Semi-Annual Progress Report for

University Transportation Centers

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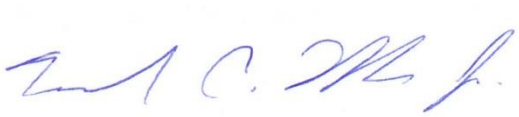

Signature of Submitting Official:

1. Accomplishments

1.1 What are the major goals of the program?

Our New England University Transportation Center (NEUTC) mission is to advance equitable safety through transformational research, education, and technology transfer. Our focus upon translating research into implementation as we work to save lives today, while delivering research that transforms safety in the presence of evolving technology and opportunity. The passage of the Infrastructure Investment and Jobs Act (IIJA) and the development of the National Roadway Safety Strategy (NRSS), coupled with a more mainstream introduction of safety culture (e.g., Safe System) provide a foundation for improved safety across the surface transportation system. The time to make a generational impact in equitable transportation safety is now.

NEUTC promises to advance transportation expertise and technology throughout the transportation discipline and contribute towards workforce development through the delivery of a robust research, education, and technology transfer agenda in support of IIJA statutory research priority of *Promoting Safety* along with the US DOT Strategic Plan Goals of *Equity* and *Transformation*. NEUTC brings together research and education leaders with a proven track record of delivering cutting-edge research to address key challenges in the delivery of equitable transportation safety. NEUTC will support the US DOT's mission, "To deliver the world's leading transportation system, serving the American people and economy through the safe, efficient, sustainable, and equitable movement of people and goods.".

1.1.1 Research

Traditional safety challenges, such as safety of vulnerable users, driver behavior, infrastructure assessment, and rural safety, are both complicated and potentially enhanced by the emergence of advanced technologies, such as AVs, smart infrastructure, and human-machine interactions (HMIs) as well as the need to account for diversity in the populations and geographies our transportation systems serve. This has created broad needs for educational and research breakthroughs and innovation across the safety spectrum. NEUTC's research addresses critical safety challenges and advances several of US DOT's Strategic Plan KPIs through the application of transformative technologies and equitable practices. To achieve impactful research and effective safety measures, focus is required on specific topic areas that either: a) provide the greatest potential for safety related improvements, and/or b) require additional attention due to the significance of crash-related outcomes. Our mission to advance equitable safety through transformative research will cover four thematic priority areas:

1) Embedding Equity and Community Engagement within Transportation Safety
2) Developing Smart Infrastructure and Connected Systems
3) Improving Safety for all Modes and Populations
4) Promoting Automated Vehicle Safety

These topic areas address integral components of the transportation system while simultaneously considering equity therefore, contributing to a sustainable transportation system for all.

1.1.2 Leadership Development

The members of our consortium are leaders within the transportation profession, and we are excited about the opportunity to expand our leadership role as we work to advance equitable transportation safety in a transformative fashion. Developing the next generation of leaders in transportation is a core

function of NEUTC. As leaders we expect NEUTC to be at the forefront in advancing US DOT's KPIs. Our plan is to mix new ideas with established best practices, such as an annual multi-day symposium that will bring faculty, students, stakeholders, vendors, and practitioners together to discuss innovations in safety research; these symposia will include activities to support collaboration, foster networking, and develop leadership skills for both researchers and students. An added focus will be placed upon increasing participation from government and industry by ensuring invitations are extended to all collaborators on all NEUTC projects. Given our prioritization on leadership, we will continuously seek opportunities for our consortium members.

1.1.3 Education and Workforce Development

The education and workforce development components will address K-12, university, and continuing education students. We are excited about the wide range of education activities within NEUTC which will expand our transportation knowledge base and broaden participation in transportation. Some of the specifical education and workforce development goals include the creation or expansion of the following activities:

The Safety Toolbox Curriculum: This initiative aims to develop and deliver educational materials focused on basic transportation safety concepts. The Safety Toolbox will feature a regional agenda including webinars, workshops, and outreach programs, targeting high school to undergraduate students and transportation professionals. It will also engage researchers, policymakers, and system operators.

Community College Pipeline: In collaboration with community college partners BHCC and HCC, this program will offer strategic educational activities such as the development of an introductory transportation course with transfer credit potential, a research and mentoring program (RAMP), visiting research and internship opportunities, and programming to address "the hidden curriculum" to help eliminate barriers to student success.

Expand Bridging Expectations & High School Course: This initiative plans to build upon a 2-day pilot program to introduce more students to transportation, with the aim of developing a year-long transportation elective for Springfield Public Schools and expanding the program across the consortium, focusing on diverse populations in major cities.

Hack-a-thons & Capstones: This involves hosting hack-a-thon style events where student teams from multiple disciplines work on solving safety and equity challenges, such as leveraging data in smart environments for better decision-making. It also supports diverse student teams working on capstone projects related to their academic degrees.

Develop College Curriculum: NEUTC members aim to increase the inclusion of transportation safety topics and improve their quality in college curricula. This includes developing case studies and curriculum modules for engineering courses, particularly for first-year students, to encourage specialization in transportation. Plans include integrating domain expertise into existing courses, developing a general education module on the societal impacts of traffic safety, and supporting the development of new courses and certificates.

Outreach to K-12: The consortium members will continue supporting K-12 STEM and career exploration activities, such as tours, internships, and presentations, along with sharing successful outreach practices across New England. Additionally, student contributions will be recognized through awards and features at annual symposia and on the NEUTC website.

1.1.4 Technology Transfer

One of the primary functions of the UTC program is to directly translate research into practice, policy, or novel advancements of the state-of-the-practice. Technology transfer and collaboration is well-documented historical strength across the entire NEUTC team. We are particularly excited about the seven-part technology transfer plan that we have developed to complement our research and education activities. Our consortium members are actively engaged in innovative technology transfer that is blend of both traditional (e.g., LTAP workshops, industry engagement, conference participation, etc.) and less traditional (e.g., DECIDE©, NSF I-Corp, public information videos, etc.) methods. Our focus in technology transfer will be translating research and best practices into implementation, especially in our rural and/or underserved communities across New England. Each member of our consortium will contribute towards- and participate within- our technology transfer and collaboration activities.

1.2 What was accomplished under these goals?

1.2.1 Research

The New England University Transportation Center (NEUTC) has had a productive first year in launching our consortium, dedicated to advancing transportation safety and efficiency through impactful research and community engagement. With a range of projects underway, we have also initiated a Year 2 Request for Proposals (RFP) to kickstart even more projects, expanding our efforts in research, technology transfer, and education.

Funded Projects

During this period, the NEUTC successfully managed a diverse portfolio of projects, comprising:

19 research projects, 2 projects focused on Technology Transfer, **1 project dedicated to Outreach and Education.** While none of these projects have been completed yet, some highlights of the ongoing work include:

- The project *Holistically Identifying Road Complexity and Relating it to Fatal Crashes* is pushing the boundaries of transportation safety research by integrating advanced AI tools. Researchers are combining crash data from MassDOT with large language models (LLMs) like ChatGPT-4 to analyze road complexity and its relationship with fatal crashes. By creating crash likelihood heatmaps and using GPS data, the project aims to develop predictive models for crash hotspots. Human-annotated images through Amazon Web Services' Mechanical Turk will further refine the model's accuracy, marking a significant advancement in using AI for road safety.
- The project *Improving Crash Prediction Using GRIDSMART Infrastructure* focuses on utilizing real-time data to enhance safety at intersections. The team has successfully downloaded movement and crash data, and analysis is set to begin. This research aims to identify high-risk intersections and mitigate potential crashes through predictive modeling.
- The project *Evaluating Older Drivers' Reaction to Forward Collision Warning (FCW) Systems Under Conditions of Distraction Using a Driving Simulator* is examining how older drivers respond to advanced driver assistance systems (ADAS), which could lead to improved safety measures for senior drivers.
- In *Assessing the Effectiveness of Bicycle Infrastructure Treatments through a Large-Scale*

Trajectories Collected with Drones, researchers are using drones to gather data on bicycle counts and interactions with vehicles in the Greater Boston area. By analyzing this data, the project aims to evaluate surrogate safety measures that assess the effectiveness of bicycle infrastructure. This innovative approach combines drone technology with safety metrics to ensure urban infrastructure supports safe cycling and reduces the risk of accidents.

Finally, during this reporting period NEUTC issued an RFP for Year 2 projects and received 35 proposals. These new projects will be selected and initiated during the next reporting period.

Peer-reviewed Journal Publications/Conference Papers

The center has continued its strong contribution to the academic field through several publications, including:

Transportation Research Record: Recent studies have addressed vulnerable road user safety screening methods, the use of vehicle telematics data as a surrogate safety measure, and novel crash severity models.

Accident Analysis & Prevention: Key contributions include the development of an artificial data generator for crash data, a Monte Carlo simulation analysis of crash hotspot identification, and an analysis of crash data using time-dependent parameters.

Journal of Transport Geography: A study on food accessibility by transportation mode offers insights into transportation equity.

Science Progress: Research on eco-driving strategies within hybrid traffic networks highlights advancements in sustainable transport practices.

Transport Reviews: Analysis of the impact of COVID-19 on transport safety, focusing on changes in road safety during the pandemic.

IEEE Robotics and Automation Letters: Contributions include advancements in autonomous vehicle technology, focusing on multi-object tracking with conformal uncertainty propagation.

These publications reflect the center's ongoing commitment to advancing knowledge in transportation safety, equitable access, and autonomous systems.

Research-Related Engagements

The center has remained active in engaging with the media and public, contributing to discussions on transportation safety and policy through various platforms:

Shannon Roberts: As a Public Engagement Program (PEP) fellow for Spring 2024, Roberts has actively engaged with the media, including appearances on satellite radio, local media, and *The Conversation*, where she discussed the dangers of hands-free phone usage on driving safety. Additionally, she has collaborated with Toyota to address gaps in risk anticipation training not covered in traditional driver's education. This research was highlighted in *Inside UMass* on July 22, 2024.

Song Gao and **Shannon Roberts** were both selected as Public Interest Technology (PIT) Fellows. The PIT Program teaches and promotes best practices for the socially responsible integration of technology.

Bryan Reimer: Presented research at the U.S. Department of Transportation's (DOT) Distraction Action Forum, contributing to national discussions on driver distraction.

Eleni Christofa: Featured in media outlets such as WCVB and CBS for her research on road safety using drones, and was awarded the 2024 Armstrong Fund grant for her project on enhancing transportation safety through new approaches. Her work with **Eric Gonzales** to address inequities in transportation access was highlighted by the UMass College of Engineering.

Davis Chacón-Hurtado: Participated in media and public discussions on the intersection of crime, public transportation, and pedestrian safety, including undergraduate and graduate presentations on these topics.

Eric Jackson: Quoted in several media outlets for his insights on transportation safety, including discussions on truck parking technology in Connecticut and pedestrian crash response demonstrations.

These media engagements reflect the center's ongoing commitment to public discourse and the advancement of transportation safety initiatives.

External Grants

NEUTC consortium members have secured significant external funding to support a variety of research activities:

- *Armstrong Fund for Science, UMass Amherst*: Research on whether schematic bicycle maps can help reduce greenhouse gas emissions.
- *BasiGo, Inc.*: Air quality monitoring and bus driver training to support BasiGo's rollout in Rwanda.
- *National Cooperative Highway Research Program (NCHRP 17-106)*: Study on the safety impacts of centerline and shoulder rumble strips on bicyclists on high-speed two-lane highways.
- *National Science Foundation*: Funding for the REU Site, RIDE (Research for Inclusivity and Driving Equity).
- *Massachusetts Department of Transportation*
    - Research on accessible bus stop design in the presence of bike lanes, and a study on the effectiveness of two-stage turn queue boxes compared to bike boxes in Massachusetts.
    - Calibration of Safety Performance Functions for rural and urban road segments.*(via Jacobs Engineering)*
    - Updating state GIS system to incorporate legally accepted speed regulations.
- *Massachusetts Highway Safety Division, Executive Office of Public Safety and Security:* Project to update the Massachusetts E-Crash Manual to incorporate recent changes to Massachusetts crash report regarding vulnerable users.

Invited Research Presentations

Faculty and researchers from the NEUTC have continued to showcase their work at prestigious national and international venues:

Ali Shirazi: Presented on spatiotemporal trends in pedestrian crashes, focusing on socio-demographic influences and the effects of COVID-19 at the *Future of Transportation* conference, August 2024, in Washington D.C.

Fei Miao: Delivered an invited seminar at Johns Hopkins University and presented at the *ICRA@40 Conference* in September 2024, furthering discussions on networked systems and control.

Caiwen Ding: Presented at the *MassDOT Innovation Conference*, contributing insights on transportation safety and innovation.

Jimi Oke: Delivered a lightning talk and poster presentation at the *2024 MassDOT Innovation Conference* in Worcester, MA, and served as a keynote speaker at the *2024 Access Management Conference* in Boston, MA.

Mike Knodler: Presented *"Improving Vulnerable Road User Safety via Mixed Research Methods"* at the *Future of Transportation Summit* in Washington D.C. He also delivered invited presentations on the evolution and safety of flashing yellow arrows for permissive during different events hosted by the University of Connecticut, the University of Arizona and Oregon State University.

Marisa Auguste and Noah Rothermel: Presented *Exploring Impaired Driving Trends in CT Using Linked Crash and Toxicology Data* at the *ATSIP Traffic Records Forum* on August 12, 2024, in San Diego, CA.

Charles Grasso and **Rose Getty**: Presented *Enhanced Intoxication Detection and Enforcement* at the *ATSIP Traffic Records Forum* on August 14, 2024, in San Diego, CA.

NEUTC faculty and students contributed several poster presentations at the *Future of Transportation Summit* in Washington D.C.:

- **Angelina Caggiano (Student)**: *Driver Behavior by Interval at Pedestrian Hybrid Beacons*.
- **Mike Knodler**: *Welcome to NEUTC!*
- **Anuj Pradhan:** *How do we learn about ADAS: Knowledge and Confidence about ADAS as a function of learning approach*.
- **Ali Shirazi and John Ivan:** *Spatiotemporal Trends in Pedestrian Crashes: Socio-Demographic Influence & COVID-19 Impact*.

In addition to the above presentations, each of the consortium site directors and all of the Year 1 project PIs delivered presentations (either podium or poster) during the inaugural NEUTC Symposium.

1.2.2 Leadership Development

The New England University Transportation Center (NEUTC) has demonstrated robust leadership in the transportation field, highlighted by a series of invited presentations, prestigious awards, and significant editorial responsibilities held by its faculty and students. This active involvement not only promotes NEUTC's visibility in the academic and professional communities but also enhances its impact on transportation policies and practices.

Invited Presentations and Workshops

- **Eleni Christofa**: Presented at the *Innovation Webinar* on July 18, 2024, discussing the effectiveness of two-stage turn queue boxes in Massachusetts and their comparison with bike boxes.
- **John Ivan**: Participated in the *NEUTC Symposium* in Worcester, MA, in April 2024, presenting on improving crash prediction using GRIDSMART infrastructure.
- **Fei Miao**: Delivered an invited seminar at Johns Hopkins University on June 24, 2024, continuing her contributions to the field of networked systems and control.
- **Francis Tainter:** Presented at the *MassDOT Innovation Conference* in Worcester, MA, in April 2024 on his work regarding Speed Management countermeasures.

Professional and Paper Awards

- **Eleni Christofa**: Recognized with the *College of Engineering Outstanding Teaching Award* and the *Chancellor's Leadership Fellowship*, reflecting her excellence in education and leadership within the academic community.
- **Efthymia Kostopoulou (graduate student)**: Awarded the *2024 WTS-Boston Ann Hershfang Graduate Scholarship* and the *2024 Jannet Walker-Ford Leadership Legacy Scholarship* from the WTS Rhode Island chapter, underscoring her potential and commitment to advancing transportation studies.
- **Manmohan Joshi (graduate student)**: Co-authored a paper titled *"Developing A Comprehensive Vulnerable Road User Safety Screening Method Using Multi-Level Data"*, which received the *Best Paper by Young Researcher Award* from the Committee on Transportation Safety Management Systems, *Transportation Research Record.*
- **Fei Miao**: Awarded the *Best Paper Award* at the AI4TS Workshop, IJCAI 2024 (Top AI conference), for the paper titled *"Adaptive Uncertainty Quantification for Trajectory Prediction Under Distributional Shift"*, co-authored with Huiquan Huang and Sihong He.
- **Egemen Okte**: Recognized with the Civil Engineering Department Teaching Award for outstanding innovation in the classroom
- **Angelina Caggiano** (graduate student): Awarded the 2023 WTS Boston Ann Hershfang Graduate Scholarship and was selected as a 2024 Lifesavers Conference Traffic Safety Scholar. She also won ATSSA & TRB's Traffic Control Device Challenge for her device GlowSafely -"Ascending Passive Detection to Light the Way of Vulnerable Road Users"

Journal Editorships and Grant Review Panels

- **Eleni Christofa**: Reviewer for the *Croatian Science Foundation (HRZZ)* and *C2SMARTER University Transportation Center*.
- **Song Gao**: Grant review panelist for the *National Science Foundation (NSF) and* Editorial board member for *Transportation Research Part B*.
- **Shannon Roberts**: Editorial board member of *Ergonomics*.
- **Eleni Christofa**: Associate Editor for the *ASCE Journal of Transportation Engineering Part A: Systems*, member of the *Transportation Research Part C: Emerging Technologies* Editorial Advisory Board, and Handling Editor for the *Transportation Research Record*.
- **John Ivan**: Associate Editor for *Accident Analysis & Prevention*.
- **Monika Filipovska**: Youth Editorial Board Member for the *International Journal of Transportation Science and Technology*.
- **Fei Miao**: Associate Editor for *IEEE Open Journal of Control Systems*

Leadership in Professional Organizations

NEUTC faculty and researchers hold prominent leadership roles in various professional organizations, furthering their impact on the transportation field:

- **Shannon Roberts**: Serves as an At-Large Member of the Executive Council for the *Human Factors and Ergonomics Society*.
- **Anshu Bamney**: *ITE Student Chapter Advisor* at UConn.
- **Eleni Christofa**: Member and Secretary of the *Transportation Research Board (TRB) Transportation and Health Committee (AME70)*.
- **John Ivan**: *President* of the UConn Student Chapter of the *Institute of Transportation Engineers (ITE)*.
- **Monika Filipovska**: Vice President of the UConn Student Chapter of the *Institute of Transportation Engineers (ITE)*.
- **Ali Shirazi**: Member of the *Maine State Transportation Innovation Council*.
- **Mike Knodler:** Executive Committee Member of ITE Transportation Education Council; Director for ARTBA; Director of ARTBA's Research & Education Division; Executive Committee Member (current Secretary) of CUTC ; Advisor UMass Joint Transportation Organization (includes both ITE and WTS Student Chapters)

Student Leadership Activities

The NEUTC supports student involvement in leadership activities, exemplified by participation in events like the First Lego League VT Championship and the Resilient Vermont Conference, fostering leadership skills among young scholars.

Four UMass students have been nominated as instructors for the First Year Seminar program, each leading a unique course:

- **Transportation Innovation and Smart Cities** – Angelina Caggiano

- **Exploring Machine Learning: A Beginner's Guide to Practical Applications** – Efthymia Kostopoulou
- **Entrepreneurship and Engineering: Creating and Launching Solutions to Real Life Problems** – Melissa Paciulli
- **Exploring Automobile Engineering Fundamentals: Understanding Vehicle Mechanics and Principles** – Pravar Parashar

1.2.3 Education and Workforce Development

We have made significant strides in education and workforce development, focusing on integrating advanced educational programs and supporting a diverse array of students in their academic and professional growth.

Hack-a-thon and Capstone Participants

We are actively planning a hack-a-thon relating to equitable transportation safety and placing students into capstone teams during the Fall 2024 semester.

NEUTC Peer Mentors and Mentees

The center supports a robust mentoring program that includes five faculty mentors from the STEM Academy. Additionally, four other mentorship pairings have been active, with plans to expand into the UTC mentoring program in the following year.

In the summer of 2024, the RIDE REU program at UMass and funded by NSF supported 16 undergraduate students, including 10 directly funded by the program and 6 funded through additional sources. These students, 50% female and 50% from underrepresented minorities, engaged in mentored research projects in industrial and civil engineering. They collaborated with faculty and PhD mentors, and 15 of them worked in pairs on projects. The program included professional development seminars, technical sessions, field trips, and culminated in a presentation and poster session. Students were provided with dorm housing and meal plans, and activities emphasized community-focused research to encourage diverse perspectives in transportation and equity-related fields.

Summer/Winter NEUTC Research Fellows

NEUTC has supported student research through summer and winter fellowships, providing valuable research opportunities and professional development:

- The *Research for Inclusivity and Driving Equity (RIDE) REU* program at UMass Amherst, primarily funded by the National Science Foundation (NSF) with additional support from NEUTC, involved **16 students** working on **9 projects** focused on transportation equity, safety, and sustainability. This program emphasizes engaging underrepresented groups in STEM, offering students hands-on research experience, mentorship, and opportunities to present their work. Participants also engage in professional development activities and network with transportation industry professionals.
- Additionally, one undergraduate student in Civil Engineering was funded to participate in the

Undergraduate Research and Innovation summer program at the University of Connecticut (UConn). UConn's Civil and Environmental Engineering department matched summer funds provided by the project to support this student's research.

- NEUTC worked with a team of students to develop a start-up company, Adion, that would facilitate ride-sharing within a university setting. The Adion technology integrated several novel features. The support provided the students with innovation and entrepreneurial training which was subsequently shared with other students across the consortium.

Students Supported by NEUTC Projects

NEUTC has provided direct support to a total of **29 Ph.D. students**, **14 undergraduate students**, and **4 postdoctoral researchers**, all contributing to various transportation and safety research projects. These projects cover a range of topics, including vulnerable road user safety, transportation equity, and innovative mobility solutions. Many of these students represent underrepresented minorities and women in STEM, furthering NEUTC's commitment to diversity and inclusion in research.

New Courses and Modules

NEUTC has made significant progress in developing curriculum modules and new courses aimed at advancing transportation safety education:

- A new undergraduate course on *Urban Transportation Planning* will be introduced at the University of Maine in Fall 2024.
- A curriculum module on surrogate safety measures has been integrated into Professor Christofa's *Pedestrians and Bicyclists* course, a senior-level/graduate elective.
- At Bunker Hill Community College, new curriculum development is underway, including lessons and modules for three advanced geospatial technology courses, expected to launch in Spring or Fall 2025. Additionally, transportation safety has been integrated into eight existing courses, including three math courses, one engineering course, two computer science courses, and two environmental science courses.
- In collaboration with *World Is Our Classroom* and the Springfield, MA public schools, a high school elective course on traffic safety is being developed, with plans for it to be eligible for college credit at Holyoke Community College.

K-12 Student Engagement

World is our Classroom: Hosted about 120 students from the Springfield-area public high schools over the course of eight days at the UMass Amherst Campus, providing insights into traffic safety, drone operations and engineering careers.

Shannon Roberts and her team conducted lab tours for prospective undergraduate students from diverse backgrounds during various outreach events, promoting engineering education and showcasing the NEUTC's research facilities.

1.2.4 Technology Transfer

We are continually engaging in technology transfer activities, ensuring that the research findings and innovations are communicated effectively to stakeholders within the industry, government, and the general public. This engagement enhances the application of research outputs in practical settings and contributes to broader societal impacts.

NEUTC-Related Events and Attendance

The **NEUTC Symposium**, held on April 29-30, 2024, at the DCU Center in Worcester, MA, brought together faculty, students, and transportation professionals to advance equitable transportation safety through research, education, and technology transfer. The event featured consortium engagement, professional development, and networking opportunities. Highlights included project presentations, poster sessions, and a keynote address by Jason DeGray of Toole Design Group. Approximately **20 students** participated, with several presenting their research. The symposium provided a platform for students to showcase their work, contributing to the professional development of emerging leaders in transportation research.

NEUTC hosted a “User-Centered Automotive Vehicle Design” workshop. The workshop took place on August 20th and 21st on the UMass campus. Leading the two-day workshop was Dr. Daniel Holder, Professor of automotive design engineering and design methods from the University of Stuttgart in Germany. Dr. Holder was a visiting research scholar at UMass this past summer, and the workshop highlighted his research in automotive design. Twenty five (25) students and faculty from UConn, UMaine, and UMass and MassDOT were in attendance at the workshop. During the workshop, attendees discussed road safety and the importance of user-centered design in the automotive vehicle design world.

Eleven (11) students from BHCC's NEUTC sponsored Summer STEM Academy visited the Transportation Safety Labs at UMASS Amherst and met with researchers, professors, and students.

Forty-three (43) students attended "Hack Your STEM Future" workshop and were presented with information on careers in transportation safety sector as well as an overview of the NEUTC.

Twenty (20) students attended a presentation by a software engineer from XPO focused on transportation logistics and safety for freight.

Francis Tainter of UMASS NEUTC presented a poster at a spring Career Poster Session that was attended by over 100 students.

NEUTC hosted the team from UMassAir during STEM week at Holyoke Community College to introduce students to educational or professional opportunities related to UAS technology.

LTAP Engagements

From April 1 to September 30, 2024, we delivered 27 safety-focused classes as part of our LTAP engagements, aimed at enhancing operational safety and technical skills for various equipment and work environments. These classes covered essential areas such as chainsaw skills, backhoe and

excavator operation, and OSHA construction standards. Courses included "Chainsaw Skills & Safety" (offered multiple times as a two-day session), "Backhoe/Excavator/Front Loader Safety," and "Trenching & Excavation Safety: Competent Person," along with specialized topics like "Confined Space Hazard Awareness" and "Bucket Truck Operations & Safety." Additionally, the "Flagger/First Aid Certification" was provided to promote roadside safety and emergency readiness. This diverse training program underscored our commitment to workplace safety, reaching a broad range of participants with practical and regulatory insights to improve safety in the field.

Media Requests

In addition to the research related engagements highlighted above, the Connecticut Transportation Institute at UConn has been particularly active in supporting media requests. During this reporting period they have contributed to 35 news articles, and a full list of links can be provided upon request.

Industry and Governmental Stakeholders Requests for Technical Assistance

Connecticut DOT Technical Assistance: Anshu Bamney provided ongoing support and expertise to the Connecticut Department of Transportation, focusing particularly on pedestrian safety projects and overall transportation safety improvements.

Social Media Engagements

NEUTC researchers actively utilize platforms like LinkedIn to share insights, research findings, and discuss current trends in transportation, helping to keep the professional community informed and engaged. In addition, NEUTC has created its own **LinkedIn page**, which is steadily growing, currently with **63 followers**. This platform serves as a hub for updates on research, events, and professional development opportunities, further expanding NEUTC's reach within the transportation community.

Practitioner Attendance at Events

NEUTC members were instrumental in organizing and attending the 2024 MassDOT Transportation Innovation Conference, held in Worcester with over 1,500 participants. The conference provided a collaborative space for discussing advancements in geospatial data, resilient infrastructure, and equitable transportation. Highlights included MassDOT's interactive “Empathy at the Intersection” exhibit, allowing attendees to experience challenges faced by vulnerable road users (VRUs). NEUTC also hosted its first symposium and convened an advisory board meeting alongside the conference, further enhancing peer-to-peer learning and industry engagement.

DOT Requests for Presentations or Proposals

MassDOT has requested two research projects: one on truck permits and another on community-centered traffic safety. The "Truck Permits" project will explore the impacts of non-reducible truck loads on infrastructure, focusing on managing increased loads to balance freight mobility and mitigate structural damage to roads and bridges. This project aims to inform policies that could optimize load limits and reduce maintenance costs while enhancing infrastructure lifespan and safety, particularly in vulnerable communities. The "Community-Centered Traffic Safety" project will address traffic safety through a tailored approach, developing strategies such as evaluating citation structures, creating culturally relevant safety messages, and crowdsourcing community-specific concerns. Together, these

initiatives involve interdisciplinary collaboration and emphasize sustainable, equitable transportation solutions across Massachusetts.

1.3 How have the results been disseminated?

As the NEUTC research, technology transfer and education projects progress, we anticipate increased opportunities to disseminate the results of our activities.

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

During the next reporting period we have planned several NEUTC activities that will directly support goal accomplishment.

NEUTC will continue the expansion of our website and social media platforms to help with the dissemination of NEUTC news and activities.

Norwich University will initiate planning for the NEUTC Leadership Summit to be planned for early 2025.

NEUTC researchers will actively participate in the CUTC banquet at TRB, which will provide valuable networking opportunities with other UTC consortiums.

Year 2 projects will be initiated, broadening the scope of NEUTC's research objectives.

2. Participants and Collaborating Organizations

2.1 What organizations have been involved as partners?

Partner organizations within the current reporting period include the various Departments of Transportation within New England. Most notably has been the continued integration of MassDOT and CTDOT to align priority projects with NEUTC activities. Additionally, NEUTC has actively partnered with MassDOT in the planning/hosting of the NEUTC Symposium and MassDOT Innovation Conference for which registered attendance of over 1600 participants from the public and private sectors, industry and academia.

World is our Classroom – a 501C3 has partnered with NEUTC to expand their Bridging Expectations program to include K-12 outreach related to transportation for public school students. We are now partnering with WioC and the Springfield Public Schools to plan for a high school level transportation elective course.

2.2 Have other collaborators or contacts been involved?

We have engaged with other collaborators both within the UTC Program and outside of the UTC Program.

NEUTC hosted Chandra Bhat to discuss transportation related outcomes with increase telehealth adoption.

NEUTC collaborated with MassDOT and a private manufacturer to test the viability and efficacy of painted rumble markings in advance of roadway situations requiring awareness.

NEUTC collaborated with the University of Wisconsin and Oregon State University to understand the impact from rumple strip presence on bicycle safety.

3. Outputs

3.1 Publications/presentations/conference papers

As a newly established consortium, the New England University Transportation Center (NEUTC) is in the early stages of its research initiatives. Currently, there are no papers that have directly resulted from NEUTC projects. However, the foundation has been set for forthcoming research outputs that are expected to make significant contributions to the field of transportation. Our teams are actively working on developing innovative studies that promise to yield valuable findings and insights, which will be shared through future publications and presentations at major conferences.

3.2 Policy papers

None yet to report.

3.3 Website and other engagements

The NEUTC website was launched in mid-January 2024 and has been heavily utilized to share news, events, and information on ongoing research projects. Currently, usage analytics are not available but should hopefully become available during the next reporting period.

In addition to our website, we initiated efforts to establish a LinkedIn presence, with expectations for significant engagement metrics in upcoming reporting periods.

3.4 New methodologies, technologies or techniques

None yet to report.

3.5 Inventions, patents, and/or licenses

None yet to report.

3.6 Other Products

None yet to report.

4. Outcomes

As a newly established consortium there have been limited outcomes from our funded work. However, we are excited about some potential outcomes from our funded research projects:

Community-Centered Traffic Safety expects to develop A new model for traffic fines that accounts for socio-economic diversity, ensuring fairness and effectiveness in traffic law enforcement.

Evaluation of Battery Electric Vehicle (BEV) Performance in Mountainous Regions and Cold Climates will inform improvements in BEV design and technology, particularly for use in harsh climates and terrains, enhancing vehicle safety and reliability.

Spatiotemporal Trends in Pedestrian Crashes Exploring the Influence of Socioeconomic, Demographic, Infrastructure, and Emerging COVID-19 Conditions results will provide a basis for developing targeted safety interventions, improving infrastructure, and implementing public awareness campaigns to reduce pedestrian crashes.

Towards a Safe, Healthy and Efficient Gig Transportation Workforce will provide gig workers with tools to make informed decisions about their schedules and work strategies, the project aims to improve their overall well-being, reducing risks associated with fatigue, anxiety, and unsafe work practices.

Evaluating the Impacts of Age and Health on Different Aspects of Mobility and Driving Behaviors will develop materials aimed at supporting older adults in making informed decisions about driving retirement, enhancing their safety and mobility.

5. Impacts

5.1 Impact on the effectiveness of the transportation system

NEUTC's focus on understanding human interactions within a complex and dynamic transportation landscape aims to enhance both safety and efficiency across the transportation system. Our research endeavors are designed to foster safer travel conditions, support the integration of diverse transportation modes, and contribute to reducing traffic congestion. Ultimately, this will not only improve roadway safety but also help in preserving the environmental integrity of our communities.

5.2 Impact on the adoption of new practices, or instances where research outcomes have led to the initiation of a start-up company

Nothing to report.

5.3 What is the impact on the body of scientific knowledge?

Highlighted in Section 1.2.1

5.4 What is the impact on transportation workforce development?

Highlighted in Section 1.2.3

6. Changes/problems

As we approach the end of year one for NEUTC we are happy to report no specific changes needed or problems encountered.

6.1 Changes in approach and reasons for change

None to report

6.2 Actual or anticipated problems or delays and actions or plans to resolve them

None to report

6.3 Changes that have a significant impact on expenditures

None to report

6.3 Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

None to report

6.4 Change of primary performance site location from that originally proposed

None to report.

7. Special Reporting Requirements

N/A