sup>th</sup> grade students from the Richland County School District on their campus to learn about civil and transportation engineering through a presentation, activities, and demonstrations such as water flow through a channel and pavement materials.
- The Citadel provided a 2-day Pre-Knob Program for 105 high school students to visit campus, attend a transportation engineering class, stay in a dormitory, and see previous highway design projects.
- UF engaged 58 middle school girls in a complete streets design activity in conjunction with the UF College of Engineering Girls Engaged in Engineering Day and as a part of the Women in Science and Engineering (WiSE) sponsored Spring Break Science Camp.
- Dr. Lily Elefteriadou (UF) presented an overview of transportation engineering and research on advanced autonomous and connected vehicle technologies to a group of middle school Girl Scouts as part of the American Society of Civil Engineer’s Merit Badge Day.
- A day-long event titled “Introduce a Girl to Engineering” was held on February 17, 2019 at The Citadel. Seventy-two Girl Scouts (4<sup>th</sup> through 10<sup>th</sup> grade) were introduced to engineering and transportation engineering with hands-on activities. This year’s activities included a balloon-powered vehicle, slime, potato clock, and a marshmallow man with a Ghostbusters’ theme.
- The Citadel department of Civil Engineering participated at the Charleston STEM Festival, a STEM celebration in the Lowcountry. More than 500 kids were introduced to civil and transportation engineering with hands-on activities, which included testing and making bridges using K’nex pieces.

### Faculty Awards

- Dr. Nagui Roupail, project PI at NC State was awarded a Distinguished University Professor title by the Office of the University Chancellor. <https://www.engr.ncsu.edu/news/2018/06/21/roupail-named-distinguished-university-professor/>. (6/21/18)
- Dr. Sisiopiku, project PI at UAB, received a 2018 Certificate of Meritorious Achievement award from the Southern District Institute of Transportation Engineers. The certificate was presented by ALSITE president Mr. Cody Long, Skipper Consulting, Inc. (10/12/18)
- Dr. Sisiopiku, project PI at UAB, was profiled in an article titled “Meet 5 role models who are inspiring young women to get into engineering” (see attached). The full article was published at the UAB Reporter and is available here or at [https://www.uab.edu/reporter/people/achievements/item/8656-meet-5-role-models-who-are-inspiring-young-women-to-get-intoengineering?utm\\_source=ereporter&utm\\_medium=email&utm\\_campaign=20190319](https://www.uab.edu/reporter/people/achievements/item/8656-meet-5-role-models-who-are-inspiring-young-women-to-get-intoengineering?utm_source=ereporter&utm_medium=email&utm_campaign=20190319). (3/18/19)
- Dr. Lily Elefteriadou (STRIDE PI) won the 2019 ASCE Harland Bartholomew Award.

### Student Awards

- Dr. Ossama Ramadan, a UAB alumnus and Postdoctoral Fellow at the UAB Transportation Engineering and Development Laboratory (TREND Lab), has been selected as the 2018 UAB Most Esteemed Postdoc. (9/20/18)
- Troyee Saha (graduate student at UAB) won the Best Oral Presentation Award at the 6th Annual UTC Conference for the Southeastern Region at Clemson, SC on October 24, 2018. Her presentation was titled: “Investigating the Impact of Lane Closure Control on Work Zone Mobility.” (10/24/18)

- Chris Brown of The Citadel (undergraduate student) won 2<sup>nd</sup> Place for his poster presented at the 6<sup>th</sup> Annual UTC Conference for the Southeastern Region at Clemson, SC on October 24, 2018. His poster was titled: “Strategies for Mitigating Congestion in Small Urban and Rural Areas”. (10/24/18)
- 2018 Gilbert H. Rowe Transportation Engineering Award, SC Institute of Transportation Engineers, presented to Citadel student Chris Brown. (12/13/18)
- Ms. Sahila Sarjana who won first place in the Southern District ITE (SDITE) graduate student technical paper contest. Her paper was titled: “Identifying Micro-Level Determinants that Influence the Transportation Network Companies (TNCs) Growth through Analysis of Transportation Users’ Preferences and Attitudes”. In addition to winning the SDITE award, the paper will also be entered into the national ITE competition. (3/29/18)

*How have the results been disseminated?*

- STRIDE researchers are working closely with selected stakeholder to obtain feedback on their research scope and process and to disseminate the findings of their work. Pages 14 to 16 provide additional information on how STRIDE PIs are working toward implementation of their research.
- The STRIDE Center uses Facebook, Twitter and Constant Contact to disseminate the results of research, raise awareness about ongoing research, promote opportunities for students to showcase research, advertise upcoming webinars and distinguished speaker seminars, conferences, including information about the various K-12 outreach activities taking place at the Center. All final reports are posted on the STRIDE website at <https://stride.ce.ufl.edu/research-2/final-reports/research-projects/>.
- A Facebook and Twitter campaign is currently in progress to showcase the newly selected Year 2 and Year 3 projects. STRIDE will spotlight the lead PI of each project and the student(s) associated with each project. To see previous spotlights posted on FB visit: <https://www.facebook.com/STRIDEUTC/>. To see previous spotlights posted on Twitter, visit: <https://twitter.com/STRIDE UTC>.

*What do you plan to do during the next reporting period to accomplish the goals and objectives?*

- Facilitate training related to FDOT cost share project “Estimation of System Performance and Technology Impacts to Support Future Year Planning”. (BDY29-977-39)
- Organize a training program related to I-STREET. This training will be available for transportation professionals who hear about lessons learned regarding implementation of advanced technologies in a real-world environment.
- Organize a webinar related to “Transit in the Era of Shared Mobility” (Project G), which was recently completed. A webinar will be scheduled in early summer 2019.
- A second meeting of the STRIDE ISC and EAB is currently being planned for July 2019 to take place during the Automated Vehicles Symposium (AVS) in Orlando, FL.
- STRIDE is organizing a UTC-poster session and will showcase student research during the AVS in Orlando.
- Plans are underway for the 7<sup>th</sup> Annual UTC Conference for the Southeastern Region and the STRIDE Center has been assisting in organizing it. The host for the next conference will be the Freight and Mobility Research Institute, a Tier- 1 UTC at Florida Atlantic University. The conference is being planned for spring 2020.
- STRIDE will participate in the 2019 UTC Spotlight Conference in May at the U.S. Senate and U.S. House of Representatives to showcase “Strategies for Alleviating Congestion”. Dr. Lily Elefteriadou is the conference organizer for this event which is sponsored by CUTC and RETRC.
- Continue to monitor projects to ensure they are completed on time.
- As projects near completion, the STRIDE Center’s Technology Transfer Coordinator (Ondine Wells) will coordinate with PIs to arrange additional webinars and workshops, as well as continued interactions with stakeholders identified throughout the project.

- Select Year 3 research projects. The STRIDE Internal Steering Committee has agreed to focus this year’s projects on Big Data/Analytics; Autonomous/Connected Vehicles; Detours, Planned Events, and Incidents; and Shared Mobility.
- Continue to organize and offer various events for K-12 (congestion challenge, teacher workshops, summer workshops).
- Host 1-2 Distinguished Lectures.
- Highlight Year 2 ongoing projects on social media and through email to showcase ongoing projects at the STRIDE Center. We will produce short, 1-page briefs that are designed to summarize the core idea of the project in non-technical terms.

## PARTICIPANTS & COLLABORATING ORGANIZATIONS

Below is a running list of the key organizations that the STRIDE Center and its consortium members have relationships with. Most state DOTs provide cost-share, while other entities provide a variety of contributions (in-kind, facilities, collaborative research, personnel exchanges).

<b>Name of Organization</b>	<b>Location</b>	<b>Type of Contribution(s)</b>
Durham-Chapel Hill Carrboro MPO	North Carolina	Various
21st Century After School Program	Gainesville, FL	collaborator; matching with school programs
ABC-UTC Florida International University	Miami, FL	UTC Conference Sponsorship
Alabama Department of Transportation	Montgomery, AL	Cost share; matching funds
Alachua County Public Schools District	Gainesville, FL	collaborator; matching with school programs
American Society of Civil Engineers (ASCE) - Girl Scout Merit Badge Day	Gainesville, FL	Event organizer
Atlanta Chamber of Commerce	Atlanta, GA	Various
Atlanta Regional Commission		Various
Auburn University		matching funds
Cambridge Systematics	Various locations in the U.S.	Various
City of Atlanta	Georgia	Various
City of Birmingham	Birmingham, AL	Various
City of Gainesville	Gainesville, FL	Providing AV shuttle, access to data streams from the City's fiber network, participation in ITE Summit
City of Raleigh	North Carolina	Stakeholder
Clemson University	Clemson, SC	UTC Conference Sponsorship
Cobb County	Georgia	Various
Community Improvement Districts (Buckhead, Cobb, Perimeter)	Georgia	Various
Department of Civil and Environmental Engineering - University of Michigan	Michigan	Various
Department of Civil Engineering, Auburn University	Alabama	Matching funds
Enforcement Engineering, Inc.	Jacksonville, FL	UTC Conference Sponsorship
Florida Department of Transportation	Tallahassee, FL	Match support, stakeholder, collaborative research

FDOT Districts 2, 4, 5, & 6	Lake City, Ft. Lauderdale, Deland and Miami	Various
Florida Highway Patrol	Florida	Various
Florida International University	Miami, FL	Collaborative research
Florida Polytechnic University	Lakeland, FL	Collaborative research; participation in ITE Summit
Florida State University/Florida A&M	Tallahassee, FL	UTC Conference Sponsorship
Freight Mobility Research Institute/Florida Atlantic University	Boca Raton, FL	UTC Conference Sponsorship
GA Tech	Atlanta, GA	Matching funds
Gainesville Community Redevelopment Agency (CRA)	Gainesville, FL	In-Kind
Georgia Department of Transportation	Georgia	Matching funds
Georgia Regional Transportation Authority (GRTA)	Atlanta, GA	In-kind
IBM (Smarter Cities Challenge)		I-STREET Grant
Institute of Transportation Research and Education, NC State	North Carolina	Various
Jacksonville MPO	Jacksonville, FL	Various
Jacobs Engineering	Boynton Beach, FL	UTC Conference Sponsorship
Jeff Hagan (CEO of Oak Hammock), Florida Department of Transportation representatives,	Gainesville, FL	In-kind
JSU		Matching funds
Kimley-Horn	Orlando, FL	Participation in ITE Summit
Kittelson & Associates	Various locations in the U.S.	Various
Louisiana State University	Baton Rouge, LA	Participation in 5 <sup>th</sup> UTC Conf.
LTG, Inc	Ormond, FL	Participation in ITE Summit
LYNX Transit Agency	Orlando, FL	Various
Malisa McCreedy (City of Gainesville, Mobility Manager)	Gainesville, FL	Stakeholder
Medical University of South Carolina	Charleston, SC	Recruiting of Public Health MS and PhD students to enroll in course
Metropolitan Atlanta Rapid Transit Authority (MARTA)	Atlanta, GA	In-kind
NCDOT	North Carolina	Matching funds; stakeholder
NCHRP Project 07-25: Guide for Pedestrian and Bicycle Safety at Alternative Intersections and Interchanges (A.I.I.).	Washington, D.C.	Stakeholder
NDS-National Data & Surveying Services	Plantation, FL	Participation in ITE Summit
North Carolina A&T State University	Greensboro, NC	UTC Conference Sponsorship
Oak Hammock	Gainesville, FL	In-kind
Oak Ridge National Labs	Tennessee	Various
Office of Materials and Research, South Carolina Department of Transportation	South Carolina	Stakeholder
Orlando-Orange County Expressway Authority	Orlando, FL	Various
PennDOT	Harrisburg, PA	Stakeholder
Regional Planning Commission of Greater Birmingham	Birmingham, AL	Various

Research Triangle Regional Public Transportation Authority (GoTriangle)	Durham, NC	Stakeholder
Southeastern Transportation Center/University of Tennessee	Knoxville, TN	UTC Conference Sponsorship
The Citadel	Charleston, SC	Institutional In-Kind match
The Triangle Regional Model Service Bureau	North Carolina	Various
Town of Cary	North Carolina	Stakeholder
Transportation Research Board	Washington, D.C.	UTC Conference Sponsorship
U.S. Army Corp of Engineering	Vicksburg, MS	Various
UAB	Alabama	Institutional In-Kind match
UF	Florida	Institutional In-Kind match
UF Computer and Information Science Engineering	Gainesville, FL	Collaborative research
UF Health (Bicycle Rodeo)	Gainesville, FL	Event organizer
UF Herbert Wertheim College of Engineering	Gainesville, FL	Collaborator
UF Institute of Aging	Gainesville, FL	Recruitment
UNC	North Carolina	Institutional In-Kind match, matching funds
UNC Highway Safety Research Center	Chapel Hill, NC	UTC Conference Sponsorship
University of Minnesota	Minneapolis, MN	Collaborative research
University of South Florida/Center for Urban Transportation Research	Tampa, FL	UTC Conference Sponsorship
Virginia Tech Transportation Institute	Blacksburg, VA	Help with data collection.
Voyage	Lady Lake, FL	Collaborative research
Women in Science and Engineering (WiSE)	Gainesville, FL	Event organizer
Women in Transportation Seminar	Gainesville, FL	Volunteers

## OUTPUTS

The STRIDE Center will use the following metrics to assess the OUTPUTS related to its technology transfer program. Among Year 1 projects, eight products and one technical report have been completed thus far. Most Year 1 projects are still in progress and additional products and reports will be produced as these are completed. One product has been completed from Year 2 funding.

The table below summarizes those outputs.

TYPE	METRIC	Year 1 Funding: Outputs In Progress	Year 1 Funding: Outputs Completed	Year 2 Funding: Outputs In Progress	Year 2 Funding: Outputs Completed
OUTPUT	<b>Product(s):</b> Number of new or improved tools, technologies, products, methods, practices, and processes to reduce congestion	1	8	17	1
OUTPUT	<b>Technical Report:</b> Number of client-based technical reports published about approaches to congestion mitigation	8	1	18	0

### Products

This table summarizes the nine products completed to date (eight from Year 1 funding and one from Year 2 funding).

Project#	Product
A	Developed a method to estimate diversion due to incidents based on the freeway mainline detector data combined with incident data using clustering, cumulative volume analysis, and regression analysis.
C	Developed a methodological framework for performance measurement using connected vehicle data, and a microscopic simulation model in PTV Vissim and FHWA TCA tool, methods to estimate microscopic safety and mobility measures based on connected vehicle data.
F	Developed 24 microsimulation models of different CFI geometries and pedestrian-bicycle crossing facilities.
G	Produced a cluster analysis showing which transit agencies are grouped as peers based on factors that influence transit ridership. Agencies can use their cluster to choose peer agencies for future benchmarking studies.
G	Produced a taxonomy of shared mobility options for accessing healthcare.
I	Calibrated FREEVAL, a freeway analysis tool, to improve the existing product, particularly for non-recurring congestion effects such as incidents.
I	Developed a new methodology using test site data to estimate and improve CV/AV technology on freeway reliability.
I	Developed an improved methodology for estimating and improving travel reliability to better coordinate freeways and local arterials.
D2	Developed a survey to assess users' perceptions of AV technologies.

### Technical Reports

- *Transit in the Era of Shared Mobility*, by Kari Watkins, Noreen McDonald, Ruth Steiner, and Billy Williams, May 30, 2019.

### Publications, Conference Papers, Posters & Presentations

- Tariq, M.T., R.C. Saha, and M. Hadi, "Methodology to Derive Route Diversion during Freeway Incident Condition," Presented at the Transportation Research Board's 98th Annual Meeting, Washington, D.C., 2019.
- Bu, L., F. Wang, X. Zhou, and C. Yin. "Managed gating control strategy for emergency evacuation", *Transportmetrica A - Transport Science*, Issue 10, Vol. 14, November 2018. <https://doi.org/10.1080/23249935.2018.1552336>
- Classen, S., Jeghers, M., Morgan-Daniel, J., Winter, S., King, L., & Struckmeyer, L. (2019). Smart invehicle technologies and older drivers: A scoping review. *OTJR: Occupation, Participation and Health Special Issue: Robotics, AI, Automations and Relationship to Health and Occupational Therapy*. Advanced online publication. doi:10.1177/1539449219830376
- Ederer, D., Berrebi, S., Diffie, C., Gibbs, T., Watkin, K. Comparing Transit Agency Peer Groups using Cluster Analysis. Transportation Research Board. Submitted for publication, 2018.
- Classen, S., Mason, J., Wersal, J., Sisiopiku, V. UF & UAB's Phase I Demonstration Study: Older Driver Experiences with Autonomous Vehicle Technology. General session will be presented at the Association for Driver Rehabilitation Specialists (ADED), Lexington, KY, August 2019.
- The OT Department was well-represented at the National Conferences for American Occupational Therapy Association (AOTA). Roughly 7,500 professionals attended the conference and 35 professionals visited our poster session titled, "A scoping review for the use of smart technology with older drivers". (4/5/2019)

- The research team for Project D2 presented their initial validation for the survey created for and utilized in this study. The poster was presented at PPHP Research Day 2019 to 20 professionals.
- "A Method to Synthesize Transportation Network Companies (TNC)-Aware Population Microdata Sample" poster presentation at the 98th TRB meeting as part of the STRIDE Poster Student Competition, Washington, DC; S. Sarjana, V. P. Sisiopiku, and O. E. Ramadan, University of Alabama at Birmingham. (1/14/2019)
- Conference poster "A Methodological Framework for Estimating Transportation System Performance Measurements using Connected Vehicle Data" at the 6th Annual UTC for the Southeastern Region, Clemson, SC. (10/24-25/2018)
- An abstract for Project J was submitted and accepted for a poster presentation at the 98th TRB meeting as part of the STRIDE Poster Student Competition, Washington, DC. (1/14/2019)
- The K2 project team presented findings in this project as well as an overview of the activities to the TRB committee on Highway Capacity and Quality of Service at the TRB's annual meeting. (1/3/2019)
- Abstract titled "Mobility Patterns and Mode Preferences of Birmingham Travelers" was selected for presentation at the 2019 SDITE/MCDITE Annual Meeting in Arlington, VA. (2/20/2019)
- Conference Presentation, "Transportation Engineering and Public Health: Updates on Science, Interventions and Practice," Georgia Section, Institute of Transportation Engineers, 2018 Summer Seminar, Daniel Bornstein, William J. Davis, 70 participants, St. Simons Island, GA. (7/18/2018)
- Research Conference Presentation, presented five research problem statements, South Carolina Department of Transportation, including bicycle and active transportation research focused projects, 100 participants. (11/1/2018)
- Research Conference Presentation, "Collaborating with Institutes of Higher Learning to Ensure Quality Research, Research Peer Exchange," South Carolina Dept. of Transportation, Madren Conf. Center, Clemson Univ., 25 participants. (8/29/2018)
- Presentation of results for North Carolina and Virginia at the conference of the Association of Collegiate School of Planning in Buffalo. (10/1/2018)
- Presentation at the regional conference of the Urban Land Institute Chapter luncheon
- "Collaborating with Institutes of Higher Learning to Ensure Quality Research, Research Peer Exchange," South Carolina Department of Transportation, Madren Conference Center, Clemson University. (8/29/2018)
- Preliminary findings for Project J were presented at the 6th UTC Conference for the Southeast, Clemson, SC. (Oct. 24-25, 2018).
- A paper based in part on Project J, entitled "Development and Calibration of VISSIM Models for Rural Freeway Lane Closures" was accepted for presentation at the 98th Annual Meeting of the TRB by Nicholas L. Jehn and Rod E. Turochy. (1/1/2019)
- "Estimation of Safety Performance Using Connected and Automated Vehicle Data," presented by Leila Azizi, FIU, at the 6th Annual UTC for the Southeastern Region, Clemson, SC., 2018. (10/24-25/2018)
- Presented five research problem statements, South Carolina Department of Transportation, Evaluation of Impacts of Maritime and Inland Port-Based Truck Traffic on Surrounding Highway Networks, progressed to final round of funding evaluation, co-authored with Doug Frate, Columbia, SC. (11/2/2018)
- Dr. Sisiopiku offered a seminar to UAB Civil Engineering Undergraduate and Graduate students titled "Traffic Congestion: Needs, Opportunities, and UAB Research Contributions" highlighting ongoing transportation research at the TRENDLab, including Project I2. (2/22/2019)

- TRB conference presentation by Berrebi, S., T. Gibbs, S. Joshi, K. Watkins, “Understanding Ridership Change at the Route Level: A Comparison of Portland and Minneapolis St-Paul” at the Transportation Research Board 2019 Annual Meeting. (1/2019)
- TRB conference presentation by Wolfe, M & N. McDonald. “Healthcare transportation services: Policy shifts and the influence of shared mobility,” at the Transportation Research Board 2019 Annual Meeting, Washington, DC. (1/2019)
- Dr. Kari Watkins was invited to present a seminar, “What do we know about maintaining and increasing transit ridership?” at Delft University of Technology. (3/2019)
- Conference presentation by Liu, C., Bardaka, E., and Karlson, T., "Suburbanization of poverty and changes in transportation access," at NCAMPO Annual Meeting, Charlotte. (4/2019)
- Conference presentation by Wolfe, M. and McDonald, N. “Transportation Barriers to Healthcare in the US,” at the 13th Association of European Schools of Planning (AESOP) Young Academics Conference, Darmstadt, Germany. (4/2019)
- Conference poster presented by Wolfe, M. “Innovative healthcare transportation services for older Americans,” at the Safe Systems Summit, Durham, NC. (4/2019)

*Students*

Seventy-one students (undergrad and graduate) and post-docs were supported by either STRIDE funding or matching, cost-share projects.

<b>Name</b>	<b>Univ.</b>	<b>Degree</b>
Abhilasha Saroj	GA Tech	Ph.D.
Ahsanul Islam	UF	Ph.D.
Amelie Bailey	UNC	M.S.
Andre Soucy	UF	Undergrad
April Gadsby	GA Tech	Ph.D.
Atonu Islam	FIU	M.S.
Chang Liu	NCSU	PhD
Chengjun Tan	UAB	Ph.D.
Dan Xu	Auburn University	Ph.D.
David Ederer	GA Tech	M.S.
Dr. Mohammadali Shirazi	UM	Ph.D.
Ehsan Amini	UF	Ph.D.
Elizabeth Sfulzita	UNC	M.S.
Furat Salman	UAB	Ph.D.
Ghazaleh Azimi	FIU	Ph.D.
Gokmen Pacal	UAB	M.S.
Guojing Hu	JSU	Ph.D.
Hector Matta	FIU	Ph.D.
Ishtiak Ahmed	NCSU	Ph.D.
James Wersal	UF	Ph.D.
Jeremy Addison	NCSU	M.S. and PhD
Jesse Anderson	UF	Res. Asst.

Jim Stewart	Auburn	M.S.
Jun IK Sohn	UF	Ph.D.
Justin Mason	UF	Post-doc
Kanaad Deodhar	GA Tech	Undergraduate
Katelyn Iles	GA Tech	Undergraduate
Lei Bu	JSU	Ph.D.
Leila Azizi	FIU	Ph.D
Mahmoud Arafat	FIU	Ph.D.
Mary Wolfe	UNC	PhD
Mathew Ransom	The Citadel	Undergraduate
Melissa Varela	UF	Undergraduate
Mengjie Han	UF	Ph.D.
Mosammat Tahnin Tariq	FIU	Ph.D.
Natcha Luechakietisak	Auburn	Undergraduate
Nicholas Jehn	Auburn	graduate
Nishu Choudhary	GA Tech	Ph.D.
Ossama Ramadan	UAB	Post-doc
Quan Yuan	UNC	Postdoc
Rajib Saha	FIU	Ph.D.
Rebecca Kiriazes	GA Tech	Ph.D.
Sahila Sarjana	UAB	M.S.
Sanskruiti Joshi	GA Tech	M.S.
Shahadat Iqbal	FIU	Post-doc
Shannon Warchol	ITRE/NCSU	Post-doc
Shoaib Samandar	NCSU	Ph.D.
Siddhartha Gulhare	UF	Ph.D.
Simon Berrebi	GA Tech	post doc
Somdut Roy	GA Tech	Ph.D.
Stephanie Mar	UNC	M.S.
Tab Combs	UNC	post-doc
Tahnin Tariq	FIU	Ph.D.
Taniya Sultana	UAB	M.S.
Tao Wang	FIU	Post-doc
Taylor Gibbs	GA Tech	MS
Troyee Saha	UAB	graduate
Wang Peng	UF	Ph.D.
Wayne Powell	UNC	M.S.
Will Leimenstoll	UNC	M.S.
William C. Hickey	The Citadel	Undergraduate
William Ortiz	GA Tech	Undergraduate
Xi Duan	UF	Ph.D.

Xinyuan “Poppy” Yang	UF	Ph.D.
Xu Dezhong	NCSU	M.S.
Xueyin Bai	UF	Ph.D.
Yahya M. Mohammed	UAB	Ph.D.
Yan Xiao, Ph.D.	FIU	Post-doc
Ziming Li	UF	Ph.D.

## OUTCOMES

The STRIDE Center uses the following metrics to assess the OUTCOMES related to its technology transfer program. Three trainings serving 158 professionals were completed related to Year 1 projects. Three trainings serving 90 professionals were completed related to Year 2 projects. The table below summarizes the number of trainings completed and the number that will be conducted as projects are completed. The number of professionals participating in future trainings is to be determined.

TYPE	METRIC	Year 1 Funding: Outcomes In Progress	Year 1 Funding: Outcomes Completed	Year 2 Funding: Outcomes In Progress	Year 2 Funding: Outcomes Completed
OUTCOME	<b>Body of Knowledge:</b> Number of technology transfer trainings for transportation professionals on a new or improved congestion mitigation approach (workshops, webinars)	6	3	15	3
OUTCOME	<b>Professionals Trained:</b> Number of transportation professionals participating in technology transfer trainings to improve their understanding and awareness of new or improved congestion mitigation approaches	to be determined	158	to be determined	90

### Trainings & Professionals Trained

Six trainings (related to both Year 1 and Year 2 projects) engaged 248 professionals during the reporting period, as summarized in the table below.

Training	# Professionals Trained
<i>Freeway Analysis and Reliability in FREEVAL: A Hands on Workshop Freeway Analysis</i> ; a three-hour workshop provided at the 6th Annual UTC for the Southeastern Region, Clemson, SC., 2018 and led by Behzad Aghdashi, Ph.D., and Nagui Rouphali, Ph.D. The workshop covered freeway facility methodology currently documented in the HCM 6th Edition with a focus on applications for operational analysis, reliability and model calibration. (10/25/2018, Project I)	13
<i>An Overview of the Real-World Testbed: I-STREET</i> ; a one hour webinar/seminar providing an overview of I-STREET (Implementing Solutions from Transportation Research and Evaluation of Emerging Technologies), a multi-modal testbed born out of the partnership between the University of Florida (UF), the Florida Department of Transportation (FDOT), and the City of Gainesville (CoG). (11/30/2018, cost-share)	35

<p>TRB webinar on “Innovation in Traffic Impact Assessment”, which included updates from STRIDE funded research, specifically Project E (“Predicting Congestion: The Challenge of Shifting Travel Behavior on Estimating Trip Generation”) (3/29/2019, Project G)</p>	<p>110</p>
<p>The OT Department hosted the annual Sandra Edwards Colloquium, with about 80 attendees (40 professionals) from across the state of FL, see <a href="https://ot.php.ufl.edu/category/sandra-edwards-colloquium/">https://ot.php.ufl.edu/category/sandra-edwards-colloquium/</a>. This year (2019) the colloquium’s theme was Driving Rehabilitation and Community Mobility—with a special emphasis on autonomous vehicle technology. This venue will be used to disseminate the ongoing research pertaining to this project. (1/26/2019, Project D2)</p>	<p>40</p>
<p><i>Advancing Collaboratively Engaged Research: Implication for Transportation Research now and in the Future</i>; The OT Department and UF transportation Institute hosted Dr. Carissa Slotterback as a Dean’s Visiting Scholar (<a href="https://phhp.ufl.edu/?wysija-page=1&amp;controller=email&amp;action=view&amp;email_id=57&amp;wysijap=subscriptions">https://phhp.ufl.edu/?wysija-page=1&amp;controller=email&amp;action=view&amp;email_id=57&amp;wysijap=subscriptions</a> on December 6, 2018 (30 professionals attended). Colleagues from OT, Public Health, Biostatistics, Environmental and Global Health, diverse disciplines in Engineering, and representatives from the City of Gainesville and the Florida Department of Transportation, were well represented during the Dean’s Visiting Scholar’s keynote. She emphasized the value of fostering relationships with stakeholders and discussed how to promote networking and strengthening relationships among transportation activists. An agenda was set with action steps to further the activities of the collaborative networks. (12/6/2018, Project D2)</p>	<p>30</p>
<p><i>Managing Performance – From Active Transportation Management to Connected Vehicle Applications</i> was hosted by STRIDE at the ITS5C Summit on Oct. 7, 2018, in Jacksonville, FL (Year 2). This four-hour workshop presented findings from recent work conducted by the Center to support the planning, deployment, and operations of existing and emerging management strategies. The workshop covered topics such as adaptive signal control, integrated corridor management, utilization of CV data for performance measurement, and CV applications for system management. Presentations were provided by STRIDE researchers including:</p> <ul style="list-style-type: none"> <li>• Mike Hunter (Georgia Tech) and Troy Galloway, “Creating a Smart Corridor, Data Integration from a Public Agency and a Research Perspective</li> <li>• Lily Elefteriadou (UF), Pruthvi Manjunatha (UF), and Raj Ponnaluri (FDOT), “Before-After Evaluation of Adaptive Signal Control in the State of Florida”</li> <li>• Thomas Chase (NCSU), “Traffic Signal Performance Measurement based on ATSPM and other Data Sources for Performance-based Prioritization of NCDOT’s Statewide Signal Retiming Program”</li> <li>• Mohammed Hadi (FIU), Decision Support Systems for Transportation System Management and Operations”</li> <li>• Lily Elefteriadou (UF) and Clark Letter (UF), “Testing the Utilization of Connected Vehicles and Automated Vehicles to Enhance Traffic Signal Control System Performance”</li> <li>• Virginia Sisiopiku (UAB), MD Ahsanul Islam (UF), Ossama Ramadan (UAB), and Mohammed Hadi (FIU). “Using Connected Vehicle Data for Transportation Performance Measurement”</li> <li>• Mohammed Hadi (FIU), “Support ITS Investment Decisions with Consideration of CV Technology”</li> </ul>	<p>20</p>

## IMPACTS

The STRIDE Center will use the following metrics to assess the IMPACTS related to its technology transfer program. Researchers met with three stakeholders related to Year 1 projects and nine stakeholders related to Year 2 projects. It is projected that an additional six stakeholder meetings will be held for Year 1 projects and nine additional meetings for Year 2 projects. One product was adopted from a Year 1 project. The table below summarizes those impacts that have been completed and those that are in progress.

TYPE	METRIC	Year 1 Funding: Impacts In Progress	Year 1 Funding: Impacts Completed	Year 2 Funding: Impacts In Progress	Year 2 Funding: Impacts Completed
IMPACT	<b>Stakeholders:</b> Number of stakeholders (agencies, businesses, etc.) you meet with to encourage adoption or implementation of congestion mitigation approaches	6	3	9	9
IMPACT	<b>Adoption/Implementation:</b> Number of incidences that congestion mitigation outputs of research have been implemented or adopted (ex. decision making, practices, methods, analytical tool, data/database, software, policy change, behavior analysis, commercialization)	1	1	2	0

### Stakeholder Meetings

Researchers met with nine groups of stakeholders during the reporting period.

Project	Stakeholder	Location	Description
G	MARTA (Metropolitan Atlanta Rapid Transit Authority) – Rob Goodwin and team	Atlanta, GA	Presentation on literature review findings regarding transit ridership change factors, including impacts of TNCs. (4/30/2019) Presentation of MARTA and peer data on ridership change and other operating data. (9/21/2018)
G	Uber Health	Chapel Hill, NC (Phone meeting)	Shared research results and discussed possible future research projects. (2/4/2019)
G	Uber	Chapel Hill, NC (Phone meeting)	Shared research results and discussed data sharing. (2/7/2019)
L2	Joan Graesch, MPH Coordinator, Dept. of Public Health, Medical Univ. of SC	Charleston, SC (In-person meeting)	Recruiting of MUSC MPH students to enroll in course and coordination of curriculum. Benefits of multidisciplinary education across engineering, public health, planning, public administration and physical activity was discussed. (3/30/2019)
L2	Dr. Ronald Gimbel, Chair, Dept of Public Health Sciences, Clemson Univ.	Charleston, SC (In-person meeting)	Coordinating course offering with Clemson University's curriculum in Public Health. Benefits of multidisciplinary education across engineering, public health, planning, public

			administration and physical activity was discussed. (3/30/2019)
L2	Dr. B.D. Wothham-Galvin, Director, Master of Resilient Urban Design, Clemson University	Charleston, SC (Phone meeting)	Coordinating course offering with Clemson University's curriculum in Resilient Urban Design. Recruiting of students to enroll in course and coordination of curriculum. Benefits of multidisciplinary education across engineering, public health, planning, public administration and physical activity was discussed. (3/20/2019)
K2	TRB Committee on Highway Capacity and Quality of Service	Washington, DC (Demonstration)	Presented the findings of "Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses" project.
D2	I-STREET Stakeholder	Gainesville, FL (In-person meeting)	Discuss project with stakeholders (UFTI, FDOT, City of Gainesville). Update with progress and data collection. Additionally, we received information from FDOT and City of Gainesville regarding the waiver from NHTSA. (2/22/2019)
D2	Jeff Hagan in Oak Hammock	Gainesville, FL (In-person meeting)	This meeting was focused on participant recruitment and methods to disseminate the findings to residents in Oak Hammock once the project is completed. (11/21/2018)

### Adoption

One product from Year 1 has been adopted and is being implemented. Additional product adoptions are expected from Year 1 and Year 2 projects as they come to completion.

- The product generated from Project G (Transit in the Era of Shared Mobility), is a cluster analysis showing which transit agencies are grouped as peers based on factors that influence transit ridership. This allows agencies such as MARTA (the public transportation operator in the Atlanta metropolitan area) to use these clusters to choose peer agencies for future benchmarking studies, a key component of strategic planning and process improvement. MARTA has used Project G's results to change the peer benchmarking agencies they use for future performance metric assessment.

### CHANGES/PROBLEMS

- Changes in approach and reasons for change – *Nothing to report*
- Actual or anticipated problems or delays and action or plans to resolve them - *Nothing to report*

- Changes that have a significant impact on expenditures - *Nothing to report.*
- Significant changes in use or care of human subjects, vertebrate animals and/or biohazards - *Nothing to report*
- Change of primary performance site location from that originally proposed - *Nothing to report*

## SPECIAL REPORTING REQUIREMENTS

- *No special reporting requirements*

## STRIDE Year 1 List of Projects

### **Congestion Management in the Era of Decentralized Traveler Information**

Lead PI: Dr. Mike Hunter, Georgia Institute of Technology

Team: Dr. Mohammed Hadi, Florida International University; Dr. A. Guin, Georgia Institute of Technology; Dr. Billy Williams, North Carolina State University; Dr. Feng Wang, Jackson State University

### **Technology Influence on Travel Demand & Behavior**

Lead PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham

Team: Dr. Noreen McDonald, University of North Carolina at Chapel Hill; Dr. Ruth Steiner, University of Florida; Dr. Mohammed Hadi, Florida International University

### **Performance Measurement & Management Using Connected & Automated Vehicle Data**

Lead PI: Dr. Mohammed Hadi, Florida International University; Dr. Nagui Roupail, North Carolina State University; Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Siva Srinivasan, University of Florida; Dr. Sanjay Ranka, University of Florida

### **Traffic Management with Autonomous and Connected Vehicles**

Lead PI: Dr. Lily Elefteriadou, University of Florida

Team: Dr. Mike Hunter, Georgia Institute of Technology; Dr. C. White, Georgia Institute of Technology; Dr. Sanjay Ranka, University of Florida; Dr. Carl Crane, University of Florida

### **Predicting Congestion: The Challenge of Shifting Travel Behavior on Estimating Trip Generation**

Lead PI: Dr. Ruth Steiner, University of Florida

Team: Dr. Noreen McDonald, University of North Carolina at Chapel Hill

### **Integrated Implementation of Innovative Designs**

Lead PI: Dr. Nagui Roupail, North Carolina State University

Team: Dr. Chris Cunningham, North Carolina State University; Dr. Steven Click, Tennessee Technological University; Dr. Mike Hunter, Georgia Institute of Technology; and Dr. Jeff Davis, The Citadel

### **Transit in the Era of Shared Mobility**

Lead PI: Dr. Kari Watkins, Georgia Institute of Technology

Team: Dr. Billy Williams, North Carolina State University; Dr. Ruth Steiner, University of Florida; Dr. Noreen McDonald, University of North Carolina at Chapel Hill

### **Work Zone Planning, Design, & Operations**

Lead PI: Dr. Rod Turochy, Auburn University

Team: Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Billy Williams, North Carolina State University; Dr. James Tsai, Georgia Institute of Technology

### **Strategies for Mitigating Congestion in Small Urban & Rural Areas**

Lead PI: Dr. Steven Click, Tennessee Technological University

Team: Dr. Siva Srinivasan, University of Florida; Dr. Mike Hunter, Georgia Institute of Technology

### **Freeway Management for Optimal Reliability**

Lead PI: Dr. Yafeng Yin, University of Michigan

Team: Dr. Nagui Rouphail, North Carolina State University; Dr. Jorge Laval, Georgia Institute of Technology; Dr. Rod Turochy, Auburn

## **STRIDE Year 2 List of Projects**

### **Changing Access to Public Transportation & the Potential for Increased Travel**

Lead PI: Dr. Kari Watkins, Georgia Institute of Technology

Team: Dr. Noreen McDonald, University of North Carolina at Chapel Hill; Dr. Eleni Bardaka, North Carolina State University; Dr. Ruth Steiner, University of Florida; Dr. Ilir Bejleri, University of Florida

### **Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data**

Lead PI: Dr. Huaguo Hugo Zhou, Auburn University

Co-PI: Dr. Rod Turochy, Auburn University

### **Urban Freight & Planning**

Lead PI: Dr. Noreen McDonald, University of North Carolina at Chapel Hill

Co-PI: Dr. Ruth Steiner, University of Florida

### **UF & UAB's Phase I Demonstration Study: Older Driver Experiences with Autonomous Vehicle Technology**

Lead PI: Dr. Sherrilene Classen, University of Florida

Team: Dr. Carl Crane, University of Florida; Dr. Virginia Sisiopiku, University of Alabama at Birmingham

### **Establishing a Dual Generational Modality Dataset: Comparing the Riding-Sharing Adoption Trends & Perspectives of Consumers of From Two Generational Cohorts, Millennials & Gen X'ers**

Lead PI: Dr. Abhinav Alakshendra, University of Florida

Team: Dr. Ruth Steiner, University of Florida; Dr. Allie Thomas, University of North Carolina at Chapel Hill

### **Integrated Implementation of Innovative Intersection Designs Part 2**

Lead PI: Dr. Nagui Rouphail, North Carolina State University

Team: Chris Cunningham, North Carolina State University; Shannon Warchol, North Carolina State University

### **Discovering Potential Market for the Integration of Public Transportation & Emerging Shared-Mobility Services**

Lead PI: Dr. Lili Du, University of Florida

Co-PI: Dr. Xia Jin, Florida International University

### **Quantitatively Evaluate Work Zone Driver Behavior Using 2D Imaging, 3D LiDAR, & Artificial Intelligence in Support of Congestion Mitigation Model Calibration & Validation**

Lead PI: Dr. Yichang (James) Tsai, Georgia Institute of Technology

Co-PI: Dr. Rod Turochy, Auburn University

### **Fly-By Image Processing for Real Time Congestion Mitigation**

Lead PI: Dr. Nasim Uddin, University of Alabama at Birmingham

Co-PI: Dr. Billy M. Williams, P.E., North Carolina State University

### **Mitigating Network Congestion by Integrating Transportation Network Companies & Urban Transit**

Lead PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham

Team: Dr. Ossama E. Ramadan, P.E., University of Alabama at Birmingham

Dr. Mohammed Hadi, P.E., Florida International University; Dr. Yan Xiao, P.E., Florida International University

### **Real-Time Data-Based Decision Support System for Arterial Traffic Management**

Lead PI: Dr. Mohammed Hadi, P.E., Florida International University

Team: Dr. Clark Letter, University of Florida

### **Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses**

Lead PI: Dr. Behzad Aghdashi, Institute for Transportation Research and Education, North Carolina State University

Team: Dr. Lily Elefteriadou, University of Florida; Dr. Nagui Roupail, North Carolina State University

### **Understanding Relationships between the Built Environment, Physical Activity, Public Health, Urban Mobility, and Traffic Congestion: Graduate Curriculum Development**

Lead PI: Dr. Dimitra Michalaka, The Citadel

Team: Dr. William J. Davis, The Citadel; Dr. Daniel Bornstein, The Citadel; Dr. Kweku Brown, The Citadel; Dr. John Vena, Medical University of South Carolina

### **Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management**

Lead PI: Dr. Mohammed Hadi, P.E., Florida International University

Team: Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Yan Xiao, P.E., Florida International University; Dr. Ossama Ramadan, P.E., University of Alabama at Birmingham

### **Data Fusion for Signalized Arterial Performance Measurement**

Lead PI: Thomas Chase; Institute for Transportation Research and Education, North Carolina State University

Co-PI: Dr. Nagui Roupail, North Carolina State University

### **Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous/Connected Vehicles**

Lead PI: Dr. Robert W. Whalin, P.E., Jackson State University

Team: Guojing Hu, Jackson State University

### **Development of Guidance for Scheduling of Freeway Work Zones to Minimize Congestion Impacts**

Lead PI: Dr. Rod Turochy, P.E., Auburn University

Team: Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Ossama Ramadan, P.E., University of Alabama at Birmingham

## **Cost Share Projects To-Date**

### **Before and After Implementation Studies of Advance Signal Technologies in Florida**

PI: Dr. Lily Elefteriadou, University of Florida

FDOT # BDV32-977-05

### **Evaluation of Arterial Corridor Improvements and Traffic Management Plans in Florida**

PI: Dr. Lily Elefteriadou, University of Florida

FDOT # BDV31-977-44

### **Development and Testing of Optimized Autonomous and Connected Vehicle Trajectories at Signalized Intersections**

PI: Dr. Lily Elefteriadou, University of Florida; Dr. Carl Crane, University of Florida; Dr. Sanjay Ranka, University of Florida

FDOT # BDV31-977-45

### **Transportation Safety Center**

PI: Maria Cahill, AICP; UFTI/T2 Center; Dr. Siva Srinivasan, University of Florida; Dr. Ilir Bejleri, University of Florida

FDOT # BDV33-945-002

**Improvements to the FDOT Travel Time Reliability Model for Freeway Analysis**

PI: Dr. Lily Elefteriadou, University of Florida  
FDOT # BDV32-934-01

**Local Technical Assistance Program for Transportation Agencies 2016-2017**

PI: Maria Cahill, AICP, UFTI/T2 Center  
FDOT # BDV33-977-04

**Safe Routes to School Technical Assistance 2017**

PI: Dr. Ruth Steiner, University of Florida; Bill Sampson, P.E., UFTI/T2  
FDOT # BDV33-945-04

**Local Technical Assistance Program for Transportation Agencies 2017-2018**

PI: Matthew Muller, UFTI/T2 Center  
FDOT # BDV33-977-05

**University of Florida (UF) Testbed Initiative- Alternative Transportation Safety Systems**

Dr. Clark Letter, University of Florida; Dr. Nithin Agarwal, University of Florida  
FDOT # BDV31-977-99

**Assessment of Connected Vehicle Data Support of SunGuide® Traffic Management Center**

PI: Dr. Mohammed Hadi, Florida International University  
FDOT # BDV29 TWO 977-21

**Guidelines for the Evaluation of Ramp Signaling Deployments in a Real-Time Operations Environment**

PI: Dr. Mohammed Hadi, Florida International University  
FDOT # BDV29 TWO 977-25

**Data and Modeling Support of Off-Line and Real-Time Decisions Associated with Integrated Corridor Management**

PI: Dr. Mohammed Hadi, Florida International University  
Sponsor: FDOT

**Estimation of System Performance and Technology Impacts to Support Future Year Planning**

PI: Mohammed Hadi, Florida International University  
FDOT # BDY29 977 -37

**Connected Vehicle Vehicle-to-Infrastructure Support of Active Traffic Management**

PI: Dr. Mohammed Hadi, Florida International University  
FDOT # BDV29 977-41

**Evaluation of Factors Influencing Roundabout Performance – GaTech**

**Development of Tools to Model Driver Behavior in a Cooperative and Driverless Vehicle Mixed Roadway Environment - GaTech**

**Implementation of a Variable Speed Limit/Ramp Metering Strategy - GaTech**

**Transportation Research, Workforce Development, and Technology Transfer Initiatives for Reducing Congestion in Alabama and the Southeast U.S.**

PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham  
Sponsor: Alabama Department of Transportation  
ALDOT # 930-973

**University of Alabama at Birmingham (UAB) Task A: Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management**

PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham

Sponsor: Alabama Department of Transportation

ALDOT # 930-998

**FREEVAL-NC Development, Training and Support (2017-46)**

PI: Dr. Behzad Aghdashi, North Carolina State University

Sponsor: North Carolina Department of Transportation

**Reliability Data and Analysis Tools Implementation Assistance Program Proof of Concept Pilot Study (SHRP2 L38)**

PI: Dr. Billy Williams, North Carolina State University

Sponsor: North Carolina Department of Transportation

**Peak Spreading Tool Implementation (2018-07)**

PI: Sarah Searcy, Research Associate, North Carolina State University

Sponsor: North Carolina Department of Transportation

**Warrant Development for Signalization of Superstreet Intersections with Two or Three Approaches (2017-11)**

PI: Shannon Warchol, Research Associate, North Carolina State University

Sponsor: North Carolina Department of Transportation

**Reasonable Alternatives for Grade-Separated Intersections (2018-20)**

PI: Shannon Warchol, North Carolina State University

Sponsor: North Carolina Department of Transportation