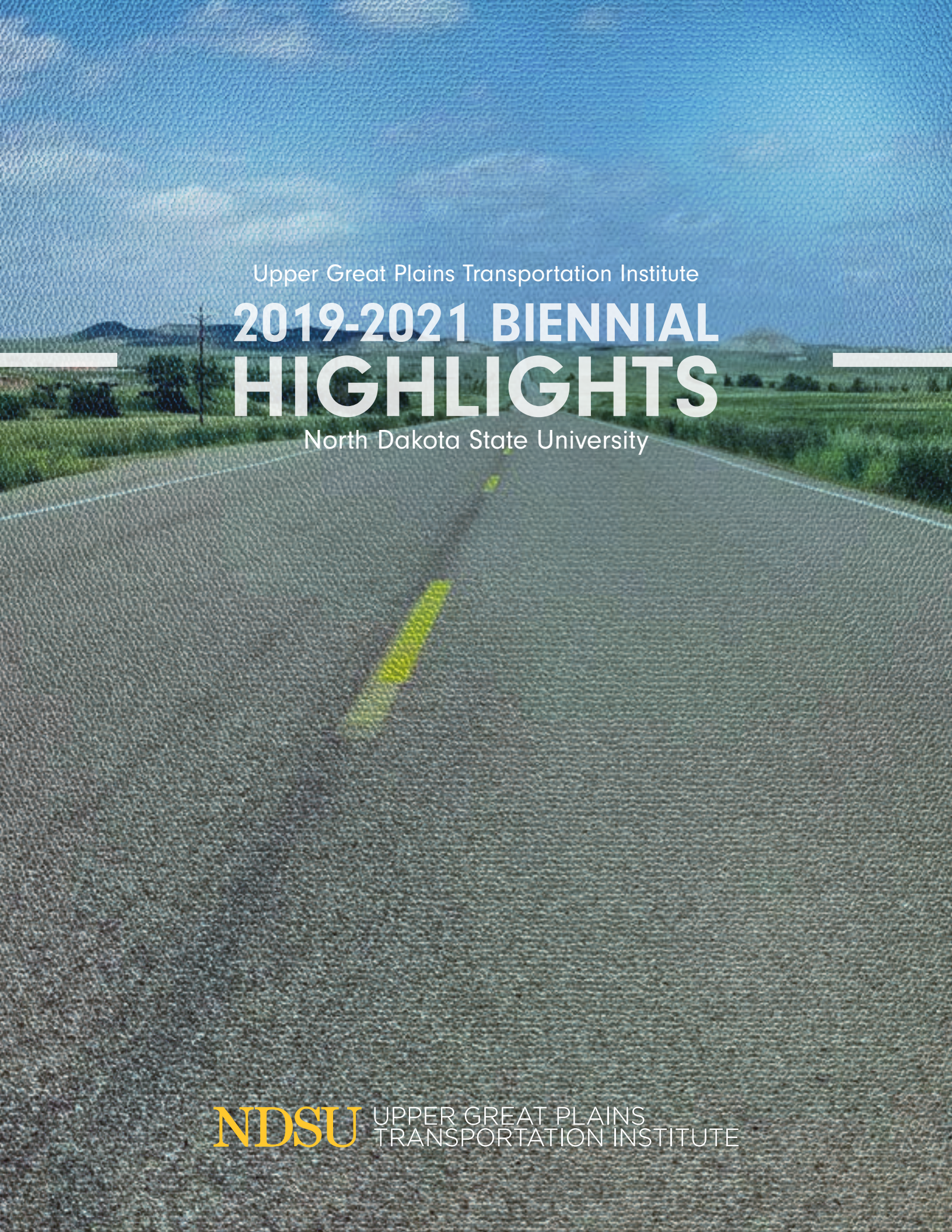

Upper Great Plains Transportation Institute

2019-2021 BIENNIAL HIGHLIGHTS

North Dakota State University

NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

Transportation Innovation

The Upper Great Plains Transportation Institute at North Dakota State University was created in 1967 to serve the people of North Dakota by examining freight rates and agricultural movements. In the more than 50 years since it was established, UGPTI has expanded significantly to include all modes of transportation and includes broad programs of research, education, and outreach.

Supporting North Dakota's transportation needs

UGPTI continues to build on its history of providing research, education, and outreach to support transportation in North Dakota. This report highlights efforts to date during the 2019-2021 biennium that focused on issues and opportunities or are likely to have a significant impact on North Dakota's citizens, businesses, and transportation systems. This report covers topics as diverse as agricultural transportation, safety, transportation planning, and gravel roads. The Institute's biennial budget for 2019-2021 was $23.29 million, including $4,396,329 in General Fund dollars from the State of North Dakota, of which $875,000 was designated for the statewide local road and bridge study. Those General Fund dollars are critical as a stable funding foundation. UGPTI leverages those funds as it pursues grant funding from federal agencies and other sources.

With its focus on North Dakota, this report is not an exhaustive record of all UGPTI's staff efforts. Additional national and regional efforts include collaborative work with numerous universities and agencies. For more information or specific questions, visit www.ugpti.org or contact our office.

Our Mission

Providing innovative transportation research, education, and outreach that promote the safe and efficient movement of people and goods.

- **Research.** Conducting applied and advanced research in highway, transit, rail, air, and waterway transportation that addresses the critical issues of the state, region, and nation.
- **Education.** Educating the transportation workforce of tomorrow through multidisciplinary curricula that focus on transportation economics, management, infrastructure planning, mobility, and supply chain logistics.
- **Outreach.** Improving the skills and knowledge of the existing workforce through training, technical assistance, and the transfer of research results to practitioners.

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Advisory Council

UGPTI is advised and guided in part by an advisory council composed of representatives from various organizations, industries, and agencies affecting or affected by transportation. Members represent government, municipalities, transit, contractors, agriculture, energy, business, trucking, railroads, and aeronautics. Membership of the advisory council is designated by North Dakota Century Code.

Advisory Council members include:

Terry Traynor – Chair
ND Association of Counties

Dale Bergman
Grand Forks Cities Area Transit

Blake Crosby
ND League of Cities

Julie Fedorchak
ND Public Service Commission

Neal Fisher
ND Wheat Commission

Doug Goehring
ND Department of Agriculture

Russ Hanson
Associated General Contractors of ND

Mike Holmes
Lignite Energy Council

James Leiman
ND Department of Commerce

Stu Letcher
ND Grain Dealers Association

Bill Panos
ND Department of Transportation

Jason Rayner
ND Corn Council

Peter Rackov
Steffes Corporation

Arik Spencer
Greater ND Chamber

Kyle Wanner
ND Aeronautics Commission

Mark Watne
ND Farmers Union

Dan Wogsland
ND Grain Growers Association

Mark Wolter
ND Motor Carriers Association

Dan Zink
Red River Valley & Western Railroad

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For more detailed information on the projects highlighted in this report, visit ugpti.org. Open the online version of the report which will include links to additional information for most projects.

Ag Transportation

Grain and oilseed transportation statistics assembled

Since 1967, UGPTI has published an annual analysis of the patterns and methods of distributing grains and oilseeds from North Dakota. The report provides a database for identifying trends in shipments of grains and oilseeds from the state. Data for the report are obtained from the "Grain Movement Report" submitted monthly by every elevator in the state to the N.D. Department of Agriculture. Information is provided on hard red spring wheat, durum, barley, sunflower, soybeans, corn, canola, dry edible beans, and dry edible peas.

Annual North Dakota Elevator Marketing Report published

The Annual North Dakota Elevator Marketing Report provides a benchmark for elevator managers in assessing performance and supplies a source for recognizing trends in the characteristics of North Dakota elevators. The report is prepared in cooperation with the North Dakota Wheat Commission and the North Dakota Soybean Council, the North Dakota Corn Council, and the North Dakota Department of Agriculture. The statistics detailed in the report are a source of information for elevator managers and those interested in the North Dakota grain industry.

Some recent highlights:

- The Pacific Northwest remained ahead of other destinations as a market for shipments of HRS wheat originating from North Dakota elevators in 2019-20, and it is an important gateway to Asian markets. Shipments to Wisconsin, Minnesota, and other Midwest destinations typically move beyond the gateway to U.S. domestic millers. The Pacific Northwest is a large U.S. grain port and important gateway to Asian markets.
- Shipments of durum show a continuing trend toward larger shuttle and unit train facilities. Elevator shipments to in-state processors accounted for about 15% of shipments. Other destination data reveal that the largest share of durum moved from North Dakota elevators to Duluth in 2019-20, followed by other destinations.
- Soybean shipments also are bound for the Pacific Northwest. Typically, these originate in trainload shipments. (see DP-310 for elevator market/transportation facts).
- Corn grown in North Dakota is processed in state and shipped to other markets primarily in trainload shipments. Elevator shipments to in-state processors accounted for about 18% of shipments. The PNW was the primary out-of-state destination at 40% of corn shipped in 2019-20.

Commercial Vehicle Safety Center improves collaboration among agencies

UGPTI was awarded a new project with the Federal Motor Carrier Safety Administration to continue the work of the Commercial Vehicle Safety Center (CVSC) and to host a second Commercial Vehicle Safety Summit in May 2021. The CVSC serves as a point of contact for universities, law enforcement, and driver licensing agencies seeking assistance to establish partnerships to improve commercial vehicle safety. It also disseminates information from existing projects and partnerships. The planned May 2021 Summit will focus on data quality and bring together representatives from law enforcement, driver licensing agencies, universities, and industry to share research and best practices to improve data quality and the collection and use of CMV data. It will highlight ways states have worked to improve data quality, improve the ways they collect data, and/or new ways they are using the data.

Driver behavior analysis to predict future crash events

UGPTI's Commercial Vehicle Safety Center staff members are working with the North Dakota Highway Patrol to analyze commercial motor vehicle (CMV) driver behaviors that may be most predictive of future crashes. Examining a set of almost 600,000 nationwide CMV drivers identified through roadside inspections conducted in 2019, data were assembled regarding inspection violations, driving convictions, and crashes for these drivers during 2017 and 2018. Results showed that drivers with certain violations, convictions, and/or a crash during 2017 were more likely to be involved in a crash during 2018 than drivers without these behaviors. Further analysis is underway to examine North Dakota-based CMV driver behaviors specifically in order to develop potential outreach or educational materials addressing the behaviors.

Local Roads

image: Shutterstock

Gravel updates

UGPTI continues to work with local governments to improve North Dakota's 60,000 miles of gravel roads.

- UGPTI continues to work with local road leaders to implement a new gravel surfacing special provision made available by the North Dakota Department of Transportation (NDDOT). The provision expands on gradation and material properties to include testing and quality assurance/quality control for gravel specified in road building and improvement contracts. Counties, townships, and cities rely on NDDOT provisions for writing specifications, and will use the provision in bidding out projects and gravel stock piles. The provision includes specifications for clay in gravel, which is essential for reducing washboarding, dust, float, and maintenance costs.
- The "Glue for Gravel Roads" class was again offered to local road managers in 2019 and 2020. The class focused on incorporating the appropriate amount of clay in existing gravel, application processes, and maintenance.
- Motor-grader operator training was held at more than a dozen sites across the state again in 2019 and 2020. The two-day session included a full day of classroom training and a second day of hands-on training in the field. Operators learned to make full use of the computerized and automated controls available on most newer motor graders to reclaim aggregate, assure proper slope for drainage, smooth rough roads, and recondition shoulders. A key topic focused on knowing when and when not to blade roads for best results. UGPTI's three current trainers, Gary Steiner, Burleigh County, Russel Klimpel, Mountrail County, and Randy Watson, Mountrail County, have more than 70 years of combined experience. Planning is underway for the training in 2021.

GRIT enhancements continue to help counties manage roads

UGPTI experts continued to update and enhance the Geographic Roadway Inventory Tool (GRIT) to help counties manage their roadways. GRIT is an easy-to-use tool that makes large volumes of roadway infrastructure information easily available without combing through files and stacks of paper. The system also standardizes information and makes it easily available for new staff and for sharing with county commissioners and the public.

County staff are now able to add emergency road construction projects resulting from flooding, windstorms, severe structural damage from frost, and other events, allowing them to alert officials and the public to problem areas and to track repairs to those areas over time. County road experts also can use GRIT to track planned construction projects in coming months and years. Several Minnesota counties are testing GRIT, so the Minnesota Local Road Research Board provided funding to add pavement condition forecasting technology to the tool. Currently, N.D. counties are adding pavement inventory and condition data for their counties so they can use that function as well to predict and budget for various pavement maintenance and reconstruction projects.

GRIT is also able to display local road restrictions in order to protect roads during the spring thaw or at other times when road restrictions are in force. The ND511 Traveler Information Map recently added a link to the GRIT load restriction map layer to make that information more broadly available to the public.

In addition to serving as a planning, information, and inventory tool for local road agencies, GRIT is also a powerful instrument for communicating roadway information to decision makers and the public. A "share" button available for most of the information layers allows information on road construction planning, weight restrictions, current projects, and other topics to be sent via email and posted to social media and websites.

GRIT was launched by UGPTI in 2015 and has also been instrumental in providing information for UGPTI's studies of investment needs for local roads and bridges in North Dakota. UGPTI staff contact road department staff in each county on a monthly basis to answer questions and provide technical assistance in using GRIT to enhance their roadway management and outreach efforts.

NDLTAP introduces R.E.D. Book

UGPTI's N.D. Local Technical Assistance Program (NDLTAP) released the R.E.D. (Recognize, Eliminate, and Discuss Safety) Book, a new resource designed to help road workers and managers eliminate accidents and injuries.

NDLTAP adapted the Minnesota publication for North Dakota workers. The R.E.D. Book program is designed to eliminate unsafe acts by requiring employees to immediately identify and discuss hazards that can hurt them. By recognizing these hazards in advance, employees are less likely to commit unsafe acts. The R.E.D. Book was introduced in webinars and live presentations across the state in July 2020 in conjunction with NDLTAP efforts to elevate safety this year in a "Safety Switch" push to get everyone (workers and road users) home safely every night.

Enhanced outreach in N.D. oil counties

Two transportation experts were recently added to the NDLTAP staff to assist with local transportation planning and investments in Dunn, McKenzie, and Williams counties and with the Mandan Hidatasa Arikara Nation. Matthew Johnson and Ed Ryen will be located in Williston and affiliated with the NDLTAP office in Bismarck. The new western outreach is an NDDOT-sponsored effort with a broad range of tasks that provide a wide array of support, with the focus of providing a "seamless and coordinated service across county lines."

Matthew Johnson is the western N.D. transportation liaison. He has more than 26 years of experience in the transportation industry, serving as a project engineer with Wold Engineering in Bottineau. He operated his own construction engineering firm, MJ Consulting, from 2018 to 2020. Johnson will help local officials plan and enhance their regional efforts and transportation investments.

Some of Johnson's duties will include:

- Advancing transportation planning, project scheduling, asset management, and operations-based technology-transfer concepts in western North Dakota.
- Coordinating initial transportation issue resolution discussions with the state, county, city, township, and/or tribal entities to determine logical resolution steps and strategies.
- Enhancing the current western N.D. UGPTI tribal efforts with MHA Nation.

Ed Ryen is the western transportation liaison assistant. He has more than 40 years in transportation engineering, bringing valuable knowledge in construction, bridge inspections, planning, emergency operations, and highway technology. In his role he will assist in further implementation of the Wise Road Weather station and the Toward 365 project. He will also assist with project and regional planning, help with the Geographic Roadway Inventory Tool (GRIT) data entry, and share best practices with local governments in the region.

Taming dust with soybean oil

NDSU researcher Jim Bahr developed and patented a soybean-based dust control product that is being produced by BioBlend, an Illinois-based manufacturer of biodegradable lubricants and industrial products. The product was placed on several test strip gravel road locations in the Upper Midwest, including North Dakota, South Dakota, and Minnesota. With help from BioBlend sales representative Todd Allison and NDLTAP's Kelly Bengtson, the product was applied to test sites in the region. The soybean-based product is non-corrosive and can be applied with standard equipment. The product may be available on the retail market as soon as 2021.

UGPTI leads effort to improve weather monitoring for transportation in the Bakken

NDLTAP is leading efforts to implement an innovative weather monitoring system that aims to minimize weather-related disruptions in the oil industry and protect roads for other users. Wise Roads (Weather Information System to Effectively Reduce Oilfield Delays and Disruptions) was implemented in 2019 to monitor weather and provide more accurate localized weather information in the Bakken oil producing region. The project is a partnership of the Western Dakota Energy Association (WDEA), the North Dakota Agricultural Weather Network (NDAWN) at NDSU, and UGPTI/NDLTAP.

To date, 31 Wise Roads weather stations have been installed in the region with funding secured for a total of 50 sites. Each station costs approximately $10,000. Some of the weather stations include road probes to measure roadbed moisture content, which provides critical road condition information, at 6 inches and, 2, 4, and 6 feet.

The cost of the weather stations is an investment in keeping roads open for industry and agriculture and in extending the life of local roads. Using information from the sites, local road agencies are better able to implement road restrictions in localized areas to limit damage to roads while keeping them fully open in other areas to facilitate commercial traffic.

UGPTI facilitates move to statewide load permitting on local roads

Through workshops and other outreach to counties, townships, and tribal agencies, UGPTI is facilitating the expansion of LoadPass, the uniform county weight permitting program originally developed for use in the 19 counties of the Western Dakota Energy Association (WDEA). As of January 2021, two cities and 30 of the state's 53 counties have agreed to join the program. The program gives counties and townships improved control over heavy loads traveling over their roads and provides a consolidated location for companies to obtain overweight (non-divisible loads) and over-dimension permits for travel on local roads, including member county, township, and city roads. It also eliminates the need for a company traveling through multiple counties to obtain a permit from multiple county courthouses. LoadPass has been in operation for more than 30 years, but has been updated to keep pace with growth in the energy industry. The N.D. Legislature previously directed local jurisdictions to develop and implement a uniform permitting system. WDEA has contracted with UGPTI to provide training on the system.

Popularity of sign warrior calendar grows

Fourth graders from across the state contributed drawings to the 2020 and 2021 Sign Warrior calendar produced by NDLTAP with assistance from the American Traffic Safety Services Association. After NDLTAP and local road departments solicited entries from schools across the state, entries were received and a selection panel chose the top drawings to include in the calendars. NDLTAP staffers and local road crews recognized winning artists and distributed calendars across the state.

The calendar project is a part of NDLTAP's effort to increase awareness of the importance of signs and improve road safety by reducing sign damage and vandalism.

Want a copy? View and download the calendar.

Improving safety through better signage

More than 850 township officers took part in 16 classes across the state to learn more about the importance of signs and sign maintenance to the safety of road users. UGPTI's N.D. Local Technical Assistance Program designed the meeting to address common sign issues faced by the state's rural townships. Following the meeting, more than 240 participants requested additional information on inventorying, maintaining, and installing signs.

In August 2020, Mountrail County hosted UGPTI's "Signing 201" class with help from local experts, Newman Signs, and the Northland Chapter of the American Traffic Safety Services Association. Participants learned about sign basics and functions, sign ordering, sign inventory systems, design layout, and sign installation, maintenance, and management. The class builds on the "Signing 101" course launched in 2016 that focused on local roadway signing.

Annual Road Day held in LaMoure

The LaMoure County Highway Department hosted the annual Road Day and Open House in August 2019 to highlight local leadership in road management. NDLTAP helped organize and host the event. The event highlighted the county's road crew and equipment and the work required to maintain the county's 1,200-plus roadway miles.

Supporting local bridges

In 2019, UGPTI hired Kelly Bengtson as its bridge and pavement engineer to provide technical assistance to local agencies. In his role, Bengston advises local experts on strategies for maintaining and extending the life of existing bridge structures as well as cost-effective approaches for bridges that need extensive repair or replacement. Bengtson is also working with the Soy Transportation Coalition, which recently investigated bridge load ratings, and is currently embarking on a marketing effort to compile a list of economic methods to repair and/or replace deficient low-volume road bridges. The coalition is an organization composed of 13 state soybean boards, the American Soybean Association, and the United Soybean Board. This marketing tool will be used to help educate funding decision-makers and to share success stories with roadway leaders to encourage innovative solutions that will improve the nation's rural bridge network.

In September 2020, UGPTI hosted a demonstration of an installation of a prefabricated bridge superstructure and deck panels in Cass County. In October, UGPTI staff facilitated a technical tour of the Long-X Bridge and Wildlife Crossing on construction project on U.S. Highway 85 south of Watford City. UGPTI has also developed "Bridge 101" and "Bridge 201" courses for local road workers to provide background on bridge scour, bridge loading and limits, maintenance best practices, signing requirements, inspections, and other topics. The one-day course included both classroom and on-site instruction.

New Technology Applications

Intelligent transportation solutions and smart cities

Researchers are analyzing ways that emerging transportation technologies can enhance safety, livability, and the economy. Studies include the following:

- Impacts of connected and autonomous vehicle deployments and how cities should prepare.
- Impacts of vehicle electrification and truck platooning on energy consumption and the environment.
- Applications of machine learning and artificial intelligence to aid decision-making about securing the transportation infrastructure from terror threats and other disasters.
- Remote sensing applications to improve multimodal transportation safety and operational efficiencies by using drones. New research will target applications that can leverage the North Dakota statewide infrastructure enabling beyond-line-of-sight drone operations.
- Micromobility and shared mobility to enhance the affordability of short trips and last-mile connectivity to transit.

This suite of studies enables “smart cities” that integrate diverse sets of information and communication technologies to monitor asset condition, security, safety, service quality, and operational efficiencies, often in real time.

Railroad Autonomous Inspection Localization System (RAILS) streamlines rail inspections

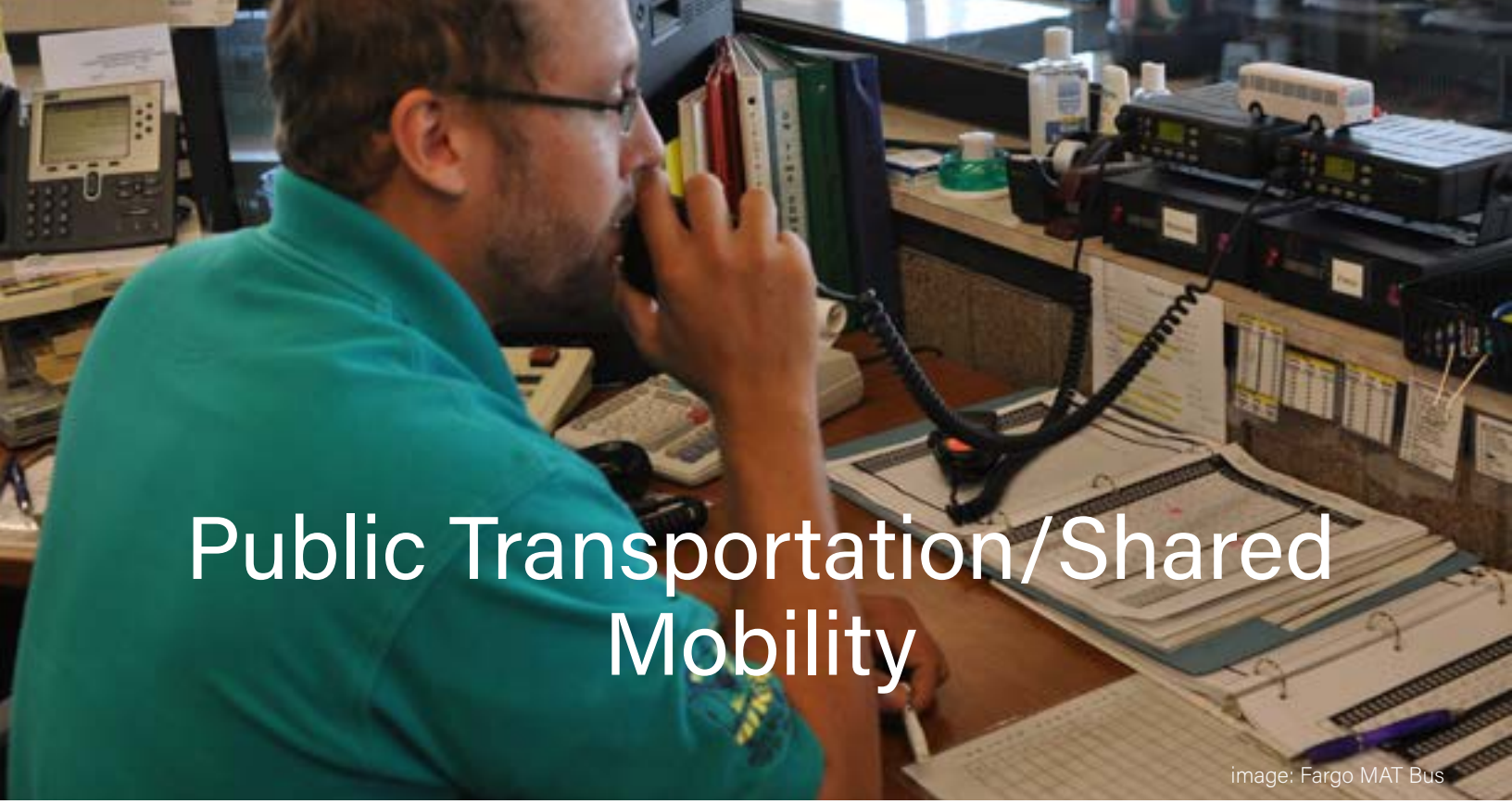
Researchers are developing an autonomous track geometry monitoring system to screen the rail network for irregularities during normal train operations. The approach, which uses low-cost sensors on board revenue service trains to identify anomalies and irregularities, will help the industry more efficiently allocate finite and expensive inspection resources.

The research focuses on developing signal processing and machine learning algorithms and models to transform on-board sensor data into track geometry equivalents. The research team is also developing methods to integrate the data with a system for data visualization.

Expected outcomes will be educational benefits, workforce development, and technology transfer to advance the state-of-the-art in railroad infrastructure condition monitoring, leading to substantial efficiency gains and safety enhancements. The system could improve safety and potentially save railroads billions of dollars by locating and characterizing irregularities before they cause accidents. At the same time, the researchers are developing a price budget model to help manufacturers and railroads determine a suitable trade-off between system performance and return on investment to spur adoption.

Patent issued to NDSU/UND for UAV technology

NDSU/UGPTI and the University of North Dakota received a patent in 2019 for antenna technology that extends the range of unmanned aerial vehicles without increasing their size or weight. The technology turns the entire body of a vehicle into an array of antennas that the system can control by steering an electromagnetic beam in any direction to achieve robust communications.



Public Transportation/Shared Mobility

image: Fargo MAT Bus

Researchers assess N.D. mobility options, transit needs, and characteristics

Researchers with UGPTI's Small Urban and Rural Center on Mobility completed the study, "Assessment of North Dakota Mobility Options, Transit Needs and Characteristics of Users," for the N.D. Department of Transportation (NDDOT). The study analyzed population and demographic trends in North Dakota to identify areas with the greatest current needs for mobility services and areas expected to have the greatest increases in demand.

This study also meets the needs of section 10 of HB 1012, passed by the North Dakota State Legislature in 2019, which called for NDDOT to study public transportation services within the state.

The research showed that public transportation in North Dakota serves riders who are mostly low income. Many have a disability, and many either cannot drive or do not have access to a vehicle. A large share of rural transit riders are older adults. Urban transit, particularly in Fargo, serves a large share of students.

Results from surveys of transit agencies, stakeholders, and riders consistently identified the greatest needs for improvement as being an increase in the number of days of service and the hours of service per day. Among the rural transit regions, the Red River Valley and the northwest region, along with Walsh County and Dickey County, were identified as the areas with the greatest need for increased services. Within the urban areas, the greatest identified need was improved fixed-route service in Bismarck-Mandan. Investments will be needed to increase services in all urban areas as populations continue to grow and demands increase.

An increase in annual statewide operating funding of $5.3 million is needed in the base scenario to meet the service gaps for both urban and rural transit. By 2030, the projected need in increased annual funding is $14.4 million statewide. Meeting the base scenario target levels requires an additional 57 vehicles statewide at a cost of $10.1 million, and meeting the 2030 scenario requires 152 new vehicles at a cost of $25.7 million. If it is assumed that the federal share of vehicle purchases is 80%, then the cost to state and local jurisdictions is $2.1 million for the base scenario and $5.1 million for 2030.

Other passenger transportation services, such as taxis, Uber, and Lyft, are also provided in the state to help meet the mobility needs of North Dakota residents. However, these services are often too expensive for many, and most vehicles are not wheelchair accessible. Intercity bus and rail options also exist but are limited.

The study also looked at the benefits of transit service. The estimated monetary benefits of rural transit in North Dakota is for every dollar invested in transit yields a $1.50 in benefits in rural areas, and for every dollar spent on transit in urban areas results in $1.70 in benefits. Without transit, many health care trips would be missed, which results in reduced quality of life and increased health care costs.

Study examines mobility and transit needs of tribal communities

UGPTI researchers with the Small Urban and Rural Center on Mobility are examining transit and livability in tribal communities to better understand transportation and mobility needs of tribal communities and identify gaps in services and funding needs.

The research expands on previous work by the center that studied the nexus of transit and livability in rural communities.

Researchers are conducting a comprehensive literature review of tribal livability, tribal mobility and public transportation needs, and tribal quality of life. Transit-related demographic information concerning the 573 federally recognized Indian tribes will be developed. The study will document the availability of transit services among the list of federally recognized tribes and analyze the public transportation services operations and funding. Tribal transit funding needs and gaps in service will be identified. The study will employ a framework developed in an earlier research project to conduct case studies with tribal communities. Case studies will examine livability factors, quality of life, transportation, and transit's contribution toward community livability.

Transit agencies' perspectives of automation examined

Researchers gathered input from U.S. transit agencies in rural, small-urban, and urban areas to understand transit agencies' interest in implementing various automated transit technologies and identify opportunities, challenges, and research needs. This study identified various U.S. transit industry uses of automation technologies and conducted a national survey of transit agencies in rural, small-urban, and urban areas to gather input about aspects of bus transit automated technologies and their implementation.

The researchers found that most rural transit agencies are comparatively less aware about the specifics of various transit automation technologies and are not knowledgeable about potential advantages, concerns, and opportunities of automation features to their agencies. As transit agency system size increased to include more urban systems, the awareness and demand for using various transit automation technologies was observed to increase.

Transit agencies face multiple challenges when procuring transit vehicles with some level of automation, including funding, public acceptance, reliability of technology, hiring and training qualified operators, lack of availability of fully ADA-compliant vehicles, uncertainty about insurance and liability requirements, and available existing transit fleets with useful service life. Rural agencies face the additional challenges of their unwillingness to risk being early adopters; lack of support from state agencies; lack of technical capabilities, such as WiFi, GPS, and cell service; lack of infrastructure, such as curbs and lane markings; natural barriers, such as mountainous terrain and adverse weather; lack of successful implementation examples in rural communities; and concerns, especially from older riders, about not feeling confident and safe with automated technologies.

Results provide improved understanding of the opportunities, advantages, and challenges for implementing bus automated transit technologies.

Intelligent transportation system applications in rural transit studied

UGPTI researchers studied the adoption and use of intelligent transportation system (ITS) applications among small-urban and rural transit systems to identify what technologies are currently in use and to learn how communities, agencies, and managers influence technology adoption. They also evaluated changes in ITS adoption over the past 10 years.

Levels of adoption of commonly used ITS technologies by transit agencies were found to be between 30% and 50%. For example, GIS was being used by nearly half of survey respondents. AVL and CASD technologies were being used by a similar number of agencies. Smartphones were used by more than 40% of survey respondents. When comparing technology use today with that of 10 years ago, significant increases have occurred. The most substantial single technology increase was seen in automated vehicle locating system use, climbing from 6% among survey respondents in 2010 to 51% today.

Econometric analysis showed that hiring managers with more education and encouraging them to attend conferences and interact with ITS vendors may influence adoption of technologies by transit agencies. Results also showed that larger agencies are more likely to use most types of technology and are more likely to find them beneficial. Finally, results can be used to identify which agencies could potentially benefit from certain technology adoptions.

Going beyond the millennials: N.D. driver ride service survey

UGPTI researchers conducted surveys across the state to better understand public perception of ride-sourcing services, such as Uber and Lyft, and to identify key contributing factors and behavior patterns which may trigger the usage of such services by those outside of the typical millennial, urban market. In addition, they compared current results with those obtained from the previous year's survey to explore shifts in North Dakotan's usage and perception of ride-sourcing services.

The researchers surveyed North Dakota drivers over age 34 to understand their perceptions and practices in a two-year survey effort. In 2020, rural participants' awareness of ride-sourcing increased by nearly eight percentage points from that of 2019. Only 3.5% of rural participants could confirm that these services were available in their area. Where services were available, 30.0% of rural participants claimed using ride-sourcing at least once in the past year. Among drivers that have used ride-sourcing, 41.7% of rural participants stated that going to/from the airport was the most common purpose of use. Among respondents, 56.5% most frequently paid $6.00 to $15.00 per trip. About 25% of rural ride-sourcing users had taken an Uber or Lyft home to avoid driving after drinking alcohol. If ride-sourcing became available, 20% of rural participants would be interested in using the services.

The rise of ride-sourcing services such as Uber and Lyft in recent years has revolutionized urban transportation across the globe. In an era when ride-sourcing companies are expanding rapidly in previously untouched markets, rural markets might soon face unexpected changes. A better understanding of the factors and attitudes that will influence the use of ride-sourcing services in rural areas will help to expand mobility for residents and mitigate any potential negative impacts.

Safety

Ongoing assessment of North Dakota's 24/7 Sobriety Program

UGPTI provides an ongoing assessment of North Dakota's 24/7 Sobriety Program to help policy makers assess how the program is working and if modifications to the program might improve results. UGPTI has developed a process to combine administrative records from NDDOT and the ND Bureau of Criminal Investigation to measure the impacts of the program in terms of traffic safety outcomes and reduced recidivism. In the most recent assessment, researchers found:

- Crashes, non-DUI-related citations, and DUI-related citations were all significantly reduced in the 60-, 360-, 730-, and 1,095-day intervals following program enrollment.
- Participants entering the program for the second or subsequent time were most likely to recidivate and have a DUI citation following program enrollment. If possible, these individuals should be targeted with additional treatment and intervention efforts.

As the 24/7 Sobriety Program has evolved, UGPTI has continued to provide sustained empirical analysis that can be used for continual program improvement. Early assessments of the 24/7 program were used in policy decisions and in support of the program being accepted as an NHTSA-approved countermeasure. This NHTSA compliance was critical in meeting program requirements for safety and infrastructure program funding.

Statewide seat belt use study

Since 2010, the North Dakota seat belt use study, which is based on national standards, has provided statistically reliable data that safety specialists and policy makers can use for planning programs and policies to boost seat belt use and improve highway safety. During the week of June 1-7, 2020, trained observers visited each site in their assigned counties to collect seat belt use data for drivers and right front-seat passengers in vehicles with gross vehicle weights up to 10,000 lbs. Data were collected for 17,836 drivers and 4,283 right front-seat passengers for a total of 22,119 vehicle occupants. The observations were conducted at 320 sites across 16 counties. Based on the sampling methodology weighting procedures, the final estimate for the statewide seat belt use was 83.7%.

Highlights include the following:

- Driver seat belt use was 79.7%, while passenger use was 88.3% statewide.
- Overall, seat belt use was higher in the east, at 85.2%, compared with 78.2% for the west.
- Occupants of cars, SUVs, and vans demonstrated relatively high seat belt use of 81.7%, 87.2%, and 88%, respectively. Truck occupants were belted at a lower rate of 76.1%.
- Female occupants show much higher rates of seat belt use, 88.2%, compared with males at 77.2%.
- Seat belt use was highest on primary roads, 90.4%, followed by local roads, 80.6%, and secondary roads, 74.8%.

Cell phone use on ND highways

Texting and talking on cell phones was higher than the national average in a 2020 UGPTI study. In conjunction with a statewide seat belt survey, trained observers saw 2.8% of drivers talking on cell phones and another 2.1% manipulating a handheld device for a total of 4.8%. The national average is 3.2%. In total, 17,836 drivers were observed in Barnes, Benson, Cass, Grand Forks, Griggs, Richland, Stutsman and Traill counties in eastern North Dakota, and Burke, Burleigh, McKenzie, Morton, Mountrail, Stark, Ward, and Williams in western North Dakota. The number of drivers talking on cell phones ranged from 11.8% in Griggs County to 1.2% in Traill County. Device manipulation ranged from a high of 8% in Griggs County to 0.4% in Burke County. Results of the study will help NDDOT assess levels of distracted driving in the state and target programs for improving highway safety.

Truck crash facts assembled

The number of truck-involved injury crashes in North Dakota has increased since 2016. However, the 2019 data reflect a 33% overall reduction from the high shown in 2014 according to data assembled by UGPTI researchers. A second measure of injury crashes by daily vehicle miles traveled (DVMT) showed a higher frequency of truck crashes on non-interstate road systems compared with interstate highways.

The size difference between 80,000-lb. trucks and 4,000-lb. passenger vehicles, along with other characteristics such as acceleration and deceleration times and turning radiuses, heightens crash risks. Truck-involved serious injury outcome incidence is 1.6 times higher compared with injury crashes where no trucks were involved. That makes it important to monitor levels and effects of increased safety-related interactions between trucks and cars. The crash data were assembled in support of NDDOT's State Highway Safety Plan and its Vision Zero safety initiative. Other highlights include:

- Care required was the most commonly issued citation in all crash categories, but considerably higher in single versus multi-vehicle truck crashes, 71% and 29%, respectively.
- Failure to yield held a 20% share in multi-vehicle truck crashes compared with 14% in other vehicle crashes.
- Speed, along with traveling too fast for conditions, combined for 16% and 14% of contributing factors in both single and multi-vehicle truck crashes, respectively.
- Weather was the largest contributing factor in all crash categories whether single, multi-vehicle, or other vehicles.
- Of the injury crashes involving trucks, 67% were multi-vehicle. Angle and rear-end crashes made up 78% of this group of injury crashes; 41% occurred at intersections or were intersection related; 24% occurred on hills and/or curves; and 53% were non-junction crashes.
- Rollovers were the most harmful event in 18% of single-vehicle truck crashes.
- Serious injury crashes peaked mid-week then declined on the weekend. Approximately two-thirds or 57%, of crashes occurred during the second half of the calendar year.
- There was a continued prevalence of truck-involved injury crashes in the oil region. Although the number of serious injury truck crashes in the region has declined, McKenzie, Williams, and Mountrail counties accounted for 42% of truck-involved fatal and injury crashes in the state.

Youth occupant survey

Traffic crashes are a leading cause of death for North Dakota youth. Previous research shows that risk for fatal and serious injury increases by 50% to 70% when occupants fail to use safety restraint systems. In addition, youth in front seat positions are substantially more likely to suffer serious injury outcomes. Researchers are currently analyzing data collected in 2020 to measure youth occupant restraint use in the state for the biennial study. Observations were conducted at 106 sites across 12 counties.

Estimated state use rates creates a pattern for safety stakeholders working to instill positive traffic safety behaviors as common practice. Ongoing evaluation provides critical feedback for programs and policies designed to increase youth occupant safety.

Statewide traffic survey

The statewide driver survey, conducted every year since 2009, provides baseline metrics for the NDDOT Safety Division and others to use in understanding the perceptions and self-reported behaviors related to traffic safety. The survey asked drivers questions about a set of nationally agreed upon priorities, including seat belts, impaired driving, and speeding. Additional questions were included to better understand views on programs and attitudes pertinent to North Dakota drivers. Results show that many North Dakota drivers have adopted safe driving practices, but it is apparent that additional efforts are needed to improve safety on the state's roads. Two specific recommendations can be made when examining trends that have taken place over the last 11 years of administering the survey.

- Results show that rural residents are less likely to use safety belts than their urban counterparts. Improvements in this area must be made to reduce rates of fatalities and serious injuries during crash events among rural North Dakotans.
- Younger drivers (18-to-34-year-olds) generally engage in more dangerous behavior behind the wheel and engage in safe practices less often than those over age 35. These dangerous practices happen despite the fact that this group has higher exposure rates to Vision Zero as a safety campaign. It is evident that the safety campaign is reaching these dangerous drivers, but the messaging may need to be revisited with an aim to more effectively resonate with these driver groups.

Lab records provide insight into role of alcohol and other drugs in traffic safety

An analysis of traffic-related criminal justice records is providing insight into efforts to prevent impaired driving. The aim of the study was to explore data related to the prevalence of drugs other than alcohol in lab records. UGPTI researchers examined data for drivers involved in lab records submitted with traffic-related order reasons. The database includes drivers involved with law-enforcement and court cases. Approximately 35% of drivers were tested for drugs other than alcohol and had a known result. About 92% of the drivers tested positive for alcohol and about 25% tested positive for at least one drug. Cannabinoids or THC, methamphetamines, and amphetamines, respectively, contributed to about 15%, 15%, and 14% of the drug-positive results. CNS stimulants and sympathomimetic amines classes were the most representative drug class among drivers.

This study provides exploratory analysis regarding the occurrence of alcohol and other drugs in traffic-related criminal justice laboratory records. The research shows that some drug substances are commonly used in combination with others drug. This research provides early insight into drug classes and substances that are the most commonly present among drivers. The findings could be highly relevant to the design of drug-related traffic laws, policies, and programs targeted at understanding and curbing drugged driving risk.

Encouraging tribal community crash reporting

The American Indian population is at high risk for motor vehicle crash injury. Although these injuries are preventable, most American Indian populations lack fundamental data needed to understand these events and develop effective countermeasures.

This research provides a framework for exploring Indian nations' crash reporting systems in an effort to fill this information void. An inventory process and experience gained in working with four tribes in North Dakota produced a pragmatic approach that tribes can refine based on objectives with regard to accountability, sovereignty, and system integrity. The study shows that electronically documenting crash event data is plausible with commitment from tribes and support from other stakeholders.

During this investigation, the researchers found several barriers to improving tribal crash reporting, including:

- The sovereign nation status of tribes means they tend to operate independently. Therefore, consensus on a single tribal crash reporting system and/or form seems very unlikely. Each tribal community has its own culture and structure that influences crash reporting.
- Relationship issues between the state and tribes, such as data privacy concerns, intergovernmental communications, and fears crash data could be used against tribal members, are barriers to collaborations on crash reporting.
- Many participants did not have a good understanding of the crash response and reporting process beyond their own role. Misgivings were evident between the tribes and the state regarding organizational capacities and crash reporting processes.
- Improved communication for tribes with the regional and federal BIA offices regarding crash reporting is needed. Greater transparency would ensure a shared understanding and expectations with regard to crash reports completed by BIA officers on behalf of the tribal communities they serve.
- Tribal capacity for crash reporting and analysis is limited because of staff shortages and turnovers. External support for a crash reporting system should be considered to ensure continuity for tribal communities willing to commit to improving their crash data.
- Because of agency restrictions that prohibit software and/or equipment from outside the agency, the lack of connection between the BIA Incident Management Analysis and Reporting System and state crash systems was identified as a major barrier to crash reporting.

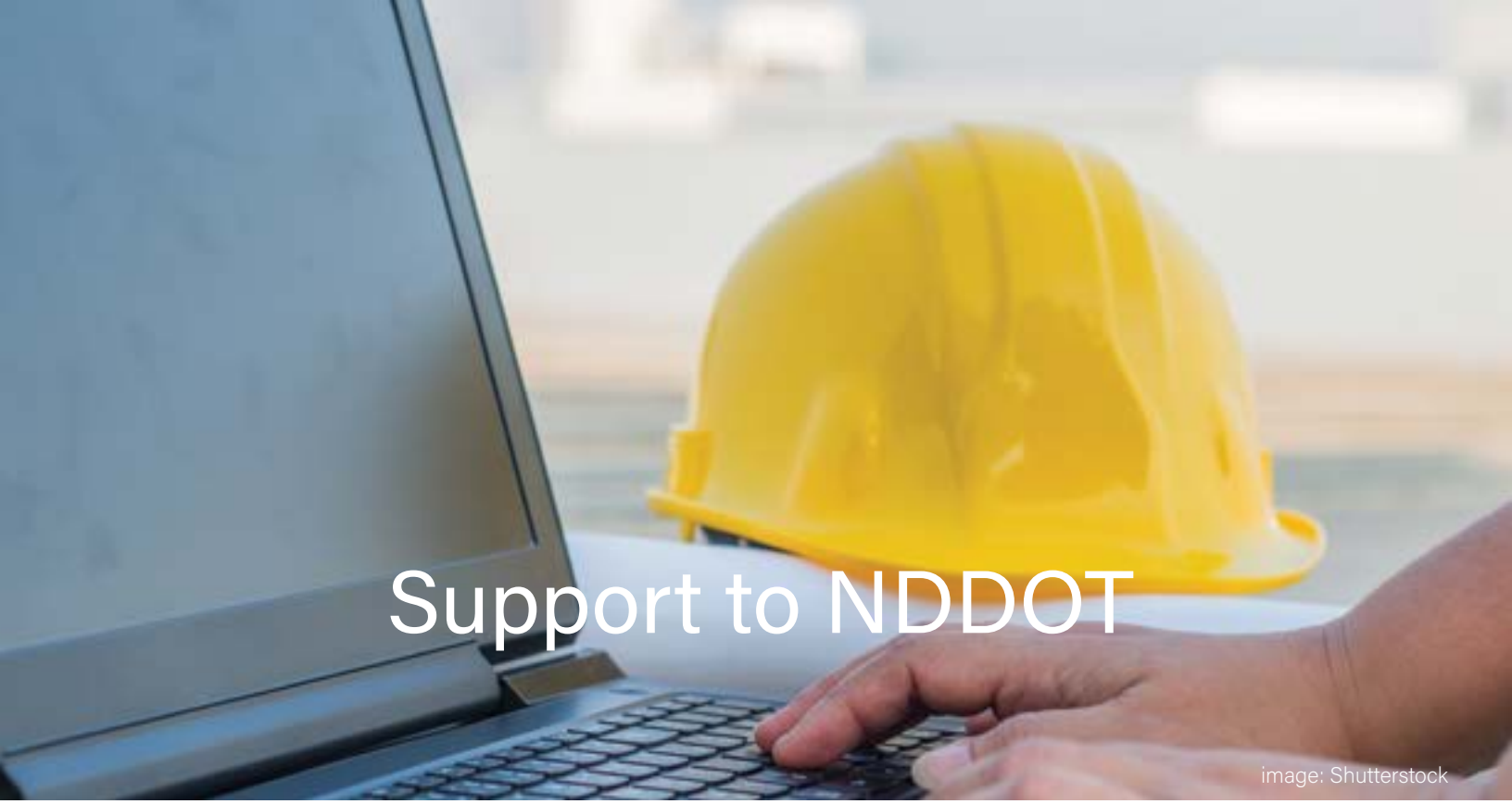
The researchers developed a simplified, minimum core standard set for data fields, with no personally identifiable information, which was successfully defined and used to engage tribes in crash data improvement. This minimum standard was used to initiate a tribal, web-based crash reporting system. The institutional capital and community willingness to invest time in high-quality crash data will require an ongoing commitment from traffic safety partners in working with Indian nations.

Analysis of overtime traffic enforcement

UGPTI research results show that overtime traffic enforcement activities related to impaired driving and seatbelt use do have an impact on serious and fatal injury crashes. The research will also help law enforcement agencies better target their efforts.

The North Dakota Department of Transportation (NDDOT) supports periodic traffic enforcement campaigns to prevent serious and fatal injuries related to seatbelt misuse and impaired driving. These enforcement campaigns are typically based on county-wide crash data and funding availability. The impact of overtime traffic enforcement was investigated through a combination of spatial analysis and trend analysis. Although ranking of counties by injury counts provides insight into locations with serious safety concerns, the methodology does not take into account county characteristics, such as highway mileage and vehicle miles traveled, or law-enforcement characteristics, such as number of officers or size of jurisdiction.

The study also found that more data and in-depth analysis related to enforcement efforts, resources, and travel characteristics and in-depth analysis may improve targeting of enforcement efforts to areas with the greatest potential for reducing impaired-driving and seatbelt-related crashes.



Support to NDDOT

image: Shutterstock

TLN is go-to source for training at NDDOT

With travel and classroom activities limited because of COVID-19, UGPTI's Transportation Learning Network served as the primary source for critical training and technical transfer. Thanks to TLN, NDDOT employees have been able to meet requirements for professional development hours by attending required training or refresher training as defined by FHWA in work zone safety & bridge inspection.

TLN was named the official representative for NDDOT in the American Association of State Highway Transportation Officials (AASHTO) Transportation Curriculum Coordination Council. TLN manages the council's training content on its internal learning management system for NDDOT employees to participate in self-paced learning, record their completion, and upload/update new/old content.

TLN has also been a critical player with the dissemination of research findings through the Mountain-Plains Consortium, a U.S. Department of Transportation funded University Transportation Center comprised of 8 universities in the Upper Great Plains and inter-mountain west led by UGPTI. TLN works closely with the MPC universities to deliver timely research for DOTs and local governments to consider for innovative practices to streamline processes or expedite construction/maintenance activities.

TLN provides professional development for region's transportation workers

The 2020-2021 training season for UGPTI's Transportation Learning Network (TLN) has an increased emphasis on high-quality, timely, innovative, and practical content that cooperators can use immediately. Courses include "Reviewing, Approving and Getting Contractors to Submit Good Project Schedules," "Risk Management 101: Personnel," "The Flexible Leader," "Off the Job Safety: Innovation for Employers," and "Powerful Conversations to Engage Your Workforce."

TLN efforts focus on assuring that DOT employees and others in the transportation workforce are prepared to implement new technology, work safer, and complete technical tasks accurately and efficiently. TLN is a collaborative effort of a consortium of several universities led by NDSU and participating departments of transportation in North Dakota, South Dakota, Wyoming, and Montana. TLN is currently working with the Nebraska Department of Transportation to explore extending training there as well. In the 2019-2020 training season (October through May), TLN delivered 48 unique presentations to more than 4,000 total participants. Two of the presentations reached more than 400 participants.

TLN is UGPTI's outreach champion in online/virtual environments, making it a go-to for training during the COVID-19 shutdowns. In fact, participants in TLN courses began to increase, and TLN was asked to partner with other programs in the region to help them deliver content to their customers. For more information, visit www.translearning.org.

UGPTI assists NDDOT with long-range infrastructure planning and budgeting

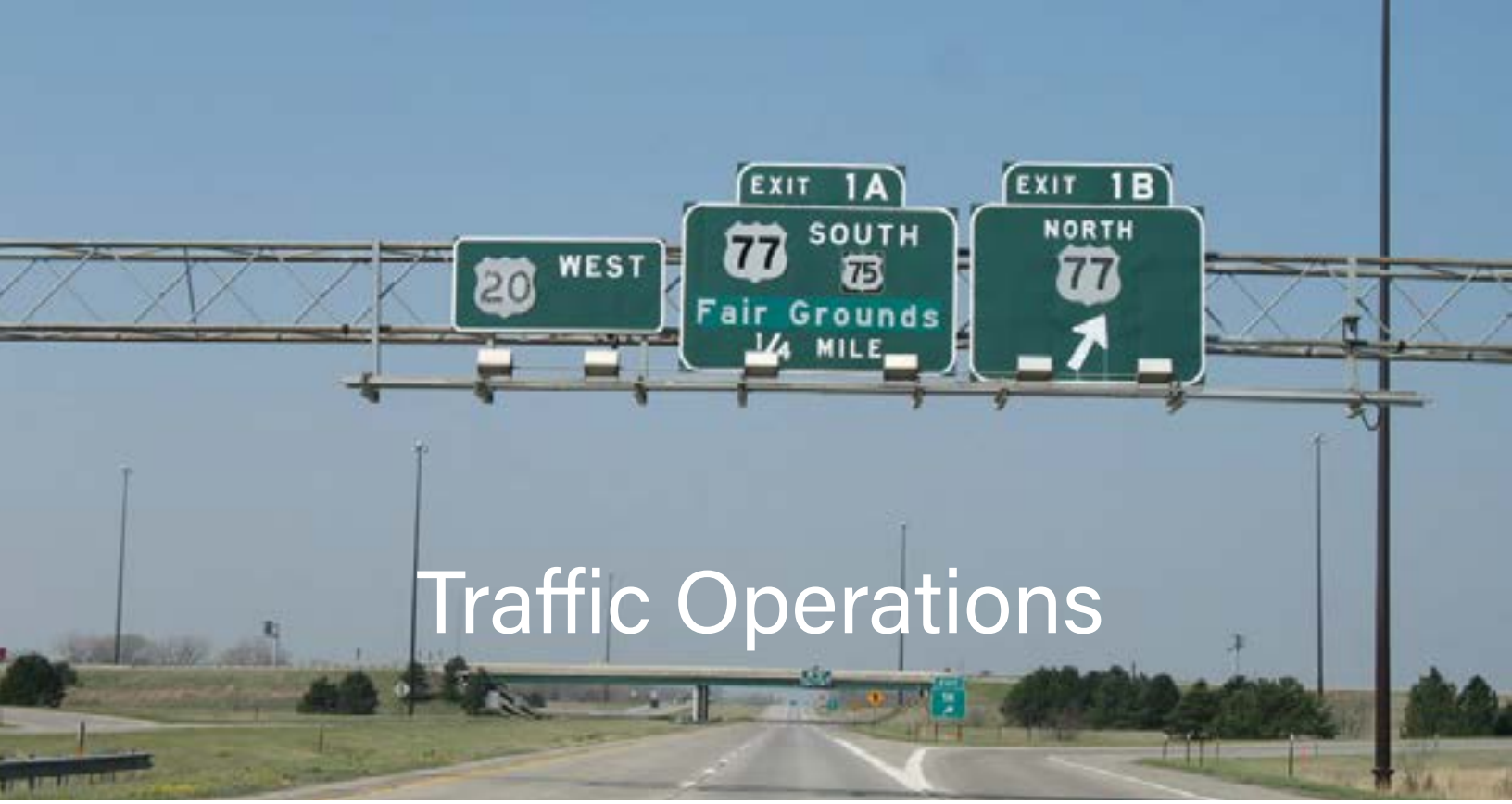
NDDOT requested the assistance of UGPTI engineering and economist staff to analyze the 20-year needs for the pavement, bridge, and urban components of the state highway system. UGPTI staff have capabilities for in truck traffic modeling as well as pavement and capacity analysis using Federal Highway Administration's Highway Economic Requirements System State Version (HERS-ST). UGPTI also performs bridge deterioration modeling for the biannual County, Township and Tribal Roads and Bridges Needs Analysis. The HERS-ST and bridge modeling procedures were applied to the state system and the resulting needs were reported back to NDDOT. NDDOT used the UGPTI assessment as part of its budgeting process and for developing its 10-year Infrastructure plan.

UGPTI assists in hosting NDDOT Virtual Local Government Summit

NDLTAP and UGPTI assisted NDDOT in hosting a virtual Local Government Summit for legislators, local government officials and transportation management officials on October 29. The summit offered a broad spectrum of key local roadway topics in a condensed learning session. Topics on the agenda provided critical asset information and management techniques that are key components of a local roadway management system. Best practices for local county, township, city, and tribal roads combine to provide better, safer roads. Presenters included:

- Bill Panos, NDDOT director, provided opening and closing comments.
- Brent Bogar, AE2S-Nexus, presented on the status of HB 1066 Operation Prairie Dog Funding.
- Stewart Milakovic, NDDOT, provided an update on NDDOT's Long-Range Transportation Plan.
- Jessica Smith, HDR, described effective transportation network planning.
- Tim Colling, Michigan Technological University, outlined strategies for pavement preservation.
- Patrick Conner, Indiana LTAP, did the same for bridge preservation.
- Bryon Fuchs, NDDOT, provided an update on NDDOT's approach to bridge inspections and load ratings.
- Dave Jones, University of California, provided strategies for gravel road preservation.
- Brad Wentz, UGPTI, described local road surface selection tools available from UGPTI.
- Jeremy Mattson, UGPTI, provided an update on a study of rural transit in North Dakota.
- Ben Worel, Minnesota DOT, detailed how frost action impacts roads and how those impacts are reflected in load restrictions.

For more information or to watch the recorded presentations, visit the Summit website.



Traffic Operations

Setting the stage for a Statewide Traffic Management Center

UGPTI is assisting NDDOT in performing planning and systems engineering analysis for the establishment of a statewide Transportation Management Center (TMC) that would serve as a centerpiece for roadway control and maintenance operations. The TMC would enhance and consolidate functions performed by separate NDDOT divisions and districts, including monitoring the transportation network, dispatching maintenance resources, and providing accurate and timely traveler information to the public. The TMC will increase coordination and cooperation between NDDOT and partner state agencies such as North Dakota Department of Emergency Services and the North Dakota Highway Patrol.

Updating technology architecture

After completing the statewide intelligent transportation systems (ITS) architecture, UGPTI is assisting the state's three MPOs in updating their regional architectures. The ITS architecture is a planning effort that provides the agency with a roadmap for the deployment of transportation technologies throughout their jurisdictions in order to enhance the safety and efficiency of the transportation system. Technologies fall under different areas, such as traffic control, maintenance, transit, public safety and emergency management, and data collection and management.

Traffic Data Dashboard helps identify traffic issues

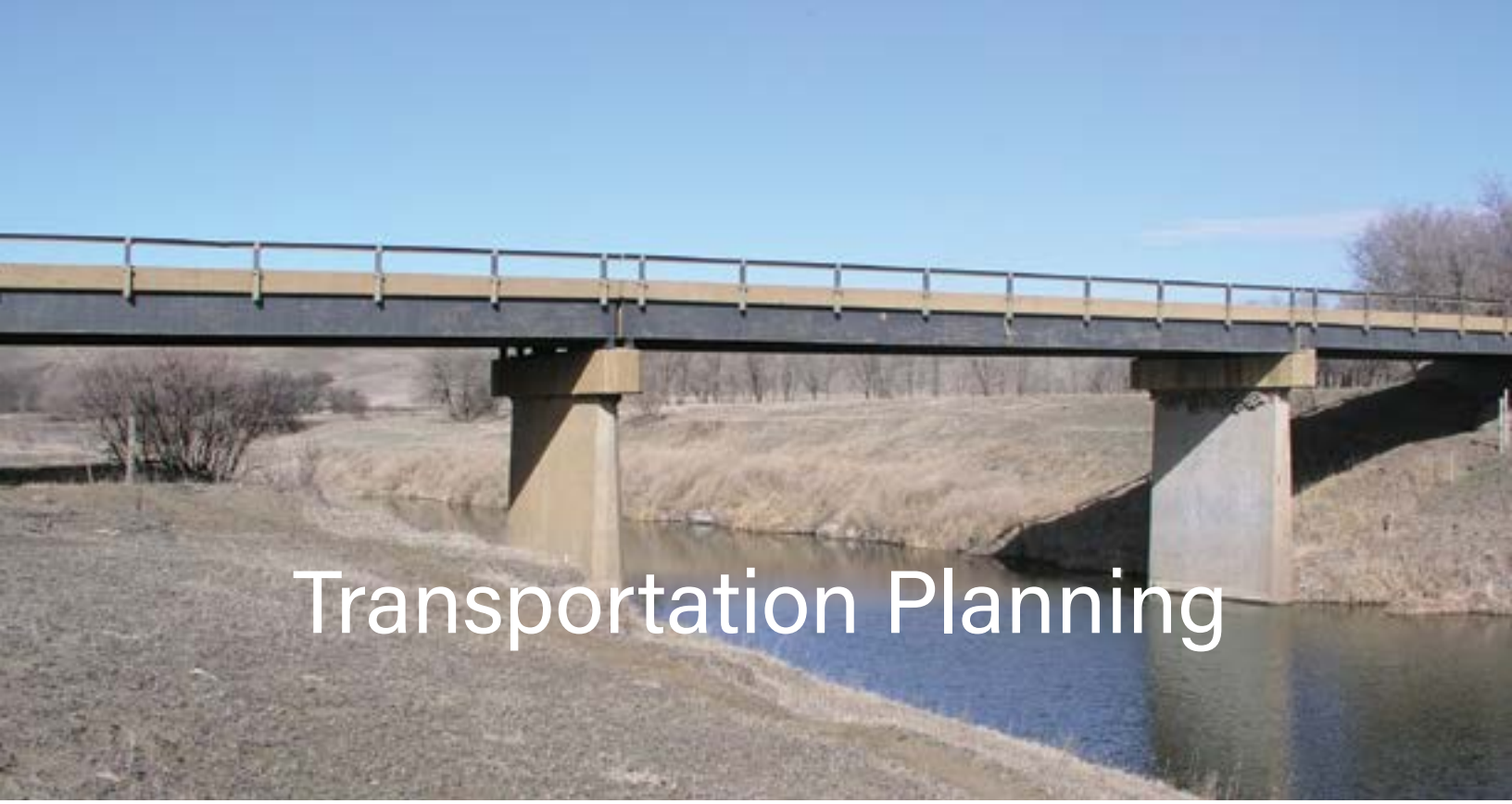
Working with NDDOT, UGPTI created a web-map traffic volume dashboard, which provides near real-time traffic volumes and speeds from automated traffic records across the state, including the Grand Forks and Fargo urban areas. The dashboard also includes several graphs that indicate how traffic volumes have changed in the past year. The dashboard provides information on changing traffic flows and bottlenecks and allows agencies to respond to traffic concerns more rapidly.

Enabling proactive troubleshooting of traffic lights

UGPTI is assisting NDDOT's Fargo District and City of Fargo in developing and implementing automated traffic signal performance measure (ATSPM) projects that will give the agencies the ability to be proactive in serving the transportation needs of their citizens. The projects will help streamline the troubleshooting process for signalized intersections, thereby eliminating the need for the transportation agencies to wait for citizen reports to apprise them of many types of outages or malfunctions.

Traffic Operations Roundtable meetings continue

UGPTI organizes and facilitates twice-a-year meetings for federal, state, regional, and city traffic operations professionals from across the state. Despite the COVID-19 pandemic in 2020, the spring meeting was held online to continue the 15-year-old tradition. Attendees share ideas, identify critical issues, share experiences, and provide training opportunities. The roundtable also facilitates inter-jurisdictional traffic operations within the larger urban areas in North Dakota by providing a resource to support the design, operation, and maintenance of traffic control systems.



Transportation Planning

ND county and local road and bridge needs study completed

The final 2020 version of UGPTI's report on North Dakota local road and bridge investment needs predicts estimated investment needs of $9.3 billion over the next 20 years. Investment needs of $6.14 billion to maintain gravel roads make up 66% of the total. The report indicates that $2.67 billion will be needed to maintain paved roads and $498.81 million will be needed to replace or maintain bridges. If averaged over the next 20 years, the annualized infrastructure need is equivalent to $466 million per year.

Increased investments in paved roads during the 2014 and 2016 bienniums improved overall pavement condition.

However, pavement condition data collected in 2019 indicate a slight increase in miles of poor-condition roads and a decrease in miles of good-condition roads. This slight decrease in overall pavement condition is likely due to somewhat reduced investments in pavement beginning in the 2018 biennium.

The research responds to the N.D. Legislature's request for a study of the transportation infrastructure of all county, township, and tribal roads and bridges in the state. Infrastructure needs were estimated using detailed traffic models and the most current crop and oil production forecasts, traffic estimates, and roadway condition data. Except for 2017-2019, UGPTI has completed a similar study each biennium since 2011-2013.

For the 2019-2021 study, pavement data collection was performed by UGPTI students utilizing custom developed smartphone technology, which measures the roughness of the road from any vehicle. The students also performed traffic counts on county roads using the latest technology involving tubes, radar, and video counting equipment.

To give counties an easy-to-use tool to inventory and track their roadway assets and improve the accuracy of the biennial studies, UGPTI researchers developed the Geographic Roadway Inventory Tool (GRIT). This online tool is continually updated to improve its functionality and usefulness. Most recently, features were added to GRIT to include county load restrictions on the NDDOT Traveler Information Map to track and update emergency road closure events and to include pavement condition forecasting.

Accessibility measures for North Dakota

Measuring the ability of North Dakota's transportation system to facilitate the ability of people to reach their desired destinations is a step toward improving transportation for residents across the state.

A UGPTI project developed computerized models that quantified accessibilities at a macro and micro geography scale. The accessibility measures used reflect the amount of opportunities reachable within given time thresholds from a given origin. The macro scale looked at all of North Dakota with the major cities and counties as the main geography. At the micro scale, the model focused on the three major MPO areas (Fargo-Moorhead, Grand Forks-East Grand Forks, and Bismarck-Mandan). Accessibility measures were estimated for three different modes – auto, transit, and non-motorized modes at the different geographic scales for three activities: healthcare, jobs, and grocery stores.

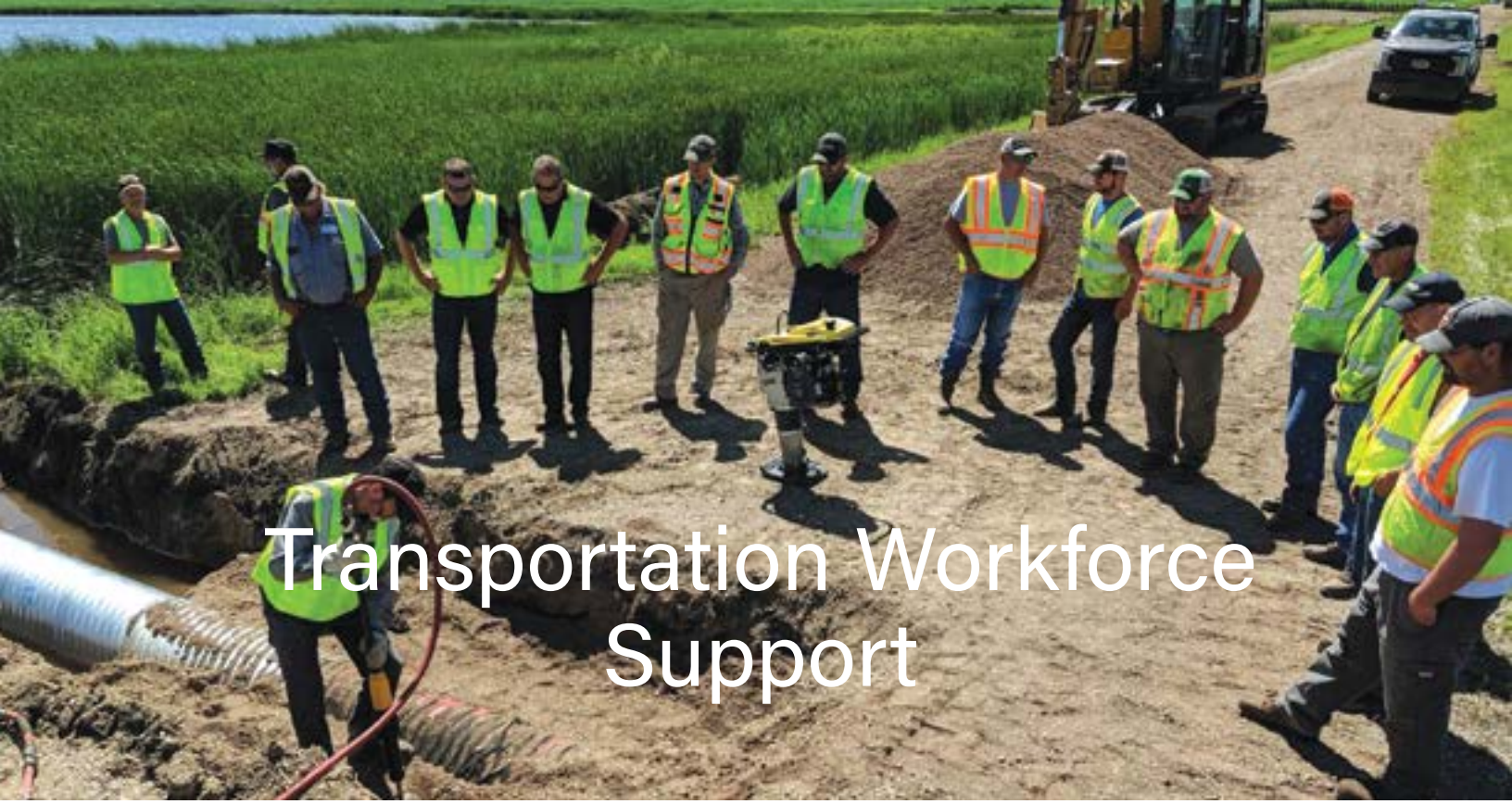
The results indicate that auto accessibility measures were very high for the urban counties compared with rural counties. Accessibilities were higher for the urban areas and cities where most citizens had good access to destinations. The transit mode considered only fixed-route systems in the Fargo-Moorhead and Grand Forks metropolitan areas. The results indicate that very few households had good access to all three accessibilities within a 30-minute travel time window. The results for a 60-minute travel time window improved significantly for the fixed-route transit system. The results for non-motorized measures were very similar to the results for the transit system with the urban counties showing higher accessibilities compared with the rural counties. For the next steps, the accessibility measures will be extended to reflect different population groups to evaluate social justice and livability. For example, the study will look at low-income groups and their accessibility to jobs and other services. Additionally, more activities will be included in evaluating accessibilities.

UGPTI interprets traffic data to help state officials plan COVID-19 response

UGPTI researcher Kim Vachal's experience in analyzing data from automated traffic recorders around the state to assess speeding issues has been useful in helping the state plan its response to the COVID-19 pandemic. State officials quickly began using daily traffic trends as an indicator of how many people are paying attention to stay-at-home orders and encouragement to limit travel to prevent the disease spread. Those counts can also indicate changes in traffic patterns as a result of the pandemic events or business/service openings.

Typically, the data from the recorders are aggregated monthly and used for longer-term assessments of traffic and road use in planning activities.

Vachal and other UGPTI researchers, including Brad Wentz, Kshitij Sharma, and Diomo Motuba from the Advanced Traffic Analysis Center, research specialist Seguy Tchakounte-Wakem, and post-doctoral researcher Satpal Wadhwa, work with the ND Department of Transportation Traffic Data Section to analyze the data each day in communicating daily updates to the ND State Emergency Operations Center and the ND State Highway Patrol, which provide briefings and recommendations to state officials, including the governor's office and the ND Department of Health. The data have been an important information resource in coordination with the ND Smart Restart Plan.



Transportation Workforce Support

TLN provides professional development for region's transportation workers

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Training for improved transit

Transit professionals in rural and small urban areas have come to count on UGPTI for training on topics such as transit management (beginning and advanced), business continuity, emergency management, financial management, hiring and retaining great employees, intelligent transportation systems, and safety and risk management. In 2019, staff with UGPTI's Small Urban and Rural Center for Mobility conducted transit-related training in 10 states, in addition to North Dakota and Washington, DC, with more than 3,100 hours of training for more than 900 individuals. Participants consistently report that the training helps them improve agency and employee performance, helping transit agencies operate more efficiently while providing improved service to those who rely on them for mobility.

Beginning in 2019 and accelerated by the Pandemic in 2020, SURCOM staff members began to develop eLearning courses with their partners to provide on-demand training. So far, six courses are offered in the eLearning format: Customer Service, Grant Writing, FTA (Federal Transit Administration) 101, Crisis Management, Onboarding, and Employee Recognition.

Webinars provide updates to commercial vehicle industry

UGPTI's Commercial Vehicle Safety Center has organized a series of webinars over the past two years to provide updates on tools, programs, and regulatory changes to law enforcement and driver licensing agencies and other stakeholders in the commercial vehicle industry. The webinars were organized with assistance from UGPTI's Transportation Learning Network. Each webinar was attended by about 150 individuals from across the country. The archived webinars include:

- Updates on Federal Motor Carrier Safety Administration (FMCSA) Rules and Programs were offered in 2019 and 2020. Representatives from the FMCSA Enforcement, Compliance, and CDL divisions provided updates on FMCSA rules and programs, including entry-level driver training, information on U.S. custom harvesters, and the newly implemented Drug & Alcohol Clearinghouse.
- Heavy Truck Crash Tool showcased a tool developed in Iowa to help target enforcement efforts. The webinar featured discussions by representatives from Iowa DOT Motor Vehicle Enforcement and Iowa State University. The tool provides instant access to information regarding heavy truck crashes, enhancing the ability to help target enforcement to reduce and prevent future heavy truck crashes.
- Impacts of Cannabis Legalization featured representatives from the Canadian Council of Motor Transport Administrators. They discussed their role working with Canadian jurisdictions as they prepared for cannabis legalization and future considerations. FMCSA representatives provided an update regarding the Drug and Alcohol Clearinghouse, particularly what actions Canadian drivers operating in the United States will need to take within the Clearinghouse.

Hands-on learning for student engineers

UGPTI's engineering intern program instructs engineering students in the methods and protocols for developing NDDOT engineering roadway designs. It also familiarizes students with the roles and responsibilities for transportation engineers and how they fit into a transportation organization. Typically, 12 engineering students are hired to work under the guidance of an NDDOT engineer and function as one of four NDDOT design squads fully developing projects to the bid-letting stage.

Students learn while providing IT assistance to NDDOT

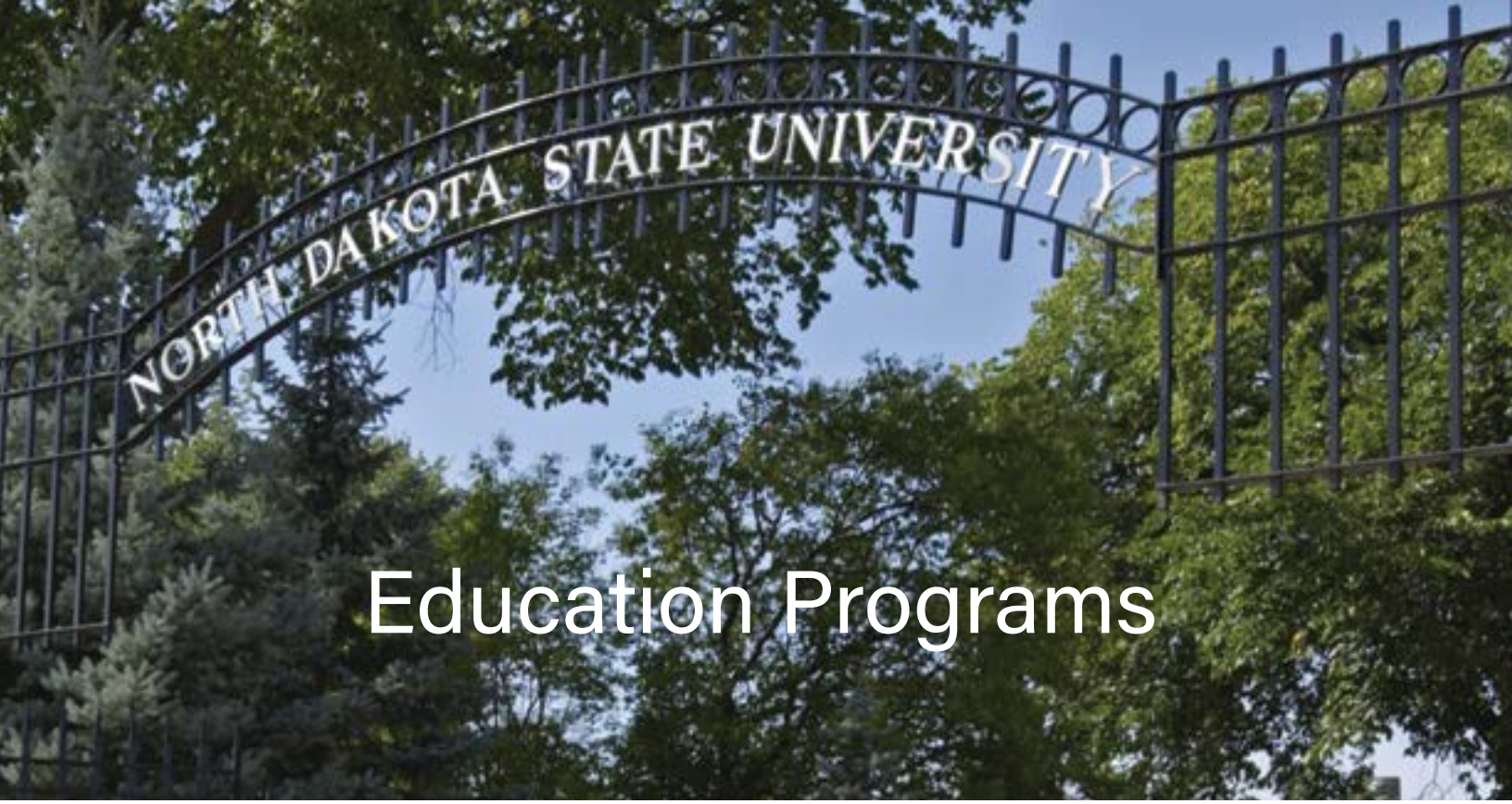
Information technology interns with UGPTI gain hands-on experience in transportation-related information technology support and application development as they assist NDDOT with meeting its information technology needs. Students also develop web-based and mobile applications to support the business practices of NDDOT and the transportation industry. Current and past projects include applications for conference registration, training certification management, materials division support for lab reports and technician certification, weigh-in-motion graph support, development of a traffic data reporting portal, surface selection tool, truck weight calculator, local government roadway inventory tools, speed data reporting tools for performance measures, safety tools such as dynamic curve warnings, freight corridor planning tool, and a travel time reliability performance measure tool.

NDLTAP extends training to local agencies

During 2020, UGPTI's N.D. Local Technical Assistance Program (NDLTAP) provided training for more than 300 participants from local road agencies, tribal government, state agencies, and contractors. Training topics included: designing pedestrian facilities for accessibility; pavement preservation; corrugated metal pipe (culvert) inspection, maintenance, and installation; sign installation and maintenance; traffic and pedestrian safety; tractor mower safety; heavy equipment safety; motor grader operator training; leadership; gravel quality, and N.D. truck weight education.

Many of the trainings are incorporated into the NDLTAP Road Scholar Program, which recognizes participants' achievements in subjects and topics essential to efficient and effective local road maintenance and management. Road Scholars earn credits from NDLTAP and UGPTI's Transportation Learning Network courses to attain three levels of training. The program has been offered for more than 30 years.

Local road workers, NDDOT employees, contractors, and consultants make up the most recent class of 82 Road Scholars, who were recognized in January 2020 for completing the continuing education program for road and highway practitioners.



Education Programs

The transportation industry needs professionals with the advanced education to meet the transportation challenges of the 21st century. A graduate degree in transportation and logistics helps students stand out above others when they begin their careers or are advancing their careers in the industry. Transportation and logistics graduate programs at NDSU will enhance students' knowledge, skills, and opportunities for a successful career in the transportation industry.

The Department of Transportation, Logistics and Finance is accredited through the College of Business by the Association to Advance Collegiate Schools of Business, which places it in the top 5% of business schools worldwide. Many UGPTI researchers hold teaching appointments in the College of Business and serve as instructors and student advisors in these programs.

NDSU's high-quality graduate programs prepare students for a wide variety of careers in the transportation industry. The programs include:

Doctorate in Transportation and Logistics. In this program, students develop advanced knowledge and research skills in the rapidly growing fields of transportation and logistics. The Ph.D. program consists of two main components: a core curriculum of 18 credits, and a dissertation. This is a research-oriented degree that requires advanced skills in mathematical programming, statistics, and transportation modeling. Prospective students must have a high quantitative aptitude and be prepared to undertake rigorous graduate-level training in quantitative methods.

Master of Supply Chain Management. This online master's program targets aspiring logisticians, industry professionals, and service members who want to meet the logistical challenges of the 21st century. Graduates gain expertise that will help them with career advancement in the supply chain management industry. Students gain competencies in supply chain management, change management, enterprise resource planning, remote sensing and adaptive logistics planning, joint total asset management, logistics and security through innovative technologies, transportation analysis and planning, crisis analysis and logistical response, and transportation security analysis.

The online Certificate in Enterprise Resource Planning (ERP) prepares students to pursue a variety of SAP professional roles and certifications by understanding process integration, data analytics, and business intelligence. Also, the ERP certification provides a pathway for students to internships and employment opportunities with companies that use SAP software applications who will consider students with SAP coursework more attractive candidates. The need for expertise with ERP systems is globally recognized as a standardized criterion for various roles in industry, government, and academia.

Required Courses: TL 715 Introduction to ERP, TL 725 ERP Configuration, and TL 735 Practical Data Analytics.

The Certificate in Supply Chain Management is an online opportunity for students to gain knowledge and real world experience in logistics and supply chain management, operations management, purchasing and demand management, emergency management, consulting, retail, and more. Growth will be driven by the need for logistics in the transportation of goods in a global economy. Employment is expected to grow as companies need logisticians to move products more effectively and efficiently, solve problems, and identify areas for improvement.

Required Courses: TL 711 Logistics Systems, TL 721 International Logistics Management, TL 723 Advanced Supply Chain Planning Across the Enterprise, TL 731 Logistics Decision Analysis, TL 733 Case Studies in Logistics. Students must complete nine credits from the above courses.

Transportation and Urban Systems. Graduates of this online program will lead transportation agencies and municipalities in improving livability in communities by integrating transportation with other components of the urban environment. They will apply new technologies and techniques in planning, operations and security. Students explore: (1) urban transportation systems; (2) relationships between transportation, land use, environment, emergency response, and logistical delivery systems; (3) coordinated planning, operations, and security; and (4) the spatial dimensions of urban systems.

The Master of Science (MS) in Transportation and Urban Systems online curriculum is built around the topics of: public transportation systems, geographic information systems, freight transportation and logistical delivery systems, urban geography and land use, the environmental impacts of transportation systems, transportation systems security, and the sustainability of transportation and urban systems. The MS degree requires a thesis and is intended for students with strong research interests.

The Master of Transportation and Urban Studies (MTUS) is an online non-thesis degree primarily intended for professional planners and engineers. Students in this program have more opportunities for synthesis of practice and additional course work, with less emphasis on research.

The Certificate in Transportation and Urban Systems is an online opportunity for practicing professionals who wish to gain additional knowledge in the emerging fields of transportation and urban systems. Students select from online courses, including: Transportation Systems Security, Transportation Planning and Environmental Compliance, Transportation System Modeling, Urban Transportation Systems Analysis, Context Sensitive Solutions, Transportation Systems Laboratory, Intelligent Transportation Solutions, and Public Transportation. Students must complete nine credits from the above courses.

For more information see the NDSU Universtiy Bulletin for 2020-21.