

Semi-Annual Progress Report for University Transportation Centers

Submitted To: Office of the Assistant Secretary for Research and Technology
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Federal Grant Number: 69A3551747122

Project Title: Tier 1 University Transportation Center
Small Urban, Rural and Tribal Center on Mobility (SURTCOM)

Program Director:
(and Submitting
Official) David Kack, Director
Email: dkack@montana.edu
Phone: 406-994-7526

Submission Date: April 28, 2023

DUNS Number: 6254479820000

EIN Number: 81-6010045

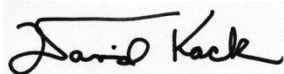
Recipient Organization: Montana State University
Bozeman, MT 59717

Project Grant Period: November 30, 2016 – September 30, 2023

Reporting Period End Date: March 31, 2023

Report Term: Semi-Annual Progress Report #12

Signature:



1. Accomplishments

What are the major goals and objectives of the program?

The mission of the Small Urban, Rural and Tribal Center on Mobility (SURTCOM) is to conduct research and provide leadership, education, workforce development and technology transfer in all transportation-related aspects of mobility for people and goods, focusing specifically on small urban, rural and tribal areas. The Western Transportation Institute (WTI) at Montana State University (MSU) is the lead institution, with consortium members including Eastern Washington University (EWU) and the Small Urban and Rural Center on Mobility (SURCOM) at North Dakota State University (NDSU).

What was accomplished under these goals?

From October 2022 through March 2023:

- WTI/MSU continues providing technical assistance to rural and tribal communities who want to increase biking and walking in their towns. The *Building Active Communities Technical Support* project identifies changes in infrastructure that can increase the number of people using active modes of transportation. In addition, WTI/MSU continues to help with Safe Routes to School efforts in Montana and is working with the Montana Area Health Education Center (AHEC) Program Office at MSU and the White Sulphur Springs (Montana) Hospital on options to increase access to the hospital and to provide connections to medical specialists in the region.
- WTI/MSU continues to work with the Idaho Transportation Department (ITD) to implement new transit services in Twin Falls, Idaho, with the hope that services will begin in that community by June 2023.
- Work continues with Transportation Demand Management (TDM) efforts in the greater Bozeman (Montana) area. WTI/MSU assisted Gallatin County and the City of Bozeman with TDM efforts under the previous SURLC UTC and is continuing efforts through SURTCOM. As part of this on-going project, TDM efforts were re-branded to “Go Gallatin” to reflect the larger commuting patterns in the area. In addition, the City of Bozeman hired a TDM Coordinator, with whom WTI works to increase the TDM efforts. Tasks throughout Winter 2023 focused heavily on the two ski areas in the Bozeman region, Bridger Bowl and Big Sky.
- WTI/MSU is wrapping up its effort on a small research project (*Implication of School Format on Women in STEM*) documenting the importance of K-12 school format (e.g., online, hybrid, in-person, “pandemic pod”) for women in science, technology, engineering, and mathematics (STEM) who have K-12 children. The three separate surveys, administered to women in STEM-related jobs throughout three discrete periods of time to capture the impact that changes in K-12 school format have on their work and family lives, have completed and data analysis is occurring. The results are intended to provide input on how future policies can better support women who work in STEM fields, including transportation. The report for this project will be noted in the next SAPR.

- WTI/MSU is wrapping up a project with MDT entitled *Effectiveness of Highway Safety Public Education at Montana Motor Vehicle Division and Vehicle Registration Stations by Streaming a Variety of Safety Content*. The purpose of this project is to research which safety messages, if any, affect those who watch the videos (i.e., increase safety behavior). Four separate data captures (surveys) for two separate video sequences were completed. A paper regarding this project was accepted for presentation at the 2023 Transportation Research Board (TRB) Annual Meeting and is being considered for publication in the Transportation Research Record. The project report is expected to be completed in Summer 2023.
- WTI/MSU continued work on the *Montana MPO Travel Survey Analysis* project. The purpose of this study is to provide additional information and greater understanding of transportation planning and travel behavior in the areas served by the Billings-Yellowstone County Metropolitan Planning Organization and the Missoula Area Metropolitan Planning Organization, two of the three metropolitan areas in Montana.
- WTI/MSU completed work on the *Statewide GNSS RTN System* project, which was sponsored by the Montana Department of Transportation (MDT). The objectives of this project were to assess various alternative business models and recommend the most appropriate for MDT to pursue in the planning and development of a Statewide Global Navigation Satellite System (GNSS) Real-Time Network (RTN) system. The report for this project can be found [here](#).
- WTI/MSU staff continues a collaboration with the University of Florida on the NCHRP 08-135, *Reliability and Quality of Service Evaluation Methods for Rural Highways* project. The objectives of this research are to: 1) develop reliability and quality of service predictive methodologies for rural road facilities to account for the new context and functional classifications of the Green Book, and 2) develop a guidebook on application of the methodologies for a broad range of users.
- Working with Battelle, staff from WTI/MSU are working on the *Traffic Incident Management (TIM) Strategies for Rural Environments* project. The objectives of this FHWA research project are to research the unique challenges, good practices, and opportunities necessary to assist rural responders and motorists to improve safety and incident mitigation of rural roadways.
- WTI's Community-engaged and Transformational Scholarship (CATS) program facilitates course-based student projects based on community needs submitted by the City of Bozeman ("City"). This Spring, students in Civil Engineering assisted the City in implementing a neighborhood traffic calming pop-up project to improve safety; students in a planning course helped the City develop fact sheets and infographics to share feedback obtained through a variety of public engagement efforts; and a Geography student explored motivations and barriers to bike commuting, which will help inform transportation plans and programming. The CATS project collaborations provide multidisciplinary students with experiential, hands-on experience addressing planning, growth, public engagement, and mobility issues in a small urban environment.

- WTI continued working with the National Association of Development Organizations (NADO) on technical assistance projects funded through the U.S. Department of Agriculture (USDA). WTI researchers are providing technical assistance to communities such as LaBelle, Florida, the Wiyot Tribe in northern California, and the White Earth Band on the White Earth Indian Reservation in west-central Minnesota.
- WTI continued working on the project *In Search of Simultaneous Benefits of Infrastructure Provisions on Freight & Bicycle Movements*. The purpose of this project is to research rural roadway measures (e.g., wider shoulders, separated facilities) that could increase freight efficiency and safety (e.g., reduce run off the road incidents) while offering bicyclists simultaneous benefits (e.g., reduced traffic-related injuries and fatalities, reduced particulate matter inhalation). In addition to roadway measures, this project will also review vehicle characteristics (e.g., freight vehicle blind spot warnings) and related policy measures that could reduce freight-bicyclist conflicts on rural roadways.
- WTI continues work on the *Transportation Equity in Rural and Small Urban Areas* project, with the purpose to provide information regarding: (1) mobility resources and needs across rural America with an emphasis on cataloging public mobility options in rural communities via the National Transit Database in relation to sociodemographic information available from the US Census Bureau in terms of race, ethnicity, and income, as well as an overview of key knowledge gaps and future areas of inquiry for equitable transportation in rural America, such as the reasonable and equitable expectations for publicly supported travel in rural settings and the unique mobility challenges for mobility in rural settings; (2) innovative policies and programs to provide comprehensive support for access to opportunities – currently being developed and piloted in large metropolitan areas – such as universal basic mobility, targeted incentives for affordable housing residents, and new approaches to transportation pricing, and assess their potential for application in rural and small urban areas; (3) indices to operationalize and assess transportation equity and prioritize investments, with an emphasis on a comparative evaluation of their relevance for practical policymaking and planning in rural and small urban areas; and (4) a distillation on the state of microtransit with respect to suitability for implementation and unique challenges in rural and small urban settings.
- WTI/MSU, in conjunction with the Center for Large Landscape Conservation (CLLC), continues work on the project *US-191 Wildlife and Transportation Conflict Assessment: Preparing for Continued Growth*. US-191 is a two-lane highway that connects Bozeman to Big Sky (Montana) and this project is assessing the extent of wildlife-vehicle collisions (WVC) along this corridor (a significant safety issue) and what solutions should be implemented. This research is also investigating WVC data to assess how many years of data is required to correctly identify hotspots, how these hotspot locations move over time, and how they are affected based on when an analysis is conducted. The field review to locate the best mitigation sites was conducted in October 2022.

- WTI/MSU is concluding work on the project *West-wide Assessment of Cost-effective Opportunities for Mitigating Wildlife-Vehicle Collisions (WVCs)*. The aim of the project is to support the design and implementation of federal and state policies to reduce WVCs and improve wildlife movement. Taking a systematic approach to identifying WVCs with large mammals in the 11 western states (e.g., Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah Washington, and Wyoming) and applying cost values to each collision allows for the identification of highway segments where the economic benefits of providing mitigation for wildlife surpass the costs of collisions. The report will summarize where WVC mitigation opportunities are beneficial throughout these western states-, by state and by county.
- WTI/MSU continued work a new project, *Technical Support to Increase Safety for People Walking and Biking in Big Sky*, which will help the Big Sky Community Organization determine what improvements may be needed to improve the safety of those walking and biking in the Town Center area of Big Sky.
- WTI/MSU continued its work on the project *Network Screening on Low-Volume Roads: Empirical Validation of a New Proposed Methodology*. The objective is to validate the newly proposed low-volume roads network screening methodology using extensive field data to assess the effectiveness of the proposed method and its suitability for implementation in Montana and the northwest region.
- WTI/MSU started three projects related to animal-vehicle collisions (AVCs). AVC impacts cost nearly \$10 billion per year. The first of these projects is the *Patterns and Causes of Domestic Animal-Vehicle Collisions on Tribal Lands* which will investigate why the rates of these collisions are over three-times as high on Tribal lands. The second project, *Reintroduction of Apex Predators to Reduce Animal-Vehicle Collisions* will determine if ensuring a healthy population of predators exists in an area is a viable solution to reducing AVCs. Finally, the *Setting up ROaDS Partners with Customized Surveys* project will look at how the ROaDS (Roadkill Observation and Data collection System) app can be customized to allow more agencies and organizations to collect data on roadkill to help determine the extent of AVCs in an area.
- WTI/MSU began a small project *Field Evaluation of All-Way Stop Control Intersection Capacity*, to quantify the capacity of these often-used intersection control methods.
- WTI/MSU also began two projects looking at the extent that health-related policies and metrics are included in transportation efforts in rural areas. *An Audit of Health-Related Performance Metrics in Montana Counties Transportation Plans* will investigate the extent to which health-related performance metrics are included in county-wide transportation plans in selected counties in Montana. *The Health in All Policies (HiAP) Rural Based Curriculum Development* project will look at how some DOTs and large urbanized areas are including HiAP efforts in their transportation projects and plans, and how those efforts can be brought to rural areas/communities.

- WTI/MSU, EWU and NDSU/SURCOM are all working as part of a team (with the KFH Group as the lead) on the NCHRP 08-147/TCRP B-49 project *Improving Public Transportation in Rural Areas and Tribal Communities*. The output of this project will be a guidebook that will assist those operating and managing public transportation (transit) systems in rural areas and in tribal communities.
- Work continued with the EWU project, *The Status and Issues for American Indian Transit in the West*. Beginning with a 2012 report, the EWU team has sought to conduct a “state of tribal transit” update, including the identification of critical issues and an assessment of western tribes in relation to transit.
- *The Impact of the Automobile on American Indian Reservations*, an EWU project, saw further progress. This report will assess the culture, use, and impact of the automobile on land use and reservation design, which will inform efforts to address unmet transportation needs.
- *Mobility on American Indian Reservations: A Tribal Context for Transportation*, an EWU project, continued its progress. This project will provide a perspective on mobility, including historic change from successful tribal specific cultures pre-contact to contemporary mobility related to American Indian reservations to other emerging transportation and key issues. A key component of this work is to understand the dynamics of mobility, particularly within tribal and community cultures, access, needs, and issues.
- EWU staff continued work on *Best Cases for Tribal Transportation Safety: Media, Planning and Action*. These small research projects are underway to support tribes on how to safely provide mobility and raise awareness of the importance of mobility.
- *Tribal-State Relations in Transportation: A Western States Analysis, Part 1: Evidence from Nine States* and *Part 2: Jurisdiction Overlaps* are two parts of a new project started by the EWU staff that will analyze how well states (and their departments of transportation) recognize the sovereignty of Tribal Governments, and how well these agencies work with the tribes to address their transportation needs. A survey related to the first part of the project is underway with tribes in the western United States to provide a quantitative approach/framework. The COVID-19 pandemic has delayed the survey analysis longer than expected, but it is currently being finalized.
- EWU staff continued work on the project *Data Driven Planning and Tribal Implementation for Tribal Safety on Reservations*. This project will analyze how Washington State traffic safety programs may empower tribal programs and implement a culture of safety.

- EWU staff continued work on the project *The Relationship between Reservation Geography & Jurisdiction Overlaps* to highlight why jurisdiction matters to Indian Country. This project attempts to correlate the effects of jurisdictional overlap with federally recognized continental American Indian Reservations and Tribal Lands through examination of how they are divided across states, counties, school districts, and congressional districts. This is accomplished by using GIS. Staff are investigating instances of these jurisdictional overlaps with the 397 census-identified continental reservations and tribal areas.
- The EWU team is working on several additional research reports, including *Dangers Related to Mobility for Tribal Women (MMIW)*; *Human Trafficking as Related to Transportation*; *Effects of Climate Change on Tribal Mobility on Land & Water Based Tribes: Sustainability, Resiliency, & Mobilizing for Climate Change*; and an *Environmental Review on Colville Confederated Tribes Roads Damage Due to Climate Change: A Preventative Measures and Cost Analysis Report*.
- SURCOM/NDSU completed the project *Interest of Shared Mobility and Emerging Vehicle Technologies in Rural America*. This project analyzed and documented the interest and adoption patterns for shared mobility, and emerging vehicle technologies in rural communities. The report for the project is available [here](#).
- SURCOM/NDSU finished the project *Understanding How Bicycle Facility Characteristics and the Built Environment Influence Bicycle Use in a Small Urban Area: Case Study of Fargo-Moorhead*. The study used bicycle count data to develop a model to estimate the relationships between bicycle facility and street characteristics and bicycle usage. The final report, executive summary, and YouTube video for the project are available [here](#).
- SURCOM/NDSU completed the project *Pedestrian User Experience at Roundabouts* for the Minnesota Department of Transportation (MnDOT). The objectives of the research were to understand pedestrian user experiences at roundabouts, identify how they can be enhanced through various pedestrian treatments, and develop related decision tools and guidance. The final report is available [here](#).
- SURCOM/NDSU neared completion of the research project *Impacts on Health in Rural and Small Urban Areas* during the reporting period. The report for this study is currently in draft form and will soon be sent for review.
- SURCOM/NDSU is working on a project, *Designing an Electric Transit Bus Network*. This project will be completed during the next reporting period.
- SURCOM/NDSU will soon complete the project, *Ranking Public Transportation Services for Rural States in the Upper Midwest and Great Plains Region*. This study was funded through the North Dakota Department of Transportation.

- SURCOM/NDSU completed the report *Workforce Development and Driver Shortages in Small Urban and Rural Transit*. The objectives of this research were to address and quantify current workforce development and driver shortfall issues in rural transit. Training practices among transit agencies were also studied to gain a greater understanding of the necessary steps that must be taken to build stronger efficient transit systems. The report recently completed the review process and will soon be available on the website (and will be noted in the next report).
- During this past reporting period, SURCOM/NDSU began a project that is looking at the acceptability of using Shared Use Mobility transportation on Native American Reservations. The project includes a case study in Oklahoma.
- SURCOM/NDSU started a project, *Utilizing Public Transportation to End Food Insecurity in the Rural and Small Urban Areas by Providing Better Access: A Case Study of Rural Counties in North Dakota*. In this study, the SURCOM team will investigate the current public transportation accessibility and determine the impact of transportation accessibility on food insecurity among 53 counties in North Dakota. This study will identify the mobility gaps which affect food insecurity in the rural and small urban areas in North Dakota, and how a better-designed public transportation can help to end food insecurity. This project should be completed during the next reporting period.

What opportunities for training and professional development has the program provided?

The program has provided multiple opportunities for training and professional development, including staff participation in the 2023 TRB Annual Meeting (with details noted herein).

How have the results been disseminated? If so, in what ways?

Research results have been disseminated through the presentations and publications noted herein, the SURTCOM website, and the websites of the SURTCOM partners (EWU & NDSU). In addition, videos were created for all the SURCOM/NDSU reports published in 2020 and later, and are available on the SURCOM website and on the Upper Great Plains Transportation Institute's [YouTube channel](#).

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

- Additional projects will begin based on the SURTCOM UTC proposal, input from the SURTCOM Advisory Committee, and topics/issues noted by state DOTs.
- Dissemination of research results continues to occur through national conferences and webinars.

2. Participants & Collaborating Organizations

What organizations have been involved as partners?

- Eastern Washington University and North Dakota State University are partners/collaborators in SURTCOM.
- MSU/WTI, SURTCOM lead, is working with the National Association of Development Organizations (NADO) on numerous projects to provide technical assistance to communities/areas (including Tribal communities) through funding from USDA. The Neponset Valley Transportation Management Association (TMA), which currently operates National RTAP, engages in many of the NADO projects.
- WTI/MSU is working with ITD to modify public transportation in Twin Falls, Idaho.
- WTI/MSU is collaborating with multiple communities in Montana on pop-up traffic calming projects. In addition, WTI/MSU is working with multiple departments within the City of Bozeman (MT) on pop-up projects, as well as the City's Transportation Demand Management (TDM) efforts.
- The Washington State DOT (WSDOT) has worked with EWU for several years and continues that collaboration.
- Additional EWU partners include the Affiliated Tribes of Northwest Indians (ATNI), numerous individual tribes, the Bureau of Indian Affairs (BIA), and the Federal Highway Administration (FHWA).
- The Montana Department of Transportation (MDT) is working on four projects with SURTCOM lead WTI/MSU.
- SURCOM/NDSU works with the National Transit Institute (NTI) and National Rural Transit Assistance Program (National RTAP) on various projects.
- SURCOM/NDSU worked with the North Dakota Department of Transportation (NDDOT) to look at North Dakota mobility services and transit systems and how well they serve the needs of North Dakota residents. SURCOM/NDSU is now working with NDDOT to examine the rankings of public transportation services for nearby rural states. This project should be completed by Spring of 2023.
- SURCOM/NDSU worked with the Minnesota Department of Transportation to conduct a study on roundabouts, with the final report of the project noted herein.
- SURCOM/NDSU worked with the Standing Rock Reservation in North Dakota (the Reservation also has land in South Dakota), as well as the Makah Indian Reservation in Washington State, while conducting the recently published research project SURTCOM 21-05.
- WTI/MSU continues leading the operations of the National Center for Rural Road Safety (also known as the "Rural Safety Center").

- NDSU/SURCOM's program director, Jill Hough serves as the chair of TRB's AP055 Standing Committee on Rural, Intercity Bus, and Specialized Transportation. She chaired the full committee meeting at the 2023 TRB Annual Meeting.
- Natalie Villwock-Witte (WTI/MSU) chairs TRB's Transportation Needs of National Parks and Public Lands (AEP20) Committee, Laura Fay (WTI/MSU) chairs TRB's Low-Volume Roads (AKD30) Committee, and Jaime Sullivan (WTI/MSU) chairs TRB's Rural Issues Coordinating Council (A0040C). All three chaired their respective committee meetings at the 2023 TRB Annual Meeting.

Have other collaborators or contacts been involved?

SURTCOM's Advisory Board consists of one representative (each) from the Montana, North Dakota, and Washington (state) DOTs, three tribal representatives, and a representative from NADO. The Board receives SAPR reports and is encouraged to submit topics/issues for potential research projects. Further, staff from SURTCOM organizations attend meetings of relevant TRB Committees and other organizations (such as ATNI), where issues/topics are discussed, and potential projects identified.

3. Outputs

Publications, conference papers, and presentations

Publications

- Hill, M., Anderson, M., King, I. (2022). Human Trafficking as a Racialized Economy and the Exploitation of Indigenous Socio-Spatial (Im)Mobility in North America, *Frontiers in Sustainable Cities*, section Social Inclusion in Cities.
[http://journal.frontiersin.org/article/10.3389/frsc.2022.884195/full?utm_source=Email to authors &utm_medium=Email&utm_content=T1_11.5e1 author&utm_campaign=Email_publication&field=&journalName=Frontiers in Sustainable Cities&id=884195](http://journal.frontiersin.org/article/10.3389/frsc.2022.884195/full?utm_source=Email%20to%20authors&utm_medium=Email&utm_content=T1_11.5e1_author&utm_campaign=Email_publication&field=&journalName=Frontiers%20in%20Sustainable%20Cities&id=884195)
- Moreno, A., Linares-Ramirez, S., Washburn, S., Al-Kaisy, A., Barrios, J., and Schroeder, B. (2023) "Identification of Potential Improvements to the Highway Capacity Manual Methodology for Rural Bicyclists and Bicyclist Classification," *Transportation Research Records*, Sage Journals, DOI: 10.1177/03611981231163864/ID: 22-01336.
- Raza, S., Al-Kaisy, A., Washburn, S., Moreno, A., Schroeder, B., and Barrios, J. (2023) "Influence Area at Signalized and Stop-Control Intersections: Operational Analysis," *Transportation Research Record*, Sage Journals.
<https://doi.org/10.1177/03611981231152457>.
- Raza, S., Al-Kaisy, A., Washburn, S. (2022) "Investigation of Roundabout Influence Areas along Rural and Suburban Corridors," *Journal of Advances in Transportation Studies*, Issue 58, pp. 21-38.

Conference Papers

2023 TRB Annual Meeting, Compendium of Papers, Session 2227 Potpourri of Transportation Safety: Public Policy, Education, and Training for Road Users of All Ages: *Effectiveness of Highway Safety Public Education at Montana Motor Vehicle Division and Vehicle Registration Stations by Streaming a Variety of Safety Content*. Natalie Villwock-Witte, Karalyn Clouser, and Jaime Sullivan (WTI/MSU).

Policy Papers

- None at this time

Presentations

October 12, 2022. Washington State Tribal Transportation Planning Organization, Quarterly Meeting (virtual meeting). Margo Hill (EWU) presented *Missing & Murdered Indian Women and the Transportation Connection*.

October 18, 2023. National Center for Rural Road Safety Webinar. Margo Hill (EWU) presented *Human Trafficking and the Role of Transportation*.

October 20, 2022. Jill Hough (NDSU/SURCOM) presented a webinar in conjunction with TRB titled *Microtransit – Innovation in Rural Mobility*.

October 21, 2022. University Transportation Centers – Tribal Colleges and Universities Summit, Albuquerque, NM. With funding from the Council of University Transportation Center, David Kack and Susan Gallagher (WTI/MSU) hosted this one-day Summit to discuss how UTCs could collaborate better with Tribal Colleges & Universities (TCUs). Special presenters included Deputy Assistant Secretary of Tribal Affairs at the U.S. Department of Transportation, Arlando Teller, and Director of the Office of Safety Programs with the Federal Motor Carrier Safety Administration, Patrick Nemons.

November 3, 2022. University of Florida Careers in Transportation webinar (online). David Kack (WTI/MSU) presented his work at WTI/SURTCOM and highlighted the many different disciplines needed in the transportation industry.

December 7, 2022. America Walks Policy Round Table on Tribal Pedestrian (online). David Kack (WTI/MSU) participated in, and functioned as a facilitator, for this discussion.

January 7 – 12, 2023. CUTC and UTC meetings, and TRB Annual Meeting, Washington D.C.

- Rural, Intercity Bus, and Specialized Transportation (AP055) Committee Meeting. Dilip Mistry (NDSU/SURCOM) provided a demonstration of the *Transit State of Good Repair eTool*.
- Lectern Session 2028. Mohsen Momenitabar, Zhila Dehdari Ebrahimi, Jeremy Mattson, and Jill Hough (NDSU/SURCOM) presented *Designing an Electric Transit Route Network Utilizing Energy Storage Technology to Mitigate Annual Demand Charges*.
- Lectern Session 2188. Laura Fay (WTI/MSU) presented *Brooms, Blades, and Ice Breakers: Alternative Mechanical Snow Removal Innovations*.
- Lectern Session 3186. Hamad Al Qublan, Jeremy Mattson, and Jill Hough presented *Role of Public Transportation During the COVID-19 Pandemic to Enhance Food Access by the Food Delivery Service in 2020-2021*.
- Poster Session 2040. Sajid Raza and Ahmed Al-Kaisy (WTI/MSU) presented *Statewide GNSS-RTN Systems: Survey of Practice*.
- Poster Session 2054. Ranjit Godavarthy & Jill Hough (NDSU/SURCOM) presented *Understanding Emerging Mobility Adaptation in Rural America*.
- Poster Session 2166. Dilip Mistry & Jill Hough (NDSU/SURCOM) presented *Machine Learning Predictive Model for Small Urban and Rural Transit Systems to Achieve and Maintain Public Transportation Rolling Stock in a State of Good Repair*.

- Poster Session 2227. Natalie Villwock-Witte (WTI/MSU) presented *Effectiveness of Highway Safety Public Education at Montana Motor Vehicle Division and Vehicle Registration Stations by Streaming a Variety of Safety Content*.
- Poster Session 3094. Patrick McMahon (WTI/MSU) presented *Blazing Trails in the 21st Century: Using E-Bikes to Map Trail Conditions in National Parks and Beyond* and Charles Gould (WTI/MSU) presented *Laboratories on the Lakes: National Parks in Michigan: Drive, Walk, Ride, and Sail into a Multimodal Future*.
- Poster Session 3147. Ahmed Al-Kaisy and Dorukhan Doruk (WTI/MSU) presented *Capacity at All-Way Stop Control Intersections: A Case Study*.
- Poster Session 3148. Sajid Raza and Ahmed Al-Kaisy (WTI/MSU) presented *Influence Area at Signalized and Stop-Control Intersections: Operational Analysis*. Ahmed Al-Kaisy (WTI/MSU) and others also presented *Identification of Potential Improvements to the Highway Capacity Manual Methodology for Rural Bicyclists and Bicyclist Classification*.
- Poster Session 3211. Jeremy Mattson, Taraneh Askarzadeh, and Zhila Dehdari Ebrahimi (NDSU/SURCOM) presented *Use of Crowdsourced Data for Evaluating the Effects of Bicycle Facilities and the Built Environment on Bicycle Use in a Small City*.

January 18, 2023, Federal Transit Administration Webinar. Margo Hill (EWU) presented on *Human Trafficking Prevention in Tribal Communities*.

January 31, 2023. University of Washington seminar. Margo Hill (EWU) presented *Tribal Sovereignty and Tribal Engagement: How to do Business with Tribes*.

March 16, National Mobility Summit, Washington D.C. David Kack (WTI/MSU) was part of the Equity – UTC Innovations and Impacts panel and discussed the aforementioned UTC-TCU Summit held in Albuquerque, NM, as well as other topics related to Native American transportation issues.

Website(s) or other Internet site(s)

- SURTCOM website (www.surtcom.org)
- EWU’s SURTCOM related website (<https://www.ewu.edu/css/surtcom/>) has updated contact information, new lectures, outreach with lectures and PowerPoint presentations, and listings of on-going research.
- NDSU’s Small Urban and Rural Center on Mobility website (<https://www.ugpti.org/surcom/>) includes project reports and video overviews.

New methodologies, technologies, or techniques

- The Transit State of Good Repair eTool allows transit agencies, State DOTs, and the Federal Transit Administration (and other agencies/organizations) to look at the number of transit vehicles that need to be replaced (along with the associated costs) to keep “the fleet” in a state of good repair (not exceeding the useful life of the vehicle).

Inventions, patent applications, and/or licenses

Nothing to Report

Other products, such as data or databases, physical collections, audio or video products, application software or NetWare, analytical models, educational aids, courses or curricula, instruments, equipment, or research material

Nothing to add that was not noted in other sections.

4. Outcomes

SURTCOM staff present the findings from research projects to the maximum extent possible. The Center has one performance measure to disseminate research deliverables for each research project. This target was met, as the research reports for all the completed projects are posted to the SURTCOM website and provided to the sponsor. Another performance measure was to plan or participate in technology transfer activities that offer implementation or deployment guidance at a broader scale. This was met through presentations at TRB, as noted elsewhere in this report. The target of hosting or participating in at least one forum per year that offers implementation assistance on a key mobility topic was met when presenting at the 2023 TRB Annual Meeting on the Transit State of Good Repair eTool.

Increased understanding and awareness of transportation issues

Virtually all the projects conducted by SURTCOM increase the understanding and awareness of transportation issues. This is especially true of the projects that are conducted in “Indian Country,” working with Tribal Governments/Agencies to address the often-complicated transportation challenges they face. This includes recognizing that many Tribal transportation projects are multi-jurisdictional efforts, which can include Tribal, State, County, FHWA and/or BIA agencies.

Passage of new policies, regulation, rulemaking or legislation

Nothing to Report

Increases in the body of knowledge

All completed projects, with their final reports posted or presentation made, increase the body of knowledge related to transportation issues.

Improved processes, technologies, techniques and skills in addressing transportation issues

- Transit State of Good Repair eTool.
- Blazing Trails in the 21st Century: Using E-Bikes to Map Trail Conditions in National Parks and Beyond.

Enlargement of the pool of trained transportation professionals

EWU, WTI/MSU and SURTCOM/NDSU staff taught classes related to planning and/or transportation. Outreach efforts were made to grade school, middle school, and high school students to promote STEM activities and to highlight the need for professionals in the transportation field. In particular, in January 2023, Rebecca Gleason and Matt Madsen (WTI/MSU) began teaching *ECIV 491- Sustainable Transportation and Community Health*, a new elective class at MSU. The final class of this semester will take place in early May 2023.

As noted earlier in this report, WTI's Community-engaged and Transformational Scholarship (CATS) program facilitates course-based student projects based on community needs submitted by the City of Bozeman.

Adoption of new technologies, techniques or practices

- Transit State of Good Repair eTool.
- Blazing Trails in the 21st Century: Using E-Bikes to Map Trail Conditions in National Parks and Beyond.

5. Impacts

The effectiveness of the transportation system

The main goal of SURTCOM is to enhance mobility of both people and goods in small urban, rural and tribal areas. Through our research and other activities, we seek to:

- Increase access to opportunities that promote equity and economic development through mobility
- Implement innovative multi-modal solutions
- Implement smart cities innovations in small urban, rural, and tribal communities
- Increase active transportation modes, especially walking and cycling
- Address mobility issues on Federal lands

Technology transfer (including transfer results to entities in government or industry, adoption of new practices, or instances where research outcomes had led to the initiation of a start-up company)

Working with ITD, WTI/MSU was able to help facilitate the re-start of a public transportation (transit) system in Idaho Falls, Idaho. This new microtransit system/service was based on a WTI/MSU recommendation to implement this type of service instead of a more traditional fixed-route system. Further, Twin Falls, Idaho will implement a microtransit system in May or June 2023.

The increase in the body of scientific knowledge

Nothing to Report

6. Changes/Problems

Changes in approach and reasons for change

Nothing to Report

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

COVID-19 delayed some field work (gathering data); thus, projects will take longer to complete than originally planned. Further, the COVID-19 pandemic altered how people moved within and

between communities, which will impact the ability to compare data gathered before and after the pandemic, although the data will likely indicate the impact of the pandemic.

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

7. Special Reporting Requirements

Not Applicable