FAMU-FSU College of Engineering

R-SEAT Rural Safe Efficient Advanced Transportation Center

Rural Safe Efficient Advanced Transportation (R-SEAT) Center

Semi-Annual Progress Report (April 1- September 30, 2025)

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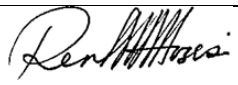
Signature of Submitting Official:	 Ren Moses, Ph.D., PE

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1. Accomplishments

1.1. What are the major goals and objectives of the Project?

The Rural Safe Efficient Advanced Transportation (R-SEAT) Center is a leading resource for advancing rural transportation. The Center conducts impactful research, informs policy, and supports educational outreach aligned with US DOT goals.

Research Thrust Areas:

- **Thrust 1: Technology, Innovation, and Mobility**
  Advance the development and deployment of innovative transportation technologies to enhance rural mobility, connectivity, and system efficiency.
- **Thrust 2: Safety**
  Enhance safety for rural transportation users by implementing technology- and data-driven safety systems.
- **Thrust 3: Resilience**
  Strengthen resilience by balancing infrastructure and community needs through socio-technical approaches.
- **Thrust 4: Workforce Development**
  Bridge the gap between research and practice through training programs, preparing and producing a workforce that supports a multimodal transportation system.

1.2. What was accomplished under these goals?

- Cleveland State University (CSU): CSU researchers published two journal articles, one in the *ITE Journal* and one in the *Journal of Next Research*. One of these was also presented at the 2025 ITE Annual Meeting. Another co-authored paper with the University of North Florida (UNF) is under review at the *Journal of Transport Geography*. A second UNF collaboration was accepted for presentation at the TRB 2026 Annual Meeting. Four articles were submitted to the IEEE FMLDS Conference; all were accepted for presentation and are under review for publication. Four TRB 2026 papers were also accepted, with one recommended for publication in the *Transportation Research Record (TRR)*.

- Stony Brook University (SBU): The SBU team analyzed 105 practitioner survey responses on workforce skill gaps in transportation. Preliminary findings were submitted and accepted for publication at TRB 2026. The team also finalized an experimental framework for simulating link disruption scenarios, advancing research on network criticality. Progress continued on the driving video diffusion model project, with a literature review completed, public crash and normal video datasets curated, clips annotated, and two SOTA models implemented. Efforts are underway to integrate multi-frame temporal dynamics. In another project, SBU deployed a crowdsourced survey using GPT-4 and YOLOv8 to generate synthetic roadway environments; ongoing data collection is exploring the influence of socio-economic factors on user safety perceptions.

- University of Washington Tacoma (UWT): UWT published one article in the *ITE Journal* and had three papers accepted for TRB 2026, with one under review for *TRR*. Two other collaborative papers with SBU are currently under review at TRR, and one micromobility-

related manuscript is undergoing a second review at the *Journal of Transport Geography*. Another paper was accepted for publication at the ASME International Engineering Congress (Nov 2025). UWT researchers are also identifying Rural Residential Clusters and assessing gaps in active transportation infrastructure and accessibility, partially supported by WSDOT. One paper from this work was accepted for the 2025 Region 10 Transportation Conference in Portland, Oregon.

- Tallahassee State College (TSC): At TSC, upgraded equipment funded by the center was actively used in the TPP 210 lab, supporting applied instruction in engineering and construction. Multiple course sections, including *Construction Estimating I*, *Engineering Graphics*, *Advanced CAD*, *Construction Materials and Methods*, and *Introduction to CAD,* served 112 enrolled students. These efforts directly enhance workforce development through modernized, hands-on training facilities.

- FAMU-FSU has made significant progress in multiple ongoing research projects focused on rural transportation safety and mobility. Current work includes simulator-based analysis of driver behavior under extreme weather conditions, modeling safety-critical crash patterns, and a completed project on optimizing on-demand mobility services in rural areas. These efforts have yielded several peer-reviewed outputs, including articles under review in *Computational Urban Science, IEEE Transactions on Learning Technologies, and Transportation Research Part A*. In addition, four papers have been accepted for presentation at the 2026 Transportation Research Board (TRB) Annual Meeting. The projects have also contributed to workforce development through student engagement, immersive simulations, and outreach activities such as K-12 summer camps and webinars, aligning well with USDOT's strategic priorities for improving rural transportation outcomes.

1.3. What opportunities for training and professional development has the project provided?

The project team engaged in a range of activities aligned with the Center's goals, including training sessions, outreach events, and student development programs. These efforts supported workforce development and promoted interest in transportation research across diverse communities. A summary of key events is provided below:

Event Name	**Location**	**Date**	**Details / Description**
Disaster Preparedness Workshop	American Red Cross, Tallahassee, FL	May 31, 2025	PI Vanli and Co-PI Ozguven presented findings from a rural-focused disaster-pandemic survey during the "Know the Risk and Plan Your Actions" workshop for emergency planners.
Drive Safety Hyperdrive Training I	RIDER Center & Zoom	April 8, 2025	Covered introduction to the Hyperdrive interface, simulator tools, and system setup.
Drive Safety Hyperdrive Training II	RIDER Center & Zoom	April 10, 2025	Hands-on session for creating and customizing virtual driving environments.
Drive Safety Hyperdrive Training III	RIDER Center & Zoom	April 15, 2025	Focused on scenario scripting, data logging, and trial configuration.

Drive Safety Hyperdrive Training IV	RIDER Center & Zoom	June 10, 2025	Q&A session to troubleshoot technical issues and reinforce simulator operation skills.
Aviation Big Data Analytics Competition	Tallahassee, FL & Ft Worth, TX	May 2025	Students analyzed a 2-million-row dataset to identify the causes of airport turnaround delays, gaining practical experience in applying data science to transportation.
Young Scholars Program	Tallahassee, FL	July 2025	Dr. Ozguven and R-SEAT graduate students mentored high school students in GIS and ArcGIS-based rural transportation projects. (see figure 1 below)
Summer Outreach Program	Cleveland State University (CSU)	Summer 2025	Led by Dr. Owusu-Danquah, with Faraji Rajabu and Ntemi Masanja. The event featured hands-on transportation activities that promoted careers in civil engineering. (See Figure 1 below)
Autoferry Outreach	Tacoma, WA	May 2025	Dr. Dillon and R-SEAT undergraduates hosted K–12 students, introducing the autonomous ferry project and STEM careers. (See Figure 2 below)
SOAR Undergraduate Research Program	Stony Brook University	May 26 – August 1, 2025	Alexander Morales Hernandez's proposal to SUNY's SOAR program was funded. He conducted 10 weeks of transportation research under the guidance of Dr. Qin and the mentorship of Ke Li.
Generative AI Training	Stony Brook University	2025	Provided hands-on training in GPT-4o and YOLO-v8 for simulating road infrastructure, along with experience in survey design, data collection, and interdisciplinary research methods.
Challenger Learning Center Summer Camp	Tallahassee, FL	July 10, 2025	Provided interactive learning on transportation data by estimating and interpreting Pearson's correlation coefficients. (See Figure 3 below)
Challenger Learning Center Summer Camp	Tallahassee, FL	July 10, 2025	Provided interactive learning on 3D survey and bridge design. (See Figure 4 below)
Introduction to Autonomous Cars - UW Youth & Teen Programs	Seattle, WA	July 21, 2025	UWT led a K-12 outreach event to interest students in the STEM field by presenting the Autoferry project. Students were encouraged to think thoroughly about engineering design and use that knowledge to continue their own project, creating miniature autonomous cars. (See Figure 5 below)

Figure 1: **Left:** Dr. Ozguven and FSU graduate students mentored high schoolers on GIS tools, resulting in posters on rural transportation. **Middle & Right:** Dr. Owusu-Danquah, with Faraji Rajabu and Ntemi Masanja, led Cleveland State's 2025 Summer Outreach, engaging students in hands-on transportation activities.

Figure 2: UWT research team introducing the autonomous ferry project and STEM careers to K-12 students

Figure 3: Summer campers interactive learning on transportation data by estimating and interpreting Pearson's correlation coefficients.

Figure 4: Summer campers learning 3D survey and bridge design

Figure 5: UWT research team K–12 students, introducing the autonomous ferry project and STEM careers to K-12 students

1.4. How have the results been disseminated?

Project findings and related research were disseminated through professional engagement in major conferences and committees. These activities enhanced visibility of the Center's goals and fostered collaboration with experts in safety, reliability, and rural transportation data analytics.

Event Name	Location	Date	Details / Description
Accessibility Assessment of Elderly Drivers to EMS in Rural Areas	CSU Virtual Webinar	April 10, 2025	Explored barriers faced by elderly drivers in accessing EMS in rural areas; proposed analytical and spatial models for improved service accessibility.
Reliability, Maintenance & Managing Risk (RMMR) Conference	Charlotte, SC	July 17–18, 2025	PI Vanli served as Program Chair. The conference focused on statistical and analytical tools for risk and reliability, aligning with the theme "Safety Through Reliability" and engaging safety professionals across sectors.
DAIS Best Paper Competition, IISE Annual Conference	Atlanta, GA	May 16–19, 2025	As Board Director and Chair of the DAIS Best Paper Committee, PI Vanli led efforts to highlight research in rural transportation safety through data analytics, aligning with the Center's research thrusts.

ITE Annual Meeting and Exhibition	Orlando, FL	August 10-13, 2025	A paper authored by CSU in collaboration with UNF was presented at the ITE Annual Meeting and Exhibition. Another paper authored by UWT in collaboration with UNF was presented at the ITE Annual Meeting and Exhibition.
IEEE Future Machine Learning and Data Science (FMLDS) Conference	Los Angeles, CA	Nov 02-05, 2025	Multiple papers authored by the CSU team based on their findings were submitted and accepted for presentation at the IEEE conference
Transportation Research Board (TRB) Annual Meeting – Paper Submission	Washington, DC	January 2026 (upcoming)	Multiple papers authored by the CSU team based on their findings were submitted and accepted for presentation at the TRB 2025 Annual Meeting. A paper authored by the UNF team, co-authored by the CSU team, will also be presented. Three papers led by the UWT team, based on their findings, were submitted and accepted for presentation at the TRB 2025 Annual Meeting.
Transportation Research Board (TRB) Annual Meeting – Paper Submission	Washington, DC	January 2026 (upcoming)	A paper authored by the SBU team, based on findings from their national workforce survey, was submitted for presentation at the TRB 2026 Annual Meeting. Another paper authored by the SBB team, based on the developed consistency active learning algorithm, was submitted and accepted for presentation at the TRB 2025 Annual Meeting. The algorithm provides a solution to adapt foundation models to rural areas that are less represented during model training.
China-US Symposium on Sustainable Development in Transportation and the Challenges of Rural Transport	Kunming, China	July 2025	Ruwen Qin was invited to present the results from her group's data analytics study on rural transportation accessibility, safety, and mobility.
The 25th COTA International Conference of Transportation Professionals	Guangzhou, China	July 2025	Ruwen Qin was invited to present the results from her group's research on multi-label driving scene identification for autonomous driving, which addresses the data scarcity challenges in rural autonomous driving areas.
The 8th International Conference on Transportation Infrastructure and Materials	Guiyang, China	July 2025	Ruewn Qin was invited to present AI and autonomous vehicle technologies for improving the efficiency of inspecting and monitoring widely distributed transportation infrastructure in rural areas. The work contributes to the resilience and safety of rural transportation.

The project team conducted outreach activities aimed at increasing awareness and understanding of transportation research among local communities and future professionals. These efforts supported the broader dissemination of project goals and findings.

Entity Name and Department	**Date**	**Details / Description**

Transportation Data Challenge – Challenger Learning Center & FAMU-FSU College of Engineering, Tallahassee, FL	July 10, 2025	Introduced high school students to transportation data analysis through an interactive competition using a smartphone app, demonstrating real-world applications of transportation research.
TRB Workforce Summit, Westminster, CO	June 2–4, 2025	The SBU team, PI Yazici, and Alireza Ershad discussed the Year 1 R-SEAT project results with transportation practitioners and encouraged participation in the survey.
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)	April 12, 2025	Dr. Qin and Lucas Tom-Wong from SBU conducted a lab tour as part of SACNAS outreach, introducing participants to transportation research tools and lab resources.

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

The following activities are planned to advance ongoing projects and meet Center goals in the upcoming reporting period:

- The FAMU-FSU team working on pass-by crash analysis will expand its scope to include two additional Florida districts and multiple years of data. Results will be prepared for submission to the TRB 2026 Annual Meeting, focusing on regional and temporal crash patterns using machine learning methods.
- Another FAMU-FSU simulation-based research on driving behavior under extreme weather conditions will proceed with experiments using the IRR-ViS platform. Key behavioral metrics such as speed, lane changes, braking, TTC, and eye-tracking will be collected and analyzed using ANOVA and regression techniques.
- The active transportation team at UWT will finalize the survey design and launch data collection following discussions with RTPOs in Washington and Florida. These partnerships aim to align survey efforts with community needs and planning priorities.
- Work will continue assessing rural transportation infrastructure across Washington State through structural analysis informed by feedback from regional planning organizations. A comparative analysis will examine the shared and distinct challenges faced across rural regions.
- At Stony Brook University, researchers will increase survey outreach and begin compiling responses for final analysis and reporting. This will support conclusions regarding workforce skill gaps in the transportation sector. The findings will be presented as a webinar for further dissemination.
- Another SBU's video data generation project will move forward with implementing the proposed diffusion model for rural accident prediction. This includes adapting the system to real-world driving data and using PSNR or MSE as anomaly indicators for anticipating forward crash events.
- UWT's Autoferry team will continue working on the analysis of marine traffic for the Puget Sound. The team has identified two potential external collaborations with small companies.

2. Products

2.1. Publications, conference papers, and presentations

Below is a list of journal publications from this reporting period that are related to individual projects or aligned with the Center's overall goals.

Author(s)	Title	Journal	Vol, Issue, Yr, Page	Status
Abdul Ngereza, Boniphace Kutela, Panick Kalambay, Angela Kitali, Emmanuel Kidando	Understanding Body Injury Patterns and Associated Severity of Micromobility Users Using Bayesian Network and Text Mining	*Journal of Next Research*	Vol. 2, Issue 3, 2025, Article. 100483 https://doi.org/10.1016/j.nexres.2025.100483	Published
Abazari, S.R., Vanli, O.A., Alisan, O., Ozguven, E.E.	Data-Driven Patient Allocation during a Pandemic for Healthcare Optimization with Epidemic Modeling	*International Journal of Health Geographics*	2025	Under Review
Daniel Udekwe, Qianwen Guo, Eren Erman Ozguven, Ren Moses	Crash Patterns and Severity Analysis on Rural Highways: Insights from Explainable Machine Learning and Correlation Analysis	*ASCE*	N/A	Under Review
Daniel Udekwe, Dimitrios Bolkas, Eren Erman Ozguven, Ren Moses, Qianwen Guo	Developing EQLab: A Virtual Civil Engineering Laboratory	*IEEE Journal on Learning Technologies*	2025	Under Review
Daniel Udekwe, Xiao Huang, Eren Erman Ozguven, Ren Moses, Qianwen Guo	Quantifying the Impact of Sun Glare on Crash Risk in Leon County, Florida	*Journal of Transport Geography*	2025	Under Review
Chen, S., Rahman, M.H., Marković, N., Siddiqui, M.I.Y., Mohebbi, M., Sun, Y.	Empowering MetroAccess Service with Nested Decomposition and Service Type Integration	*INFORMS Journal on Applied Analytics*	Vol. 55(3), pp. 238–253	Published
Rahman, M.H., Chen, Y., Chen, S., Sun, Y., Siddiqui, M.I.Y., Mohebbi, M., Marković, N.	Enhancing Underutilized Bus Routes with Advance Reservations and Semiflexible Routing	*Transportation Science*	DOI: 10.1287/trsc.2024.0561	Published Online

Author(s)	Title	Journal	Vol, Issue, Yr, Page	Status
Okorie, C., and Sun, Y.	ADA Paratransit Districting: A Discrete Optimization Approach	*Transportation Research Part A*	N/A	Under Review
Li, K, Zhang, C., and Qin, R.	Multi-label Scene Classification for Autonomous Vehicles: Acquiring and Accumulating Knowledge from Diverse Datasets	*IEEE Transactions on Intelligent Vehicles*	N/A	Under Review
Zhao, Y., Qin, R., van de Lindt, J.W., Sharpe, J., Yan, G.	Understanding the Relationship between Structural Failure and Fatalities in Tornadoes: A Quantitative Investigation of the 2021 Midwest Tornado Outbreak	*Advances in Wind Engineering*	Vol. 2, Iss. 3, 2025, 100070	Published
Li, Y., Zhang, D., Dong, P., Yao, S., Qin, R.	A surface electromyography-based deep learning model for guiding semi-autonomous drones in road infrastructure inspection	*Computer-aided Civil and Infrastructure Engineering*	2025	Accepted
Ershad, A., Yazici, A. Walters, J., Kalambay, P., Danquah, J., Ferdinand, P., Dillon, H., and Kitali, A.	Transportation Job Ads: Do They Align with the Sector's Technology-Driven Transformation?	Transportation Research Record: Journal of the Transportation Research Board	N/A	Under review
Walters, J., Kalambay, P., Balyagati, P., Danquah, J., Kitali, A., Yazici, A., Ershad, A., Vasudeva, P., and Dillon, H.	Transportation Engineering 2.0: A Vision for the Future Transportation Engineering Workforce	Transportation Research Record: Journal of the Transportation Research Board	N/A	Under review
Kalambay, P., Ford, M., Kitali, A., Ngereza, A., Kidando, E., Walters, J., Dillon, H.	A Bayesian Quantile-Based Analysis of Micromobility Usage and Challenges	Journal of Transport Geography	N/A	Under review
Kalambay, P., Balyagati, P., Kitali, A., and Kidando, E.	Profiling Crash-Associated Factors and Injury Risk Patterns Among Lost-in-Thought (Daydreaming) Drivers: A Combined Cluster-Sequence Analysis Approach	Transportation Research Record: Journal of the Transportation Research Board	N/A	Under review
Kitali, A., Pljakić, M., Lippu, C., Kidando, E., Kutela, B.	Influence of Traffic Safety Culture at Personal, Family, Workplace, and	Transportation Research Part F:	N/A	Under review

Author(s)	Title	Journal	Vol, Issue, Yr, Page	Status
	Community Levels on Speeding Behavior	Traffic Psychology and Behavior		
Kitali, A., Haule, H. J., Theofilatos, A., and Andrew, L.	Factors Influencing Injury Outcomes of Motorcycle Crashes on Roundabouts	Traffic Injury & Prevention	N/A	Under review
Kutela, B., Lippu, C., Ruseruka, C., Novat, N., Kidando, E., and Kitali, A.	A Comparative Safety Performance Evaluation of Automated Driving Systems (ADSs) and Advanced Driver Assistance Systems (ADASs)	Journal of Transportation Engineering, Part A: Systems	N/A	Accepted for publication
Mrema, R., Kitali, A., Sando, T., and Kalambay, P.	Development and Implementation of a GIS-Based Active Transportation Infrastructure Assessment and Navigation Tool	Institute of Transportation Engineers (ITE) Journal	98(7), 35-39	Published
Ngereza, A., Muller, V., Lippu, C., Kutela, B., Kidando, E., and Kitali, A.	Exploring Benefits and Challenges of 511 Applications in Enhancing Mobility and Safety by Evaluating User Reviews	Transportation Research Record: Journal of the Transportation Research Board	N/A	Accepted for publication

The following **conference** papers were presented or submitted during the current reporting period. These papers align with the goals of individual projects and the Center's overall mission.

Author(s)	Title	Conference	Status / Citation Details
DeLise, A., Abazari, S.R., Vanli, O.A.	An Epidemiological Mixed-Integer Nonlinear Programming Framework for Vaccine Modeling and Patient Allocation During Pandemics	International Conference on Industrial Engineering and Operations Management (IEOM), Orlando, FL, June 17–19, 2025	Presented
Daniel Udekwe, Dimitrios Bolkas, Eren Erman Ozguven, Ren Moses, Qianwen Guo	VRISE: A Virtual reality platform for immersive and interactive surveying education	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026.*	Accepted for presentation
Daniel Udekwe, Qianwen Guo	Enhancing accessibility for elder users: a quantum-inspired bilevel optimization framework for transit route design.	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026.*	Accepted for presentation

Ziyue Li., Daniel Udekwe, Qianwen Guo	A two-stage restoration approach for road networks after disruptive natural disasters.	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026.*	Accepted for presentation
Sara Muvuma,, Tsegai Yhdego, Ren Moses, Hui Wang	The Rural Mobility Index: A Composite Framework for Capturing Multidimensional Mobility Constraints in Rural Areas	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026.*	Accepted for presentation
Abdul Ngereza, Emmanuel Kidando, Caroline Bikuba, Angela Kitali, Boniphace Kutela	Predicting Likelihood of Multiple Secondary Crashes Using Ordinal Neural Networks	*IEEE Conference*	Accepted for presentation
Abdul Ngereza, Panick Kalambay, Angela Kitali, Emmanuel Kidando, Jeffrey Walters, Heather Dillon	Influence of the factors associated with micromobility crashes on the injury sustained	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Ntemi Masanja, Abdul Ngereza, Tumaini Sakaza, Philip Balyagati, Emmanuel Kidando	Mitigating Congestion with Physics-Informed Neural Networks and Adaptive Traffic Signal Control	*IEEE Conference*	Accepted for presentation
Ntemi Masanja, Abdul Ngereza, Tumaini Sakaza, Philip Balyagati, Emmanuel Kidando	Physics-Informed Neural Networks for Adaptive Traffic Signal Control and Congestion Mitigation	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Philip Balyagati, Abdul Ngereza, Emmanuel Kidando, Ntemi Masanja, Caroline Bikuba	Causal Inference and Uncertainty Quantification for Counterfactual Analysis of Injury Severity in Multi-Vehicle Collisions	*IEEE Conference*	Accepted for presentation
Philip Balyagati, Abdul Ngereza, Emmanuel Kidando, Josiah Owusu-Danquah, Angela Kitali, Panick Kalambay	Hierarchical Bayesian Analysis of Rural-Urban Settings in EMS Prehospital Timelines for Elderly Crash Victims	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Philip Balyagati, Ntemi Masanja, Abdul Ngereza, Faraji A. Rajabu, Emmanuel Kidando, Angela Kitali	Predicting Collision Patterns Among Elderly Drivers Using Kolmogorov Arnold Networks and FARS Data	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation

Tumaini Sakaza, Philip Balyagati, Emmanuel Kidando	Leveraging Game Theory for Intelligent and Adaptive Traffic Signal Systems	*IEEE Conference*	Accepted for presentation
Tumaini Sakaza, Emmanuel Kidando	A Literature Review on the Integration of Game Theory and Artificial Intelligence in Traffic Signal Control	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Sanchez-Sossa J, Hauger N, Nuxoll N, Wilson C, McCourt MJ, Donatelli C, Kalambay P, Dillon HE	Preliminary Design and Testing of an Autonomous Foot Ferry Prototype for the Salish Sea	International Mechanical Engineering Congress and Exposition, Nov 16–20, 2025, Memphis, TN	Accepted for presentation
Kalambay, P., Balyagati, P., Kitali, A., and Kidando, E.	Profiling Crash-Associated Factors and Injury Risk Patterns Among Lost-in-Thought (Daydreaming) Drivers: A Combined Cluster-Sequence Analysis Approach	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Lippu, C., Kidando, E., Kitali, A., Bikuba, C., and Kutela, B.	Divergent Effects of Factors on Crash Injury Severity Across Vehicles with Different Safety Ratings: A Hierarchical Bayesian Approach	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Lippu, C., Sakaza, T., Rajabu, F., Kidando, E., and Kitali, A. Kidando, E., Kitali, A.	Do NHTSA Safety Ratings Predict Real-World Crash Severity Outcomes? Evidence from Motor Vehicle Occupant Crash Injury Data	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Kalambay, P., Lipscomb, G., Sanchez-Sossa, J., Obico, G., Dillon, H., McCourt, M., Kitali, A., and Walters, J.	Mapping Locations for Low-Carbon Autonomous Electric Passenger Ferries: A Data-Driven Analysis of Socioeconomic and Demographic Neighborhood Profiles	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation
Li., K., Zhang, C., Qin, R.	Bridging domain shifts in multi-label driving scene identification with consistency-based active learning	*Transportation Research Board 105th Annual Meeting, Washington, D.C., USA. 11-15 Jan. 2026*	Accepted for presentation

The following presentations were delivered by project team members during this reporting period. Each presentation contributed to the dissemination of research aligned with the Center's focus areas.

Presenter(s)	Presentation Title	Date	Venue / Institution
Philip Balyagati, Abdul Ngereza, Josiah Owusu-Danquah	Accessibility Assessment of Elderly Drivers to Emergency Medical Services (EMS) in Rural Areas	April 10, 2025	Cleveland State University (Webinar)
Li, K.	Toward a Driving Scene Foundation Model: Acquiring and Accumulating Knowledge from Diverse Datasets.	September 15, 2025	Stony Brook University (seminar)

2.2. Website(s) or other internet site(s)

R-SEAT Center has recently updated and relaunched its official website and LinkedIn page to align with new federal UTC guidelines and the Center's revised focus on Innovation and Technology.

- Website: https://reat.eng.famu.fsu.edu/
- LinkedIn: Rural Safe Efficient Advanced Transportation (R-SEAT): Posts | LinkedIn

All content, branding, and documentation—including the new logo—reflect the updated mission and thrust areas

2.3. Technologies or techniques

2.4. Inventions, patent applications, and/or licenses

2.5. Other products

3. Participants and Other Collaborating Organizations

3.1. Who has worked on the program?

The following individuals made significant contributions to research, development, and administration during this reporting period.

Name	Program Role	Contribution to the Project	Funding Support
Emmanuel Kidando	PI (CSU)	Lead PI on research, oversight, and coordination	R-SEAT
Josiah Owusu-Danquah	PI (CSU)	Led research, coordination, and mentorship	R-SEAT
Philip Balyagati	Ph.D. Student (CSU)	Research assistant on a project	R-SEAT
Abdul Ngereza	Ph.D. Student (CSU)	Research assistant on multiple projects	R-SEAT
Tumaini Sakaza	Ph.D. Student (CSU)	Research assistant on a project	R-SEAT
Ntemi Masanja	Graduate Student (CSU)	Research assistant on a project	R-SEAT

Name	Program Role	Contribution to the Project	Funding Support
Seyed Reza Abazari	Graduate Student	Data curation, model formulation, and report writing	R-SEAT
Omer Arda Vanli	PI (FAMI-FSU)	Lead PI on research, oversight, and coordination	R-SEAT
Qianwen Guo	PI (FAMU-FSU)	Lead PI on research, oversight, and coordination	R-SEAT
Ren Moses	Director	Center Lead	R-SEAT
Eren Ozguven	PI (FAMI-FSU)	Lead PI on research, oversight, and coordination	R-SEAT
Tsegai Yhdego	Faculty	Administration and reporting	R-SEAT
Amon Brayant	Faculty	Administration and reporting	R-SEAT
Daniel Udekwe	Graduate Student	Research assistant on Project	R-SEAT
Yanshuo Sun	PI (FAMI-FSU)	Lead PI on research, oversight, and coordination	R-SEAT
Sarah Mvuma	Graduate Student	Research assistant on a project	
Gabriel Nickson Mutalemwa	Graduate Student	Research assistant on a project	
Zhenhao Lan	Graduate Student	Research assistant on a project	R-SEAT
Gian Orbico	Undergraduate Student	Design and modeling	R-SEAT
Shea McGee	Undergraduate Student	Design, simulation, data analysis, and testing	R-SEAT
Gauge Weber	Undergraduate Student	Design and modeling	R-SEAT
Monica R. Deibel	Undergraduate Student	Literature review and survey development	R-SEAT
Robyn Watkins	Undergraduate Student	Literature review and rural transportation challenge categorization	R-SEAT
Anil Yazici	PI (SBU)	Lead PI on research, oversight and coordination	R-SEAT
Alireza Ershad	Graduate Student	Conducting the project research tasks	R-SEAT
Amir Hossein Ali Khan	Graduate Student	Research assistant on project	Non R-SEAT
Saba Sohrabi	Graduate Student	Research assistant on project	R-SEAT
Ruwen Qin	PI (SBU)	Lead PI on research, oversight, and coordination	R-SEAT
Ke Li	Research Assistant	Research assistant on project	R-SEAT
Lucas Tom-Wong	Undergraduate Student	Lucas will work with Ke on the data collection task.	Stony Brook University
Alexander Morales Hernandez	Undergraduate Student	Alexander will work with Ke on the data collection task.	Stony Brook University
David Zhang	High School Student	David worked with Dr. Qin on sensor data analysis and paper writing	None
Susu Xu	PI (SBU)	Lead PI on research, oversight, and coordination	R-SEAT, NSF
Chenguang Wang	Research Assistant	Research assistant on a project	R-SEAT

Name	Program Role	Contribution to the Project	Funding Support
Angela Kitali	PI (UWT)	Lead PI on research, oversight, and coordination	R-SEAT, WSDOT
Jeffrey Walters	PI (UWT)	Lead PI on research, oversight, and coordination	R-SEAT
Heather Dillon	PI (UWT)	Lead PI on research, oversight, and coordination	R-SEAT
Sagar Keshari	Postdoctoral Researcher	Principal research	R-SEAT

3.2. What organizations have been involved as partners?

The following organizations partnered with the Center during this reporting period, providing data, technical support, consulting, and research collaboration aligned with project objectives

Organization Name	Location	Contribution to the Project
Ohio Emergency Medical Services	Columbus, OH	Provided access to statewide EMS incident data and technical support. In-kind support included data preparation and a sharing agreement to analyze EMS operational timelines.
Jacksonville Transportation Authority (JTA)	Jacksonville, FL	Supported field data collection for transportation research.
Annapolis Transit	Annapolis, MD	Provided field data to support transit-related analysis.
IT Curves	Gaithersburg, MD	Offered software support and consulting related to transit operations and data systems.
Numurus	Seattle, WA	Contributed both hardware and software support for research development.
WAV-C	Bremerton, WA	Provided policy guidance and technical advice related to transportation innovation and accessibility.
University of Florida	FL	Collaborative research
Washington State Department of Transportation	WA	Co-founders in one of the projects
Suffolk County Public Works, NY	NY	SBU researchers reached out to Suffolk County Public Works and initiated the collaboration that led to one of the year-3 projects on the economic and safety impacts of Long Island Greenway project.

3.3. Have other collaborators or contacts been involved?

In addition to core project staff and partner organizations, the following collaborators contributed to project activities during this reporting period

Collaborator Name	Type of Collaborator	Description of Collaboration	Collaboration Period
University of North Florida	Non-Consortium University	Joint research on a project with Cleveland State University.	October 1, 2024 – September 30, 2025

Jacob Xiang Yan	Outside of the consortium but in the US	Co-design the survey	2024-2025
Sebastian Ruiz	Outside of the consortium but in the US	Help with testing of the survey before dissemination, and help with spreading the word after the survey is made live	2024-current
TRB Workforce Committee	Non-consortium collaborator	The project team attended the TRB Workforce Summit held by the TRB Workforce Development Committee. The event organizers and participants helped the project team to spread the word to the wider audience.	TRB 2025 - Present
Kristal Metro	Outside of the consortium but in the US	During the TRB Workforce Summit, SBU researchers connected with Kristal Metro, who is working on her dissertation related to workforce development. SBU researchers started collaborating on a paper that combines the findings of the SBU research projects and Mrs. Metro's dissertation research on entry-level jobs in the transportation industry.	August 2025 - present
Xianbiao Hu	Outside of the consortium but in the US	Collaborated on developing a simulation-based framework for the verification and validation of lane-keeping assistance systems, which can be utilized for evaluating the readiness of autonomous driving in rural areas.	May 2025 - September 2025

4. Impact

4.1. What is the impact on developing the program's principal discipline(s)?

The UTC program significantly strengthened transportation engineering capacity across the R-SEAT consortium. At FAMU-FSU, research advanced in rural resilience, AI for disaster response, and truck parking, with multiple publications in the TRB. At SBU, five PhD students received UTC support, which led to new faculty hires and course offerings. UWT engaged undergraduates from civil, mechanical, electrical, and computer science, as well as students from regional community colleges, in active research. CSU launched a new PhD program in Civil Engineering with a transportation focus in Fall 2024, now supporting nine students, with most funding provided by R-SEAT.

4.2. What is the impact on other disciplines?

The interdisciplinary reach of R-SEAT projects has spurred collaborations beyond engineering: SBU integrated planning, computer vision, and AI with outputs presented at IEEE and non-engineering venues; FAMU-FSU engaged disciplines including education, arts, and social sciences, notably through tribal resilience initiatives; UWT partnered with ecology, environmental science, and urban planning departments; and CSU initiated cross-departmental proposals with

Computer Science, Electrical Engineering, and Urban Planning faculty, demonstrating broad disciplinary impact and innovation.

4.3. What is the impact on the development of the transportation workforce?

- R-SEAT advanced workforce development by generating actionable insights on technology-driven skill needs, workforce transformation, and recruitment strategies, disseminated through journal and conference publications, including presentations at the TRB 2025 Workforce Summit. Several State DOTs expressed interest in applying these recommendations to improve job advertising and applicant outreach.
- Workforce capacity building was strengthened across the consortium, including supporting a postdoctoral researcher who transitioned to a tenure-track faculty role, and engaging over 10 undergraduate research assistants in hands-on transportation projects. These experiences enhanced student readiness for careers and graduate studies by developing technical, analytical, and problem-solving skills, while also expanding access to internship and employment opportunities.

4.4. What is the impact on physical, institutional, and information resources at the university or other partner institutions?

The UTC program enhanced institutional visibility and collaboration across the consortium. SBU committed new graduate support and internal resources; FAMU-FSU secured NSF funding tied to resilience research. CSU expanded cross-campus partnerships, notably with the Ohio EMS Board, and increased shared research capacity with UWT and UNF. UWT reported significant gains through strengthened institutional partnerships that support multidisciplinary research and student engagement.

4.5. What is the impact on technology transfer?

Research findings were disseminated through major national venues, including the TRB and the American Red Cross Disaster Preparedness Forum. At SBU, workforce research influenced DOT hiring practices; FAMU-FSU presented resilience strategies to community stakeholders; CSU engaged Ohio EMS Services through project presentations; and UWT formed multi-year partnerships with regional companies in autonomous and marine transportation. These efforts collectively reflect R-SEAT's role in translating research into practice, facilitating knowledge exchange with state and local agencies, and fostering sustained collaborations with industry for real-world application of transportation innovations.

4.6. What is the impact on society beyond science and technology?

Across the consortium, R-SEAT fostered community partnerships and public engagement: SBU collaborated with Suffolk County on Long Island Greenway impact studies; FAMU-FSU conducted rural outreach in Florida's Panhandle to identify transportation needs; CSU partnered with Northeastern Ohio school districts on educational outreach; and UWT deepened collaborations with community colleges, local startups, WSDOT, and RTPOs. These efforts enhanced awareness of transportation challenges, expanded regional resilience initiatives, and

created pathways for inclusive stakeholder participation, thereby extending R-SEAT's societal impact well beyond academia.

5. Changes/Problems

5.1. Changes in approach and reasons for change

The Rural Safety Efficient and Advanced Transportation (R-SEAT) Center has undergone a comprehensive realignment to comply with current federal guidelines. Key changes include:

- Rebranding from REAT to Rural Safety Efficient and Advanced Transportation (R-SEAT) to align with the new government executive order, new priorities, and policies.
- Updating the research focuses on *Innovation and Technology*.
- Revising all internal and external documents, including the website and project repositories.
- Ensuring that all ongoing and future activities align with national transportation priorities.

Additionally:

- The center's logo was updated for simplicity and clearer branding (See figure 6 below).
- Updated online resources:
  - **Website**: https://reat.eng.famu.fsu.edu/
  - **LinkedIn**: Rural Safe Efficient Advanced Transportation (R-SEAT): Posts | LinkedIn

These changes reflect our proactive commitment to alignment with federal goals and enhanced public visibility.

Figure 5: New R-SEAT logo

5.2. Actual or anticipated problems or delays and actions to resolve them

Student Ke Li in Qin's group was unable to obtain a visa to return to the U.S. during the summer. He has been working hard to catch up since his return. Qin's group confronted the challenge of having insufficient computational resources. The group met with SBU's Research Computing and Informatics (RCI) group to request additional resources.

5.3. Changes that have a significant impact on expenditure

5.4. Changes of primary performance site location from that originally proposed

5.5. Additional information regarding products and impacts