

## **Semi-Annual Progress Report for University Transportation Centers**

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Small Urban, Rural and Tribal Center on Mobility (SURTCOM)

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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. Montana State University (MSU) is the lead institution, with consortium members including Eastern Washington University (EWU) and North Dakota State University (NDSU).

## What was accomplished under these goals?

During the period October 2019 – March 2020:

- Work is nearly completed with two WTI/MSU projects entitled *Using WIFI to Determine Transit Ridership* and *Autonomous Paratransit in Rural Areas*. The first project looks at using devices searching for WIFI signals as a potential low-cost way to count riders on transit vehicles, while the second project is a preliminary review (cost/benefit analysis) of using an autonomous paratransit vehicle in a rural setting.
- WTI/MSU continues providing technical assistance to rural and tribal communities that want to increase biking and walking in their towns. The *Building Active Communities Technical Support* project will identify changes in infrastructure that can increase the number of people using active modes of transportation.
- Work continues on a WTI/MSU project entitled *Developing a Methodology for Implementing Safety Improvements on Low-Volume Roads in Montana*. This project is being conducted in conjunction with the Montana Department of Transportation.
- WTI/MSU is working with MDT to initiate a project entitled *Use of Fluorescent Delineators in Temporary Traffic Control Work Zones*. The project is currently in the contracting stage. Expanding the use of this technology will help enhance the safety of motorists, workers and others in small urban work zones, as well as in rural and tribal areas.
- Work continues on a WTI/MSU project which will identify fiber-reinforced polymer (FRP) materials and systems suitable for bridge superstructure and related design elements (e.g. fencing, sound barriers) that can be designed for bike/ped (and wildlife) crossings to meet American Association of State Highway and Transportation Officials (AASHTO) standards. Consideration will be given to the complete bridge system (superstructure, abutments, foundations, fencing, railings, sound barriers, etc.) to identify how FRP materials can be utilized for their design.
- WTI/MSU continues work on two projects in association with the National Association of Development Organizations (NADO) to improve mobility in rural areas around Fort Smith, Arkansas and Augusta, Georgia. The timeline for these projects will likely be extended due to the COVID-19 situation.

- WTI/MSU started work on additional projects with NADO related to transportation and its ties to economic development. In addition to NADO, the National Rural Technical Assistance Program (National RTAP) is involved. This new effort includes working with the Hopi and Fort Belknap Tribal Governments, as well as with locations in Northcentral New Mexico, and the Big Sandy and Cumberland development areas in Kentucky. It is anticipated that these projects will also be extended due to the COVID-19 situation.
- Work continued with an EWU project entitled *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.
- EWU staff neared completion of the project entitled *Mobility & Access on American Indian Reservations in the Western United States: Phase I*. This initial study has documented issues related to distance and access and is establishing a framework for more detailed mobility analysis. The long-term goal is to understand the needs of American Indian reservations and address the transportation systems and resources that serve them.
- *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. An important 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.
- EWU staff completed the project, *Tribal Mobility and Access to Healthcare in Washington State*. This project used a GIS analysis to determine tribal mobility, isolation, and access to healthcare for land both on and off a reservation. The report, *Locational Hospital Accessibility & the role of the Federally Recognized American Indian Reservations within Washington State* is available on the EWU website at [https://cdn.ewu.edu/css/wp-content/uploads/sites/7/2020/02/Washington-State-Healthcare-Access-Report\\_Washington\\_State\\_Healthcare\\_Access\\_Final.pdf](https://cdn.ewu.edu/css/wp-content/uploads/sites/7/2020/02/Washington-State-Healthcare-Access-Report_Washington_State_Healthcare_Access_Final.pdf)
- *Tribal-State Relations in Transportation: A Western States Analysis, Part 1: Evidence from Nine States* and *Part 2: Jurisdiction Overlaps* is 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 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.

- 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.
- The EWU team is working on several additional research reports, including, *Colville Reservation Seatbelt Use, a Focus Group Survey; Dangers Related to Mobility for Tribal Women; A Tribal Short Course on Local Planning; and Tribal Engagement for a Culture of Tribal Traffic Safety*.
- EWU staff continue to teach numerous university planning classes, including fifteen different classes during the Fall 2020 quarter, and twelve different planning classes during the Winter 2020 quarter.
- NDSU continues work to develop two Tribal Transit Training modules that will be available online. This work included site visits and interviews with tribal transit staff. This training should improve the effectiveness and efficiency of tribal transit systems.
- SURCOM/NDSU just began work on the project *Tribal Transit Study: Demographic Needs Indicators, Funding Needs, and Livability*. Public transportation needs, the importance of providing critical lifeline services to transit dependent populations, and their contribution towards tribal community livability has not been studied to a significant degree. The objectives of the study are to identify research needs for tribal communities and address challenges including: 1) determine ways to understand mobility needs of tribal communities, 2) analyze transit operations and service coverage, 3) study demographic livability indicators, and 4) understand ways to improve livability of residents in tribal communities..
- SURCOM/NDSU also began work on *Develop a Revenue Vehicle Rehabilitation or Replacement Predictive Model for Small Urban and Rural Transit Systems*. The primary objective of this research is to improve the process to maintain America's small urban and rural revenue vehicles in a good physical condition, in a cost-effective manner. This project was completed, and the final report is currently out for review.
- SURCOM/NDSU finished the draft report for the NCHRP Project *Opportunities for State DOTs to Encourage Shared Use Mobility*. The final report is under review by the NCHRP Panel.
- SURCOM/NDSU completed work on a Rural Transit ITS project, that investigated ITS technologies that are being used in rural areas. The final report for this project is out for review and will be finalized soon.
- SURCOM/NDSU supports a Ph.D. student who is working on a Cyclist Riding Behavior Rating System. The student conducted a national survey to identify cycling behaviors that are perceived as reckless and risky by U.S. residents and to understand the perceived magnitude of each risky behavior. The study also simulated risky behaviors to

evaluate and develop a new method for capturing the behaviors using sensors embedded in mobile phones. This research was completed, and the report is being finalized. This student completed his dissertation defense March 30, 2020. The student was completely funded by UTC dollars.

- SURCOM/NDSU began a study in August for the North Dakota Department of Transportation (NDDOT) to look at the state's mobility services and transit systems, to evaluate how well they serve the needs of North Dakota residents.
- SURCOM/NDSU started the project *Improving Mobility Among America's Aging Population to Combat Social Isolation*. This project will quantify the cost of providing greater mobility options to aging adults in small urban and rural communities to lower social isolation. This will be compared to the increased medical spending attributed to current levels of isolation.
- SURCOM/NDSU started the project *Interest of Shared Mobility and Emerging Vehicle Technologies in Rural America*. This project will document and analyze the interest and adoption patterns for shared mobility, and emerging vehicle technologies in rural communities.

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

- MSU, EWU and NDSU sent multiple staff to the TRB Annual Meeting in January 2020. Some conferences and meetings were cancelled in February and March, however, due to the COVID-19 situation, which reduced participation in professional development opportunities during this reporting period.
- Rob Lynch (SURCOM/NDSU) attended a 2020 Training Conference to learn new training skills to reach diverse audiences.

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

- See the information in Section 1, Accomplishments for project report information. Highlights include:
  - Natalie Villwock-Witte presented on the project *Bicycle and Pedestrian Infrastructure Improvements Realized in Communities of Less Than 10,000 People* at a Wisconsin Department of Transportation meeting (Friday, December 13, 2020).
  - EWU staff attend the Annual TRB Meeting in January 2020, and presented in sessions including *Tribal Mobility & Sustainability: Effects of Climate Change; Opioid & Poly-Drug Use and The Effects on Tribal Mobility; and Danger of Mobility for Tribal Women, and Missing & Murdered Indigenous Women*. These topics will also be presented at the National Transportation in Indian Country Conference (NTICC) in late August/early September, if that conference is held.
  - SURCOM/NDSU staff have provided multiple trainings of their Transit I and Transit II classes.
  - Two eLearning Modules were developed. They include *Grant Writing for Rural and Tribal Transit Providers* (<https://modules.ugpti.org/grant->

[writing/story\\_html5.html](#)) and *Customer Service for Rural and Tribal Transit Providers* ([https://downloads.ugpti.org/surtcom-customer-service/story\\_html5.html](https://downloads.ugpti.org/surtcom-customer-service/story_html5.html)).

- Jeremy Mattson presented *Economic Benefits of Rural Transit* at the MN Public Transit Conference.
- Ranjit Godavarthy presented the NCHRP Shared Use Mobility study at the TRB Annual Meeting to Committees: AP055 and AP020.
- Jill Hough presented *Mobility Services and Needs of North Dakota's Transit System to provide for North Dakota Residents* as part of a panel titled "Rural Transportation for Everyone: Policy and Practice in 2020." She also served as one of several facilitators who guided small group discussion on how equity can be addressed in a variety of transportation issues and modes.
- At the TRB Annual Meeting, Jeremy Mattson presented *Relationships between Land Use, Transit, and Household Expenditures in Small Urban Areas*.

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 and input from the SURTCOM Advisory Committee.

## **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 a total of four mobility/transit projects which are fully funded by NADO (through a grant from USDA). Further, the Neponset Valley Transportation Management Association (TMA), which currently operates the National RTAP, is involved in two of the NADO projects.
- WTI/MSU is working with the Idaho Transportation Department (ITD) on a project on assessing the transit system in Twin Falls, Idaho.
- WTI/MSU is working with multiple communities in Montana on pop-up traffic calming projects. Further, WTI is working with multiple departments within the City of Bozeman (MT) on pop-up projects, as well as the City's Climate Action Plan.
- 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.
- The Minnesota Department of Transportation (MnDOT) is working with SURTCOM partner NDSU on a project. NDSU/SURTCOM also works with the National Transit Institute (NTI), and additional partners including the Oklahoma Transit Association.
- NDSU is working 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.
- NDSU worked with WSP, Inc. to conduct the NCHRP study *Opportunities for State DOTs to Encourage Shared Use Mobility*.

#### Have other collaborators or contacts been involved?

SURTCOM's Advisory Board, which consists of one representative (each) from the Montana, North Dakota and Washington (state) DOTs, three tribal representatives, and one person from the National Association of Development Organizations (NADO), 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**

Final project reports were noted in Section 1, Accomplishments. In addition, SURTCOM staff collaborated on the following publications, papers and presentations:

Rahim Taleqani, Ali and Jill Hough. (2020). "Risk Perception of Bicycle/Scooter Riders Risky Behaviors." *Journal of Safety Research* (submitted January 2020).

Mistry, Dilip and Jill Hough. (2020). "Comparing a Machine Learning Predictive Model to FTA's Default Useful Life Benchmark to Predict Replacement Costs for Revenue Vehicles." *Transportation Research Record*. <https://doi.org/10.1177/0361198120906410>

Rahim Taleqani, Ali Chrysafis Vogiatzis, and Jill Hough. (2020). Maximum Closeness Centrality-Clubs: A study of Dock-less Bike Sharing." *Journal of Advanced Transportation*. <https://doi.org/10.1155/2020/1275851>

Taleqani, Ali R., Raj Bridgelall, Jill Hough, and Ken Nygard. (2019). "Data Driven Analytics of Road Quality." Proceedings of 34<sup>th</sup> International Conference on Computers and their Applications, 58, pp. 454-463.

Rahim Taleqani, Ali, Jill Hough, and Ken Nygard. (2019). "Public Opinion on Dockless Bike Sharing: A Machine Learning Approach." *Transportation Research Record*. 2673.4 (2019): 195-204.

Mattson, Jeremy and Del Peterson. *Relationships between Land use, Transportation, Household Expenditures, and Municipal Spending in Small Urban Areas*. (2019). SURL 19-009. North Dakota State University. <https://www.ugpti.org/resources/reports/downloads/sur19-009.pdf>

Godavarthy, Ranjit. (2019). *Transit Automation Technologies: A Review of Transit Agency Perspective*. SURL 19-010. North Dakota State University.

### **Conference Papers**

- None at this time

### **Policy Papers**

- None at this time

### **Presentations**

In addition to the presentations made at the TRB Annual Meeting noted elsewhere in this report, presentations include:

- David Kack and Rebecca Gleason (WTI/MSU) were guest lecturers for two CE 350 Introduction to Transportation classes at MSU (October 22, 2019).
- Rebecca Gleason (WTI/MSU) provided a guest lecture for nearly 100 students at MSU on Sustainable Transportation. ECHM 205: Energy and Sustainability (October 29, 2019).
- Rebecca Gleason (WTI/MSU) provided a guest lecture for nearly 40 students at MSU on Sustainable Transportation. ECHM 405 Sustainable Energy (November 7, 2019).
- Margo Hill (EWU) presented at the Affiliated Tribes of Northwest Indians (ATNI) on Drug Abuse & Prevention: The Role of Transportation & Mobility; and Tribal Mobility Issues for Women (January 27-28, 2020).
- Angelena Campobasso and Margo Hill (EWU) both presented during a forum for 350 Spokane for Climate Change. Angelena presented Transportation Issues for Indian Country due to Climate Change; and Margo presented How Local Tribes Met Their Transportation Needs Through the Rivers and Lakes (February 7, 2020).
- Danae Giannetti (WTI/MSU) presented on *Streetmix and Multimodal Transportation* at the Montana Science Center (MSC) Girl Scouts Citizen Scientist Day (February 29, 2020).
- Danae Giannetti (WTI/MSU) presented a guest lecture (through distance learning) called "A Human-Centered Approach to Transportation and Mobility" to nearly 100 students at MSU in ECHM 205: Energy and Sustainability, now being delivered online (March 26, 2020).



#### Website(s) or other Internet site(s)

- SURTCOM website ([www.surtcom.org](http://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.
- The Small Urban and Rural Transit Center (NDSU) website (<https://www.surtc.org/>) has been updated as of January 1, 2020 to reflect an organizational name change: Small Urban and Rural Center on Mobility <https://www.ugpti.org/surcom/>.

#### New methodologies, technologies or techniques

SURTCOM/NDSU developed a revenue vehicle rehabilitation or replacement predictive model utilizing machine learning.

EWU is partnering with the University of Washington's STAR Lab on primary research regarding using cell phones to determine how tribal transportation takes place on and off American Indian Reservations.

#### 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

NDSU continues to work on training modules for tribal transit. Two eLearning Modules were developed. They include *Grant Writing for Rural and Tribal Transit Providers* [https://modules.ugpti.org/grant-writing/story\\_html5.html](https://modules.ugpti.org/grant-writing/story_html5.html) and *Customer Service for Rural and Tribal Transit Providers* [https://downloads.ugpti.org/surtcom-customer-service/story\\_html5.html](https://downloads.ugpti.org/surtcom-customer-service/story_html5.html)

## **4. Outcomes**

SURTCOM staff present the findings from research projects to the maximum extent possible, and present on all projects related to the SURTCOM theme, such as the ongoing and completed projects with NADO. With one performance measure to disseminate research deliverables for each research project, that target was met, as the research reports for the all 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. 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 David Kack and Andrea Hamre (WTI/MSU) participated in the Rocky Mountain Region Tribal Transportation Program Tribal Transit Workshop, in Billings, Montana (February 11-12).

#### Increased understanding and awareness of transportation issues

Margo Hill and Jason Scully (EWU) presented SURTCOM's work during the Associated Schools of Collegiate Planning (ACSP) Annual Conference, Greenville, S.C. (October 24-27, 2019). Richard Rolland (EWU) took part in and presented SURTCOM's work at the PACTRANS-CSET Regional Transportation Conference at the University of Washington (October 11, 2019).

#### Passage of new policies, regulation, rulemaking or legislation

Margo Hill (EWU) has been selected to serve on TRB's National Human Trafficking Transportation Steering Committee.

#### 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

Nothing to Report

#### Enlargement of the pool of trained transportation professionals

EWU, WTI/MSU and SURCOM/NDSU staff taught numerous classes related to planning and/or transportation. Further, 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.

#### Adoption of new technologies, techniques or practices

Nothing to Report

## **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 hope to:

- Increase access to opportunities that promote equity and economic development through mobility;
- Implement innovative multi-modal solutions in these areas;
- Implement smart cities innovations in small urban, rural, and tribal communities;
- Increase active transportation modes, especially walking and cycling; and,
- 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)

The Deep East Texas Council of Governments (DETCOG) has continued the voucher program that was established with SURTCOM's assistance. Further, DETCOG's model has been shared

with additional non-profits and city governments as an option for providing basic mobility for people with limited options.

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

The COVID-19 situation has cancelled or delayed many conferences where SURTCOM staff were scheduled to present. Further, the COVID-19 has delayed some field work (gathering data), so projects will likely take longer to complete than originally planned. Finally, the COVID-19 pandemic may ultimately alter how people move within and between communities, which may affect comparing data gathered before and after the pandemic.

It is anticipated that securing match for the UTC funds may become more challenging, as local and state governments, and other potential funding partners, may limit funding for research as a result of budget cuts due to the pandemic. It would be helpful if all UTCs could have match requirements reduced for the next 18 months of their UTC funding. It is recognized that this would likely require Congressional action.

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