Semi-Annual Report for University Transportation Centers

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The complete list of projects can be found at: https://stride.ce.ufl.edu/stride-research/active-research-projects/)
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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?

- Careers in Transportation Course (funded by STRIDE with matching funds by CUTC): The course was taught in fall 2022 and had 58 students who opted for the certificate of completion and seven students who were enrolled for university credit. We had 48 college students and 17 working professionals from the private and public sectors. The course exposed students to numerous transportation-related topics. Throughout the semester the instructors invited a total of 36 speakers from the transportation industry to present on one of the topics in the syllabus. The course materials developed by STRIDE, including the syllabus and the list of guest speakers and other resources can be found at https://stride.ce.ufl.edu/education/stride-careers/. The final report was sent to Tracy Ulberg at CUTC on April 12, 2023.
- **YEAR 1 Projects (COMPLETED):** All 10 research projects are now completed. All these reports, including the technology transfer reports (TRRs)s, the project briefs (PBs), and the webinars, are posted to the STRIDE Center's projects webpage and shown as "Completed". All these completed projects have an associated TTR, PB, and a recorded webinar and their data have been uploaded to the STRIDE Center's community page in the Zenodo data repository. The 10 completed projects for Year 1 are:
 - > Project A Impact of Smartphone Applications on Trip Routing and Congestion Management
 - > Project B Technology Influence on Travel Demand and Behaviors
 - Project C Performance Measurement and Management Using Connected and Automated Vehicle Data
 - 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, Traffic, and Other System Impacts
 - Project F Integrated Implementation of Innovative Intersection Designs
 - Project G Transit in the Era of Shared Mobility
 - > Project H Strategies for Mitigating Congestion in Small Urban and Rural Areas
 - > Project I Freeway Management for Optimal Reliability
 - > Project J Improving Work Zone Mobility through Planning, Design, and Operations
- **YEAR 2 Projects:** Fourteen out of 17 projects are now completed. The final reports (including the TTRs, the PBs, and the webinars) have been posted to the STRIDE Center's <u>project webpage</u>. We have also disseminated the results of these projects via Constant Contact, and we have sent them to TRB for inclusion into their e-newsletter. All these completed projects have an associated TTR, <u>PB</u>, and a <u>recorded</u> <u>webinar</u>. The PIs have uploaded the data for these projects into the <u>Zenodo repository</u>. The 11 completed projects for Year 2 are:
 - > Project A2 Changing Access to Public Transportation & the Potential for Increased Travel
 - > Project B2 Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data

- > Project C2 Urban Freight & Planning
- Project D2 UF & UAB's Phase I Demonstration Study: Older Driver Experiences with Autonomous Vehicle Technology
- Project E2 Establishing A Dual Generational Modality Dataset: Comparing the ride-sharing adoption trends and perspectives of consumers from two generational cohorts, Millennials and Gen X'ers
- Project F2 Discovering Potential Market for the Integration of Public Transportation & Emerging Shared-Mobility Services
- Project G2 Quantitatively Evaluate Work Zone Driver Behavior Using 2D Imaging, 3D LiDAR, and Artificial Intelligence in Support of Congestion Mitigation Model Calibration and Validation (recently completed)
- > Project H2- Fly-By Image Processing for Real Time Congestion Mitigation
- Project 12 Mitigating Network Congestion by Integrating Transportation Network Companies and Urban Transit
- > Project J2 Real-Time Based Decision Support System for Arterial Traffic Management
- Project K2 Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses (this report has been sent to the TRB Newsletter and accepted for publication)
- Project M2 Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management
- Project O2 Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous /Connected Vehicles.
- Project Q2 -Enabling the Shared Transportation Revolution

One project has completed the peer review process, and we are awaiting the finalized report and the responses to the reviewer comments:

Project L2 - Understanding Relationships Between the Built Environment, Physical Activity, Public Health, Urban Mobility, and Traffic Congestion: Graduate Curriculum Development

One project is currently out on peer review:

- > Project N2- Data Fusion for Signalized Arterial Performance Measurement One project is ongoing:
 - Project P2 Development of Guidance for Scheduling of Freeway Work Zones to Minimize Congestion Impacts

We continue to monitor the three projects in Year 2 that are in various stages of completion. We conduct our monitoring activities via quarterly reports and by communicating with PIs by phone and email. Projects which have delivered a draft final report are considered completed. STRIDE Center staff work with the PI on remaining deliverables (the TTR, PB scheduling a webinar, and ensuring their data is uploaded into the Zenodo repository). Center staff are also working on ensuring all final reports are 508compliant for accessibility and that they are formatted correctly.

- **YEAR 3 Projects:** There are a total of 11 projects. All but one project is completed:
 - Project A3 UF & UAB's Phase 2 Demonstration Study: Developing a Model to Support Transportation System Decisions considering the Experiences of Drivers of all Age Groups with Autonomous Vehicle Technology
 - > Project B3 Micro-Mobility as a Solution to Reduce Urban Traffic Congestion
 - > Project C3 Emerging Micromobility Services for the Transportation Disadvantaged
 - Project D3 Evaluating Detours for a Major Construction Project in the Era of Real-Time Route Guidance

- > Project E3 Locating and Costing Congestion for School Buses and Public Transportation
- Project G3 Utilization of Connectivity and Automation in Support of Transportation Agencies' Decision Making
- > Project H3 Smartphone-Based Incentive Framework for Dynamic Network-Level Traffic
- Congestion Management
- > Project 13 Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data, Phase II
- Project J3 Identifying and Mitigating Congestion Onset
- Project K3 Traffic Congestion Identification and Prediction based on Image Processing and Deep Learning Methods

One project is ongoing:

Project F3 - Traffic Congestion Identification and Prediction based on Image Processing and Deep Learning Methods

A list of Year 3 projects is available at <u>https://stride.ce.ufl.edu/stride-research/active-research-projects/.</u> Once completed, final reports (including the TTRs, the PBs, and the webinars) will be posted to the STRIDE Center's project webpage. The results will be disseminated via Constant Contact and final reports will be sent to TRB for inclusion into their e-newsletter. All completed projects will have an associated TTR, <u>PB</u>, and a recorded <u>webinar</u>. The PIs will upload their data into the <u>Zenodo repository</u>.

• **YEAR 4 Projects:** There are a total of six projects. Currently there are two projects that are ongoing and two projects that are in the peer review process.

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Completed projects:

- Project C4 Framework for the Development of a Diverse Transportation Workforce in the Southeast Region
- > Project F4 Automatic Safety Diagnosis in Connected Vehicle Environment

Two ongoing projects:

- Project B4 Integrated Corridor Management: Cooperative Signal Control with Freeway Operations and Ramp Metering
- > Project E4 Innovative intersection and interchange designs and their use across the Southeast

One project has completed the peer review process, and we are awaiting the finalized report and the responses to the reviewer comments:

Project D4 - Mobility-on-Demand Transit for Smart, Sustainable Cities

One project is currently out on peer review:

Project A4 - Addressing Unpredictable Sources of Congestion

A list of Year 4 projects is available at <u>https://stride.ce.ufl.edu/stride-research/active-research-projects/.</u> Once completed, final reports (including the TTRs, the PBs, and the webinars) will be posted to the STRIDE Center's project webpage. The results will be disseminated via Constant Contact and final reports will be sent to TRB for inclusion into their e-newsletter. All completed projects will have an associated TTR, <u>PB</u>, and a recorded <u>webinar</u>. The PIs will upload their data into the <u>Zenodo repository</u>.

• **YEAR 5 Projects:** There are a total of nine projects. Four are currently ongoing, four have been completed, and we are waiting on the final report for one project.

Completed projects:

- Project A5 Barriers and Facilitators of People with Disabilities in Accepting and Adopting Autonomous Shared Mobility Services
- > Project D5 Overcoming Barriers to Freight & Logistics Firm Collaboration with Urban Planning
- Project E5 Transportation Workforce Development for State DOTs to Address Equity, Diversity, and Inclusion in the Southeast Region
- Project J5 Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses (Phase 2 of Project D)

Ongoing projects:

- Project F5 Transportation Workforce Development Related to Traffic Signal Systems Phase II
- > Project G5 Engineering Careers from a Unique Summer Bridge Program
- > Project H5 (supplement to J3, Phase 2) Identifying and Mitigating Congestion Onset (Phase II)
- Project I5 Evaluation of Advanced Vehicle & Communication Technologies through Traffic Microsimulation; Project J5 – Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses/Phase II

Peer review completed, awaiting final report:

> Project K5 - A Better Understanding of Shopping Travel in the U.S.

All Year 5 projects are posted at <u>https://stride.ce.ufl.edu/stride-research/active-research-projects/</u>. Once completed, the final reports (including the TTRs, the PBs, and the webinars) will be posted to the STRIDE Center's project webpage. The results will be disseminated via Constant Contact and final reports will be sent to TRB for inclusion into their e-newsletter. All completed projects will have an associated TTR, <u>PB</u>, and a recorded <u>webinar</u>. The PIs will upload their data into the <u>Zenodo repository</u>.

- YEAR 6 Projects: All 15 projects are currently ongoing. These projects began in spring 2022, and most have received a no-cost extension and are due to be completed by August 31, 2023. Below is a list of these projects:
 - A6 Public Microtransit Pilots: System Assessment and Equity Considerations Based on the NC Experience
 - B6 Optimal Charging Station Planning to Adapt Mass Adoption of Electric Vehicles under Both Normal and Evacuation Scenarios
 - D6 Centralized Clearinghouse for Transportation Workforce Development Resources for the Southeastern Region
 - > E6 State DOT Policies Affecting Adaptive Street Use
 - > F6 Simulating a Shift to E-Delivery: Impacts on VMT
 - G6 Phase 2: Evaluating Signal Timing Planning Options in Terms of Coordination between Successive Signals at Continuous Flow Intersections
 - H6 Utilization of Connectivity and Automation in Support of Transportation Agencies' Decision Making – Phase 2
 - > 16 Macroscopic Fundamental Diagram Estimation using Loop-Detector Data (subcontracted)
 - > J6 Implementation Project: Planning for Urban Freight
 - ► K6 A Curriculum for Transportation Equity
 - > L6 Locating and Costing Congestion for School Buses and Public Transportation, Phase II
 - > M6 Analysis of Impacts of Pavement Quality Deterioration on Recurring Traffic Congestion
 - > 06 Real-time Safety Diagnosis System for Connected Vehicles Using Parallel Computing
 - > P6 Equitable Artificial Intelligence in Transportation
 - ▶ R6 WKF STRIDE K-12 Curriculum: Exploring Innovations in Transportation

NOTE: These projects are scheduled to be completed by late summer 2023, but due to the delays from the COVID-19 pandemic, they may need to be extended to Spring 2024.

- STRIDE Ongoing and Completed Projects: A list of all STRIDE projects (ongoing and completed) can be found 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 project-specific web pages for each STRIDE-funded project to provide the required Project Information sheets, links to final reports, as well as links to recorded webinars, products, related news, and any other information that relates to the project.
- **Students Supported by STRIDE:** Thirty-five masters and Ph.D. students were supported by STRIDE during the reporting period.
- **STRIDE Fall 2022 Newsletter:** The STRIDE Center's Fall 2022 newsletter was released December 7, 2022. The newsletter highlighted some of the completed research projects and associated products. We also included a spotlight on several students including the STRIDE Student of the Year, information on the CUTC-funded class (Careers in Transportation) and an update on K-12 activities. The complete newsletter can be viewed at https://conta.cc/30Z90sd.
- STRIDE Training for Implementation of Advanced Technologies through I-STREET: STRIDE is planning an I-STREET-related training program, funded by FDOT through a match project, which will include lessons learned on the implementation of advanced technologies. The program will provide course offerings on topics related to autonomous and connected vehicles, data analytics, and sensors for transportation applications. The task is nearly complete and the plan developed will be reviewed by FDOT for further action.
- Work in Progress for STRIDE Spring 2023 Newsletter: The next STRIDE newsletter (spring 2023) is scheduled to be released late May 2023.
- Research Project Briefs (no change): STRIDE continues to produce 2-page Project Briefs for each completed project, which summarize the project products and findings. STRIDE also continues to create final report "packages" which contain the final report, the project brief, the technology transfer report, and links to associated webinars. This final report package is sent via Constant Contact to transportation professionals, students, alumni, and other stakeholders. For a complete list of the Project Briefs, visit https://stride.ce.ufl.edu/technology-transfer/products/.
- **STRIDE Webinars:** During this performance period, 15 webinars related to STRIDE projects were held from October 5, 2022 to March 8, 2023. To view upcoming and the list of archived webinars, including their recordings, visit https://stride.ce.ufl.edu/technology-transfer/workshops-webinars-conferences/.
- STRIDE Student Poster Showcase & Competition: This event was held during the 2023 annual meeting of
 the Transportation Research Board in conjunction with the University of Florida Transportation Institute
 reception. There were 18 posters showcased in total and students were eligible to compete for 1st, 2nd,
 and 3rd place. The winners are listed in the section below (List of Awards and Recognitions). To view the
 posters, visit the event page at https://stride.ce.ufl.edu/2022/10/stride-2023-student-poster-showcase-competition/.

List of Awards and Recognitions

- Matteo Saracco, Georgia Institute of Technology
 - ✓ STRIDE Student of the Year for 2022 (award presented at the CUTC Awards Banquet during the 2023 meeting of the Transportation Research Board).
 - ✓ 1st Place, STRIDE Student Research Showcase & Competition, Carving Up the Curb: Evaluating Curb Management Strategies for Ride-Hailing & Ride-Sharing Activity through Simulation
- Subid Ghimire, North Carolina State University
 - ✓ 2nd Place, Spatial & Temporal Characteristics of Microtransit Trips: A Case Study of Wilson
- Abdullah Al Farabi, North Carolina State University
 - ✓ 3rd Place, Integrated Corridor Management by Cooperative Traffic Signal & Ramp Metering Control
- Afrin Anni, University of Alabama at Birmingham
 - ✓ GSG Professional Development Travel Award, Fall 2022

- Mahmud Hasan Mamun
 - ✓ The Effect of CAVs on Freeway Operations as Assessed by the Highway Capacity Manual and Simulation Models, October 2022, ITE Florida and Puerto Rico Student Best Poster Award

K-12 Outreach / Workforce Development Activities

STRIDE (at UF) was awarded a grant from the CUTC New Initiative Projects to develop a new undergraduate course on Careers in Transportation. The course was piloted Fall 2022. During the semester, 37 speakers presented about their profession and their personal career path. Students also completed an elevator pitch, a personal Odyssey Plan, an informational interview, and a Professional Profile project to develop their own skills. Weekly assignments included readings, videos, podcasts, and activities related to transportation issues. Seven UF students registered for the class received 1-credit. Seven additional students (non-UF) participated in the course for a Certificate of Completion. A final report for the project can be found at https://stride.ce.ufl.edu/wp-centert/unlead-loites/152/2022/04/CUTC_Final_Bapart_Gaparts_in_Transportation_April 2022.pdf

 $\underline{content/uploads/sites/153/2023/04/CUTC-Final-Report-Careers-in-Transportation-April-2023.pdf.}$

• The University of Florida and The Citadel developed **Transportation Engineering and Design Activities**, a free online curriculum booklet with three activities for 5th to 12th grade students. The page can be accessed at <u>https://stride.ce.ufl.edu/transportation-engineering-design-activities-k-12/</u>. The activities introduce three transportation topics not currently found in existing curriculum materials developed by other organizations. All activities help educators meet NGSS Engineering Design standards for middle and high school students. The activities have been piloted multiple times with different age groups in 2021 and 2022. The three activities include:

1) Design Streets for Everyone – Students learn what a Complete Street is and to evaluate how well an existing street meets the needs of different users. Students then re-design a street they are familiar with by incorporating Complete Street design features.

2) Curb Design: Create an Enjoyable Downtown – Students learn what the "curb space" is and learn about six different functions that this space can play in creating a livable downtown. Students then create a curb management plan including a design, a revenue plan, and a marketing plan. Students evaluate each other's plans.

3) Design an App for Safer School Zones – Students learn how apps determine a person's location and why school zones are important for the safety of students. Students then design a paper prototype of an app and evaluate each other's app designs. Students consider issues around creating accessible apps and how to design apps that do not increase distracted driving.

Moon Lander Activity Box - A hands-on STEM design activity for elementary students with an emphasis on 4th and 5th grade. During this activity, students learn what engineering is and how engineers solve transportation problems we experience every day. Students are then challenged to apply the engineering design process to build a "moon lander" out of a set of materials and within given design constraints. This activity introduces concepts that can assist students in completing the egg-drop engineering design activity/competition that is often implemented in 5th grade classrooms. This activity was adapted from the PBS Design Squad Touchdown activity. This activity has been implemented with over 1,100 students during the STRIDE grant. An activity box is available for use by educators or outreach programs to implement in their classrooms or programs. Information is posted at https://stride.ce.ufl.edu/moon-lander-activity-box-k-12/.

How have the results been disseminated?

- The STRIDE Center continues to send final reports to TRB for inclusion in their weekly E-Newsletter to disseminate research results and products to the transportation community.
- Product Briefs are created which summarize the research and any associated products. They are incorporated into a Constant Contact email for wider dissemination.
- The Product Briefs are created to promote the various products developed from STRIDE- funded projects and can be found at https://stride.ce.ufl.edu/technology-transfer/products/.

- Thirty-one briefs have been completed to-date. All briefs are available on the STRIDE website on the <u>Products page (https://stride.ce.ufl.edu/technology-transfer/products/</u>).
- 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 and can be found on each project-specific page. Visit the Research Project page at https://stride.ce.ufl.edu/stride-research/final-reports/. (Note: Both active and completed projects are posted on this page)
- Project PIs publish the results of their research in refereed journal publications, and they regularly present research in progress at technical conferences.
- 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 continues to update the project-specific pages on its website. The project-specific pages provide a comprehensive list of all activities and products related to each STRIDE-funded project. These include the following: final reports, webinars, workshops, technology transfer reports, project briefs, presentations, and publications. For an example of such a page visit the Research Projects page at https://stride.ce.ufl.edu/stride-research/active-research-projects/. (Note: Both active and completed projects are posted on this page)

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

Our focus during the next reporting period is to complete the remaining projects in Years 2, 3, and 4, and 5. Projects in Year 6 are scheduled to be completed by August 2023; however, the STRIDE team will request an extension to allow for completion of these projects and wrap-up of the center activities. Although the COVID-19 pandemic created some delays and setbacks, our PIs are working diligently on their projects.

- Year 2 Projects: Work with PIs to finalize Project P2 (Turochy, Development of Guidance for Scheduling of Freeway Work Zones to Minimize Congestion and Safety Impacts)
- Year 3 Projects: We are expecting a draft final report for Project F3 (Davis, Evaluation of Transportation Network Infrastructure, Safety, and Travel Route Characteristics of Bike Share, Electric-Powered Pedal-Assist Bike Share, and Electric Scooter System Operation)
- Year 4 Projects: Waiting on draft final reports for Projects B4 (Hajbabaie Integrated Corridor Management: Cooperative Signal Control with Freeway Operations and Ramp Metering) and E4 (Guin - Innovative intersection and interchange designs and their use across the Southeast).
- Year 4 Projects: Projects F5, G5, H5 (Phase 2 of Project J3), and I5 are still ongoing and are scheduled to be completed at the end of August 2023. We will monitor these projects closely to ensure they meet their deadline. We are awaiting the final report for project K5, and anticipate this project to be completed in the next 2 months.
- Year 6 Projects: All projects in this year began at various dates throughout 2022, and are ongoing. We will monitor these projects to make sure they are completed on time, although we won't rule out issuing no-cost extensions since the draft final reports will need to undergo the peer review process, which usually takes two to three months.
- We will publish the STRIDE Center's Spring 2023 newsletter by late May 2023.
- Continue to coordinate all consortium activities with the STRIDE Internal Steering Committee via monthly Zoom meetings.

- 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/Product Briefs as projects are completed.
- Continue to send finalized reports to TRB for inclusion into their newsletter and on various other social medial platforms (LinkedIn, Twitter, FB) associated with the STRIDE Center and the University of Florida Transportation Institute.
- 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/.
- Attend the <u>Omniair Florida Plugfest</u> at the <u>SunTrax testing facility</u> in Auburndale, Florida. STRIDE will have a booth at this event which will include information on projects contributing to connected vehicles and associated technology (May 3, 2023).
- Attend the Summer 2023 CUTC Meeting at Florida International University, June 20 to 21.

SELECTED PARTICIPANTS & COLLABORATING ORGANIZATIONS

Below is a list of <u>selected organizations</u> that the STRIDE Center and its consortium members have collaborated with in the past 6 months (the complete list far exceeds the page limit for this report). Most state DOTs provide cost-sharing, while other entities provide a variety of contributions (in-kind, facilities, collaborative research, personnel exchanges, etc.)

Project #	Name of Organization	Location	Type of Contribution(s)
H2, A6	North Carolina Department of Transportation (NCDOT)	Raleigh, NC	matching funds, including departmental support for graduate student
E3, L6	Durham, North Carolina Public Schools	Durham, NC	anonymous school bus route data
C3. A6	Alabama Cooperative Extension	Auburn, AL (and counties around the state)	data, guidance on travel needs, connections to communities
J3	North Carolina State University	Raleigh, NC	collaborative Research
J3	Georgia Institute of Technology	Atlanta, GA	collaborative Research
J3	Florida International University	Miami, FL	collaborative Research
B4	Florida Department of Transportation (FDOT)	Tallahassee, FL	field data and simulation files
B4	Kittleson & Associates	Raleigh, NC	simulation files and data
L6	GoDurham	Durham, NC	stakeholder
J6	Raleigh Parking	Raleigh, NC	stakeholder
L6	Applied Information	Alpharetta, GA	private company interested in measuring school bus congestion
P6	Virginia Tech Transportation Institute (VTTI)	Blacksburg, VA	collaborative research
M6	Regional Planning Commission of Greater Birmingham (RPCGB)	Birmingham, AL	data sharing

M6	University of Alabama at Birmingham	Birmingham, AL	in-kind, facilities, financial
B6	University of Florida	Gainesville, FL	collaborative research
B6	Florida International University	Miami, FL	collaborative research
A6	City of Wilson	Wilson, NC	stakeholder

OUTPUTS

The STRIDE Center uses the following metrics to assess the OUTPUTS related to its technology transfer program. Eighty-nine products and forty technical reports have been completed so far. The table below summarizes those outputs. Researchers have <u>exceeded the targets</u> for products in Year 1, 2, 3, and 4 thus far.

METRIC	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	TOTAL
	Target / Completed						
Product(s): Number of new or improved tools, technologies, products, methods, practices, and processes to reduce congestion	9 / 20 *	18 / 36*)	11 / 22 *	6 / 8*	9 / 3*	15 / 0 *	89* Products
Technical Report: Number of client- based technical reports published about approaches to congestion mitigation	10 / 10 *	17 / 14*	11 / 10*	6 / 22*	9 / 4*	15 / 0 *	40* Technical Reports

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

Products

This table summarizes the 19 products completed during the reporting period (October 1, 2022 to March 31, 2023). The total number of products completed to date is 72. Twenty-four Project Briefs have been completed (some briefs feature more than one product). Project Briefs can be found on the <u>STRIDE Product page</u> (<u>https://stride.ce.ufl.edu/technology-transfer/products/</u>).

Project #	Product
Q2	COVID-19 and shared mobility survey and methodology This product is a questionnaire survey that was implemented to measure the comfort and usage of users on three types of shared mobility: (1) private ride-hailing, (2) shared ride-hailing, and (3) public transit, during three time periods: (1) recent past, (2) current, and (3) future. It can be used by researchers and analysts to quickly document users' attitudes towards shared mobility during the pandemic. The survey can inform public transit agencies, transportation planners, and TNC provides about the determinants that drive people towards the use of shared ride-hailing services.
Q2	Curbside management scenario modeling This product fills the literature gap of traffic and curb impacts from the shift of long-term parking to ride-hailing vehicles while allowing for double parking and on-street parking using a microsimulation (VISSIM). The use of microscopic simulation software proved to be a good tool to explore and examine the impacts of different curb configurations on traffic flow and curb performance. Analysis of the simulation results indicated potential congestion reduction from introducing curb management strategies. The collected curbside data from Atlanta, GA can be

	used by transportation policy makers to analyze pick-up and drop-off (PUDO) behavior and
	Curbside management literature review and educational product
Q2	This product reviews earlier studies on attitudes towards shared mobility and the emerging literature analyzing the impact of COVID-19. Based on the literature, a lecture was developed to introduce the potential users and uses for the curb zone, examine a few curb treatments and technology solutions, and work through a general process that engineers and planners use to make informed curb decisions. A corresponding activity was developed for students to identify the current uses of a local curb, calculate curb productivity, examine the surrounding context, evaluate the potential solutions, and support their preferred alternative. This product can be used by teachers for transportation engineering outreach. (https://stride.ce.ufl.edu/curbside-
В3	Decision-Support Tool for Stakeholders: SERMOS SERMOS collects and analyzes e-scooter-related data (e.g., GBFS data, e-scooter equity zone data, e-scooter parking zone data, among others), which are expected to benefit various stakeholders. For example, cities can use the tool to monitor and regulate micromobility operations. MPOs can use the tool to assist long-term planning of multimodal transportation systems. For the SERMOS system, there are three modules, including reporting module, mapping module, and analytics module. The reporting module provides the functionality that users can click any location on the map to report an e-scooter incident or just leave a comment. After the report is submitted, the reported location and the reporting time will also be recorded. All of this information is then stored and maintained in the database to serve as the input for the mapping module. The analytics module includes equity monitor, parking violation detector, and trip pattern analysis. The analytics module will be fully developed if additional funding is available.
Н3	A methodology to induce sustainable travel behavior change using incentives and nudges The methodology is designed to reduce congestion in real-time by using a reinforcement learning-based framework. Incentives and nudges were modeled in the context of network-level traffic congestion and were found to be behavior consistent, real-time, and market-based. Regional transportation agencies and cities can use this methodology to reduce congestion by incentivizing users to change their behavior.
Н3	Correlated equilibrium routing mechanism This mechanism suggests routes that both optimize traffic conditions and benefit the driver. The tool could mitigate traffic congestion and reduce system costs by computing and providing route guidance efficiently for large scales of users.
К3	Data processing technique A data processing technique was created to decompose nonstationary traffic data into stationary components for further study. The technique can be applied and extended to various time-series data, including traffic flow, speed, occupancy, etc.
К3	Methodology to predict traffic of a road network A methodology was innovatively applied to the traffic state prediction of a road network. The superiority of this methodology in predicting network state was verified through experiments. The method can be used for congestion prediction on a large road network.
C4	Workforce development practitioner survey methodology and Results The project includes the results of a survey addressing workforce development existing conditions, priorities, and mediums; future conditions, priorities, and mediums; educational pipelines; retainment/recruitment challenges; emerging technologies; demographic change; and equity, diversity, and inclusion strategies. This is the only survey available in the Southeast detailing practitioner experience of workforce development issues and is a valuable source of information for future researchers. It establishes a baseline understanding of the state of workforce development in the region.

	Workforce development practitioner interview methodology and transcripts
	The project includes the results of focused interviews addressing the same topics as the survey
C4	(see above). Similar to the survey, this information is a useful addition to the limited body of
C4	knowledge addressing the state of the Southeastern transportation workforce and can be used
	by researchers, practitioners, or policymakers to better coordinate the implementation of
	workforce development strategies.
	Set of recommendations for workforce development strategies to meet the needs of the
	southeastern region
C4	This project includes a list of potential strategies/actions that can be taken to better address the
	workforce development needs of the Southeastern transportation industry. This information can
	be used by researchers, practitioners, or policymakers as a reference for the creation of policies
	or implementation of strategies.
	Motorist survey
	The survey asked motorists to list the information sources they used to select detour routes
D3	during construction. Though the data were collected for a Birmingham construction project, the
_	information will prove useful to transportation agencies across the country. The survey is
	available in the final report (https://stride.ce.ufl.edu/wp-
	content/uploads/sites/153/2023/03/Project-D3-Final-Report-FORMATTED.pdf).
	Webinar/Training: How to Build Diversity + Enhance Inclusion within the Transportation
	Cotting the right people to do the job in transportation againsis is gravial specifically in the
FF	stermath of a crisic (such as a hurricana). Understanding communities' needs and addressing
ED	their sensorns requires a diverse set of skills, perspectives, and lived experiences. This webiner
	inter concerns requires a diverse set of skins, perspectives, and lived experiences. This weblinar
	transportation workforce and provides guidance for the public and private sectors
	Champing travel methodology improvements and results
	This project demonstrated extended and applied a relatively new methodology for estimating
	the amount of travel in the US that supports channing activities (to the best of our knowledge
	the amount of traver in the OS that supports shopping activities (to the best of our knowledge,
К5	California) The STRIDE report, code, and future publications provide a documented
	demonstration of this methodology that can be applied elsewhere. Eurthermore, the results of
	this project provide information about how much people travel for shopping, which can be
	annlied in transportation forecasting and modeling
	Algorithms to detect unpredictable sources of congestion
	1. An algorithm for detecting the potential primary-secondary incident pairs using NCDOT's
	Traveler Information Management System (TIMS) data
	2. An algorithm for detecting the potential primary-secondary crash pairs using NCDOT's
	archived crash data
	3. Criteria for the deployment of service patrol vehicles that consider passenger vehicle and
A4	truck volumes, TOD, day of week, and seasonal needs.
	The products detect secondary incidents on freeways by using incident location and time data
	from archived database(s). The algorithms leverage the spatiotemporal relationship of
	consecutive incidents happening on a corridor. Transportation planners and engineers can
	improve congestion management by using the algorithms to prioritize locations that are prone
	to secondary incidents for service patrol deployment.
	New optimization models (user model and operator model) for on-demand paratransit
54	systems.
D4	When used for optimizing paratransit operations, these models can help paratransit operators
	save costs and allow paratransit riders to save travel time and have better trip experiences.
	New discrete choice models to analyze micromobility (e.g., e-scooters and e-bikes) adoption
D4	and use.
	These models can be used to predict the growth trends of micromobility options in the

	Southeast region, which can guide transportation agencies to plan and develop the necessary
	infrastructure such as bike lanes to accommodate the increased micromobility-based travel. In
	addition, the models can shed light on the main population groups who are adopting and using
	micromobility options.
	New models for estimating the potential emission benefits of replacing diesel buses with
D4	electric buses.
04	The models can inform transit agencies on to what extent transitioning to an electric bus fleet
	can help achieve Department of Transportation's decarbonization goals.
12 (Dhase 2)	Microsimulation Model in Vissim
JS (Plidse Z)	Created for the Bruton Smith Blvd site by the NCSU/ITRE Team

Completed Technical Reports

The following projects are completed (all active and completed projects can be found on the STRIDE website at https://stride.ce.ufl.edu/stride-research/active-research-projects/):

- 1. Project A-Impact of Smartphone Applications on Trip Routing & Congestion Management
- 2. Project B -Technology Influence on Travel Demand & Behaviors
- 3. Project C-Performance Measurement & Management Using Connected & Automated Vehicle Data
- 4. Project D-Evaluation of Advanced Vehicle and Communication Technologies through Traffic Microsimulation
- 5. Project E-The Challenges of Predicting Travel Behavior on Estimating Trip Generation: Local Traffic Impact Assessment in Four Southeastern and Mid-Atlantic States
- 6. Project F-Integrated Implementation of Innovative Intersection Designs
- 7. Project G-Transit in the Era of Shared Mobility
- 8. Project H Strategies for Mitigating Congestion in Small Urban & Rural Areas
- 9. Project I-Freeway Management for Optimal Reliability
- 10. Project J- Improving Work Zone Mobility through Planning, Design, and Operations
- 11. Project A2-Changing Access to Public Transportation & the Potential for Increased Travel
- 12. Project B2-Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data
- 13. Project C2-Urban Freight & Planning
- 14. Project D2-UF & UAB's Phase I Demonstration Study: Older Driver Experiences with Autonomous Vehicle Technology
- 15. Project E2 Establishing a Dual Generational Modality Dataset: Comparing the Riding-Sharing Adoption Trends & Perspectives of Consumers from Two Generational Cohorts, Millennials & Gen X'ers
- 16. Project F2-Discovering Potential Market for the Integration of Public Transportation & Emerging Shared-Mobility Services
- 17. Project G2 Quantitatively Evaluate Work Zone Driver Behavior using 2D Imaging, 3D Lidar, & Artificial Intelligence in Support of Congestion Mitigation Model Calibration & Validation
- 18. Project H2-Fly-By Image Processing for Real Time Congestion Mitigation
- 19. Project I2 Mitigating Network Congestion by Integrating Transportation Network Companies and Urban Transit
- 20. Project J2 Real-Time Data-Based Decision Support System for Arterial Traffic Management
- 21. Project K2-Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses
- 22. Project M2-Comparing and Combining Existing and Emerging Data Collection and Modeling Strategies in Support of Signal Control Optimization and Management
- 23. Project O2- Macroscopic Fundamental Diagram Approach to Traffic Flow with Autonomous/Connected Vehicles
- 24. Project Q2 Enabling the Shared Transportation Revolution

- 25. Project A3 UF & UAB's Phase 2 Demonstration Study: Developing a Model to Support Transportation System Decisions considering the Experiences of Drivers of all Age Groups with Autonomous Vehicle Technology
- 26. Project B3 Micro-Mobility as a Solution to Reduce Urban Traffic Congestion
- 27. Project C3 Emerging Mobility Services for the Transportation Disadvantaged
- 28. Project D3 Evaluating Detours for a Major Construction Project in the Era of Real-Time Route Guidance
- 29. Project E3 Locating and Costing Congestion for School Buses and Public Transportation
- Project G3 Utilization of Connected and Automated Vehicles in Support of Transportation Agencies' Decision Making
- 31. Project H3 Smartphone-Based Incentive Framework for Dynamic Network-Level Traffic Congestion Management
- 32. Project I3 Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data, Phase II
- 33. Project J3 Identifying and Mitigating Congestion Onset
- 34. Project K3 Traffic Congestion Identification and Prediction based on Image Processing and Deep Learning Methods
- 35. Project C4 Transportation Workforce Development for State DOTs to Address Congestion for the Southeast Region
- 36. Project F4 Automatic Safety Diagnosis in Connected Vehicle Environment
- 37. Project A5 Barriers and Facilitators of People with Disabilities in Accepting and Adopting Autonomous Shared Mobility Services
- 38. Project D5 Overcoming Barriers to Freight and Logistics Firm Collaboration with Urban Planning
- 39. Project E5 A Framework to Promote Diversity and Inclusion in Workforce Development in Southeast States
- 40. Project J5 Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses Project J5 (Phase II of Project K2)

Publications, Conference Papers, Posters& Presentations

The following publications, conference papers, posters and presentations were completed during the reporting period.

Project #	Description	Date	Туре
A6	Ghimire, S., and Bardaka, E. (2023). Publicly Owned Microtransit: A Spatio-Temporal Analysis of Service Characteristics Using Trip-Level Data. Presented at the 2023 Transportation Research Board Annual Meeting, January 8-12, Washington, D.C.	Jan-23	conference presentation
B4	Machine Learning Models for Predicting Capacity Reduction Rate Resulting from Queue Spillback Due to Ramp Metering.	Jan-23	TRB presentation
B4	Integrated Corridor Management by Cooperative Traffic Signal and Ramp Metering Control.	Jan-23	TRB presentation
B6	FDOT presentation Charging Station Planning and Emerging Mobile Charging Techniques.	Jul-22	conference presentation
B6	Southeast Florida FSUTMS User Group Meeting (Title: Charging Station Planning and Emerging Mobile Charging Technology).	Apr-22	conference presentation
16	lacobucci, E., N. McDonald, C.H.W. Edwards, R. Steiner. "Using Social Media to Understand Challenges Faced by US Urban Parcel Delivery Drivers: Reports from the Curb." Association of Collegiate Schools of Planning Conference, Toronto, Canada, November.	Nov-22	conference presentation

	lacobucci, E., N. McDonald, C.H.W. Edwards, R. Steiner. "Reports from the Battle for the Curb: Using Social Media to Understand Challenges Faced by US Urban Parcel Delivery Drivers." Transportation Research		conference
J6	Board 102nd Annual Meeting, Washington, D.C., January.	Jan-23	presentation
16	Invited Talk: "Reports from the Battle for the Curb: Addressing Planning Challenges Stemming from the Rise of E-Commerce." Department of Community and Regional Planning, East Carolina University. February 9, 2023.	Feb-23	other/invited talk
J6	Iacobucci, E., N. McDonald, R. Naumann, and K. Kucera. (2023). "Examining Injury Trends in Parcel Delivery Drivers in the United States: Challenges and Opportunities." American Journal of Industrial Medicine. https://onlinelibrary.wiley.com/doi/abs/10.1002/ajim.23473	Mar-23	publication
	Parallel Computing on In-vehicle Multicore Computers for Safety		
06	Diagnosis in the Connected Vehicle Environment.	Oct-22	publication

OUTCOMES

The STRIDE Center uses the metrics shown in the table below to assess the OUTCOMES related to its technology transfer program. One hundred and nine trainings serving 5,060 professionals have been held for STRIDE projects to-date. Researchers have <u>exceeded or met the targets</u> for both the number of trainings and the number of professionals trained for Year 1, Year 2, Year 3, Year 4, and Year 5 projects thus far.

METRIC	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6*	Other	TOTAL
	Target / Completed							
Body of	9 / 25*	18 /	11 / 25*	6 / 6 *	9 / 11*		7	109*
Knowledge:		33*				15/0*		Trainings
Trainings for								(10 new this
professionals								period)
Professionals	90 /	180 /	110 /	60/ 178*	90 / 230 *		301	5060*
Trained	1336*	1943*	1122*			150/0*		Professionals
								trained
								(441 new this
								period)

* Totals include this and all prior reporting periods.

Trainings & Professionals Trained

Eighteen trainings engaged 590 professionals during the reporting period, as shown in the table below. There were an additional 654 views of YouTube recordings of STRIDE product videos and webinars.

Project #	Training	Date	# Trained	YouTube Views
C4	STRIDE Webinar: "Strategies for Developing a Diverse Transportation Workforce in the Southeast Region" presented by Ruth Steiner, Ph.D.	10/5/2022	17	67
C4	and Jeremy Griffith, University of Florida; and Steven Click, Ph.D.,	10/ 5/ 2022		07

	Tennessee Technical University on October 5, 2022. (17 Attendees) Recording: https://youtu.be/HeDmHH-Mmxo			
F4	STRIDE Webinar: "Automatic Safety Diagnosis in Connected Vehicle Environment" presented by Shuang Tu, Ph.D. and Di Wu, Jackson State University on October 12, 2022. (25 Attendees) Recording: https://youtu.be/PuJv-29Lf2A	10/12/2022	25	56
63	STRIDE Webinar: "Utilization of Connectivity and Automation in Support of Transportation Agencies' Decision Making" presented by Mohammed Hadi, Ph.D., Florida International University; Michael Hunter, Ph.D., Georgia Tech; and Shoaib Samandar, Ph.D., North Carolina State University on October 18, 2022. (25 Attendees) Becording: https://youtu.be/sEggynPl9yM?t=1	10/18/2022	25	34
Q2	STRIDE Webinar: "Impact and analysis of rider comfort in shared modes during the COVID-19 pandemic" presented by Becca Kiriazes, Ph.D. Georgia Tech on October 19, 2022. (8 Attendees) Recording: https://youtu.be/syGuoJvIZ9c	10/19/2022	8	35
цэ	STRIDE Webinar: "Smartphone-Based Incentive Framework for Dynamic Network-Level Traffic Congestion Management" presented by Viswa Sri Rupa Anne, Georgia Institute of Technology and Yuqiang Ning, University of Florida; Principal Investigators: Lili Du, Ph.D., University of Florida, and Srinivas Peeta, Ph.D., Georgia Tech on October 26, 2022. (10 Attendees) Recording: https://www.be/fxQMnYkECv8	10/26/2022	10	31
Н3	CTRIDE Wahings "Room Logenia on Traffic Chata Readiction"	10/26/2022	10	31
КЗ	presented by Robert W. Whalin, Ph.D., and Guojing Hu, Ph.D., Jackson State University on November 3, 2022. (17 Attendees) Recording: https://youtu.be/XM3NYIIv-t0	11/3/2022	17	65
J2	STRIDE Webinar: "Real-Time Data-Based Decision Support Systems for Arterial Traffic Management" presented by Mohammed Hadi, Ph.D., Florida International University, and Lily Elefteriadou, Ph.D., University of Florida on November 8, 2022. (32 Attendees) Recording: https://youtu.be/f9bn1u88fAg	11/8/2022	32	37
J5	STRIDE Webinar: "Assessing and Addressing Deficiencies in the HCM Weaving Segment Analyses- Phase II" presented by Ishtiak Ahmed, Ph.D., North Carolina State University, and Ehsan Amini, Ph.D., University of Florida on November 9, 2022. (22 Attendees) Recording: https://youtu.be/XR2ZFV2Ib5Q	11/9/2022	22	54
В4	STRIDE Webinar: "Integrated Corridor Management: Cooperative Signal Control with Freeway Operations and Ramp Metering" presented by Ali Hajbabaie, Ph.D., North Carolina State University; Mohammed Hadi, Ph.D., Florida International University; and 'Lily Elefteriadou, Ph.D., University of Florida on November 15, 2022. (39 Attendees) Recording: https://youtu.be/KtQb2YTdS0c	11/15/2022	39	35

С3	STRIDE Webinar: "Transportation disadvantaged populations: Travel characteristics and emerging mobility solutions" presented by Eleni Bardaka, Ph.D., North Carolina State University; Xia Jin, Ph.D., Florida International University; and Jeffrey LaMondia, Ph.D., Auburn University on November 16, 2022. (41 Attendees) Recording: https://youtu.be/dNHoJ9bEtrw	11/16/2022	41	65
D3	STRIDE Webinar: "Evaluating the Effectiveness of Detour Plans for a Major Construction Project" presented by Andrew Sullivan, Ph.D. and Virginia Sisiopiku, Ph.D., University of Alabama at Birmingham on November 30, 2022. (34 Attendees) Recording: https://youtu.be/v2kRfx45Ixs	11/30/2022	34	36
К5	STRIDE Webinar: "A Better Understanding of Shopping Travel in the US" presented by Matt Bhagat-Conway, Ph.D., University of North Carolina at Chapel Hill on December 7, 2022. (28 Attendees) Recording: https://youtu.be/h3gdxkwVgfl	12/7/2022	16	26
12	STRIDE Webinar: "Examining modal shifts between automobiles, transit, and Uber trips and quantifying their impacts" presented by Virginia Sisiopiku, Ph.D., and Da Yan, Ph.D., University of Alabama at Birmingham, and Mohammed Hadi, Ph.D., Florida International University on December 9, 2022. (37 Attendees) Recording: https://youtu.be/45lafENPu8o	12/9/2022	37	51
E5	STRIDE Webinar: "How to Build Diversity + Enhance Inclusion within the Transportation Workforce" presented by Mehri Mohebbi, Ph.D., University of Florida; Virginia Sisiopiku, Ph.D., University of Alabama at Birmingham; and Dimitra Michalaka, Ph.D., The Citadel on March 1, 2023. (18 Attendees) Recording: https://youtu.be/NNy_2070TeU	3/1/2023	18	39
N2	STRIDE Webinar: "Data Fusion for Signalized Arterial Performance Measurement" presented by Data Fusion for Signalized Arterial Performance Measurement on March 8, 2023. (32 Attendees) Recording:	3/8/2023	32	23
N2	Shoaib Samandar presented the developed framework and algorithms at the NCDOT's Research and Innovation Summit held in Chapel Hill, NC in October 2021. Over 50 attendees, including representatives from NCDOT, NCSU, UNCC, UNC, and other academic institutions participated in the session. The presentation covered the motivation, objectives, and outcomes of the STRIDE project. Attendees expressed keen interest in adopting the framework and algorithms for their existing arterial datasets and offered data sharing. The session also included a Q&A where attendees could learn more about the project and its potential impact on transportation performance metrics	10/1/2021	50	n/a
	Online presentation delivered at the Transportation Research Poords	10/1/2021	50	
A5	Automated Road Transportation Symposium (ARTS), Washington DC, USA – "Automated Shuttles and Buses for All Users (Session B210): Older Drivers and Persons with Disabilities Experiences with	7/13/2021	57	n/a

	Automated Shuttles" presented by Justin Mason and Sherrilene Classen, University of Florida, on July 13, 2021.			
А5	In-person podium presentation delivered at the University Transportation Centers annual conference, Boca Raton, FL, USA – "Connected and Autonomous Vehicles (Session 1B): Experience of Drivers of All Age Groups in Accepting Autonomous Vehicle Technology" presented by Sherrilene Classen, Justin Mason, Seung Woo Hwangbo, from University of Florida, and Wencui Yang, Virginia Sisiopiku, from University of Alabama at Birmingham on March 24, 2022.	3/24/2022	30	n/a
А5	A research presentation was presented at the University of Florida Institute for Learning in Retirement at Oak Hammock, Gainesville, FL, USA – "Simulator Sickness in Younger, Middle-Aged, and Older Drivers After Exposure to an Autonomous Driving Simulator" presented by Seung Woo Hwangbo, Justin Mason, and Sherrilene Classen, University of Florida, on March 25, 2022.	3/25/2022	40	n/a
A5	A research presentation was presented at the annual Association for Driver Rehabilitation Specialists Conference, Charlotte, NC, USA – "Autonomous Vehicle Revolution & Drivers' Perceptions of AVs" presented by Seung Woo Hwangbo and Sherrilene Classen, University of Florida, on October 3, 2022.	10/3/2022	40	n/a
L6	a webinar/listening session with several North Carolina city/transportation professional leaders, which served to disseminate our recent findings as well as to collect their perceptions and experiences in managing urban freight and the curb in their own cities.			
		TOTAL this period	590	654

IMPACTS

The STRIDE Center uses the list of metrics shown in the table below to assess the IMPACTS related to its technology transfer program. Over 192 meetings with stakeholders have been conducted since the beginning of the grant. Some researchers meet with stakeholders on a weekly or biweekly basis. Twenty-three products have been adopted or implemented to-date. Researchers have <u>exceeded the target</u> number of stakeholders for Yea 1, Year 2, Year 3, Year 4, and Year 5 thus far.

METRIC	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	TOTAL
		Total / Completed					
Stakeholders: Number of	9 / 13*	18 / 80*	11 / 54*	6 / 24*	9 / 15*	15 / 6	192*
stakeholders (agencies,							Stakeholder
businesses, etc.) you meet with							Meetings
to encourage the adoption or							
implementation of congestion							
mitigation approaches							

Adoption/Implementation:	2 / 2 *	2 / 12 *	2 / 2 *	2 / 4*	2 / 3 *	2 / 0 *	23*
Number of incidences that							Products
congestion mitigation outputs							Adopted/
of research have been							Implemented
implemented or adopted (ex.							
decision making, practices,							
methods, analytical tool,							
data/database, software, policy							
change, behavior analysis,							
commercialization)							

* Totals include this and all prior reporting periods.

Stakeholder Meetings

Researchers held eight meetings with stakeholders during the reporting period. Some researchers meet with their stakeholders on a weekly or regular basis and many meetings include multiple stakeholders.

Project #	Stakeholder(s)	Date	Description
J3 (Phase 2)	Andrei Dumitru, Traffic Engineer, City of Concord. Cade Bowman, TMC operator, City of Concord	6/14/2022	Discussion about gathering and transferring the detector and traffic signal event and signal plan data.
H3	Informs Conference	10/27/2021	The presentation included details about the mathematical modeling of incentives and nudges and challenges faced in the real-world.
Н3	Transportation Research Board	1/11/2022	Yuqiang Ning presented the findings from Task 2 of the project in the 101st Annual Meeting of the Transportation Research Board.
К5	Leta Huntsinger, Institute for Transportation Research and Education	3/3/2022	Dr. Huntsinger expressed a willingness to have the regional model used for research and provided background on the history of the model and the upcoming Generation 2 model.
L6	Applied Information	4/6/2023	Applied Information reviewed a report from the first phase of this project and wanted to meet with the team to discuss opportunities to collaborate on ways to identify where school buses and caught in congestion.
J6	Scott Whiteman (Community Planning Manager, City of Durham), Michael Moore (Transportation Director, City of Raleigh), Johanna Cockburn (Director of Transportation, City of Greensboro), Kirk Ericson (Deputy Director, City of Winston-Salem), Matthew Currier (Parking Manager, City of Raleigh), Eliud DeJesus (Transportation Planner, GUAMPO)	3/28/2023	Disseminated recent findings from four journal articles and one professional article exploring various topics relating to urban freight, collect stakeholders' perceptions and experiences in managing urban freight and the curb in their own cities.
J3 (Phase 2)	Attendees from the Research and Innovative Summit of NCDOT, 2023	3/29/2023	Presented the research work at the Research and Innovative Summit of NCDOT held in Raleigh.

H6	Bobby Walston, John Beaman,	3/23/2023	The team met with NCDOT's leadership to explore the
	Gallas Rebecca, NCDOT		future of AVs and CAVs in the state of North Carolina.
			They were also invited to participate in a one-hour
			virtual forum with other industry leaders, aimed at
			informing the state's continued approach to advanced
			mobility. This collaborative effort brought together
			NCDOT's aviation, freight, and integrated mobility teams
			to build a comprehensive framework for integrated
			mobility partners, maximizing the potential benefits of
			increasingly autonomous technologies for North
			Carolina's residents, businesses, and visitors.

Product Adoption

There were nine product adoptions during the reporting period. A total of twenty-three products have been adopted or implemented to-date.

Q2	Curbside Assignment for Multimodal Transportation Course at GaTech
	The curbside literature review was adopted to form a lecture and student homework assignment for
	Multimodal Transportation course at the Georgia Institute of Technology in 2021. This has been shared
	with STRIDE and will be used in future outreach activities. Lessons learned from online-survey are
	documented in an upcoming publication that can be used as guide for quick and effective deployment of
	online surveys. Curb data collected from the video feeds will be summarized and shared with Midtown
	Alliance for local policy/project implications. Efforts planned to encourage adoption/implementation of the
	product(s) include publication of two additional technical papers.
C4	Workforce Development Practitioner Survey Methodology and Results
	The results of the survey can be used by researchers, policymakers, and industry practitioners to better
	understand the characteristics of workforce development practice within the region. These results are the
	sole source of information/data specifically related to transportation workforce in the Southeast region. It
	provides users the opportunity to gain insight into the practitioner's understanding of the state of
	workforce development practice in the Southeast. The results of the survey were shared with the
	participants.
C4	Workforce Development Practitioner Interview Methodology and Transcripts
	Similar to the survey, the results of the interviews can be used by industry stakeholders to gain a better
	understanding of the characteristics of workforce development practice within the region. The interviews,
	like the survey, are in total, the only source of information for the state of transportation workforce
	development in the Southeast currently available. Additionally, these products add to the very limited body
	of knowledge pertaining to data collection efforts on transportation workforce development. These
	transcripts are included in the appendix of the final report.
C/	Set of Recommendations for Workforce Development Strategies to Meet the Needs of the Southeastern
	Region
	This product is being used as a guiding point for future research projects by STRIDE Project D6 (A
	Centralized Repository on Workforce Development in the Southeast) E5 (Transportation Workforce
	Development Related to Traffic Signal Systems – Phase II) K6 (Promoting Transportation Equity through
	Curriculum Interventions) and F5 (Transportation Workforce Development for State DOTs to Address
	Equity Diversity & Inclusion (Southeast Region)) are all follow on projects from the recommendations
	suggested in project C4. Additionally, the webinar conducted by the project team focused heavily on
	actionable stens to implement the suggested recommendations
	actionable steps to implement the suggested recommendations.

N2	Data Fusion Framework
	Although the products of this research have not been put into use, they are now available for adoption by
	public agencies. The researchers have been in talks with NCDOT to assist them in integrating the developed
	framework and enhanced delay estimation algorithms into their everyday operations. The framework, if
	accepted, will enable the fusion of various data sources with different spatial and temporal resolutions.
	Additionally, adopting the developed algorithms will enhance the estimation of transportation
	performance metrics, resulting in better efficiency and safety. Therefore, the potential adoption of the
	framework and algorithms will bring significant benefits in terms of improving transportation operations.
E5	Training Product: How to Build Diversity + Enhance Inclusion within the Transportation Workforce
	This training product is ready for adoption by public and private transportation agencies. The training
	materials provided in this webinar is guiding the development of equity planning for transportation
	agencies. The PI of the project is introducing the framework developed through this study and the training
	materials to professional organizations she is involved in.
К5	Shopping Travel Methodology Improvements and Results
	The main opportunity for the adoption and implementation of this project will occur through future
	research. This research provides a baseline estimate of how much travel supports shopping. Researchers
	modeling e-shopping can use these baselines to better understand the effects of e-shopping on travel,
	something that will be useful in practice. This would, in turn, improve the quality of travel forecasts, better-
	aligning infrastructure investments with needs. We plan to publish the findings in academic journals and
	present them at conferences to disseminate the findings to those who can use them.
A4	A Framework for Detecting Secondary Crashes on Interstate Corridors
	ALDOT is reviewing the methodology for potential application to state ASAP programs.
A5	1) The FDOT, Office of Safety funded a new project using the survey developed with this STRIDE funding.
	The funding will help to enhance the survey (Phase 1) and extend it to adults (i.e., 50+ years old) (Phase 2)
	who are using a variety of autonomous mobility services, including ride-hailing services, ride-sharing
	services, taxis, shuttles, and buses. FDOT (Classen) Phase I Total Award: \$203,947. FDOT (Classen) Phase II
	Total Award: \$269,442. Barriers and facilitators pertaining to older drivers' perceptions of the use of
	autonomous vehicle technology inform engineers, city planners, policymakers, and healthcare
	professionals.
	2) The North Florida/South Georgia Region Veterans Administration has funded a new project using a
	survey developed with this STRIDE funding. The project will quantify, qualify, and integrate rural Veterans'
	acceptance and adoption perceptions pertaining to automated vehicle technologies — and inform future
	planning and policy for ubiquitous accessible Veteran Transportation. In 2022, the North Florida/South
	Georgia Region Veterans Administration Total Award: \$200,000. Promoting Veteran Centric Rural
	Transportation Options via Automated Shuttle Exposure.

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* caused the cancellation or postponement of several events and activities. All project meetings and university courses have continued uninterrupted. Although reduced traffic and social distancing rules did initially result in delays in data collection, the recent relaxation of pandemic rules has allowed our researchers to carry out their normal research activities.
- Changes that have a significant impact on expenditures NOTHING TO REPORT
- Significant changes in the 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

• NONE

STRIDE Year 1, Year 2, Year 3, Year 4, Year 5, and Year 6 List of Projects

The complete list of projects can be found at: <u>https://stride.ce.ufl.edu/stride-research/active-research-projects/</u>)

Cost Share Projects

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There are three new cost share projects at the University of Florida (see below). There are no new cost share projects to report from the STRIDE consortium members.

Developing the Capacity for Producing the Next Generation of Transportation Leaders FDOT Project # BED31-977-11 Dr. Siva Srinivasan, University of Florida

Support for the I-STREET Testbed FDOT Project # BED31-977-06 Dr. Lily Elefteriadou, University of Florida

Research on Artificial-Intelligence for Data Integration with State Highways FDOT Project # BED31-977-08 Dr. Sanjay Ranka, University of Florida