# Semi Annual Report for University Transportation Centers

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology (OST-R)
Federal Grant No. 69A3551747104

Project Title: Southeastern Transportation, Research, Innovation, Development & Education Center (STRIDE)

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Submission Date: October 30, 2020

DUNS #:969663814
EIN #: 59-6002052

Recipient Organization: U.S. Department of Transportation
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Washington, DC 20590

Project Grant Period: 1/19/2017 to 9/30/2022

Reporting Period End Date: 9/30/2020

Reporting Term or Frequency: Semi Annual

Signature of Submitting Official: _____
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# Contents

# 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?*

- Five of the 10 research projects funded in Year 1 have been completed (Project G - *Transit in the Era of Shared Mobility*, Project I - *Freeway Management for Optimal Reliability*, Project B - *Technology Influence on Travel Demand and Behaviors*, Project F - Integrated Implementation of Innovative Intersection Designs, and Project C - *Performance Measurement and Management Using Connected and Automated Vehicle Data*). Draft final reports are expected by November 2020 for the remaining five projects (Project A - *Impact of Smartphone Applications on Trip Routing and Congestion Management*; Project D - *Evaluation of Advanced Vehicle and Communication Technologies through Traffic Microsimulation*; Project E - *Predicting Congestion: The Challenge of Shifting Travel Behavior on Estimating Trip Generation*; Project H - *Traffic and Other System Strategies for Mitigating Congestion in Small Urban and Rural Areas*; and Project J - *Improving Work Zone Mobility through Planning, Design and Operations*).
- Three of the 17 projects funded in Year 2 have been completed (Project B2 - *Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data;* Project F2 - *Discovering Potential Market for the Integration of Public Transportation and Emerging Shared-Mobility Services; and* Project O2 - *Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous /Connected Vehicles*). Three projects (Project C2 - *Urban Freight and Planning*; Project H2 - *Fly-By Image Processing for Real Time Congestion Mitigation*; and Project K2 - *Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses*) are in peer-review process. We are expecting a final report on Project A2 - *Changing Access to Public Transportation and the Potential for Increased Travel*. The remaining 10 projects are still ongoing and expected to be completed in early Spring 2021.
- The 11 projects funded in Year 3, with a focus on Big Data/Analytics, Autonomous/Connected Vehicles, Detours, Planned Events and Incidents, and Shared Mobility are all still in progress and are scheduled to be completed in 2021.
- A total of six new projects were recently selected for Year 4. Five of these are under contract, and the sixth will be under contract by the end of 2020. The new projects are: Project A4 - *Identification of Unpredictable Sources of Non-recurring Congestion and Mitigating Strategies*; Project B4 - *Integrated Corridor Management: Cooperative Signal Control with Freeway Operations and Ramp Metering*; Project C4 - *Transportation Workforce Development for State DOTs to Address Congestion for the Southeast Region*; Project D4 - *Mobility-on-Demand Transit for Smart, Sustainable Cities*; Project E4 - *Innovative intersection and Interchange Designs and their use across the Southeast* (expected to be subcontracted soon); and Project F4 - *Automatic Safety Diagnosis in Connected Vehicle Environment*.
- A list of all STRIDE projects are posted on the STRIDE website at https://stride.ce.ufl.edu/research-2/active-research-projects/; they are also included at the end of this report. We have created web pages for each STRIDE funded project, which include the required Project Information sheets, links to final reports, links to webinars, products, news, webinar links and any other information that relates to the project. We continue to monitor all STRIDE final reports, and we are reviewing them for 508 compliance requirements for accessibility.

- During the reporting period, STRIDE hosted ten webinars to disseminate our research findings to 475 professionals. A list of webinars offered this reporting period is in the "Trainings and Professionals Trained" section of the report. Webinar recordings are at https://stride.ce.ufl.edu/technology-transfer/workshops-webinars-conferences/. This reporting period the STRIDE Center's webinar series has an average of 47 live participants and an average of 54 YouTube views for each recording.
- Eighty-four students (undergrad and graduate) and post-docs have been supported in the last year by STRIDE funding or matching cost-share projects.
- The STRIDE Center's spring 2020 newsletter was released on May 26, 2020, and included reviews of research projects, spotlights on researchers and students, a list of webinars, and overview of K-12 activities and student and faculty accomplishments (https://conta.cc/2Tq8Jy7).
- STRIDE Center Director, Dr. Lily Elefteriadou, was the invited Distinguished Lecturer for a webinar hosted on May 27, 2020 by the Center for Connected Multimodal Mobility (C2M2), a UTC at Clemson University. Dr. Elefteriadou's presentation was on "Optimizing Traffic Signal Control with Connected and Autonomous Vehicles in the Traffic Stream".
- The STRIDE Center assisted in establishing the Women in Transportation Initiative (WITI) Internship Program at the University of Florida in Spring 2020. WITI is a flagship program of the U.S. Department of Transportation (DOT) Office of Small Business (OSDBU) that focuses on encouraging young women to pursue careers in the transportation industry. The experiential learning program was conducted in collaboration with the Women of Asphalt (WofA), the University of Florida Transportation Institute, and the UF Engineering School of Sustainable Infrastructure & Environment (ESSIE).
- The STRIDE Center served on the planning committee for the 7th Annual UTC Conference for the Southeastern Region. The STRIDE Center co-sponsored this event. The conference was set to take place March 26th and 27th 2020, but it has been postponed. The planning committee has organized a Regional UTC Student Spotlight virtual event where students will present posters related to their UTC - funded projects on November 4, 2020.
- STRIDE is planning a training workshop to be led by Dr. Mohammed Hadi of FIU for an FDOT-funded, cost-share project titled *Estimation of System Performance and Technology Impacts to Support Future Year Planning (BDY29-977-39).* Due to the COVID-19 pandemic, this workshop has been postponed, tentatively to Spring 2021.
- STRIDE is planning an I-STREET-related training program, which will include lessons learned on the implementation of advanced technologies. The program will begin with on-line offerings.
- STRIDE was in the process of coordinating a visit from Dr. Srinivas Peeta of the Georgia Institute of Technology as Distinguished Lecturer, but due to COVID-19, the visit was cancelled.
- On August 10, 2020, the STRIDE Center hosted an internal webinar for PIs of research projects on Stakeholder Engagement. The webinar included presentations from five STRIDE researchers who spoke about their experiences with and strategies to engage stakeholders. Thirty-six STRIDE researchers participated live and a recording was provided to all researchers afterwards.
- In November 2020, STRIDE will begin working on gathering news items, research highlights, student spotlights and other items of interest for the STRIDE Center's fall 2020 newsletter. Plans are to release the newsletter by mid-December 2020.
- Due to COVID-19, the annual STRIDE Student Poster Showcase and Competition typically organized in conjunction with TRB will be a virtual event. Student participants will prepare a research poster and deliver a 3-minute presentation using the Flipgrid platform for recording and posting their research videos. Awards will be given to the top 1st, 2nd, and 3rd place posters.
- The South Carolina (SC) Bike and Pedestrian Clearinghouse is complete and can be found at https://www.scltap.org/bike-ped/. The clearinghouse serves as a resource for South Carolina's transportation agencies and engineering organizations and provides information on state and federal documents and websites, bicycle, and pedestrian advocate groups, walkable/bikeable projects, and

bikeshare and micromobility programs. A webinar offered on Aug. 5, 2020 to practitioners is available at: https://www.youtube.com/watch?v=at2gD-o6TJw&feature=youtu.be

- STRIDE has prepared a "STRIDE Communications Process" which serves as a guide for how the Center disseminates and communicates various types of information related to research projects, education, technology transfer, and K-12 activities.
- STRIDE has been working on creating 2-page Project Briefs, which summarize the results and products of completed projects. STRIDE has completed three Project Briefs related to Project G (Part 1 and Part 2) and Project B. These will be released in November 2020. Along with the Project Briefs, STRIDE has also been creating final report "packages" which contain the final report, the project brief, the technology transfer report, and links to associated webinars. This final report package will be sent via Constant Contact to transportation professionals, students, alumni, and other stakeholders.

List of Awards and Recognitions

- Dr. Winter, Associate Director of the Institute for Mobility, Activity, & Participation (I-MAP) at the University of Florida, received the Distinguished Scholar Award from the Association for Driver Rehabilitation Specialists.
- The student research team for Project M2, "Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management" led by Dr. Mohammed Hadi at Florida International University, was selected as finalist as part of the National Operation Center of Excellence Competition.

K-12 Outreach Activities

Due to Covid-19, many K-12 outreach activities (summer programs at Georgia Tech, University of Alabama Birmingham, Jackson State University, and the University of Florida) were cancelled. In a few cases, briefly described below, activities were re-formatted for a virtual platform or new virtual outreach activities were created:

- During the week of June 22-26, 2020, Dr. Michalaka of The Citadel, taught a "Tour of Engineering" virtual summer camp organized by the South Carolina Governor's School of Science and Mathematics (SCGSSM). Sixteen rising 8th and 9th graders participated and learned what engineers do through lectures and hands-on work sessions. Students developed a safely-returning-to-school protocol, designed a classroom that allows social distancing, designed a bridge using Bridge Designer software, built bridges using office material and edible material, described their neighborhood streets and transformed them to complete streets (streets for all) using Streetmix, designed and built a safety collision device, and designed a phone application for school zones. In all activities, students used the engineering design process to brainstorm, build, and improve their ideas. The camp also included activities such as Kahoot quizzes, guest lecture, short videos, and presentations.
- The Citadel's department of civil and environmental engineering and construction engineering held a series of virtual recruiting/orientation meetings over the summer to recruit high school students into the civil and construction engineering programs. They held five sessions involving a total of 40 students.
- Dr. Michalaka and Dr. Ryan from The Citadel, were interviewed on September 18th and September 25th by twenty-one (21) in the West Ashley High School Principles of Engineering course as part of a "Professional Interview" exercise.
- Tennessee Tech restructured their STEM-in-Motion teacher training program for a virtual format and moved activities and lessons to a website (https://sites.google.com/view/stride-stem-in-motion-ttu-2020/home) and re-structured the workshop. The new format allowed teachers greater flexibility by giving them two weeks to complete the modules and providing them with opportunities to work both individually and cooperatively online. Each module included pre-recorded videos, readings, internet exploration, engaging activities, and interactive responses. All participants also created their own transportation activity to incorporate into their classroom. The online workshop had 19 participants.
- The University of Florida provided mentorship to the Howard Bishop Middle School Future City Engineering Club during twenty Zoom meetings during the summer. The meetings included videos, discussions, activities, and interviews with UF professors and students in preparation for the regional competition planned for January 2021.

- The University of Florida partnered with UF's Innovation Station in Sarasota County, to introduce 6th, 7th, and 8th grade students at Booker Middle School to transportation engineering via Zoom. On September 29, 2020, students learned about transportation technologies, careers, and UF transportation research. Students tested their reaction time and learned how this simple measurement is used to make transportation systems safer.
- STRIDE updated the "STEM Resources for Educators" webpage (https://stride.ce.ufl.edu/k-12-workforce-development/resources-for-educators/) to include an expanded list of free, online resources related to transportation and engineering. The webpage was shared via the UFTI Constant Contact list.

*How have the results been disseminated?*

- Project PIs publish the results of their research in refereed journal publications, and they regularly present research in progress in technical venues. STRIDE organizes webinars for each research project, which are recorded and are available through our YouTube channel.
- Project PIs regularly present their research to various stakeholders. The STRIDE Center tracks interactions between project PIs (and their teams) and stakeholders via progress reports, email communication, and through the Technology Transfer reports due at the completion of each project (in addition to the final/technical report). STRIDE is continuously encouraging researchers to work closely with stakeholders to obtain feedback on their research scope and methodology and to assist with the dissemination of their research findings.
- STRIDE has created project-specific pages on its website. These packages group all activities related to a project including final reports, webinars, workshops, and publications. For an example of such a page visit https://stride.ce.ufl.edu/project-g/. The 2-page Project Briefs are being created for each competed STRIDE project and posted on each project's designated webpage. Project Briefs will also be incorporated into a Constant Contact email for wider dissemination.
- The STRIDE Center uses Facebook, Twitter, LinkedIn, and Constant Contact to disseminate the results of research, to raise awareness about ongoing research projects, to promote opportunities for students (conferences, symposia, poster sessions), to advertise upcoming webinars and distinguished speakers, and to provide information on the various K-12 outreach activities taking place at the Center.
- Final reports are posted on the STRIDE website at https://stride.ce.ufl.edu/research-2/final-reports/.

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

- Develop our research and education program for Year 5.
- We will continue planning for virtual and/or in-person events and training courses as appropriate.
- Publish the STRIDE Center's Fall 2020 newsletter by mid-December 2020.
- Continue to coordinate activities with the STRIDE Internal Steering Committee via Zoom.
- Continue to attend planning meetings for the 7th Annual UTC Conference for the Southeastern Region.
- STRIDE will continue to monitor research projects through progress reports on a quarterly basis. Each report is reviewed to ensure adequate progress is made, to collect metrics, and for invoicing purposes.
- Continue to develop 2-page Project Briefs as projects are completed.
- Continue to host webinars related to on-going or completed STRIDE projects. A schedule of the upcoming webinars is provided at https://stride.ce.ufl.edu/technology-transfer/workshops-webinars-conferences/.
- Continue to provide guidance and monitor the K-12 projects at The Citadel, Georgia Tech, Jackson State University, Tennessee Tech, University of Alabama at Birmingham, and at the University of Florida. Efforts will be made to expand online programs where possible.
- Finalize plans for the STRIDE Student Poster Showcase and Competition and issue a call for posters mid-November 2020 and host the event on January 29, 2021.

## PARTICIPANTS & COLLABORATING ORGANIZATIONS

Below is a list of the key organizations that the STRIDE Center and its consortium members have collaborated with in the past 6 months. Most state DOTs provide cost-share, while other entities provide a variety of contributions (in-kind, facilities, collaborative research, personnel exchanges, etc.)

| # | Organization | Location | Type of Contribution |
|---|---|---|---|
| J2 | City of Gainesville | Gainesville, FL | Access to data streams from the City's fiber network. |
| F4 | Computational and Data-Enabled Science and Engineering (CDS&E) Program at Jackson State University. | Jackson, MS | Adopter of the proposed methodologies for class teaching in the CDS&E program |
| F3 | City of Columbia | Columbia, SC | Data access permission for the Blue Bike network in Columbia |
| D2 | Florida Department of Transportation | Tallahassee, FL | Collaborative research |
| D2 | UF Computer & Information Science Eng. | Gainesville, FL | Collaborative research |
| D2 | University of Minnesota | Minneapolis, MN | Collaborative research |
| D2 | Voyage | Lady Lake, Florida | Collaborative research |
| D2 | Texas A&M Transportation Institute | College Station, TX | Collaborative research |
| D2 | University of Kansas | Lawrence, KS | Collaborative research |
| D2 | University of Iowa | Iowa City, IA | Collaborative research |
| D2 | Beep | Lake Nona, FL | Collaborative research |
| D2 | Florida Polytechnic University | Lakeland, FL | Collaborative research |
| J3 | NC State | Raleigh, NC | Collaborative research |
| J3 | GA Tech | Atlanta, GA | Collaborative research |
| J3 | FIU | Miami, FL | Collaborative research |
| Q2 | UC Davis | Davis, CA | Collaborative research (Giovanni Circella) on COVID-19 and lifestyles |
| L2 | City of Charleston Mayor's Health & Wellness Advisory Committee | Charleston, SC | Expert panel for evaluation of final student presentations. |
| M2 | Alabama Department of Transportation | Montgomery, AL | Cost share |
| M2 | Florida Department of Transportation (FDOT) | Tallahassee, FL | Cost share |
| D3 | Sain Associates, Inc. | Birmingham, AL | Data and collaboration on analysis |
| D3 | Alabama Department of Transportation | Birmingham, AL | Data and project information |
| D3 | Regional Planning Commission of Greater Birmingham | Birmingham, AL | Data and project information |
| D3 | City of Birmingham Traffic Engineering | Birmingham, AL | Data and project information |
| I3 | Virginia Tech Transportation Institute (VTTI) | Blacksburg, VA | data collection and provider |
| M2 | University of Alabama | Tuscaloosa | Data share and collaboration on the implementation of the study finding |
| M2 | City of Hoover | Hoover City, Alabama | Data share and possible implementation of study findings |
| N2 | City of Raleigh | North Carolina | Data sharing |
| N2 | FDOT | Florida | Data sharing |
| N2 | GDOT | Georgia | Data Sharing |
| N2 | Town of Cary | North Carolina | Data Sharing |

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| C3 | Alabama Cooperative Extension | Auburn, AL (and other counties) | Data, guidance on travel needs, connections to communities |
| D2 | Arcadis | New York City, NY | Dissemination |
| D2 | Florida State University | Tallahassee, FL | Dissemination |
| D2 | Florida A&M University | Tallahassee, FL | Dissemination |
| L2 | Clemson University | Charleston, SC | Feedback on course curriculum and collaboration across institutions |
| F3 | Georgia Institute of Technology | Atlanta, GA | Collaboration to construct database, engage MAAS providers |
| L2 | College of Charleston | Charleston, SC | Feedback on course curriculum and suggested additional collaborators |
| F3 | College of Charleston | Charleston, SC | Collaboration to construct database, engage MAAS providers |
| L2 | City of Charleston Planning Department | Charleston, SC | Eric Pohlman, West Ashley Project Coordinator, provided information regarding redevelopment area |
| C3 | Orange County Department for Aging | Orange County, NC | Helped organize stakeholder meeting involving UNC Healthcare, Duke Health. |
| I2 | FDOT (Md. Shahadat Iqbal) | Florida | In-kind |
| Q2 | TOMNET University Transportation Center | Atlanta, GA | in-kind contribution of survey data |
| I2 | UAB | AL | Institutional in-kind match |
| G3 | FDOT | FL | Match support |
| G3 | GDOT | FL | Match support |
| G3 | NCDOT | FL | Match support |
| D | FDOT | | Match support |
| D | Georgia Department of Transportation | | Match support |
| I2 | FDOT | FL | Match support |
| N2 | NCDOT | | Matching funds; stakeholder; Data sharing |
| F3 | Blue Bikes of South Carolina | Columbia, SC | Micro-mobility provider |
| F3 | Gotcha Mobility | Charleston, SC | Micro-mobility provider with 50 MAAS systems across U.S. |
| C3 | Gainesville Regional Transit System (RTS) | Gainesville, FL | personnel exchange, data |
| J2 | FDOT, District 4 Office | Ft. Lauderdale | Possible implementer |
| M2 | FDOT, District 4 Office | Ft. Lauderdale | Possible implementer |
| F4 | Mississippi Department of Transportation | Jackson, MS | Potential product adopter |
| Q2 | TU Delft | Delft, Netherlands | Collaborative research related to project goals |
| J2 | Florida Department of Transportation | Tallahassee | Matching funds. |
| D2 | Center for Independent Living | Gainesville, FL | Provide mobility options to individuals throughout the lifespan |
| D2 | City of Gainesville | Gainesville, FL | Providing AV shuttle |
| A3 | City of Gainesville | Gainesville, FL | Providing AV shuttle |

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|---|---|---|---|
| D2 | Transdev | Paris, France | Providing safety operator/engineer and route mapping for AV shuttle |
| A3 | Transdev | France, Paris | Providing safety operator/engineer and route mapping for AV shuttle |
| D2 | HealthStreet | Gainesville, FL | Recruitment |
| D2 | Oak Hammock – Inst. of Learning in Retirement | Gainesville, FL | Recruitment |
| D2 | Rotary Club | Gainesville, FL | Recruitment |
| D2 | UF Clinical Translational Science Institute (CTSI) | Gainesville, FL | Recruitment |
| D2 | UF Institute of Aging | Gainesville, FL | Recruitment |
| A3 | UF Nightlife Navigators (Student Gov. Agency) | Gainesville, FL | Recruitment |
| A3 | UF Korean Student Association | Gainesville, FL | Recruitment |
| A3 | UF HealthStreet | Gainesville, FL | Recruitment |
| A3 | UF Health Study Listings (StudyConnect) | Gainesville, FL | Recruitment |
| A3 | Rotary Club | Gainesville, FL | Recruitment |
| A3 | ResearchMatch | Gainesville, FL | Recruitment |
| A3 | The Village | Gainesville, FL | Recruitment |
| A3 | FDOT's Safe Mobility for Life Coalition | Tallahassee, FL | Recruitment |
| A3 | Local churches, libraries, recreation centers | Gainesville, FL | Recruitment |
| D2 | Alachua Health Education Center | Gainesville, FL | recruitment and dissemination |
| C3 | City of Gainesville Department of Mobility | Gainesville FL | Research oversight, strategic direction |
| N2 | Town of Cary | | Stakeholder |
| N2 | Bluemac Analytics | Oregon | Vendor partner |
| D2 | Florida Polytechnic University (i.e., Rahul Razdan, Arman Sargolzaei, Mustafa Akbas) | | |
| D2 | Florida State University (i.e., Walter Boot) | | |
| D2 | Jeff Hagan (CEO of Oak Hammock), Florida Department of Transportation representatives, | | |
| D2 | Mac Higgins (CEO of Voyage) | | |

## OUTPUTS

The STRIDE Center uses the following metrics to assess the OUTPUTS related to its technology transfer program. Thirty-two products and eight technical reports have been completed so far. The table below summarizes those outputs.

| **METRIC** | Year 1 Projects Target/Completed | Year 2 Projects Target/Completed | Year 3 Projects Target/Completed | **TOTAL COMPLETED (All Projects)** |
|---|---|---|---|---|
| **Product(s):** Number of new or improved tools, technologies, products, methods, practices, and processes to reduce congestion | 9 / 16* | 18 / 23* | 11 / 6* | **45* Products** |
| **Technical Report:** Number of client-based technical reports published about | 9 / 5* | 18 / 3* | 11 / 0 | **8* Technical Reports** |

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| approaches to congestion mitigation | | | | |

* Totals are calculated from this reporting period as well as all prior reporting periods.

### *Products*

This table summarizes the 13 products completed during the reporting period (Oct 1-March 31). Two products are from Year 1, 5 are from Year 2, and 6 are from Year 3 projects. The total number of products completed to date is 45.

| # | Product |
|---|---|
| D | **Simulation Extension -** Evaluation of advanced traffic control strategies integrating Connected and Autonomous Vehicles (CAVs) requires accurate representation of these emerging technologies within the context of microscopic traffic simulation. The research team created a simulation extension with CAV functionality, which includes integrated emissions modeling. Practitioners can use this product to evaluate transportation management strategies using emerging technologies. Any AV or CV models can be integrated into this framework as a "plug and play" solution. |
| H | **Congestion Management Toolkit for Small/Rural Communities**<br>Surveys and interviews with staff from small/rural communities revealed that while congestion due to peak period traffic, special events, tourism, crashes and work zones are issues in small / rural communities, systematic procedures to monitor, measure, and mitigate congestion are nonexistent. There is an interest in information and training on these topics but the staff may not have the time to invest in such endeavors. Therefore, the research team developed a web-based repository of basic information on congestion management as a "toolkit" that may be accessed by these agencies on demand and for free to understand the basic issues. https://techtransfer.ce.ufl.edu/tech-transfer/ufti-t2-projects/stride-projectH |
| D2 | **Continuing Education Courses -** Two courses were developed and are available online.<br>1) Older Adults' Perceptions of Automated Vehicle Technology.<br>This course provides an overview of older adults' transportation needs, the potential benefit of autonomous vehicle technology (AVT) to their health and safety, and results from a study conducted to determine older adults' perception before and after being exposed to AVT (i.e. a driving simulator driving in autonomous mode and an automated shuttle). The presentation highlights implications for practice, policy and research.<br>https://ot.phhp.ufl.edu/category/online-education/ceu-courses/dr-classen-courses/<br>2) Autonomous & Connected Vehicles (ACV): Introduction for the Health Care Professional.<br>This course provides an overview of the current crash statistics in the USA, an introduction to autonomous vehicles (AV) including the levels of AV, how driving as an occupation may be affected/changed by AV, the pros and the cons of AV, a timeline for AV, as well as a discussion on the vulnerable road users and how they may benefit from AV. The presentation highlights that we are facing the greatest transportation revolution of the century and invite health care professionals to consider the opportunities of AV technology for mobility-disadvantaged people. https://ot.phhp.ufl.edu/category/online-education/ceu-courses/dr-classen-courses/ |
| I2 | **Travel Preference Survey -** Developed a comprehensive travel diary questionnaire looking at travel preferences and practices at markets where Transportation Network Companies (TNC) are present. The survey requested participants to report detailed trip information for a typical day (i.e., 24-hr travel diary) during a weekday and weekends including origin and destination of each trip, travel time, trip purpose and travel mode used. Demographic data were also obtained and used in the analysis and interpretation of survey findings. The survey can be used as a model for others that seek to understand transportation users' preferences, choices, and attitudes towards the use of various transportation modes when shared mobility options are available. |
| I2 | **Activity-based Models for the Birmingham and Miami Beach Networks** - Traditional traffic simulation models lack the ability to simulate shared modes in detail. Thus activity-based models were developed for Birmingham and Miami Beach networks to allow for modelling of a variety of transportation modes including technology-based ridesharing modes. The models were developed in MATSim and can be used by local transportation agencies including Metropolitan Planning Organizations and state Departments of Transportation to study the impact of shifts in travel demand due to applications of shared-use economy on local and regional congestion. |

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| J2 | **Clustering method for bi-level identification of traffic pattern**<br>The research team developed a clustering method for bi-level identification of traffic patterns. The method was applied to two arterial streets segments in Fort Lauderdale, FL and Gainesville, FL. In addition to identifying patterns in the data, the cluster was able to identify measurement errors of the video image detectors in Gainesville. The method groups the traffic conditions in the days of the years and times within the day into distinctive traffic patterns for use in the design of time-of-day signal plans, traffic responsive signal plans, an traffic analysis and simulation models. The method can be used to set and activate suitable signal control plans. It can be also used by modelers as part of their simulation and analysis effort to model different scenarios in a year rather than modeling one ”typical” or average condition. |
| M2 | **Developed a hybrid machine learning and fuzzy logic model for signal timing selection under non-recurrent conditions.** The research team developed a framework, in which different operator decision logs, emerging data, simulation and optimization tools can be used in combination to produce an optimized signal control. The research includes the use of high-resolution controller data in the decision. The research team developed a process to automate the decisions made by operators at the TMC based on previous decisions using machine learning. They have also developed new methods to calibrate simulation models based on high-resolution controller data combined with optimization. The developed methods were implemented in a tool that can be used by the traffic management center staff to recommend changes to signal control timing in real-time operations. The traffic engineer at the traffic management center can enter information about non-recurrent conditions such as incidents or expected demand surges in the tool and the tool can then produce recommendations for timing adjustments that reduce the expected delays and queues and increase throughput. |
| B3 | **Machine Learning Methodology for Micromobility Travel Demand** - New methodologies in machine learning are developed to model and interpret micromobility travel demand. These methods can significantly improve predictive accuracy compared to the traditional statistical models. They also offer rich and informative interpretations for decision-makers. With accurate demand prediction and the understanding which factors are driving the demand, we can better design the transportation networks to improve congestion. DOTs and MPOs can use our new methods. |
| B3 | **Algorithms to Infer E-scooter trips from GBFS data** - New algorithms were invented to infer micromobility trips from the raw GBFS (General Bikeshare Feed Specification) data. With micromobility trips properly inferred, we can understand how micromobility trips distribute across space and time, which can help policy makers to develop strategies to improve congestions during rush hours. DOTs, MPOs, transit agencies, and cities can use our new algorithms. |
| B3 | **Improvements to the Activity-Based Traffic Simulator -** The Birmingham activity-based traffic simulator was developed using the MATSim platform and used to simulate traffic conditions throughout the day using a variety of traffic modes. Cadyts, a MATSim extension was used to manage the calibration process. The traffic simulator was enhanced and expanded to account for micro-mobility options including e-scooters. The simulator can be used to conduct sensitivity analysis to demonstrate the impact of modal shifts in the presence of micro-mobility options on traffic congestion. DOTs and MPOs can use the simulator. |
| C3 | **GTFS editor to create transit system scenarios** - Focusing on Gainesville, FL as a case study, the research team used the Regional Transit System (RTS) five-year development plan and inputs from RTS staff and the City of Gainesville transportation officials to develop four scenarios for possible changes in public transit and other transportation services that would better serve transportation disadvantaged populations. Transportation disadvantaged populations (elderly people, people with disabilities, low-income households, and households who do not own a personal vehicle), face mobility challenges due to limited options of accessible and affordable transportation services. The general transit feed specification (GTFS) defines a common format for public transit schedules with the associated geographic information. The GTFS data is useful for transit system employees, researchers and advocates to understand the existing transit routes. The data can be difficult to edit in order to evaluate alternatives. The research team developed a set of Python script editors to modify the GTFS data based on changes to transit service (1. suspending specific transit routes; 2. decreasing transit frequency of a route; 3. increasing transit frequency of a route; and 4. changing service span of a route). |
| G3 | **Methodology for Safety-Based CAV applications for VISSIM -** The FIU team has developed methodologies for three safety-based CAV applications on urban streets and incorporated the methodology in VISSIM applications. |

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| | The method can be integrated with traffic management center software at locations where advanced detectors that measure vehicle trajectories exist and/or at locations where data can be captured from CAVs. The modification of the central software at the TMCs will allow the software to better assess the performance in real time, provide more detailed and accurate information and alerts to TMC operators, and recommend more effective plans to address detected mobility and safety problems. |
| K3 | **Methodology for Short-Term Traffic Flow Prediction -** A hybrid CEEMDAN-WPD-Deep ESN deep learning methodology for short-term traffic flow prediction was developed. The methodology can forecast the future real-time traffic flow based on current and past traffic information. The hybrid methodology combines the data decomposition technology with a deep learning architecture to capture the nonstationary nature of traffic data and forecast traffic flow accurately and efficiently. With the real-time traffic flow predictions, travelers can make smarter choices to avoid congested roads, and agencies can implement traffic control strategies to ease traffic congestion. Navigation system companies and DOTs can benefit from the methodology. |

### *Completed Technical Reports*

- Project B - *Technology Influence on Travel Demand and Behaviors*, PI: Dr. Virginia Sisiopiku, UAB
- Project C - *Performance Measurement and Management using Connected and Automated Vehicle Data*, completed, PI: Dr. Mohammed Hadi, FIU
- Project G - *Transit in the Era of Shared Mobility,* PI: Dr. Kari Watkins, GaTech
- Project F - *Integrated Implementation of Innovative Intersection Designs*, PI: Dr. Nagui Rouphail, NCSU
- Project I - *Freeway Management for Optimal Reliability*, 2020, PI: Dr. Yafeng Yin
- Project B2 - *Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data*, PI: Dr. Huaguo Zhou, Auburn
- Project F2 - *Discovering Potential Market for the Integration of Public Transportation and Emerging Shared-Mobility Services*, PI: Dr. Lili Du, UF
- Project O2 - *Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous /Connected Vehicles*, PI: Dr. Robert Whalin, JSU

### *Publications, Conference Papers, Posters & Presentations*

| Project | Description | Date | Type |
|---|---|---|---|
| A2 | Wolfe, M., N. McDonald, G. M. Holmes. 2020. Transportation barriers to health care in the US: Findings from the NHIS, 1997-2017. American Journal of Public Health 110(6): 815-822. | 2020 | publication |
| B2 | Xu, D. "Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data, Phase II" at ITE Annual Meeting/McTrans Virtual Booth, 8/7/2020 | 8/7/2020 | presentation |
| B3 | Zhao, X., Steiner, R., Yan, D., Sisiopiku, V. (2020) Can Micro-mobility Reduce Urban Traffic Congestion?: A Case Study of Birmingham, Alabama; Annual ITE Meeting, New Orleans, LA | August 2020 | conference presentation |
| B3 | Elefteriadou, L., Du, L., Zhao, X. (2020). Autonomous vehicles and micromobility in a disruptive society and transportation system. The 5th Conference on Sustainable Urban Mobility. | June 2020 | conference presentation |
| B3 | Sisiopiku, V., Zhao, X., Xu, Y., Yan, D., Steiner, R. (2020) Can Micro-mobility Reduce Urban Traffic Congestion?. ITE Annual Meeting. | 8/2020 | conference presentation |
| C2 | McDonald. 2020. "Urban freight delivery and loading spaces." Presented at the TRB Freight Workshop, January 2020. | January 2020 | presentation |

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| C3 | Stakeholder summit on access to healthcare. Organized with the Orange County (NC) Department for Aging. | 6/2020 | presentation |
| D2 | Classen, S., Mason, J., Wersal, J., Rogers, J., & Sisiopiku, V. (2020). Older drivers' experience with automated vehicle technology: Interim analysis of a demonstration study. Frontiers in Sustainable Cities, 2(27), 1-12. https://www.frontiersin.org/articles/10.3389/frsc.2020.00027/full | 6/12/2020 | publication |
| D2 | Mason, J., Classen, S., Wersal, J., & Sisiopiku, V. 2020. Establishing face and content validity of a survey to assess users' perceptions of automated vehicles. Transportation Research Records. https://doi.org/10.1177/0361198120930225. | 7/5/2020 | publication |
| D2 | Classen, S., Mason, J., Wersal, J., Rogers, J. & Sisiopiku, V. UF & UAB's Phase I demonstration study: Older adults' perceptions of automated vehicle technology. Oral presentation at the Annual Meeting of AUVSI: Breakout Session: The potential for AVs to support active aging and community mobility in suburban and ex-urban areas. San Diego, California, July 22, 2020 | 7/22/2020 | conference presentation |
| D2 | Classen, S. & Mason, J. Older Adults, New Mobility, and Automated Vehicles, Urbanism Next and RAND Corporation on behalf of AARP Virtual Roundtable, 23 September, 2020 | 9/23/2020 | conference presentation |
| D2 | UF Occupational Therapy Doctoral Student Works on Study to Understand Older Driver Perceptions on AV Technology featured in the University of Florida Transportation Institute newsletter: https://www.transportation.institute.ufl.edu/2019/10/older-drivers-and-autonomous-vehicles/ | 9/16/2020 | Other |
| D2 | Classen, S. & Mason, J. Older Adults, New Mobility, and Automated Vehicles, Urbanism Next and RAND Corporation on behalf of AARP Virtual Roundtable, 23 September, 2020 | 9/23/2020 | presentation |
| D3 | Khan, A., Sullivan, A., and Sisiopiku, V.P. (2020). "Traffic Impacts Assessment for a Major Road Construction Project in Birmingham, Alabama", Virtual presentation to the 8th World Sustainability Forum, WSF2020, Switzerland, Sept. 2020. | September 2020 | |
| E | Combs, T. S., McDonald, N. C., & Leimenstoll, W. (2020). Evolution in Local Traffic Impact Assessment Practices. Journal of Planning Education and Research. https://doi.org/10.1177/0739456X20908928 | January 2020 | publication |
| E | McDonald, Noreen C., and Tabitha S. Combs. (2020) Reinventing TIA: Contemporary Approaches to Addressing the Traffic Impacts of Urban Development. ITE Journal. | September 2020 | publication |
| E2 | The PI co-organized a webinar on "Life in the Era of COVID-19" which was attended by almost 500 people across the globe. One of the themes of the Webinar was related to global transportation during COVID-19. Professor Ruth Steiner (Co-PI) was a panelist. | 5/27/2020 | webinar |

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| G | Wolfe, M. and N. McDonald. 2020. Innovative health care mobility services in the US. BMC Public Health 20: 906. | 2020 | publication |
| H2 | Jones, S and Uddin, N. "Fly-by image processing for Congestion Management", Virtual presentation to ALDOT | 2020 | presentation |
| I2 | Sarjana, S., Ramadan, O.E., and Sisiopiku, V.P. (2020). "Analysis of Transportation Users' Preferences and Attitudes for Identifying Micro-Level Determinants of Transportation Network Companies' (TNCs) Growth". Journal of Transportation Technologies, Vol. 10, No. 3. Pp. 251-264, June 19, 2020, Available at https://www.scirp.org/pdf/jtts_2020061810033242.pdf | 6/17/2020 | publication |
| I3 | Dan Xu, ITE Annual Meeting/McTrans Virtual Booth, Analysis of Headway and Speed based on Driver Characteristics and Work Zone Configurations Using Naturalistic Driving Study Data | 8/7/2020 | conference presentation |
| J | Jehn, N.L., and R.E. Turochy. "Development of Breakdown Probability Models and Heavy Vehicle Passenger Car Equivalents for Rural Freeway Work Zones", was published in Transportation Research Record: Journal of the Transportation Research Board, 2020. | 2020 | publication |
| J | Saha, T. and Sisiopiku V.P. (2020). "Assessing Work Zone Traffic Control Options for 3-to-1 Lane Closures". Journal of Transportation Technologies, 10(01):50-64. DOI: 10.4236/jtts.2020.101004. | 2020 | publication |
| M2 | Pacal, G, V, Sisiopiku, and M. Hadi, "Traffic Signal Operation, Optimization, Maintenance and Management Practices in the Southeast," International Journal of Engineering Research and Development. | 6/15/2020 | publication |
| M2 | Using High-Resolution Controller Data in the Calibration of Traffic Simulation Models - Transportation Research Board Annual Meeting; Conference Presentation and forwarded to editorial board for publication | 9/30/2020 | presentation |
| N2 | Alternative Algorithms for Improving ATSPM's Approach Delay Estimation, Shoaib Samandar, Thomas Chase, Nagui Rouphail presented at STRIDE Poster Competition, TRB | January 2020 | poster |
| O2 | Guojing Hu, Feng Wang, Weike Lu, Tor A. Kwembe, and Robert W. Whalin. "Cooperative bypassing algorithm for connected and autonomous vehicles in mixed traffic," IET Intelligent Transport Systems 14, no. 8 (2020): 915-923, https://doi.org/10.1049/iet-its.2019.0707 | August 2020 | publication |
| O2 | Guojing Hu. "Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous /Connected Vehicles". ITE Annual Meeting 2020 in McTrans' virtual exhibition booth. | August 2020 | presentation |
| O2 | Weike Lu, Jun Liu, Jiannan Mao, Guojing Hu, Chuqiao Gao, and Lan Liu. "Macroscopic fundamental diagram approach to evaluating the performance of regional traffic controls," Transportation Research Record 2674, no. 7 (2020): 420-430, https://doi.org/10.1177%2F0361198120923359. | June 2020 | publication |

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| P2 | Chy, Tausif. “Work Zone Lane Drop Placement Evaluation”, presented at the 99th Annual Meeting of the Transportation Research Board in January 2020. | January 2020 | presentation |
| Q2 | Powerpoint (short and long versions) and student homework assignment on Curbside Management for an undergraduate Multimodeal Transportation course. | September 2020 | educational product |
| | R. Sengupta, R. Reddy, P.J. Shah, A. Rangarajan, S. Ranka, A Platoon Matching Approach for the Estimation of Arterial Travel Time Distributions, Proceedings of IEEE Intelligent Transportation Systems Conference. | 9/1/2020 | conference proceedings |
| | Autonomous Shuttles”. Meyer, G., and Beiker, S. “Road Vehicle Automation 7, Lecture Notes in Mobility”, Springer, August 2020 https://doi.org/10.1007/978-3-030-52840-9 | August 2020 | publication |
| cost share | Steiner, R. L. Agarwal, N., Masciocchi, J., Grinder, E., Wood, S., Peters, B., Chan, N., Yang, Y. & Rahmani, R. (2020) Implementing Safe Routes to School Programs in Rural Florida Communities: Final Report. Prepared for Florida Department of Transportation Safety Office under Florida Department of Transportation Contract Project BDV33-945-03. (33 pages). | 2020 | publication |
| cost share | M. Pourmehrab, L. Elefteriadou, S. Ranka and M. Martin-Gasulla, "Optimizing Signalized Intersections Performance Under Conventional and Automated Vehicles Traffic," in IEEE Transactions on Intelligent Transportation Systems, vol. 21, no. 7, pp. 2864-2873, July 2020, https://doi.org:10.1109/TITS.2019.2921025 | July 2020 | publication |
| cost share | Emami, P., S. Ranka, P. Pardalos, L. Elefteriadou. “Machine Learning Methods for Data Association in Multi-Object Tracking." ACM Computing Surveys, April 2020. https://doi.org/10.1145/3394659 | April 2020 | publication |
| cost share | Omidvar, A., L. Elefteriadou, M. Pourmehrab and C. Letter. "Optimizing Freeway Merge Operations Under Conventional and Automated Vehicle Traffic." ASCE Journal of Transportation Engineering, Part A: Systems, Volume 146 Issue 7, July 2020. https://doi.org/10.1061/jtepbs.0000369 | July 2020 | publication |
| cost share | Lily Elefteriadou, Blaine Leonard, Lili Du, Wei Ma, Jun Liu, Kuilin Zhang, Jiaqi Ma, Ziqi Song, Xiaopeng Li, and Sevgi Erdogan. Book Chapter: “Enabling Transportation Networks with Automated Vehicles: From Individual Vehicle Motion Control to Networked Fleet Management”. Meyer, G., and Beiker, S. “Road Vehicle Automation 7, Lecture Notes in Mobility”, Springer, August 2020 https://doi.org/10.1007/978-3-030-52840-9 | August 2020 | publication |
| cost share | Katherine Turnbull, Cynthia Jones, and Lily Elefteriadou. Book Chapter: “Catching up with Low-Speed Autonomous Shuttles" in Road Vehicle Automation 7 (p. 63-70) | July 2020 | book chapter |
| cost share | Elefteriadou, L. Book Chapter: “Cyber Physical Systems in Transportation: Traffic Management With Connected and Autonomous Vehicles”. Chimay J. Anumba and Nazila Roofigari-Esfahan (Eds): Cyber-Physical Systems in the Built Environment, Springer, July 2020, https://doi.org/10.1007/978-3-41560-0 | July 2020 | publication |

# OUTCOMES

The STRIDE Center uses the metrics shown in the table below to assess the OUTCOMES related to its technology transfer program. Thirty-eight trainings serving 2,078 professionals have been held for STRIDE projects to date. During this reporting period, six trainings serving 410 professionals have been completed related to Year 1 projects and 5 trainings serving 166 professionals have been completed related to Year 2 projects.

| **METRIC** | Year 1 Projects Target/ Completed | Year 2 Projects Target/ Completed | Year 3 Projects Target/ Completed | **TOTAL COMPLETED (All Projects)** |
|---|---|---|---|---|
| **Body of Knowledge:** Number of technology transfer trainings for transportation professionals on a new or improved congestion mitigation approach (workshops, webinars) | 9 / 20* | 18 / 18* | 11 / 0 | **38* Trainings** |
| **Professionals Trained:** Number of transportation professionals participating in technology transfer trainings to improve their understanding and awareness of new or improved congestion mitigation approaches | 90 / 924* | 180 / 1154* | 11 / 0 | **2,078* Professionals trained** |

* Totals include this and all prior reporting periods.

### *Trainings & Professionals Trained*

Eleven trainings (related to Year 1 and Year 2 projects) engaged 576 professionals during the reporting period, as shown in the table below. There were an additional 540 views of YouTube recordings of STRIDE webinars.

| **Project #** | **Training** | **Date** | **# Trained** | **YouTube Views** |
|---|---|---|---|---|
| C | STRIDE webinar - Dr. Mohammed Hadi, Florida International University, presented "Performance Measurement and Management Using Connected and Automated Vehicle Data" | 4/22/2020 | 73 | 45 |
| B | STRIDE webinar - Dr. Virginia Sisiopiku, University of Alabama at Birmingham, presented "Technology Influence on Travel Demand and Behaviors" | 5/13/2020 | 53 | 64 |
| H2 | STRIDE webinar - Dr. Nasim Uddin and AbdelAziz AbdelLatef, UAB, presented "Fly-By Image Processing for Real Time Congestion Mitigation" | 6/3/2020 | 22 | 109 |
| O2 | STRIDE webinar - Dr. Robert Whalin, Jackson State University, and Guojing Hu, PhD Candidate, Jackson State University, presented " Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous/Connected Vehicles" | 7/1/2020 | 32 | 71 |
| L2 | STRIDE webinar - Dr. William J. Davis and Dr. Daniel B. Bornstein , The Citadel, presented "Creation of graduate curriculum explaining relationships between Public Health, Physical Activity, Urban Mobility and The Built Environment" | 7/8/2020 | 30 | 46 |
| TT (Yr 1) | STRIDE webinar - Dimitra Michalaka, Ph.D., P.E. , The Citadel, presented "South Carolina (SC) Bike and Pedestrian Clearinghouse" | 8/5/2020 | 43 | 18 |
| C2 | STRIDE webinar - Noreen McDonald, Ph.D., and Charles Edwards, UNC at Chapel Hill, presented "Planning for Urban Freight Delivery: How do City Codes Accommodate Freight?" | 8/12/2020 | 32 | 13 |

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|---|---|---|---|---|
| F2 | STRIDE webinar - Lili Du, Ph.D., University of Florida, and Ming Lee, Ph.d. (on behalf of Xia Jin, Ph.D.), Florida International University, presented "Discovering Potential Market for the Integration of Public Transportation & Emerging Shared-Mobility Services" | 8/19/2020 | 50 | 45 |
| D | STRIDE webinar - Dr. Pruthvi Manjunatha, UF, Dr. Michael Hunter, Georgia Tech, and Dr. Lily Elefteriadou, UF, presented "Evaluation of the Operational Effects of Connected and Autonomous Vehicles (CAVs) through Microsimulation" | 9/9/2020 | 93 | 87 |
| cost-share (Yr 1) | STRIDE webinar - Dr. Pruthvi Manjunatha, UF, presented "I-STREET: A Real-World Transportation Testbed in Gainesville, FL" | 9/16/2020 | 47 | 42 |
| E | Tabitha Combs, Ph.D., Research Associate and Lecturer from UNC's Department of City and Regional Planning was a panelist on a 2.5 hour workshop "Evaluating Innovations in Traffic Impact Assessment to Facilitate Safety and Operations Integration" delivered August 12, 2020 at the ITE 2020 Annual Meeting. | 8/12/2020 | 101 | |
| | **TOTAL for Reporting Period** | | **576** | **540** |

## IMPACTS

The STRIDE Center uses the list of metrics shown in the table below to assess the IMPACTS related to its technology transfer program. Seventy-one meetings with stakeholders have been completed and 5 products have been adopted or implemented to-date.

| **METRIC** | Year 1 Projects Target/ Completed | Year 2 Projects Target/ Completed | Year 3 Projects Target/ Completed | Year 4 Projects Target/ Completed | **TOTAL COMPLETED (All Projects)** |
|---|---|---|---|---|---|
| **Stakeholders:** Number of stakeholders (agencies, businesses, etc.) you meet with to encourage adoption or implementation of congestion mitigation approaches | 9 / 10* | 18 / 72* | 11 / 18* | 6 / 1* | **101* Stakeholder Meetings** |
| **Adoption/Implementation:** 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) | 2 / 2* | 2 / 3* | 11 / 0* | 2 / 0* | **5* Products Adopted/ Implemented** |

* Totals include this and all prior reporting periods.

### *Stakeholder Meetings*

Researchers held 25 meetings with stakeholders during the reporting period. Five additional stakeholder meetings (noted with *) were held during the previous reporting period but not included in the April report.

| **Project** | **Stakeholder** | **Date** | **Description** |
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|---|---|---|---|
| J | Alabama DOT: Jeff Benefield, Kerry NeSmith | 3/27/2020" | Held a videoconference progress meeting on an ALDOT research project. Mentioned Projects J and P2 and how those complement/relate to the ALDOT project on the effects of queue warning systems in work zones. Requested attendees' future input on P2 and support to implement results of J and P2. |
| D2, A3 | Jesus Gomez & Malisa McCreedy, City of Gainesville | 5/5/2020, 6/29/2020, 7/2/2020 | Justin Mason has been in constant communication with the City of Gainesville to plan and organize data collection and get updates related to the automated shuttle and their policies to mitigate the spread of COVID-19. |
| D2, A3 | Neal Hemenover, VP of Innovation, Transdev | 5/5/2020, 7/2/2020 | Dr. Sherrilene Classen, Justin Mason and Neal Hemenover (Transdev) have maintained communication to receive updates on COVID-19 best practice, NHTSA waiver approval, modifications of the automated shuttle to include seatbelts, and data collection. |
| G2 | Nicholas Jehn, Kinley-Horn | 7/21/2020 | Discussed the proposed traffic simulation modeling work and associated data needs for this project for Task 4. |
| J2 | Emmanuel Posadas, PE, City of Gaineville | June 2020 | Meet to discuss the project schedule, the City of Gainesville data issues, and the possibility of implementing the products of this project. |
| M2 | Giri Jeedigunta (AECOM), Aidin Massahi (Eland engineering) | May 2020 | Continue discussing automating the signal timing updates in special events and the tournament participation. |
| P2 | Alabama DOT: Jeff Benefield, Kerry NeSmith | 3/27/2020* | Held a videoconference progress meeting on an ALDOT research project. Mentioned Projects J and P2 and how those complement/relate to the ALDOT project on the effects of queue warning systems in work zones. Requested attendees' future input on P2 and support to implement results of J and P2. |
| Q2 | Calvin Thigpen, Director of Policy Research Government Relations, Lime | 5/20/2020 | Discussed the opportunity to collaborate with Lime Scooters on a survey effort to understand the perceptions among the public and micromobility users of COVID-19 risks on different modes of transportation (including micromobility, public transit, and ridehailing). Although a data sharing agreement for this survey was not reached, there is a potential opportunity for future collaboration. |
| A3 | UF Korean Student Association | 7/1/2020 | Seung Woo Hwangbo has utilized social media platforms to engage with UF student organizations. |
| B3 | Laurence Wilse-Samson, Sr. Manager, Policy Research @ Bird | 2/12/2020* | X. Zhao met with industry partner to seek feedback on our findings and explore collaboration opportunities. |
| B3 | Andrea Broaddus, Sr. Research Scientist @ Ford Mobility | 3/25/2020* | X. Zhao met with industry partner to seek feedback on our findings and explore collaboration opportunities. |
| B3 | City of Birmingham & Parking and Transportation, UAB | 2/13/2020* | V. Sisiopiku met with key stakeholders listed below to seek feedback on our work. Stakeholders included Darrell O'Quinn, City Councilor, City of Birmingham; Cory Pettway, Community Liaison, City of Birmingham; Colin Alexander, City of Birmingham; Brian Atkinson, Programs Manager, Parking and Transportation, UAB; Andre Davis, Director of Transportation, Parking and Transportation, UAB |

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| C3 | Orange County Dept. for Aging (Alison Smith) | June 2020 | Mary Wolfe presented our STRIDE research results to a virtual summit of local transit and social service agencies engaged with access to healthcare. Meeting involved UNC Health care, Orange County Public Transit, Chapel Hill Transit. |
| D3 | Scott Tillman – RPCB<br>Becky White – Sain Associates | 6/5/2020 | Met with Regional Planning Commission to discuss scope of work for Sain Associates and estimated budget. Contacted Sain Associates to discuss scope of work. Began contract discussions. |
| D3 | Chris Hilyer, Brett Sellers – ALDOT TSMO | 7/2/2020 | Provided an update to ALDOT on project status and progress. |
| E3 | Pinellas County Schools<br>Tony G. Langhorne<br>Field Operations Supervisor<br>Transportation | 4/28/2020;<br>6/22/2020 | STRIDE Researchers met online with PCS Staff to review and obtain their data submission for this project. PCS Provided an equivalent descriptive report of all Bus Routes, Runs, Stops, Arrival Times, Total Loads and Paths of Travel for all planned school bus routes. |
| B3 | FDOT central office officials and location district officials (30-40 people attended) | 09/23/20 | X. Zhao presented our work in I-STREET stakeholder meeting to seek their feedback. |
| C3 | Mark Gwynne, President UNC Health Alliance and UNC Senior Health Alliance | 9/25/2020 | We met with representatives from the UNC Health Alliance to share our research and identify the issues they face in their work as medical providers around transport barriers to care. |
| C3 | City of Gainesville Department of Mobility (Malisa McCreedy) and RTS (Jesus Gomes (Director), Krys Ochia (Planning Mgr.), Julian Lauzan, Ricky Walker | 7/17/2020 | We presented preliminary analysis of demographic data and transit route analysis to Gainesville Regional Transit (RTS) and City of Gainesville Department of Mobility. Our research team obtained data and opinions on proposed scenarios. |
| C3 | RTS (Krys Ochia) | 9/15/2020 | Our research team met with RTS to learn more about the general transit feed specification (GFTS) and transit operations. We used that information to adjust our scenarios. |
| E3 | Mathew Palmer, Director, Strategic Planning Initiatives, Durham Public Schools | ongoing (April and May meetings) | The project team has had ongoing communications, in person, on phone, and by email, with Durham Public Schools, primarily with their strategic planning office but also with their school bus routing team. |
| E3 | Education Logistics, Inc. (Edulog) - Andy Leibenguth, Senior Consultant | ongoing (April and May) | Ongoing conversations with Senior Consultants from Edulog about applicability of data within their software to help answer the research question. |
| K3 | Ms. Cindy Smith and about 10 colleagues from Mississippi Department of Transportation (MDOT) | 8/10/2020 | Dr. Robert Whalin and Ms. Guojing Hu presented the background, methodology and experimental results of the K3 project to the MDOT researchers. |
| F4 | Cindy Smith P.E. ,Research Director, MDOT;<br>Marta Charri P.E. Engineer, MDOT | 8/10/2020 | The research team did a presentation as an overall introduction for the project based on the proposal. |
| F3 | Jake Soule, Director of Operational Strategy, Gotcha Mobility | 7/27/2020 | Meeting agenda was on: I. UTC and Project overview; II. Presentation of similar research done with Charleston bike share data and possible benefits of our collaboration to Gotcha Mobility; III. Data requests and dashboard access. |

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| F3 | John Fellows, City Planning Administrator, City of Columbia, SC; Shane Shaughnessy, Assist. City Planner, City of Columbia, SC | 7/28/2020 | Meeting agenda was on: I. UTC and Project overview; II. Presentation of similar research done with Charleston bike share data and possible benefits of our collaboration to the City of Columbia; III. Data requests and dashboard access |
| D2 | Jesus Gomez (CoG), Dr. Pruthvi Manjunatha (UF I-STREET), & Neal Hemenover (Transdev) | 7/16/2020 - 10/15/2020 | Dr. Mason meets bi-weekly with the City of Gainesville, UF I-STREET, and Transdev for shuttle operation updates to plan and organize data collection. These meetings have been instrumental in providing us with updates related to the automated shuttle and their policies to mitigate the spread of COVID-19. |
| D2 | Deb Olivera—Chair, OT Department, FAMU | 7/16/2020 - 10/15/2020 | Dr. Classen had various engagements with Dr. Olivera—that resulted in Dr. Classen being invited as Keynote speaker for an upcoming FSU-FAMU Transportation Conference.<br>The 6th Annual Transportation Day – Webinar: Technology in Transportation. 16 October 2020. |
| D2 | FDOT central office officials and location district officials (30-40 people attended) | 09/23/20 | Dr. Classen presented findings of "Older Adults' Perceptions of Autonomous Vehicles" at I-STREET stakeholder meeting. |
| A3 | Sunrise Rotary Club of Gainesville | 8/20/2020 | Seung Woo Hwangbo and Justin Mason presented this study to potential participants via online Zoom meeting. |

*Product Adoption*

There were no product adoptions during the reporting period. We anticipate product adoptions from Year 1 and Year 2 projects as they come to completion. Five products have been adopted to-date.

## 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 – *The COVID 19 pandemic has caused the cancellation or postponement of several events and activities. The STRIDE consortium has modified several K-12 programs to an on-line format. All project meetings and university courses have continued uninterrupted. Reduced traffic and social distancing rules may result in delays in data collection.*
- 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, Year 2, and Year 3 List of Projects

(For the complete list, visit: https://stride.ce.ufl.edu/stride-research/active-research-projects/)

## STRIDE Year 4 List of Projects

(These are the STRIDE Center's most recently funded projects, which began late Fall 2020)

**Identification of Unpredictable Sources of Non-recurring Congestion and Mitigating Strategies (Project A4)**
Lead PI: Thomas Chase, Research Associate, ITRE/North Carolina State University

Team: Dr. Angshuman Guin, Georgia Institute of Technology; Dr. Andrew Sullivan, University of Alabama at Birmingham; Dr. Rod Turochy, Auburn University; Christopher Cunningham, MSCE, P.E., North Carolina State University; Dr. Virginia Sisiopiku, University of Alabama at Birmingham

**Integrated Corridor Management: Cooperative Signal Control with Freeway Operations and Ramp Metering (Project B4)**
Lead PI: Dr. Ali Hajbabaie, North Carolina State University
Team: Dr. Lily Elefteriadou, University of Florida and Dr Mohammed Hadi, Florida International University

**Transportation Workforce Development for State DOTs to Address Congestion for the Southeast Region (Project C4)**
Lead PI: Dr. Ruth Steiner, University of Florida
Team: Dr. Mohammed Hadi, Florida International University; James B. Martin, P.E., North Carolina State University; Dr. Virginia P. Sisiopiku, University of Alabama at Birmingham; Dr. Dimitra Michalaka, The Citadel; Dr. Steven Click, Tennessee Technological University

**Mobility-on-Demand Transit for Smart, Sustainable Cities (Project D4)**
Lead PI: Dr. Xilei Zhao, University of Florida
Team: Dr. Nikhil Kaza, University of North Carolina at Chapel Hill; Dr. Noah Kittner, University of North Carolina at Chapel Hill; Dr. Noreen McDonald, University of North Carolina at Chapel Hill; Dr. Virginia Sisiopiku; University of Alabama at Birmingham; Dr. Xia Jin, Florida International University; Dr. Jeffrey LaMondia, Auburn University; Dr. Xiang Yan, University of Florida; Dr. Andrea Broaddus, Ford Motor Company

**Innovative Intersection and Interchange Designs and their use across the Southeast (Project E4)**
Lead PI: Dr. Mike Hunter, Georgia Institute of Technology
Team: Chris Cunningham, MSCE, PE, ITRE/North Carolina State University; Dr. Ali Hajbabaie, North Carolina State University; Dr. Tabitha Combs, University of North Carolina at Chapel Hill; Dr. Michael Rodgers, Georgia Institute of Technology; Dr. Hugo Zhou, Auburn University

**Automatic Safety Diagnosis in Connected Vehicle Environment (Project F4)**
Lead PI: Dr. Shuang Z. Tu, Jackson State University
Team: Dr. Robert Whalin, Jackson State University

## New Cost Share Projects for this Reporting Period

**Research Initiatives for Reducing Congestion in Alabama and the Southeast U.S. (ALDOT # 931-029)**
PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham
Sponsor: Alabama Department of Transportation

**Transportation Research, Workforce Development, and Technology Transfer Initiatives for Reducing Congestion in Alabama and the Southeast U.S. ALDOT # 930-973**
PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham
Sponsor: Alabama Department of Transportation

**Task A: Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management (ALDOT # 930-998)**
PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham
Sponsor: Alabama Department of Transportation

**Assessment of the Infrastructure Readiness for Connected Vehicle to Infrastructure Applications on Arterial Streets (BDV29-97758)**
PI: Dr. Mohammed Hadi, Florida International University
Sponsor: Florida Department of Transportation

**Georgia Transportation Institute**
PI: Dr. Mike Hunter, GaTech
Sponsor: Georgia Department of Transportation

**VISSIM Simulation Guidance**
PI: Dr. Mike Hunter, GaTech
Sponsor: Georgia Department of Transportation

**Development of Tools to Model Driver Behavior in a Cooperative and Driverless Environment**
PI: Dr. Mike Hunter, GaTech
Sponsor: Georgia Department of Transportation

**Guidelines for Left Turn Signal Phasing Options by Time of Day: A Safety and Operational Study (2018-22)**
PI: Dr. Shannon Warchol and Chris Cunningham, P.E., North Carolina State University
Sponsor: North Carolina Department of Transportation

**Evaluating the Connection Between Transit and TNCs (Transportation Network Companies) in Pinellas County for Statewide Application (BDV31 977-123)**
PI: Dr. Peng, Zhong-Ren, University of Florida
Sponsor: Florida Department of Transportation

**Evaluation of East Gainesville's Microtransit Mobility Project (BDV31 977-127)**
PI: Dr. Ruth Steiner, University of Florida
Sponsor: Florida Department of Transportation

**Develop, Refine, and Validate a Survey to Assess Adult's Perspectives of Autonomous Ride-Sharing Services (BDV31 977-128)**
PI: Dr. Sherrilene Classen, University of Florida
Sponsor: Florida Department of Transportation

**Florida ATMA Pilot Demonstration and Evaluation (BDV31 977-133)**
PI: Dr. Nithin Agarwal, UFTI/T2 Center
Sponsor: Florida Department of Transportation

**Characterizing Curve Crashes in Florida (BDV31 977-135)**
PI: Dr. Ilir Bejleri, University of Florida
Sponsor: Florida Department of Transportation

**Data Management and Analytics for UF Smart Testbed (BDV31 977-77)**
PI: Dr. Sanjay Ranka
Sponsor: Florida Department of Transportation

**Bigdata Analytics and Artificial Intelligence for Smart Intersections (BDV31 977-116)**
PI: Dr. Sanjay Ranka
Sponsor: Florida Department of Transportation

**Data Analytics and Evaluation of the Gainesville Trapezium Connected Vehicle Signal Phasing and Timing (SPaT) Deployment Project (BDV31 977-117)**
PI: Dr. Sanjay Ranka
Sponsor: Florida Department of Transportation

**Develop, Refine, and Validate a Survey to Assess Adult's Perspectives of Autonomous Ride-Sharing Services (BDV31 977-128)**
PI: Dr. Sherrilene Classen
Sponsor: Florida Department of Transportation