CMMM
Center for MultiModal Mobility in Urban, Rural and Tribal Areas

Semi-Annual Progress Report for University Transportation Centers:
Center for Multimodal Mobility in Urban, Rural and Tribal Areas (CMMM)

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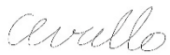

1. Accomplishments

What are the major goals and objectives of the program?

1. Developing more refined models of travel behavior and the factors that influence travel demand;
2. Assessing the potential for unmanned and autonomous vehicles (both ground and air) to streamline the delivery of goods and facilitate the movement of people;
3. Investigating a wide array of congestion-reduction strategies, including incentivization of public transit, and the use of toll and HOV lanes;
4. Identifying the key contributors to transportation-related inequity and presenting solutions that support mobility justice, as well as better understanding the equity implications of travel barriers, including constrained access to food, healthcare, and employment;
5. Evaluating the potential of modalities such as rideshare, vanpool and microtransit to improve mobility while meeting the ever-evolving demand for efficient, reliable transportation;
6. Exploring the feasibility and impact of infrastructure-based solutions such as "complete streets" in reducing congestion and addressing inequity;
7. Exploring innovative approaches to project finance and delivery and providing technical assistance to stakeholders.

What was accomplished under these goals?

1. During this reporting period, we have selected three new competitive projects for funding, which must be collaborative across departments. Our first 12 core projects are working on their final reports, the Year 2 core projects are several months into their research, and our current 6 competitive grants are all in progress. In total so far**, CMMM has funded 30 projects adding up to more than $3 million.** These projects range across transportation goals including improving the mobility of people and goods, promoting safety, reducing congestion, and more. Each project reflects the values of the CMMM as well as the USDOT UTCs.

2. CMMM proudly co-hosted a two-day Generative AI in Transportation workshop on March 13–14, 2025, at Clark Hall, University of Maryland, in partnership with the ASCE T&DI Artificial Intelligence in Transportation Committee. The event was a resounding success, drawing more than 120 participants from across the country. Attendees included transportation engineers, AI researchers, public officials, students, and industry professionals, all convened to explore the transformative potential of Generative AI in the transportation sector.

   The workshop featured expert-led technical sessions, hands-on demonstrations, and interactive panel discussions that provided deep insights into the integration of AI for safer, more efficient, and equitable mobility systems. Topics ranged from predictive modeling for traffic flow, AI-enhanced infrastructure monitoring, and pedestrian safety to ethical considerations in autonomous vehicle deployment.

This conference also served as a platform for interdisciplinary collaboration, enabling participants to network and initiate joint projects. CMMM was proud to host an educational booth at the event and showcase its research initiatives. The success of this workshop underscores the growing relevance of AI in the transportation field and CMMM's commitment to leading conversations that shape the future of mobility.

Attendees engaged in **expert-led sessions, interactive discussions, and networking opportunities**, gaining valuable insights into cutting-edge AI techniques for safer and more efficient transportation. The workshop provided a platform for knowledge-sharing and collaboration, highlighting the critical role of AI in the future of transportation.

3. We are excited to announce that CMMM has recently undergone a full digital refresh to better reflect our mission and growing portfolio of research and educational initiatives. As part of this update, we have introduced a new, modernized logo and an updated color scheme that aligns with CMMM's identity and commitment to innovation in multimodal transportation. In addition, we have launched a completely redesigned website to improve accessibility and user experience. The new site offers a comprehensive view of CMMM's ongoing and past research, seminars, grant-funded projects, and documentation. We invite you to explore the updated platform at: **www.mti.umd.edu/cmmm.**

4. To further expand our outreach and engagement, we are also posting regularly on LinkedIn, where our presence continues to grow. Follow us at **https://www.linkedin.com/company/umd-cmmm** for updates on CMMM's activities, events, and opportunities for collaboration. These updates represent our ongoing efforts to strengthen CMMM's visibility and communicate our values as a research and education-focused center under the University of Maryland.

5. Our advisory board meets twice a year and will have its next meeting on May 29, 2025. This interdisciplinary list ensures a robust and active team that reflects the values of CMMM. The team will meet twice a year to foster collaboration and innovation. So far, the board has met on December 13, 2023, May 3, 2024, December 5, 2024.

See the list of members below:

1. Samantha Biddle
2. Marcia Argust
3. Elisabetta Cherchi
4. Christopher Conklin
5. Christian Dorsey
6. Dan Goldfarb
7. Robbyn Lewis
8. Arben Shasho
9. Neil Pedersen
10. Jason Wang
11. Richard Wu
12. Hua Xiang

What opportunities for training and professional development has the program provided?
CMMM has hosted 10 educational seminars for students, faculty, and staff at the University of Maryland. Each seminar has had a Zoom link included so that consortium members as well as members of the advisory board are able to participate.

1. February 27, 2025, Dan Goldfarb, ATCS
   Impacts Resulting from Vehicle Electrification Policies in Metropolitan Areas

2. March 27, 2025, Mario Monsreal, Texas A&M
   Supply Chain Fluidity, Resiliency, and the Role of Transportation
3. April 24, 2025, Sisinnio Concas, University of South Florida
   Advancing Towards a Smarter and More Sustainable Transportation System

4. October 29, 2024, Dr. Pratt Herakul, Meta
   Life After Graduation: What to Expect, How to Navigate

5. September 26, 2024, Neil Pedersen, retired Executive Director, TRB
   Four Big Issues Facing Transportation: Safety, Climate, Health, Equity

6. April 25, 2024, Dr. Prateek Bansal, National University of Singapore
   Harnessing Household Travel Survey with Smartcard Data to Generate Spatiotemporally Heterogenous Activity Plans for Transit Users

7. March 25, 2024, Shari Schaftlein, Federal Highway Administration
   Serving All People, All Abilities

8. April 4, 2024, Dr. Brian Park University of Virginia
   Transformative Traffic Management Harnessed by Proactive Route Guidance

9. October 27, 2023, Dr. Neda Masoud University of Michigan
   Incentive Design for Promoting Ridesharing

10. December 5, 2023, Guangchen Zhao, University of Maryland
    Measuring Mobility in the 21st Century: What Can We Learn from Mobile Device Location Data?

Additionally, a core project funded for year two of CMMM involves research on and action toward an **outreach and educational program at SJSU**. This project with introduce elementary school students to transportation concepts to foster early interest in STEM fields. By engaging students in problem solving skills and other important transportation-related concepts, CMMM will increase interest and understanding in our world.

How have the results been disseminated? If so, in what way/s?

The results have been disseminated through the website and LinkedIn. The core projects, the competitive projects, the educational seminars, and more have been reflected on this page: www.mti.umd.edu/cmmm

Additionally, CMMM sends out a bi-annual newsletter to all of the consortium members, their students, faculty, staff, and to members of the advisory board.

CMMM also hosted an educational booth at the Generative AI Conference mentioned above.

What do you plan to do during the next reporting period to accomplish the goals and objectives?
CMMM plans to continue hosting their seminar series, will put out a newsletter twice a semester, will have updated branding and an updated website. We will continue to work with our collaborators to improve the mobility of people and goods.

2. Participants and Collaborating Organizations

What organizations have been involved as partners?
CMMM collaborated with the University of Maryland, Morgan State University, San Jose University, North Dakota State University, White Earth Tribal and Community College, the University of Michigan, the Federal Highway Administration, MDOT, USDOT, the University of Virginia, and the National University of Singapore.

Have other collaborators or contacts been involved?
CMMM worked with several collaborators via the competitive and core projects. These are all professors from various universities including the University of Maryland, Morgan State University, San Jose State University, and North Dakota State University.
The professors are listed here: Ali Haghani, Gang Len Chang, Paul Schonfeld, Xianfeng Yang, Mehdi Shokouhian, Celeste Chavis, Young-Jae Lee, Ahoura Zandiatashbar, Susan Shaheen, Adam Cohen, Ying Huang, Ilya Ryzhov, Anna Alberini, Di Yang, Muhid Kabir, Mansha Swami, Jean Daniels Saphores, Yaobang Gong, and Kofi Nyarco.
CMMM also worked with the industries, Transurban, Rekor-AI, and EurekaFacts.

3. Outputs

CMMM has made significant strides through its 30 supported projects, including an educational program that introduce elementary students to transportation concepts like roads and bridges. These initiatives foster early interest in STEM while developing skills such as problem-solving and critical thinking. CMMM is also preparing several potential journal papers and has hosted several seminars to share knowledge and promote collaboration.

4. Outcomes

The outcomes for this reporting period include increased understanding and awareness of transportation issues. This outcome was achieved via 10 educational seminars, the review and funding of 3 new competitive projects, and the meeting of the CMMM advisory board.

So far, PI Cinzia Cirillo spoke at two different conferences, an Industrial AI event at the University of Maryland and the Board of Trade 2023 Capital Regional Transportation Forum. She has also been named the **Chair of the TRB Travel Forecasting Committee.**

5. Impacts

What is the impact on the effectiveness of the transportation system?
The research conducted by our students and faculty directly enhances transportation system effectiveness, addressing challenges like traffic flow, safety, and equitable access. These projects generate data-driven solutions that improve efficiency, reduce congestion, and support sustainable, resilient mobility for diverse communities.

What is the impact of technology transfer on industry and government entities, on the adoption of new practices, or on research outcomes which have led to initiating a start-up company?

1. CMMM partnered with **Transurban**, a toll operator, to enhance transportation systems through innovative tolling research and solutions.

2. CMMM collaborated with **Rekor-AI** to advance pedestrian safety, leveraging AI-driven insights for safer urban environments.

3. CMMM worked alongside **EurekaFacts** on projects related to e-bike adoption and standards, providing applied research that supports regulatory and safety standards.

What is the impact on the body of scientific knowledge?
CMMM's students and researchers are at the forefront of transportation innovation, actively contributing to solutions for complex mobility challenges through an impressive portfolio of 30 supported research projects. Their work spans critical areas such as sustainable urban mobility, autonomous vehicle integration, and commute equity, producing valuable insights that are not only advancing academic understanding but also influencing real-world transportation systems. This research is fueling numerous journal publications and supporting our students in achieving advanced degrees, all while equipping them with hands-on expertise that prepares them for impactful careers in the field.

What is the impact on transportation workforce development?

1. CMMM is preparing an exciting summer camp initiative in partnership with North Dakota State University and White Earth Tribal and Community College. Scheduled for June 10–12, 2025, this camp will provide K–12 students with a hands-on educational experience focused on transportation safety and data science.

The program will introduce students to key transportation topics, including pedestrian safety through camera-based detection and image analysis. Participants will engage in experiments using real-world datasets to learn how to analyze pedestrian movement and evaluate safety interventions. These activities are designed to foster curiosity in STEM fields while encouraging practical problem-solving skills. By targeting youth in rural and tribal communities, this effort also promotes equity in access to transportation education and workforce pathways.

2. A group of researchers has been educated via our seminar series on different transportation needs and goals. One of our core projects is supporting elementary school interest in transportation, aiding in future workplace recruitment:
   The Mineta Transportation Institute (MTI) has developed an educational program introducing elementary students to transportation concepts, focusing on roads and bridges to foster early interest in STEM fields. This program aims to spark curiosity and build essential skills, such as critical thinking and problem-solving, by engaging students in understanding the history, construction, design, and societal impact of transportation infrastructure. The curriculum, which includes interactive lessons on bridge-building, will undergo pilot testing to ensure it is engaging, accessible, and practical for educators. By highlighting topics like bridge design, weight distribution, and global infrastructure, MTI's lessons play a crucial role in inspiring future engineers and builders, helping students develop skills that will serve them well in school, careers, and life.

6. Changes/Problems

We updated our logo to better reflect CMMM.

7. Special Reporting Requirements

Nothing to report