



Mineta
Consortium
for Transportation
Mobility

Semi-Annual Progress Report

Mineta Consortium for Transportation Mobility

April 1, 2022 - September 30, 2022



To move is to live.



Semi-Annual Progress Report for University Transportation Centers Mineta Consortium for Transportation Mobility (MCTM) Led by San José State University

- **Federal Agency and Organization Element to Which Report is Submitted:**
U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology
- **Federal Grant or Other Identifying Number Assigned by Agency:** 9A3551747127
- **Project Title:** Tier 1 University Transportation Center
- **Center Director:**
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MCTM Executive Director
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- **Submission Date:** October 31, 2022
- **DUNS and EIN Numbers:** 0568207150000 and 94-6017638
- **Recipient Organization:**
San Jose State University Research Foundation
210 N. Fourth Street, 4th Floor, San Jose, CA 95112
- **Recipient Identifying Number or Account Number:** Not Applicable
- **Project/Grant Period:** November 30, 2016 – September 30, 2023
- **Reporting Period End Date:** September 30, 2022
- **Report Term or Frequency:** Semi-annual
- **Signature of Submitting Official:** *Karen Philbrick*

Introduction

The Mineta Consortium for Transportation Mobility (MCTM), led by the Mineta Transportation Institute (MTI) at San José State University, conducts research, education, workforce development, and technology transfer activities to improve mobility of people and goods. MCTM unifies and focuses the efforts of four outstanding institutions that represent and support the geographical, cultural, racial, and socioeconomic diversity that makes our nation strong: Howard University; Navajo Technical University (NTU); San José State University (SJSU); and the University of North Carolina Charlotte (UNCC).

1. Accomplishments

Emerging Leaders Seed Grant Program

The Emerging Leader Seed Grant Program engages and develops leadership capacity among junior faculty at SJSU. This program supports faculty in the first five years of an academic position who are interested in exploring transportation research problems aligned with MTI's research goals and objectives and encourages multidisciplinary participation. To date, MTI has awarded sixteen seed grants to faculty from five of the seven academic Colleges at SJSU.

During this period of performance two seed grant project final reports were published:

1. [Exploring the Effects of Meaningful Tactile Display on Perception and Preference in Automated Vehicles](#): PI Gaojian Huang, Assistant Professor, Department of Industrial and Systems Engineering
2. [Twilytics: A Social Perception Analysis of Public Transit Systems during the COVID-19 Pandemic](#): PI Egbe-Etu Etu, Assistant Professor, Department of Marketing and Business Analytics

No new emerging leader seed grants were funded during this period of performance.

Ongoing Research

Since January 6, 2017, MCTM has funded 126 research projects. Of these, 47 projects were competitively selected or underwent peer review prior to selection, 16 were emerging leader seed grants, and 63 projects were commissioned white papers and research projects. Details on all MCTM projects can be found in the [UTC project information sheets](#).

Leveraging Federal Funds

USDOT has made, and continues to make, a significant investment in developing and sustaining the UTC program and MCTM researchers and staff work tirelessly every day to leverage that federal investment to dramatically increase its return.

To that end, MTI was recently awarded a \$4.6M Federal Railroad Administration Consolidated Rail Infrastructure and Safety Improvements program grant to develop a Climate Change and Extreme Events Training and Research (CCEETR) program. CCEETR is a multi-campus consortium

with MTI/SJSU as the lead institution and partners at the University of Hawaii, Oregon State University, Michigan State University, and Colorado State University-Pueblo.

In addition, MCTM partner, Navajo Technical University was recently awarded two large grants. A 5-year, \$2.5M grant from the National Science Foundation will support the establishment of two graduate engineering programs at NTU. A 5-year, \$5M grant from the U.S. Department of Energy will focus on increasing Native Americans enrolled in graduate engineering programs and advanced research. Both of these grants leveraged the transportation workforce development programs developed under the auspices of the MCTM UTC program.

Dissemination of Results

MCTM utilizes a diverse array of dissemination methods and media to ensure research results, conference proceedings, and expert interviews reach those responsible for managing change. These methods include publication, seminars, workshops, websites, social media, webinars, and other technology transfer mechanisms.

MCTM continued its #MTIResearchSnaps webinar program. This program provides a diverse audience with access to the latest MCTM research during a short, 30-minute period. This “mini” format allows individuals to learn from the researchers for 15-minutes followed by a moderated Q&A for the last 15-minutes. Recordings and accessible transcripts for each webinar are available online at <https://transweb.sjsu.edu/research/webinars/past> and are widely promoted through social media, newsletters, and other MTI communication opportunities.

Consortium Website

In compliance with the Grant Deliverables and Reporting Requirements for 2016 University Transportation Centers, MCTM has a website that features all consortium activities: <https://transweb.sjsu.edu/mctm>. This website is updated regularly with event information, media coverage, and research activities.

Media Coverage

During this reporting period, there were **1,170 MTI stories featured in print, radio, and television media**, bringing the total number of MCTM stories to 2,999 since inception. Links to many of these articles are featured on the [Consortium website](#) and below is a snapshot of activity:

Article	Media Outlet
We've Got to Stop Requiring Parking Everywhere	New York Times
How Cargo-Bikes Can Reduce Carbon Emissions in Bay Area Cities	KCBS Radio
Bay Area High School Students Get a Transportation Lesson at San José State	East Bay Times
US: Transit is Seeing More Cyber Threats, Many Agencies aren't Ready	MassTransit

Article	Media Outlet
Why Gas is Actually Cheap in America	The Hustle
California to Ban Sales of New Gas-Powered Cars by 2035	CNN
The Shifting Nature of Terror on U.S. Transit	Streetsblog USA
Newsom Signs Bill Targeting Harassment and Hate in Public Spaces	Axios
Trains Keep on Rolling: High-Profile Interventions Prevent Rail-Worker Strike	KTVU-Fox
How a Rise in EVs Could Prompt a Change to the CA Gas Tax	KCBS Radio

Continuing Education: Opportunities for Growth and Engagement

MCTM is providing thought leadership and contributing to solutions for some of our nation's most pressing transportation problems. Through regional forums, national summits, mid-career leadership training, and K-12 workforce development initiatives we help create a connected world. To that end, and during this period of performance, MCTM sponsored/co-sponsored 14 technology transfer and workforce development activities that reached 5,458 attendees; a selection follows:

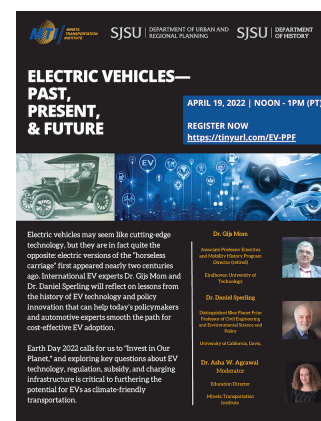
California Bicycle Summit 2022 April 4-6, 2022 • Oakland, CA: MTI was proud to co-sponsor the California Bicycle Summit 2022 in Oakland. This inspiring biennial gathered California bicycle advocates, planners, agency administrators, and more, for four days of keynote addresses, workshops, and bike rides. The Summit was the state's most important bicycle advocacy event and one of the nation's leading bicycle-related conferences.

SJSU Urban Planning Spring Symposium: Racial Equity in Transportation Planning April 8, 2022

- [Online](#): MTI co-sponsored the SJSU Urban Planning Coalition to host their Spring Symposium on Racial Equity in Transportation Planning. This event aimed to give attendees a better understanding of some of the problems that minority communities face in transportation and mobility and some of the ways that these issues can be addressed through the planning process. MTI Trustee Kimberly Slaughter participated as a speaker in the panel.

Electric Vehicles—Past, Present, & Future April 19, 2022 • [Online](#):

In partnership with SJSU's Department of Urban & Regional Planning and Department of History, MTI hosted this free virtual event "Electric Vehicles—Past, Present, & Future" that celebrated Earth Day 2022 by exploring key questions about EV technology, regulation, subsidy, and charging infrastructure critical to furthering the potential for EVs as climate-friendly transportation. The webinar invited attendees to reflect on lessons from the history of EV technology and policy innovation that could help today's



policy makers and automotive experts smooth the path for cost-effective EV adoption.

How to Be Your Own Boss Without Going Broke or Crazy (Part 3) April 26, 2022 • [Online](#):

WTS-SF Bay Area and MTI hosted a three-part series on starting a consulting business. In this last session of the series, attendees had a chance to learn from small business owners about their experience building their business, with a focus on branding and winning work. We also invited a large consulting firm to share their perspective on partnering with small businesses.

SVBC's Bike Month and Bike to Wherever Days April 26 to May 28, 2022 • Various locations in Santa Clara and San Mateo Counties, CA: MTI was a proud co-sponsor of Silicon Valley Bicycle Coalition's (SVBC) Bike Month and Bike to Wherever Days festivities. To celebrate Bike Month, SVBC organized a series of fun, family-friendly events to promote the health and environmental benefits of biking as well as safety precautions when riding. Some of the events include Basic Bike Maintenance, Biking Basics, and Smart Cycling.

The Future of Mobility Innovations to Replace Parking Mandates May 16, 2022 • [Online](#): The City of San Jose voted to reform policies that mandate parking in new development. MTI, along with TransForm, provided support to Catalyze SV to host a 2-hour online education event tailored for developers building in Silicon Valley to learn about innovative mobility services from Envoy, Glydways, Lyft, Parkade, and Via, that could help make development easier and more cost-effective with this transition.



2022 MSTM Capstone Showcase May 26, 2022 • [Online](#): During this virtual event, students from the Master of Science in Transportation Management program at San José State University, which is supported by MTI, presented their final capstone research projects. This interactive event provided attendees the opportunities to meet with the students and learn about their research and key issues in the field of transportation.

13th Annual Mineta National Transportation Policy Summit June 3, 2022 • [Online](#): The accelerating transition to electric vehicles brings new urgency to discussions on how to replace fuel taxes with other broad-based, reliable sources of transportation revenue. From Wyoming to Delaware to California, more and more state legislatures are considering mileage fees, regions like the San Francisco Bay Area are considering expanded tolling, and New York City is within reach of adopting a congestion pricing proposal. Overlaying these discussions is a persistent call to consider the equity of any new charges on drivers. How will the charges impact low-income drivers? Does payment require access to banking tools that are not universally available? This event explored proposals including fee rates that vary by driver income, vehicle characteristics, or time and



place, and equity-centered policies for responding to non-payment of tolls or other fees. **Congressman Peter DeFazio** was featured in a fireside chat with MCTM's Executive Director and **Polly Trottenberg**, Deputy Secretary, US Department of Transportation delivered a keynote address.

International Level Crossing Awareness Day (ILCAD) 2022 June 8-10, 2022 • Denver, CO: MTI was a part of the U.S. Committee hosting [ILCAD 2022](#) in Denver, CO June 8 – 10. This year's event was co-organized by [International Union of Railways \(UIC\)](#), [Association of American Railroads \(AAR\)](#), [Federal Railroad Administration \(FRA\)](#) and [Operation Lifesaver Inc. \(OLI\)](#). The themes of the 2022 conference were:

- Technology – What technologies could help to educate people, raise awareness, and ultimately prevent incidents at level/grade crossings?
- Enforcement/Regulations – joint initiatives of the railways with local authorities and law enforcement agencies to encourage people to respect the rail-highway interface.
- Community outreach – What are the best means of making people aware of the safety risks at crossings?

30th Annual Awards Banquet and Convocation Celebration June 25, 2022 • San José, CA: MTI held its 30th Annual Banquet and Convocation Celebration in-person, featuring a commencement address by Dr. Beverly Scott, at San José State. After celebrating our graduates and annual successes virtually, we were grateful for the opportunity to welcome our esteemed trustees, generous sponsors, local leaders, graduates, friends and family to gather and commemorate the advancements made in our industry.

Joined by our distinguished Board of Trustees, we celebrated our MSTM graduates from classes 2020-2022, our alumni of the year, the winners of the Garrett Morgan Sustainable Transportation Competition, and much more. This exciting MSTM celebration included individualized recognition of each graduate and award presentations.



Transatlantic Autonomous Driving Dialogue – Social Impact & Opportunities June 30, 2022 • Palo Alto, CA: MTI was a partner organization in the Transatlantic Autonomous Driving Dialogue hosted by the German American Chamber of Commerce (GACC West). This event explored the latest autonomous driving trends in Silicon Valley and Germany. Attendees had the opportunity to learn about the latest industry insights and explore the newest pilot projects.

Mineta Summer Transportation Institute 2022 July 25-August 5, 2022 • San José, CA: San José State University (SJSU) conducted its seventeenth annual Mineta Summer Transportation Institute (MSTI) during July-August 2022. MSTI was offered as a 3-week, Monday through Friday, 15-day non-residential program for high school students (9th through 12th grades) on the campus of SJSU. The primary goal of the program was to inform and inspire students to think critically about their futures and their potential for careers in transportation. A secondary goal of the program was to inspire the students to attend a college or university after high school. The

program was comprised of three main components: a college-level course in environmental studies, with emphasis on transportation; (2) field trips; and (3) guest speakers. MSTI was designed to be both academically challenging and fun. The participants had the opportunity to earn three units of college credit at no cost to the student through SJSU in an introductory environmental studies class with a STEM and transportation emphasis. Overall, we are happy to note a **100% satisfaction level with the program among students**. In addition, a survey of participants found that the program, which included eight field trips and, at least, 35 guest speakers, helped them better understand the field of transportation and encouraged them to consider a transportation career. Program changes were made to refine and improve upon MSTIs from previous years by combining elements from previous successes and adding new activities. This year, new community partnerships include the California High-Speed Rail Authority, the Port of Oakland, and the US Coast Guard.



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Rotary's Environmental Summit on Green Transportation & Clean Energy September 10, 2022

- San José, CA and Online: Rotarians, community members, and industry experts in-person attended the Summit for new insights on green transportation and clean energy. Attendees participated in presentations, discussions and demonstrations regarding present and future green transportation and alternate fuel solutions to create healthier, more sustainable communities, and mitigate the climate crisis from the perspective of policy, technology, practice, and equity. MTI was a proud co-sponsor of this event.

Beyond Crypto: Blockchain for Urban Development September 15, 2022 • [Online](#): Nonprofits in Oakland are planting trees to help with carbon sequestration to address climate change with the help of blockchain technology—a system in which a record of transactions are maintained across several computers linked in a peer-to-peer network. Blockchain provides an effective mechanism to codify process steps, enables any qualified individual or entity to easily participate in the delivery of those services, removes the need for single entity contracts, and also effectively tracks execution of those services. The process of selecting trees, getting permits to plant those trees in the right spot, planting the trees, and verification of proper planting all happen on the blockchain, and because activity is broken down and managed at discrete transaction level, anyone can participate in the effort as long as they follow the rules set out in the blockchain. This webinar discussed the specifications for using blockchain and distributed organizations to enable decentralized delivery and finance of urban infrastructure and the potentials of blockchain to empower everyone to improve transportation systems and their communities. Webinar also included Q&A with the project authors.

Student Scholarships

Each year, MTI hosts an annual awards banquet and convocation celebration to recognize students graduating with their Master of Science in Transportation Management (MSTM) degree. This celebration also serves as a fundraising opportunity whereby MTI secures sponsorships that support scholarships for MSTM students. During this period of performance, MTI awarded \$27,000 to deserving students.

Plans During the Next Reporting Period to Accomplish the Goals?

No change to the agency-approved application.



2. Participants & Collaborating Organizations

What Organizations Have Been Involved as Partners?

During this period of performance, MCTM universities partnered with the 35 organizations listed below.

1. Organization Name and Location: **Alabama A&M University** (Huntsville, AL)
 - Partner's Contribution to the Project: Fabricated structural components for Formula SAE competition vehicle
 - Project: Navajo Technical University Workforce Development Components
2. Organization Name and Location: **American Public Transit Association (APTA)** (Washington, DC)
 - Partner's Contribution to the Project: In-kind sharing of information
 - Project: Promoting Diversity within the Public Transit Workforce
3. Organization Name and Location: **Association of American Railroads** (Washington, DC)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: International Level Crossing Awareness Day 2022
4. Organization Name and Location: **California Bike Coalition** (Sacramento, CA)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: California Bicycle Summit 2022
5. Organization Name and Location: **California Department of Transportation** (Caltrans-Sacramento, CA and several district offices)
 - Partner's Contribution to the Project: In-kind support providing internal promotion of MSTM program
 - Project: MTI Master of Science in Transportation Management
6. Organization Name and Location: **California High Speed Rail Authority** (Sacramento, CA)
 - Partner's Contribution to the Project: In-kind support of facilities tour and panel of speakers on infrastructure planning and development, as well as career development

- Project: Mineta Summer Transportation Institute 2022
7. Organization Name and Location: **Catalyze SV** (Silicon Valley, CA)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: The Future of Mobility: Innovations to Replace Parking Mandates
 8. Organization Name and Location: **Charlotte Douglas International Airport** (Charlotte, NC)
 - Partner's Contribution to the Project: In-kind support (project-related data)
 - Project: UNCC Research Projects
 9. Organization Name and Location: **City of Charlotte and Charlotte Regional Transportation Planning Organization** (Charlotte, NC)
 - Partner's Contribution to the Project: In-kind support (project-related data)
 - Project: UNCC Research Projects
 10. Organization Name and Location: **City of San José, Department of Transportation** (San José, CA)
 - Partner's Contribution to the Project: In-kind support of facilities tour and panel of speakers on career development
 - Project: Mineta Summer Transportation Institute 2022
 11. Organization Name and Location: **DB E.C.O. North America Inc.** (Sacramento, CA)
 - Partner's Contribution to the Project: 5K Sponsorship of field trip to the California High Speed Rail construction sites in Fresno, CA
 - Project: Mineta Summer Transportation Institute 2022
 12. Organization Name and Location: **District Department of Transportation** (DDOT: Washington, DC)
 - Partner's Contribution to the Project: In-kind support (access to signal timing and other field-related-data; traffic control for the safety of students and field technicians during data collection efforts)
 - Project: Howard University Research Projects
 13. Organization Name and Location: **Federal Railroad Administration** (Washington, DC)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: International Level Crossing Awareness Day 2022
 14. Organization Name and Location: **German American Chamber of Commerce (GACC West)** (San Francisco, CA)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: Transatlantic Autonomous Driving Dialogue – Social Impact & Opportunities

15. Organization Name and Location: **Guadalupe River Park Conservancy** (San José, CA)
 - Partner's Contribution to the Project: In-kind support of guest presentation and class activities
 - Project: [Mineta Summer Transportation Institute 2022](#)
16. Organization Name and Location: **HNTB** (Oakland, CA)
 - Partner's Contribution to the Project: In-kind support of guest presentation and class activities
 - Project: [Mineta Summer Transportation Institute 2022](#)
17. Organization Name and Location: **International Union of Railways (UIC)** (Paris, France)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: [International Level Crossing Awareness Day 2022](#)
18. Organization Name and Location: **Morningbird Foundation**
 - Partner's Contribution to the Project: In-kind sharing of information
 - Project: [Navajo Technical University Workforce Development Components](#)
19. Organization Name and Location: **National Advanced Driving Simulator** (University of Iowa)
 - Partner's Contribution to the Project: In-kind support (maintenance and support for the miniSim simulation software and assistance with AV scenario development)
 - Project: [UNCC Research Projects](#)
20. Organization Name and Location: **North Carolina Department of Transportation** (NCDOT: Raleigh, NC)
 - Partner's Contribution to the Project: In-kind support (project-related data)
 - Project: [UNCC Research Projects](#)
21. Organization Name and Location: **Nuro** (Mountain View, CA)
 - Partner's Contribution to the Project: In-kind support of guest presentation and vehicle demonstration
 - Project: [Mineta Summer Transportation Institute 2022](#)
22. Organization Name and Location: **Operations Lifesaver, Inc.** (Washington, DC)
 - Partner's Contribution to the Project: In-kind support of sharing information
 - Project: [International Level Crossing Awareness Day 2022](#)
23. Organization Name and Location: **Port of Oakland** (Oakland, CA)
 - Partner's Contribution to the Project: In-kind support of facilities tour and panel of speakers on career development
 - Project: [Mineta Summer Transportation Institute 2022](#)

24. Organization Name and Location: **Rotary Club of San José** (San José, CA)
- Partner's Contribution to the Project: In-kind support of sharing information
 - Project: Transatlantic Autonomous Driving Dialogue – Social Impact & Opportunities
25. Organization Name and Location: **San José State University Chicanx/Latinx Student Success Center** (San José, CA)
- Partner's Contribution to the Project: In-kind support of guest presentation and class activities
 - Project: Mineta Summer Transportation Institute 2022
26. Organization Name and Location: **San José State University Department of Urban Planning** (San José, CA)
- Partner's Contribution to the Project: In-kind support
 - Project: SJSU Urban Planning Spring Symposium: Racial Equity in Transportation Planning, Electric Vehicles–Past, Present, & Future, Mineta Summer Transportation Institute 2022
27. Organization Name and Location: **San José State University Department of History** (San José, CA)
- Partner's Contribution to the Project: In-kind support
 - Project: Electric Vehicles–Past, Present, & Future
28. Organization Name and Location: **Santa Clara Valley Transportation Authority (VTA)** (Santa Clara, CA)
- Partner's Contribution to the Project: In-kind support of facilities tour and panel of speakers on career development
 - Project: Mineta Summer Transportation Institute 2022
29. Organization Name and Location: **Silicon Valley Bicycle Coalition (SVBC)** (San José, CA)
- Partner's Contribution to the Project: In-kind support
 - Project: SVBC's Bike Month and Bike to Wherever Days
30. Organization Name and Location: **Spin (Ford Mobility)**
- Partner's Contribution to the Project: Data, software, and in-kind technical support
 - Project: The San José City (SJC) Bikeway Equity Web Map (MTI was one of five awardees for the 2021 Mobility Data for Safer Streets Initiative)
31. Organization Name and Location: **TNL** (San José, CA)
- Partner's Contribution to the Project: In-kind support of guest presentation and class activities
 - Project: Mineta Summer Transportation Institute 2022

32. Organization Name and Location: **TransForm** (Oakland, CA)
- Partner's Contribution to the Project: In-kind support of guest presentation and class activities
 - Project: Mineta Summer Transportation Institute 2022
33. Organization Name and Location: **U.S. Coast Guard** (Coast Guard Island, Alameda, CA)
- Partner's Contribution to the Project: In-kind support of facilities tour and panel of speakers on career development and public safety demonstration
 - Project: Mineta Summer Transportation Institute 2022
34. Organization Name and Location: **Washington Metropolitan Area Transit Authority (WMATA)** (Washington, DC)
- Partner's Contribution to the Project: In-kind technical support, AVL data, and other transit-related data
 - Project: Howard University Research Projects
35. Organization Name and Location: **WTS-SF Bay Area** (San Francisco, CA)
- Partner's Contribution to the Project: In-kind support
 - Project: How to Be Your Own Boss Without Going Broke or Crazy

Have Other Collaborators or Contacts Been Involved?

MTI collaborates with a wide range of departments/programs on campus at SJSU. Additionally, several organizations have participated as experts in MCTM summits, conferences and events.

3. Output

Performance Measures for Research Outputs	2022 ^a	2021	2020	2019	2018
Number of completed research reports, including two-page research briefs <i>Target goal: 12 reports, including research briefs, <u>annually</u></i>	9	15	19	16	8
Number of research presentations at professional meetings and conferences <i>Target goal: 35 presentations <u>annually</u></i>	38	79	117	107	53

Number of downloads of research reports as tracked through Google Analytics (GA) and ScholarWorks (SW) annually (see Figure 1 below for geographic distribution)	13,283 (GA)	17,939 (GA)	14,248 (GA)	15,380 (GA)	13,597 (GA)
	11,433 (SW)	18,307 (SW)	12,955 (SW)	8,782 (SW)	6,198 (SW)
<i>Target goal: 3,000 downloads annually</i>					
^a Number reported through September 30, 2022					

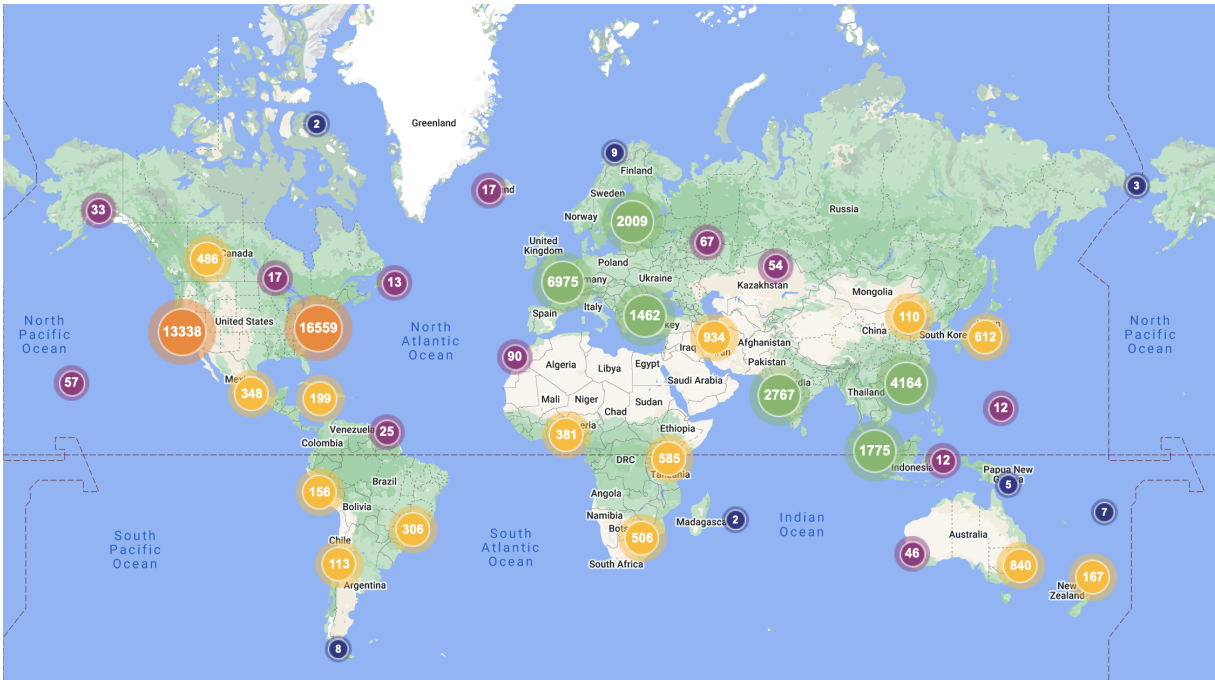


Figure 1 Distribution of MTI Report Readers via ScholarWorks, January 1, 2018-September 30, 2022 [57,675 downloads from 3,434 Institutions in 164 countries]

Published Research Reports

During this period of performance, six research reports featuring the results of MTI-funded research, were published on the MCTM website. All reports are peer-reviewed prior to publication.

1. Hartle, J. C., Elrahman, O.A, Wang, C. & Rodriguez, D. (2022, June). [Assessing Public Health Benefits of Replacing Freight Trucks with Cargo Cycles in Last Leg Delivery Trips in Urban Centers.](#)
2. Arhin, S., Manandhar, B., Obike, K. & Anderson, M. (2022, June). [Impact of Dedicated Bus Lanes on Intersection Operations and Travel Time Model Development.](#)
3. Gajera, H., Pulugurtha, S.S., & Mathew, S. (2022, June). [Influence of Level 1 and Level 2 Automated Vehicles on Fatal Crashes and Fatal Crash Occurrence.](#)

4. Belcher, S., Belcher, T., Seckman, K., Thomas, B. & Yaqub, H. (2022, July). [Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges.](#)
5. Shaheen, S., Martin, E., Cohen, A., Broader, J. & Davis, R. (2022, July). [Managing the Curb: Understanding the Impacts of On-Demand Mobility on Public Transit, Micromobility, and Pedestrians.](#)
6. Mohebbi, M., Raghuram, S., & Zandiatashbar A. (2022, August). [Pathway to Promote Diversity within Public Transit Workforce.](#)

Publications, Conference Papers, and Presentations

During this period of performance, 38 academic and professional presentations/briefing featuring MCTM-federal or match funded research and researchers. Two additional presentations occurred in a prior reporting period but had not been included in that report. A selection follows:

Academic Presentations				
	Presentation Title	Audience/Conference	Location	Date
1	* Critical Issues for MPA/MPP Students on Managing in a Crisis Environment: Lessons from the Field	NASPAA Conference	Online	10/28/21
2	* Spatio-Temporal Analysis of the Roadside Transportation Related Air Quality (STARTRAQ) and Neighborhood Characterization	4th 2022 International Teleconference / Horario Teleconferencia Internacional	Online	3/15/22
3	Analysis of Freight Movements in the San Joaquin Valley	Central California Research Symposium	Fresno	04/01/22
4	Ensuring that the Transit Industry and Their Vendors are Aligned to Face the Increasing Cybersecurity Challenges	American Association of Transportation and Highway Officials Webinar	Online	04/19/22
5	Cybersecurity Threats are Real. What You Can Do Now to Manage Your Risk.	Council on Public Transportation and Multi-State Transit Technical Assistance Program Webinar	Online	04/19/22
6	Achieving Excellence for California's Freight System	Commercial Ports Luncheon	Long Beach, CA	04/26/22
7	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	APTA Mobility Conference	Columbus OH	05/03/22

8	Protecting Surface Transportation and Other Soft Targets	Advanced Development for Security Applications Workshop	Boston, MA	05/03/22
9	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	CTAA Annual Meeting and Expo	Louisville, KE	05/12/22
10	California Rail Plan: A Model for Integrating Rail Service with Other Transportation Modalities	Planning Horizons, Caltrans	Online	05/18/22
11	Effect of Airport Expansion and Infrastructure Projects on Road Link-Level Travel Time Reliability in its Vicinity.	ASCE International Conference on Transportation & Development	Seattle, WA	05/31/22
12	Do Telecommuters Make Fewer Trips? An Analysis of Telecommuting Travel Behavior in Urban and Rural Communities in the USA	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
13	What Causes Traffic Congestion? An Exploratory Analysis of Possible Main Attributes Contributing to Urban Traffic Congestion in California	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
14	An Exploratory Comparison of International Travel Behavior: Travel Activity, Travel Time, and Travel Distance in GB, NZ, and USA	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
15	A Comparison of the Effects of Automated and Warning Systems on Driver Behavior	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
16	Examining the Association Between Bus Transit Reliability and Ridership	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
17	Effect of Airport Expansion and Infrastructure Projects on Road Link-Level Travel Time Reliability in its Vicinity	ASCE International Conference on Transportation & Development	Seattle, WA	06/01/22
18	Application of Immobilized Bacteria on Food Waste Biochar as Sustainable	ASM Microbe 2022	Washington, DC.	06/10/22

	Solutions for Construction Concrete			
19	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	Mobility as a Service in the U.S.	San Francisco, CA	06/22/22
20	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	Transport Security Congress	Miami, FL	06/22/22
21	Exploring Long-Term Performance in Design-Build Best-Value Evaluation Criteria	International Conference on Construction Engineering and Project Management Conference	Online	06/23/22
22	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	Washington State Transit Association and State Public Transportation Partnership Meeting, Facing the Threat of Cybersecurity (both moderator and speaker)	Spokane, Washington	08/28/22
23	Spatio-Temporal Analysis of the Roadside Transportation Related Air Quality (STARTRAQ) in San Joaquin Valley, California	The Clean Air International Forum 2022	Gyeonggi-Do, South Korea**	09/07/22
24	Planning for Advanced Air Mobility	ITS World Congress	Los Angeles, CA	09/18/22
25	Aligning the Transit Industry and Their Vendors in the Face of Increasing Cyber Risk: Recommendations for Identifying and Addressing Cybersecurity Challenges	ITS World Congress, Managing Operation Security in Public Transit	Los Angeles, CA	09/21/22
26	Impact of ZEVs on State Transportation Revenue	Briefing for California Senate and Assembly Transportation Committees	Online	09/30/22

* Occurred during a previous reporting period but had not been reported.

** USDOT funds were not used to support international travel.

Published Conference Proceedings

During this period of performance, 3 conference proceedings were published. One additional article was published in a prior period, but not reported.

1. Jacuinde-Alvarez, D., Dols, J. & Tayeb, S. "A Real-Time Intelligent Intra-vehicular Temperature Control Framework." Proceedings of SAI Intelligent Systems Conference, November 2021.
2. Gouribhatla, R. & Pulugurtha, S.S. (2022). "A Comparison of the Effects of Automated and Warning Systems on Driver Behavior." ASCE International Conference on Transportation & Development (ICTD 2022), Seattle, WA, May 31-June 3.
3. Kodupuganti, S. R. & Pulugurtha, S. S. (2022). "Modeling Safety Performance of Urban Roads with Heterogeneous Traffic Conditions." ASCE International Conference on Transportation & Development (ICTD 2022), Seattle, WA, May 31-June 3.
4. McCarthy, P. & Kim, J. "Evaluating a Sustainability Rating System for California Infrastructure Projects." Proceedings of the 2022 International Conference on Construction Engineering and Project Management, University of Nevada Las Vegas, Las Vegas, NV, United States, June 20-23, 2022, pp. 188-195.

Journal Publications

During this period of performance, 9 journal articles were published. An additional 4 articles were published in a prior reporting period but not reported.

1. Dong, H. (2021). "Evaluating the Impacts of Transit-oriented Developments (TODs) on Household Transportation Expenditures in California." *Journal of Transport Geography*, 90, 102946.
2. Kim, J., Dominguez, S., & Diaz, L. (2021). "Economic Evaluation of Route Choice Characteristics for Owner-operator Truck Drivers in Southern California Freeways." *Journal of Transportation Engineering, Part A: Systems*, <https://doi.org/10.1061/JTEPBS.0000585>.
3. Rajib, A., Saadeh, S., Katawal, P., Mobasher, B. & Fini, E. (2021). "Enhancing Biomass Value Chain by Utilizing Biochar as A Free Radical Scavenger to Delay Ultraviolet Aging of Bituminous Composites Used in Outdoor Construction." *Resources, Conservation and Recycling*, Vol. 168, 105302 <https://doi.org/10.1016/j.resconrec.2020.105302>.
4. Saadeh, S., Al-Zubi, Y., Katawal, P., Zaatarah, B. & Fini, E. (2021), "Biochar Effects on the Performance of Conventional and Rubberized HMA." *Journal of Road Materials and Pavement Design*, pages 1-17, <https://doi.org/10.1080/14680629.2021.2012238>.
5. Basavaraj, D. & Tayeb, S. (2022). "Towards a Lightweight Intrusion Detection Framework for In-Vehicle Networks." *Journal of Sensor and Actuator Networks*, 11(1), 6.
6. Braham, A., Cheng, D., Smith, K., Myers, L. & Peshkin, D. (May-June 2022), "Pavement Preservation, Maintenance, and Rehabilitation." *TR News*, No. 339. <https://onlinepubs.trb.org/onlinepubs/trnews/trnews339toc.pdf>.
7. Gouribhatla, R. & Pulugurtha, S. S. (2022). "Factors Influencing Crash Involvement During Early Years of Owning a New Vehicle." *International Association of Traffic and Safety Sciences (IATSS) Research Journal*, 46(2), <https://doi.org/10.1016/j.iatssr.2022.02.003>.
8. Gouribhatla, R. & Pulugurtha, S.S. (2022). "Vehicles, Advanced Features, Driver Behavior, and Safety: A Systematic Review of the Literature." *Journal of Transportation Technologies*, 12(3), 10.4236/jtts.2022.123026.

9. Kodupuganti, S. R. & Pulugurtha, S.S. (2022). "Are Facilities to Support Alternative Modes Effective in Reducing Congestion?: Modeling the Effect of Heterogeneous Traffic Conditions on Vehicle Delay at Intersections." *Multimodal Transportation Journal*, (in press).
10. Pulugurtha, S. S. & Jain, R. N. (2022). "Passenger Car Equivalent Travel Time of a Truck." *Multimodal Transportation Journal*, 1(3), 100031, <https://doi.org/10.1016/j.multra.2022.100031>.
11. Tavakoli, A., Lai, N., Balali, V., & Heydarian, A. (2022). "How Are Drivers' Stress Levels and Emotions Associated with the Driving Context? A Naturalistic Study." *Journal of Accident Analysis and Prevention*, 9, 23956-23978.
12. Yagci Sokat, K. (2022). "Understanding the Role of Transportation in Combating Human Trafficking in California." *Transportation Research Interdisciplinary Perspectives*, 15, 100673.
13. Yang, Y. & Yeh, H., (2022), "A Robust Model Predictive Control-Based Scheduling Approach for Electric Vehicle Charging With Photovoltaic Systems," *IEEE System Journal*, doi: 10.1109/JSYST.2022.3183626.

Books or other non-periodical, one-time publications

MCTM documents 6 publications in this category during this period of performance.

1. Agrawal, A.W. & Nixon, H. (April 2022). [What Do Americans Think about Federal Tax Options to Support Transportation? Topline Results from Year Thirteen of a National Survey](#) (MTI Perspective).
2. German, L. (April 2022). [The Allocation of Costs and Control: A Case Study of PRIIA Section 209 and Amtrak State-Supported Routes](#) (MTI Perspective)
3. Alexander, S. (May 2022). [Robots Among Us: An Analysis of Community Perspectives and Reactions toward Sidewalk Delivery Robots in the City of San José](#) (MTI Perspective).
4. Schank, J. & Huang, E. (June 2022). [Free Transit: It Depends on How](#) (MTI Perspective).
5. Jenkins, B.M. & Butterworth, B.R. (August 2022). [Changing Patterns of Violence Pose New Challenges to Public Surface Transportation in the United States](#) (MTI Security Perspective).
6. Belcher, S. & Grimes, J. (September 2022). "How Transit Agencies Can Leverage Vendors to Improve Their Cyber Risk Exposure." *Metro Magazine*. <https://www.metro-magazine.com/10181789/how-transit-can-leverage-their-vendors-to-improve-their-cyber-risk-exposure>.

Website(s) or other Internet site(s)

- An MCTM website is maintained at <http://transweb.sjsu.edu/mctm/index.html>
- An MCTM presence has been established, and continues to grow, in conjunction with the existing MTI Facebook page - <https://www.facebook.com/MinetaTransportation/> and Twitter feed - [@MinetaTrans](https://twitter.com)

Technologies or Techniques: Nothing to report

Inventions, Patent Applications, and/or Licenses: Nothing to report

Other Products

- Dataset with [survey data focused on curbside management](#).
- Dataset on [intersection operations and vehicle turning movements](#) in Washington, D.C.

4. Outcomes

- Performance Measures for Research Outcomes

Performance Measures for Research Outcomes	2022 ^a	2021	2020
Number of technology transfer events (workshops, seminars, webinars, etc.) <i>Target goal: 12 annually</i>	24	29	29
Number of technology transfer event participants <i>Target goal: 500 participants annually</i>	6,197	2,668	2,382

Performance Measures for Research Outcomes	Current Period	Previous Period
Number of organizations participating in consortium activities <i>Target goal: 10 during each semi-annual performance reporting period</i>	35	18

5. Impacts

- Performance Measures for Research Impacts

Performance Measures for Research Impacts	2022 ^a	2021	2020
Number of instances of research influencing policy or practice <i>Target goal: 3 annually</i>	5	8	6
Evidence of impact and exposure based on number of media articles covering MCTM activities <i>Target goal: 50 annually</i>	1280	399	334
Evidence of impact on transportation workforce development based on number trained and/or educated individuals (K-12 level) <i>Target goal: 50 K-12 students annually</i>	132	1162	1,063
Evidence of impact on transportation workforce development based on number trained and/or educated individuals (college level/working professionals) <i>Target goal: 75 college students and/or working professionals annually</i>	6,065	1,542	1,417

Percent of surveyed participants attending MCTM technology transfer events and training programs reporting that MCTM research and training is useful, effective, and impactful <i>Target goal: 60% with an average survey score of more than 4 out of 5 indicating that the event was useful, effective, and impactful</i>	76%	76%	90%
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MCTM documents the following instances of research influencing policy or practice during the current period of performance (April 1, 2022 – September 33, 2022):

1. MTI’s Dr. Asha W. Agrawal was asked to brief California’s Legislative Analyst’s Office on how zero-emission vehicle adoption will impact transportation revenues as part of their effort to develop policy around transportation fees at the state level. [June 2022]
2. Researchers at Volpe, the National Transportation Systems Center, reached out to MTI to note that their work to assist the Federal Transit Administration plan for addressing cybersecurity will include recommendations from MTI’s [research on cybersecurity](#). [July 2022]
3. Staff with San José’s Office of the Mayor contacted MTI about research published on [increasing public transit access](#) indicating that the work “...could make a big difference...about the potential for microtransit in San José.” [July 2022]

What is the Impact on the Effectiveness of the Transportation System? Nothing to report

What is the 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

What is the Impact on the Body of Scientific Knowledge? Collectively MCTM partners are impacting the body of scientific knowledge through the publication of reports, journal articles, conference presentations, technical advising, and other activities. As visually depicted in Figure 1, from January 1, 2018 to September 30, 2022 MCTM reports were downloaded 57,675 downloads from 3,434 Institutions in 164 countries from the SJSU ScholarWorks archive and there were 74,447 downloads from the MTI website.

What is the Impact on Transportation Workforce Development?

- MTI’s lesson plans for elementary school children on climate change, transportation, and high speed rail have been used by the California High Speed Rail Authority as part of their outreach efforts to education partners statewide.
- MTI Research Associate Dr. Anurag Pande received the Distinguished Scholarship Award at California Polytechnic University San Luis Obispo. Dr. Pande has conducted research in partnership with MTI since 2009 and has educated hundreds of engineers, many of whom have gone on to careers in the transportation field.
- MCTM partner Navajo Technical University participated in the 2022 Navajo Nation Fair where students in NTU’s electrical engineering and welding programs were able to demonstrate their skills through projects created in the classroom.
- MCTM partner Dr. Stephen Arhin received promotion to full Professor at Howard University. Many graduates from the civil engineering program at Howard have had the

opportunity to train under Dr. Arhin's leadership through the Howard University Transportation Research Center where they gain research experience in data collection and data management skills, data analysis and report writing skills.

- MCTM partner University of North Carolina at Charlotte hosted a field trip for high school students participating in North Carolina A&T university's Summer Transportation Institute.

Additional Successes of Note

MCTM is regularly contacted by academics, practitioners, elected officials, government entities, transit agencies and others to provide information, insight, and briefings on high priority transportation initiatives. The following are of note but do not fit neatly into any of the prior categories, as such this new section has been implemented.

- Metro Magazine contacted MTI about research published in March 2020 on [crime and sexual harassment on public transportation](#). The magazine described the work as "...still one of our best read stories."
- Former California Secretary of Transportation David S. Kim contacted MTI noting the importance of the Institute's research on measuring public attitudes towards road user charges which he included in a speech given at the RUC America Forum in 2022.
- MTI's Deputy Director of the Allied Telesis National Transportation Security Center is frequently asked to consult and provide briefings focused on emergency management. During the current period of performance, several activities are of note:
 - Consulted on the design of the 2023 Simulation Exercise on wildland fire for the Network of Schools of Public Policy, Affairs, and Administration (NASPAA).
 - Consulted with faculty from the University of Sendai in Japan regarding housing recovery after disasters.
 - Consulted with faculty from Linfield University on the functions of the policy group in an Emergency Operations Center.
 - Served as an invited guest speaker for FEMA on the prevention and response to a suicide bombing
 - Appointed Communications Chair for the Section on Emergency and Crisis Management for the American Society for Public Administration.

1. Changes/Problems

- Changes in Approach and Reasons for Change: Nothing to report
- Actual/Anticipated Problems or Delays Encountered: Nothing to report
- Changes that Have a Significant Impact on Expenditures: Nothing to report
- Significant Changes in Use or Care of Human Subjects, Vertebrate Animals, and/or Biohazards: Nothing to report
- Change of Primary Performance Site Location from that Originally Proposed: Nothing to report