



Semi-Annual Progress Report  
Mineta Consortium for Transportation Mobility  
April 1, 2018-September 30, 2019



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 I University Transportation Center
- **Center Director:**  
Karen E. Philbrick, PhD  
MCTM Executive Director  
[karen.philbrick@sjsu.edu](mailto:karen.philbrick@sjsu.edu) and 408.924.7562
- **Submission Date:** October 31, 2019
- **DUNS and EIN Numbers:** 0568207150000 and 94-6017638
- **Recipient Organization:**  
San Jose State University Research Foundation  
210 N. Fourth Street, 4<sup>th</sup> Floor, San Jose, CA 95112
- **Recipient Identifying Number or Account Number:** Not Applicable
- **Project/Grant Period:** November 30, 2016 – September 30, 2022
- **Reporting Period End Date:** September 30, 2019
- **Report Term or Frequency:** Semi-annual
- **Signature of Submitting Official:** *Karen Philbrick*

## ■ I. Accomplishments

### A. Major Goals and Objectives of the Program

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 and make our nation's transportation system safe, efficient, accessible, and convenient for all.

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; San José State University; and the University of North Carolina Charlotte.

### B. Accomplishments Under These Goals

#### Research Program

##### **Emerging Leaders Seed Grant Program**

The Emerging Leader Seed Grant Program engages and develops leadership capacity among junior faculty at San José State University. 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. MTI research has involved faculty from five of the seven academic Colleges at SJSU. Within the Emerging Leader Seed grant program, we have engaged with faculty from the College of Business, College of Engineering, College of Health and Human Sciences, and College of Social Sciences. Within our larger research program, we have engaged with all of these Colleges, plus the College of Science. Transportation truly is a multidisciplinary field and MCTM's research portfolio demonstrates this.

To date, MTI has awarded seven seed grants. An emphasis has been made on engaging with faculty outside some of the traditional transportation disciplines (e.g. civil engineering, urban planning, etc.) to broaden MCTM's research portfolio and accomplish our stated goal of using a multidisciplinary approach to address the complex nature of today's mobility challenges.

Four projects are complete and the white papers have been published to the MCTM website:

1. [Integrating Smart Cars in Smart Cities: A Particle Swarm Problem](#)  
Faculty Member: Francesca Favaro, PhD, Assistant Professor, Department of Aviation and Technology
2. [Improving Demand Modeling in California's Rail Transit System](#)  
Faculty Member: Rui Liu, PhD, Assistant Professor, Department of Economics
3. [Review of Literature and Curricula in Smart Supply Chain & Transportation](#)  
Faculty Members: Seung Jun Lee, PhD, and Tianqin (Kelly) Shi, PhD, Assistant Professors, Department of Global Innovation and Leadership

4. [Older Adults' Perceptions Regarding Transportation Services in San Jose, CA: Access, Barriers, and Innovations](#)

Faculty Member: Deborah Bolding, Ph.D., OTR/L, FAOTA, Assistant Professor, Department of Occupational Therapy

Three additional projects are underway:

1. [Wireless Power Charging of Electric Vehicles Using Resonant Converters](#)

Faculty Member: Mohamed Badawy, Ph.D., Assistant Professor, Department of Electrical Engineering

2. [Freeways and Farms: Prusch & Taylor Street Urban Farms Study](#)

Faculty Member: Joshua Baur, Ph.D., Assistant Professor, Department of Health Science and Recreation

3. [Transit Insecurity: Defining Metrics and Consequences](#)

Faculty Member: Dan Nathan-Roberts, Ph.D., Assistant Professor, Department of Industrial & Systems Engineering

### **Ongoing Research**

Since January 6, 2017, MCTM has funded 62 research projects. Of these, 34 projects were competitively selected or underwent *peer review* prior to selection, 7 were emerging leader seed grants, and 21 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 competitively-selected to lead the California State University Transportation Consortium, funded at \$2 million annually. In addition, MTI has received grants from the Department of Homeland Security to maintain a database and conduct research of terrorist and serious criminal attacks against public surface transportation as well as funding from the Metropolitan Transportation Commission and Bay Area Rapid Transit District to support our successful Mineta Transportation Leadership Academy for mid-career professionals.

### **C. 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 launched a new #MTIResearchSnaps webinar program during this reporting period. 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 moderated Q&A for the last 15-minutes. A recording and accessible transcript for the inaugural event, [“Will CA’s Green Goal for ZEVs Cut Revenue Along with](#)

[Greenhouse Gas Emissions.](#)” is available online. MTI plans to host #MTIResearchSnaps webinars four to six times annually.

### **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: <http://transweb.sjsu.edu/mctm/index.html>. This website is updated regularly with event information, media coverage, and research activities.

### **Media Coverage**

During the reporting period, there were 303 stories featured in print, radio, and television media, bringing the total number of MCTM stories to 1023 since inception. Links to many of these articles are featured on the [Consortium website](#) and below is a snapshot of activity:

- USA today (April 8, 2019): [Why a seemingly unplanned terrorist attack at National Harbor is the hardest kind to prevent](#)
- Politico (April 24, 2018): [High-stakes infrastructure sit-down for next week](#)
- Transportation Today News (April 29, 2019): [Institute examines effectiveness of safe school routes](#)
- Hoover Institution (May 1, 2019): [The road \(and rail and reservoirs\) ahead: Can California be innovative-- and sensible?](#)
- The Washington Post (June 10, 2019): [Metro has a new team running its rail operations. There's something unusual about them.](#)
- Planetizen (June 10, 2019): [Automobile dependency in action](#)
- Fleet Owner (July 2, 2019): [Women are changing the transportation industry](#)
- Streetsblog (July 22, 2019): [The effect of electric vehicles on California transportation funding](#)
- Planetizen (September 16, 2019): [Consumer group accuses states of 'Punishing' electric vehicle drivers](#)
- ABC7 News (September 20, 2019): [Raging Grannies, students step up for climate strike in South Bay](#)
- The Mercury News (September 28, 2019): [As deaths rise on Bay Area train tracks, big solutions are a long way off](#)

### **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 19 technology transfer activities that reached 3,813 attendees; a selection follows:

### **ABC's of Bike Safety Maintenance**



April 2, 2019 • San José, CA: MTI partnered with Community Cycles of California, a non-profit social enterprise serving low income families, homeless individuals, veterans and other disadvantaged populations, to provide a hands-on bike repair and maintenance workshop for students at St. Leo the Great Elementary School

### **San Jose Unified School District College and Career Fair**

April 16, 2019 • San José, CA: MTI hosted an information booth at Branham High School where students from the district were able to learn about a variety of career paths available in the transportation industry as well as to learn more about the [Mineta Summer Transportation Institute](#).

### **Mobility Leader Series: “How Your Apps Are Opening You Up to Cyberattacks” featuring Ash Padwal**

April 25, 2019 • San José, CA: As part of MTI's ongoing Mobility Leader Series, MTI hosted Ash Padwal, from Allied Telesis, to discuss how new mobility apps and other transit technologies can subject users to cyberattacks. Padwal also discussed the need for more computer scientists and engineers in the transportation workforce.

### **“Personal Transportation Devices: Present and Future” Symposium**

April 27, 2019 • San José, CA: In partnership with the Urban Planning Coalition, a student organization affiliated with San Jose State's Urban and Regional Planning Department, the symposium presented on several aspects of PTD integration into cities, college campuses, and downtown v. suburb areas.

### **Visiting Scholar Series presents: Dr. Sandra Rosenbloom in “Changing Spatial Patterns of Aging: Mobility and Access Implications”**

May 16, 2019 • San José, CA: MTI hosted Dr. Sandra Rosenbloom, from the University of Texas at Austin, as part of our ongoing Visiting Scholar Series. Dr. Rosenbloom discussed her recent research on the transportation needs of the senior community. MTI collaborated with San Jose State's Department of Health Science and Recreation on this event.

### **ICTPA Annual Conference “Innovation in Transportation”**

May 16, 2019 • San José, CA: MTI collaborated with the International Chinese Transportation Professionals Association to host their annual conference at San Jose State University to discuss the latest technical advancements in transportation.

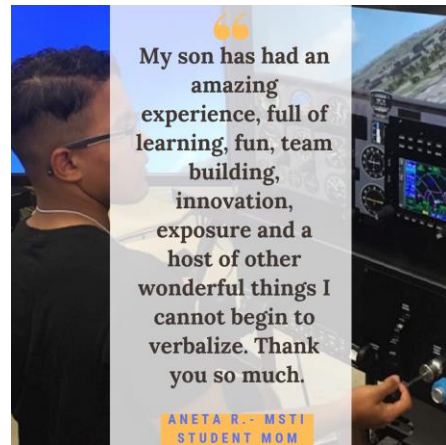


## Garrett Morgan Sustainable Transportation Competition 2019

May 17, 2019 • Nationwide: MTI held its annual sustainable transportation competition for middle school students. Eight schools participated in a nationwide video-conference where teams from California, Maryland, and New Mexico gathered to present the results of their sustainable transportation project. This competition, which honors the trailblazing African American inventor, Garrett Augustus Morgan, brings mentors and students together to work for three months on identifying a problem and developing a solution. This year [From the Heart Christian School](#), [Juan Crespi Middle School](#), [Toddy Thomas Middle School](#), [MacArthur Fundamental Intermediate School](#), [California Montessori Project- Capitol Campus](#), [Sutter Middle School](#), [Hazelton Middle School](#), and [Crownpoint Middle School](#) schools registered to compete. A formal presentation and welcome was provided by Diana Furchtgott-Roth the Deputy Assistant Secretary for Research and Technology (OST-R). This year's winners demonstrated that the future is in good hands with California Montessori taking first place and MacArthur Fundamental Intermediate and Sutter Middle School took 2nd and 3rd respectively. A complete [video](#) of the competition is available and the California Department of Transportation (Caltrans) created a **News Flash** [commercial](#) highlighting the program. Student innovations included a drone that transports commuters and an app that makes it easy for parents to take carpooling to the next level.

## Summer Transportation Institute

June 10-28, 2019 • San José, CA: MTI conducted its sixteenth annual Summer Transportation Institute (STI) during June 2019. STI was offered as a free 3-week, Monday through Friday, 15-day non-residential program for high school students on the campus of San José State University. MTI partnered with the East Side Union High School District (ESUHSD) for a fifth non-consecutive year as well as San Jose Unified School District (SJUHSD). The primary goal of the program was to inform and inspire students to critically think about their futures and their potential for careers in transportation. The program comprised three main components: (1) college-level course in environmental studies, with an emphasis on transportation; (2) field trips; (3) guest speakers. A secondary goal of the program was to inspire the students to attend a college or university after high school. Most of the students in the program are from schools with a high socioeconomically disadvantaged population, lacking college role models; thus, having a need to reinforce attending college. By meeting on the SJSU campus the students became not only familiar with the campus but could literally see themselves and their peers attending college. The students experienced a total of 11 field trips over the course of the 15 days of the program where they were exposed to a wide range of careers in transportation. In-kind and financial support from key community organizations and businesses (partners detailed in section 2 – Participants and Collaborating Organization) totaled over \$22,000. A select group of twelve attendees were then selected to travel to Pensacola Florida to spend six nights aboard the world's largest simulated aircraft carrier to learn about careers in aviation. A Top Gun style graduation with certificates delivered by a retired General completed this innovative experience!



## **The Intersection between Transportation and Housing: Building Blocks to the Future**

June 21, 2019 • San Francisco, CA: In partnership with the Commonwealth Club, MTI held its annual transportation summit. Experts discussed how agency-owned land in and around transportation hubs could be incentivized to create transit-oriented development projects, which place high-density housing above or adjacent to transportation. The event recording was [broadcast nationwide](#) on more than 230 NPR stations.



## **TechCrunch Session: Mobility 2019**

July 10, 2019 • San José, CA: MTI partnered with TechCrunch to bring a day of programming with the best founders, investors, and technologists intent on inventing a more sustainable and mobile future.

## **Women's Leadership Policy Summit**

August 17, 2019 • San José, CA: MTI partnered with the County of Santa Clara to deliver a summit that educated, empowered, and engaged young women in leadership and policy. The summit, attended by over 600 participants, included panels on housing and transportation, social equity and advocacy, women's initiatives, leadership, and immigration.

## **6th International Conference on Women's Issues in Transportation "Insights, Inclusion, and Impact"**

September 10-13, 2019 • Irvine, CA: MTI co-sponsored TRB's 6<sup>th</sup> International Conference on Women's Issues in Transportation. This sold-out conference focused on all aspects of women's issues and was guided by an evaluative framework of three lenses: insights, inclusion, and impact. MTI Research Associate Dr. Asha W. Agrawal served as Co-Chair for the conference, while Dr. Hilary Nixon, MTI's Deputy Executive Director served on the steering committee as Program Co-Chair.

## **Latinos in Transit Leadership Summit**

September 14, 2019 • Irvine, CA: MTI partnered with Latinos in Transit and welcomed the nation's top Latina transit leaders to discuss career advancement for mid-level.

## **Research Snaps Webinar: Will CA's Green Goal for ZEVs Cut Revenue with Greenhouse Gas Emissions?**

September 19, 2019 • San José, CA: MTI delivered a 30 minute webinar that discussed California's goal of reaching 5 million zero-emission vehicles (ZEVs) by 2030 and how that would impact the revenue California collects from taxes imposed by Senate Bill 1 (SBI). [View webinar](#) (transcription available).



## **Sunday Friends' 2nd Annual STEAM Fair**

September 22, 2019 • San José, CA: MTI partnered with Lowell Elementary and the non-profit group Sunday Friends to deliver a science, technology, engineering, art, and math (STEAM) fair to elementary kids. MTI led students in hands on activities that included taking a transportation safety pledge and building a bridge model.

## **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 \$34,000 to deserving students.

### **D. 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 following:

1. Organization Name and Location: **Alabama A&M University** (Huntsville, AL)
  - Partner's Contribution to the Project: In-kind support (consultation on K-12 workforce development, design files and fabrication facilities)
  - Project: 2019 Summer Transportation Program & 2020 Formula SAE Competition
2. Organization Name and Location: **American Public Transportation Association** (APTA-Washington, DC)
  - Partner's Contribution to the Project: In-kind support (meeting space/host and program sponsor)
  - Project/Program: Garrett Morgan Sustainable Transportation Competition & MTI/MCTM Board of Trustees meeting
3. Organization Name and Location: **California Department of Transportation** (Caltrans-Sacramento, CA and several district offices)
  - Partner's Contribution to the Project: In-kind support (live-streaming broadcast network, mentor for Garrett Morgan Sustainable Transportation Competition, facilities for MSTM classes and Garrett Morgan competition)
  - Project: MTI Masters of Science in Transportation Management & Garrett Morgan Sustainable Transportation Competition
4. Organization Name and Location: **City of Charlotte** (Charlotte, NC)
  - Partner's Contribution to the Project: In-kind support (data pertaining to all major new developments and road construction projects in Charlotte)

- Project: Modeling Operational Performance on Urban Roads with Heterogeneous Traffic Conditions; and How Effective are Toll Roads in Improving Operational Performance?
5. Organization Name and Location: **City of San Jose Department of Parks, Recreation and Neighborhood Services** (San Jose, CA)
    - Partner's Contribution to the Project: In-kind support (resources and materials to conduct evaluation of open streets event)
    - Project: An Evaluation of VivaCalleSJ 2018
  6. Organization Name and Location: **City of San Jose Department of Transportation** (San Jose, CA)
    - Partner's Contribution to the Project: In-kind support (facilities tour and panel of speakers on career development)
    - Project: National Summer Transportation Institute
  7. Organization Name and Location: **Community Cycles of California (CCC)** (San Jose, CA)
    - Partner's Contribution to the Project: In-kind support providing materials and toolkits for hands-on bike repair workshops
    - Project: ABC's of Bike Safety Maintenance
  8. Organization Name and Location: **CommUniverCity** (San Jose, CA)
    - Partner's Contribution to the Project: Financial and in-kind support (provided research funding and logistical support)
    - Project: An Evaluation of VivaCalleSJ 2018
  9. Organization Name and Location: **County of Santa Clara** (Santa Clara, CA)
    - Partner's Contribution to the Project: In-kind support providing logistics, speakers, giveaways, and meals
    - Project: Women's Leadership and Policy Summit 2019
  10. Organization Name and Location: **District Department of Transportation (DDOT)**: Washington, DC)
    - Partner's Contribution to the Project: In-kind support (access to signal timing data)
    - Project: Predicting Acceptable Wait Times for Patrons at Transit Bus Stops by Time of Day
  11. Organization Name and Location: **Google** (Sunnyvale, CA)
    - Partner's Contribution to the Project: In-kind support providing facilities tour and panel of speakers on career development
    - Program: National Summer Transportation Institute
  12. Organization Name and Location: **Henry Cowell Redwoods State Park** (Felton, CA)

- Partner's Contribution to the Project: In-kind support providing facilities tour and guest speaker on career development and environmental history
  - Program: National Summer Transportation Institute
13. Organization Name and Location: **History San Jose Trolley Barn** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing facilities tour and panel of speakers on history of rail transit
  - Program: National Summer Transportation Institute
14. Organization Name and Location: **International Chinese Transportation Professionals Association (ICTPA)** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing logistics, speakers, giveaways, and meals
  - Project: ICTPA 32nd Annual Conference: Innovation in Transportation
15. Organization Name and Location: **Navajo Division of Transportation** (Navajo DOT: Mentmore, NM)
- Partner's Contribution to the Project: In-kind support
  - Project: Developing a Certificate in Transportation Careers
16. Organization Name and Location: **North Carolina Department of Transportation** (NCDOT: Raleigh, NC)
- Partner's Contribution to the Project: In-kind support (data)
  - Project: Modeling Operational Performance on Urban Roads with Heterogeneous Traffic Conditions; and How Effective are Toll Roads in Improving Operational Performance?
17. Organization Name and Location: **Prospect Silicon Valley** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing facilities tour and panel of speakers on career development and event collaborator
  - Program: National Summer Transportation Institute & Prospect Silicon Valley Innovation and Impact Symposium 2019
18. Organization Name and Location: **San Jose Mineta International Airport** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing facilities tour and panel of speakers on career development
  - Program: National Summer Transportation Institute
19. Organization Name and Location: **SEMI High Tech University** (Milpitas, CA)
- Partner's Contribution to the Project: In-kind support providing hands-on engineering and technology activities
  - Program: National Summer Transportation Institute
20. Organization Name and Location: **The Tech Interactive Museum** (San Jose, CA)

- Partner's Contribution to the Project: In-kind support providing admission at group rate/ non-profit discount of 16%
  - Program: National Summer Transportation Institute
21. Organization Name and Location: **TechCrunch** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing complimentary tickets for 10 MTI attendees
  - Project: TechCrunch Mobility 2019
22. Organization Name and Location: **Union Pacific Railroad** (Omaha, NE)
- Partner's Contribution to the Project: In-kind support providing education materials for distribution
  - Project: Lowell STEAM Fair
23. Organization Name and Location: **University City Partners** (Charlotte, NC)
- Partner's Contribution to the Project: Collaborator on research project
  - Project: Modeling Operational Performance on Urban Roads with Heterogeneous Traffic Conditions
24. Organization Name and Location: **Valley Transportation Authority (VTA)** (San Jose, CA)
- Partner's Contribution to the Project: In-kind support providing facilities tour and panel of speakers on career development
  - Program: National Summer Transportation Institute
25. Organization Name and Location: **Washington Metropolitan Transit Authority (WMATA)** (Washington, DC)
- Partner's Contribution to the Project: Provided data and expert assistant for research project
  - Program: Predicting Acceptable Wait Times for Patrons at Transit Bus Stops by Time of Day

### **Have Other Collaborators or Contacts Been Involved?**

MTI collaborates with a wide range of departments/programs on campus at SJSU. These include: Lucas College and Graduate School of Business; Lurie College of Education; Davidson College of Engineering; College of Science; and the College of Social Sciences. Additionally, several organizations have participated as experts in MCTM summits, conferences and other events. These include but are not limited to Bay Area Rapid Transit District, Caltrans, Metropolitan Transportation Commission, and the Silicon Valley Leadership Group.

### **3. Outputs**

- Performance Measures for Research Outputs
  - Number of completed research reports, including two-page research briefs.
    - Target goal: 12 reports, including research briefs, annually.

- 10 reports with research briefs published during this period of performance
  - 5 reports with research briefs published during the prior period of performance
  - Exceeded annual goal: 15 total
- Number of research presentations at professional meetings and conferences annually.
  - Target goal: 35 presentations annually.
    - 43 presentations were given in this period of performance
    - 56 presentations were given in the prior period of performance
    - Exceeded annual goal: total of 99 presentations
- Number of views and downloads of research reports as tracked through Google Analytics annually.
  - Target goal: 250 views/downloads monthly.
    - During the period of performance, research reports were downloaded from the Center’s website a total of 7,688 times (approx. 1,281 monthly).
    - During the period of performance, research reports were downloaded from SJSU ScholarWorks archive a total of 4,063 times (approx. 677 monthly).
    - Exceeded monthly goal: total of 1,958 report downloads monthly

### **Published Research Reports**

During this period of performance, ten research reports featuring the results of MTI-funded research, were published on the MCTM website. All reports are peer-reviewed by two academics and a practitioner prior to publication.

1. Agrawal, A.W., and Nixon, H. (2019, June). [What Do Americans Think About Federal Tax Options to Support Transportation? Results from Year Ten of a National Survey.](#)
2. Cordero, E., and Centeno, D. (2019, July). [Evaluating the Effectiveness of a School-Based Intervention on Driving-Related Carbon Emissions Using Real-Time Transportation Data.](#)
3. Douglas, G. et al. (2019, August). [Community Benefits and Lessons for Local Engagement in a California Open Streets Event: A Mixed-Methods Assessment of Viva CalleSJ 2018.](#)
4. Fang, K., Agrawal, A. W., and Hooper, A. (2019, May). [How and Where Should I Ride This Thing? “Rules Of The Road” for Personal Transportation Devices.](#)
5. Favaro, F., et al. (2019, June). [Analysis of Disengagements in Semi-Autonomous Vehicles: Drivers’ Takeover Performance and Operational Implications.](#)
6. Goetz, A., and Alexander, S. (2019, April). [Urban Goods Movement and Local Climate Action Plans: Assessing Strategies to Reduce Greenhouse Gas Emissions from Urban Freight Transportation.](#)



7. Harvey, C., Fang, K., and Rodriguez, D.A. (2019, September). [Evaluating Alternative Measures of Bicycling Level of Traffic Stress Using Crowdsourced Route Satisfaction Data.](#)
8. Kukkapalli, V.M., and Pulugurtha, S.S. (2019, June). [Modeling the Effect of a Road Construction Project on Transportation System Performance.](#)
9. Mane, A.S., and Pulugurtha, S.S. (2019, June). [Modeling the Influence of Land Use Developments on Transportation System Performance.](#)
10. Mathur, S. (2019, May). [Value Capture to Fund Public Transportation: The Impact of Warm Springs BART Station on the Value of Neighboring Residential Properties in Fremont, CA.](#)

### **Publications, Conference Papers, and Presentations**

During this period of performance, 43 academic and professional presentations featured the results of MCTM-funded research. An additional two presentations occurred in the previous reporting period but had not been included in that report. (Full citations for all presentations available upon request, a select example appears below).

<b>Academic Presentations</b>				
	<b>Presentation Title</b>	<b>Audience/Conference</b>	<b>Location</b>	<b>Date</b>
1	*Briefing on SBI and MTI study	California Senate Transportation Committee	Sacramento, CA	2/26/19
2	*How and Where Should I Ride This Thing? “Rules of the Road” for Personal Transportation Devices	VTA Systems Operations & Management Working Group	San Jose, CA	3/27/19
3	Transportation Innovation: The Role of a University Transportation Center in Improving Mobility	Lucas College of Business Dean's Advisory Board Meeting	San Jose, CA	4/12/19
4	Evacuation, Sheltering and Public Information During Disasters	Briefing for Professor Ichiro Matsuo, Center for Integrated Disaster Information Research, University of Tokyo	San Jose, CA	4/24/19
5	Harmonizing Climate Change Mitigation and Adaptation in San Jose and Oakland, CA	Urban Affairs Association Annual Conference	Los Angeles, CA	4/24/19
6	Will Older Californians Step into Ride-Sharing Services?	SJSU's CHAMP Colloquium	San Jose, CA	4/25/19
7	How and Where Should I Ride This Thing? “Rules of the Road” for Personal Transportation Devices	ITS Berkeley Seminar	Berkeley, CA	4/26/19
8	Toward Reduced Emissions: Modeling Construction Equipment Activities with Deep Learning	CSU Research Competition	Fullerton, CA	4/26/19

9	How Can We Build MegaProjects Right?	SPUR San Francisco	San Francisco, CA	5/2/19
10	Public Agency Panel: Affordable Housing & the Transportation Sector (panel moderator)	Caltrans District 4 Calmentor Annual Awards Luncheon	Oakland, CA	5/3/19
11	Buying Decongestion: Crazy Idea or Credible Solution	t-TECH 2019 Future Transport Conference, ITS New Zealand	Christchurch, New Zealand**	5/6/2019
12	Hacking the Future of Street, Intersection, and District Design	Urbanism Next	Portland, OR	5/7/19
13	Estimating Impacts of Automated Shuttles	32nd Annual Conference of International Chinese Transportation Professionals Association (ICTPA)	San Jose, CA	5/16/19
14	Development of Chip Seal Performance Models for Local Agencies in California	32nd Annual ICTPA Conference	San Jose, CA	5/16/19
15	The Effectiveness of See Something, Say Something	2019 Security & Emergency Management Roundtable	Louisville, KY	5/17/19
16	Effect of Blue Line Light Rail Transit System on Operational and Safety Performance in the UNC Charlotte Area	2019 ASCE North Carolina Spring Technical Seminar	Wilmington, NC	5/17/19
17	Early empirical evidence for the effects of adaptive ramp metering on measures of travel time reliability	15th World Conference on Transport Research	Mumbai, India**	5/26/19
18	Using Manipulatives as a Teaching Tool in the Emergency Management Classroom	21 Annual Emergency Management Higher Education Symposium	Emmitsburg, MD	6/3/19
19	Estimating Impacts of Automated Shuttles	ASCE International Conference on Transportation and Development	Alexandria, VA	6/11/19
20	Toward Reduced Emissions: Modeling Construction Equipment Activities with Deep Learning	2019 ASCE International Conference on Computing in Civil Engineering	Atlanta, GA	6/17/19
21	Participant Perception and HMI Preferences During Simulated AV Disengagements	10th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design	Santa Fe, NM	6/24/19
22	Harmonizing climate change mitigation and adaptation in transport and land-use planning in California cities	Association of European Schools of Planning	Venice, Italy**	7/9/19
23	Smart Growth Calculator	Presentation to staff of the Urban Ecology Agency	Barcelona, Spain**	7/17/19

24	RAC & CUTC Collaborating Session	2019 National Research Advisory Committee and TRB State Representatives Meeting	Santa Fe, NM	7/22/19
25	Next Generation Challenges/Emerging Trends in Traffic Safety (Personal Transportation Devices)	Governor's Highway Safety Association Meeting	Anaheim, NM	8/26/19
* Occurred during the previous reporting period, but had not been reported.				
** Federal funds not used to support international travel.				

### Published Conference Proceedings

During this period of performance, three articles in conference proceedings were published.

1. Minett P., Niles J., Lee R., Bogue B., and Schaefer MD., Buying Decongestion: Crazy Idea or Credible Solution. Proceedings of [t-TECH 2019, ITS](#). May 2019, New Zealand, Christchurch.
2. Cheng, Ding, and R. Gary Hicks, Development of Chip Seal Performance Models for Local Agencies in California. Proceedings of the [32nd Annual Conference of ICTPA](#), Innovation in Transportation. May 16-19, 2019, San Jose, CA.
3. Cheng, Ding and R. Gary Hicks, Asphalt Pavement Maintenance and Rehabilitation Treatment Selection Using an Expert System Approach. Proceedings of [the 32nd Annual Conference of ICTPA](#), Innovation in Transportation. May 16-19, 2019, San Jose, CA.

### Journal Publications

During this period of performance, seven journal articles were published.

1. Appleyard, B. S., Frost, A. R., & Allen, C. (2019). Are All Transit Stations Equal and Equitable? Calculating Sustainability, Livability, Health, & Equity Performance of Smart Growth & Transit-Oriented-Development (TOD). *Journal of Transport & Health*, 14. doi: 10.1016/j.jth.2019.100584
2. Arhin, Stephen A., Gatiba, Adam, Anderson, Melissa, and Ribbisso, Melkamsew. (2019). Predicting STOP-Sign Compliance at All-Way Stop Intersections in Close Proximity to Signalized Intersections. *International Journal of Engineering Research & Technology*, 8(7).
3. Arhin, Stephen A., Gatiba, Adam, Anderson, Melissa, and Ribbisso, Melkamsew (2019). Acceptable Wait Time Models at Transit Bus Stops. *Engineering, Technology & Applied Science Research*, 9(4), 4574-4580.
4. Favarò, F. M., Eurich, S. O., & Rizvi, S. S. (2019). "Human" Problems in Semi-Autonomous Vehicles: Understanding Drivers' Reactions to Off-Nominal Scenarios. *International Journal of Human-Computer Interaction*, 35(11), 956-971. doi: 10.1080/10447318.2018.1561784
5. Favarò, F. M., Seewald, P., Scholte, M., Eurich, S. (2019). Quality of Control Takeover After Autonomous Vehicles' Disengagement. *Journal of Transportation Research Part F*, 64, 196-212. doi:10.1016/j.trf.2019.05.004
6. Loukaitou-Sideris, A., Wachs, M., & Pinski, M. (2019). Toward a Richer Picture of the Mobility Needs of Older Americans. *Journal of the American Planning Association*, 1-19. doi: 10.1080/01944363.2019.1630295

7. Mathew, S., Pulugurtha, S. S., & Mane, A. S. (2019). Effect of Toll Roads on Travel Time Reliability within its Vicinity: A Case Study from the State of North Carolina. *Transportation Letters*, 1–9. doi: 10.1080/19427867.2019.1671043

### **Books or other non-periodical, one-time publications**

MCTM documents six publications in this category during this period of performance:

1. Bolding, D. (2019, May). [Older Adults' Perceptions Regarding Transportation Services in San Jose, CA: Access, Barriers, and Innovations](#). (MTI Emerging Leader Seed Grant Final Report).
2. Edwards, F.L. (editor). 2019. *Housing Recovery After Disasters*. Lexington Books, ISBN 978-1-4985-9279-6.
3. Edwards, F., Goodrich, D., Hellweg, M., & Strauss, J. (2019). Earthquake Early Warning Systems: International Experience. In B. Kar & D. Cochran (Eds.), *Risk Communication and Community Resilience*. New York, NY: Routledge.
4. Ferrell, C. (2019, April). [Active Transportation and Health Effects of Safe Routes to Schools \(SR2S\) Projects and Planning](#) (MTI Perspective).
5. Hernandez, C., Slaton, T., Balali, V., & Akhavian, R. (2019). A Deep Learning Framework for Construction Equipment Activity Analysis. In *Computing in Civil Engineering 2019: Data, Sensing, and Analytics* (pp. 479-486). Reston, VA: American Society of Civil Engineers.
6. Niles, J. (2019, August). [Full Potential of Future Robotaxis Achievable with Trip-Based Subsidies and Fees Applied to the For-Hire Vehicles of Today](#) (MTI Perspective).

### **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](http://www.twitter.com)

### **Technologies or Techniques**

Nothing to report

### **Inventions, Patent Applications, and/or Licenses:**

Nothing to report

### **Other Products**

- [Data from a nationwide public opinion poll on federal transportation taxes](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Data on the effectiveness of a school-based intervention on driving-related carbon emissions](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Data from an analysis of open streets participants](#) was developed and is publicly available through SJSU ScholarWorks archive.

- [Dataset of state, city, and campus regulations for personal transportation devices](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Dataset of driver responses to autonomous technology disengagements](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Dataset of bicycle infrastructure audit data for Portland and Austin](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Dataset of travel time estimates before and after road construction projects in Charlotte, NC](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Dataset on travel time in Charlotte, NC for 259 road links](#) was developed and is publicly available through SJSU ScholarWorks archive.
- [Dataset on sales characteristics for homes near a new transit station](#) was developed and is publicly available through SJSU ScholarWorks archive.

#### 4. Outcomes

- Performance Measures for Research Outcomes
  - Number of technology transfer events (workshops, seminars, webinars, etc.) and number of participants
    - Target goal: 12 events reaching 500 participants annually
      - MCTM delivered 19 events reaching 3,813 during this period of performance
  - Number of organizations participating in consortium activities
    - Target goal: 10 annually
      - MCTM engaged 25 organization during this period of performance (see section 2 for a complete listing).

#### 5. Impacts

- Performance Measures for Research Impacts
  - Number of instances of research influencing policy or practice
    - Target goal: 3 annually
    - Example 1: Testimony before Congress’s Subcommittee on Research and Technology by Brian W. Ness, P.E., Chair of AASHTO’s Committee on Research and Innovation discussed research by MTI on best practices to effectively develop an incident command post, assign the right course of action for transportation workers, and help them coordinate more effectively with emergency responders. According to Ness, these practices “save valuable time, and lives.” Video of the testimony can be [viewed](#) (see, specifically, 47:35 to 48:05).
    - Example 2: The Los Angeles Department of Transportation is using MTI’s [Level of Traffic Stress for bicycle infrastructure research](#) to revise and update their bicycle network in Los Angeles. MTI’s Dr. Hilary Nixon will serve on the technical advisory committee for this effort.



- **Example 3:** Using MTI's Level of Traffic Stress (LTS) model, the state of Delaware was able to visualize and plan their statewide bicycle infrastructure network. Their application of the MTI LTS model is described in a [GIS Story Map published by ESRI](#).
  - Evidence of impact and exposure based on number of media articles covering MCTM activities
    - Target goal: 50 annually
      - 303 during this period of performance
      - 178 during the previous period of performance
  - Evidence of impact on transportation workforce development based on number trained and/or educated individuals
    - Target goal for K-12: 50 students annually
      - 305 students during this period of performance
      - 323 students during the previous period of performance
    - Target goal for post-secondary: 75 college students and/or working professionals annually
      - 103 students
  - Percent of surveyed participants attending MCTM technology transfer events and training programs reporting that MCTM research and training is useful, effective, and impactful
    - Target goal: 60%
      - Goal added in October 2019, Progress to be reported in next reporting cycle

### **What is the Impact on the Effectiveness of the Transportation System?**

- Aston Greene, Chief of System Security and Law Enforcement for [LA Metro](#), one of the largest public transportation system in the U.S. by ridership described MTI's transportation security database and research as the "only actionable intelligence" he receives that allows him to ensure the safety and security of passengers and staff across the system.

### **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?**

- MTI researchers received an award from ITS New Zealand for their research that examines an [innovative method to reduce congestion](#). If implemented, the generalizable method could provide a cost-effective alternative to current congestion management approaches.
- Keagan Baun, Crime Analyst with the Portland Police Bureau – Transit Division, contacted MTI for expert assistance to improve their K-9 explosive detection operations as it relates to transportation security to identify and prevent possible terrorist attacks on their system.

- David Mayer, CEO of the [Washington Metrorail Safety Commission](#) (WMSC) which oversees and enforces safety practices on the DC region’s Metrorail system, contacted MTI for expert assistance on transit security. MTI researchers produced a 32-page briefing book – *How Sophisticated are Terrorist Attacks on Public Surface Transportation*.
- Dr. Maryam Nazari (CSU Fresno) was recognized by the American Society of Civil Engineers San Francisco Section with the Outstanding Research Project of the Year Award for her research “[Green Strategies for Design and Construction of Non-Auto Transportation Infrastructure](#).” This research shows that tire-derived aggregates can enhance the sustainability of transportation infrastructure leading to more cost-effective and environmentally-beneficial outcomes for the transportation system.

### **What is the Impact on Transportation Workforce Development?**

- MCTM research projects provide opportunities for undergraduate and graduate students, including students from minority-serving institutions, to learn research methods including data collection and data management skills, data analysis, and report writing skills. They are exposed to transportation and STEM-related careers through their roles as research assistants on MCTM projects. To that end, during this period of performance, more than 150 students receive financial support through MTI-funded research (federal funds and leveraged federal funding). This support included tuition, stipends, and paid hourly rates.
- CSU Fresno student, Ms. Roshanak Farshidpour, received the 2019 Outstanding Civil Engineer Student Award by the ASCE San Francisco Section. She previously received this award from the ASCE Fresno Section as well. CSU Fresno partners with MTI on the California SBI Consortium, which competed successfully for funding in part due to our federal UTC experience.
- MTI partners with the [City and County Pavement Improvement Center](#) to provide training to transportation professionals and engage in research on innovative solutions to improve pavement materials and maintenance. A new [peer-to-peer online tool](#) to facilitate learning has been developed and a new pavement engineering and management certificate program is under final review for approval by the Center’s governance board. This partnership comes directly from leveraging federal funding to secure the lead of the California State University Transportation Consortium (CSUTC).
- Neil Pedersen, TRB Executive Director, recommended MTI as a resource to identify a UTC that has undertaken significant efforts related to inclusion and diversity in the transportation profession. MTI’s CSUTC partner, CSU Long Beach, will be providing an article for an upcoming *TR News* issue that showcases how higher education institutions have addressed inclusion and diversity and how these lessons can be applied to transportation agencies and industries.
- Saul Payan is a clear example of a success story from [MTI’s Summer Transportation Institute](#) program for high school students. Saul is a first generation American who will be the **first in his family to attend college**. He has been considered an “at-risk” youth by his high school counselors but was encouraged to attend our summer program. The program piqued his interest in transportation and MTI invited him to attend TechCrunch’s Mobility Session 2019 as our guest. He met with transportation

companies while at the session and received a **paid internship** with General Radar working on radar detection for autonomous vehicles.

- Irma Garcia, MTI's Communication and Workforce Development Coordinator, completed [Praesidium Training](#) for Supervisors. The purpose of this training is to ensure that all staff who work directly with minors understand child sexual abuse prevention in a university setting. Training covered, best practices when interacting with minors, and reporting processes and procedures. MTI works closely with minors through a number of K-12 workforce development programs. Ensuring their safety is our highest priority.
- MCTM partner, Navajo Technical University, was highlighted in a recent issue of [Native News Online](#) for their summer program with high school students. A highlight from this year's program was the development of solar go-karts that were featured at a local community maker faire.
- MCTM partner, Navajo Technical University was one of 44 Makers chosen to make a replica of a component of the Apollo Command Module door celebrating the 50<sup>th</sup> anniversary of the first moon landing as part of Project EGRESS at the Smithsonian Air & Space Museum. The project lead, Darrick Lee, a member of the Navajo Tribe, completed the NTU Electrical Engineering Program in May 2019, and is currently teaching in NTU's Energy Systems Program. He will start his graduate degree in Electrical Engineering at Arizona State University in January 2020. He is actively recruiting students into NTU's Energy Systems and Electrical Engineering programs and hopes to earn his Ph.D. in EE and return to NTU as a professor.
- MCTM partner, Navajo Technical University reports that two students, Lakreasha James and Terique Descheny who attended their 2019 summer transportation program for high school students enrolled in their [welding program](#) and have been recognized for their accomplishments with a paid internship/apprenticeship for Fall 2019. Combined with the college credits earned from the summer program, Lakreasha, who enrolled in 9 additional credits, is halfway through her certificate program and plans to start a welding and mechanics business with her father.
- Navajo Technical University expanded their Commercial Drivers License (CDL) program to their Chinle, AZ campus and is developing a certificate in Heavy Machinery at that campus to increase the number of students trained in this skill.
- More than 100 San José State University students had the opportunity to participate in a collaborative research project between MTI, [CommUniverCity](#) (a service-learning partnership between SJSU, the City of San José, and the local community), and the City of San José's Department of Parks, Recreation, and Neighborhood Services in a comprehensive evaluation of [Viva Calle](#), an open streets program hosted by the City.

### **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.

- California State Assemblymember Kansen Chu contacted MTI to provide technical expertise on daytime running lamps, which was used as background information for [Assembly Bill 808](#) introduced to the California State Legislative for consideration.
- MTI researchers provided a briefing for the [California State Senate Transportation Committee](#) on the future of transportation funding. Specifically, MTI researchers highlighted the [The Impact of ZEV Adoption on California Transportation Revenue](#).
- The [Northern California Regional Intelligence Center \(NCRIC\)](#), in partnership with the FBI, used data developed by MTI on transportation security in an article publication by the National Counter Terrorism Center’s *Alliance* journal. NCRIC described MTI’s data as “a useful resource as we updated local law enforcement and federal partners from an intel perspective.”
- The [Government Accountability Office](#) contacted MTI to provide expert opinion on how TSA identifies and compares U.S. and foreign passenger rail security standards and best practices, particularly as they relate to shared terminal facilities and cyber systems.
- MTI’s Dr. Hilary Nixon was invited to participate in a workshop convened by the [Bureau of Transportation Statistics](#) and [National Transportation Library](#) to develop a National Transportation Data Preservation Network. A team of experts were brought together to identify best practices for ensuring that data is widely available to the public.
- Dr. Mohamed Badawy was highlighted in a recent issue of [Washington Square Magazine](#). Dr. Badawy received an MTI Emerging Leader Seed Grant to support his research on dynamic charging, which would allow electric vehicles to be charged while moving along a highway.

## ■ 7. 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