Upper Great Plains Transportation Institute

Annual Report 2000-01

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Judge Barth	North Dakota Wheat Commission*
April Fairfield	North Dakota Farmers Union*
LeRoy Ernst	North Dakota Motor Carriers Association*
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Larry Kleingartner	North Dakota Oilseed Council
Greg Stocker	Red River Valley Potato Growers Association
Deb Johnson	North Dakota Soybean Council
Mark Weber	Red River Valley Sugarbeet Growers Association

All statutory members (*) are ex officio as a result of their affiliation with agencies and organizations, which are named in the UGPTI enabling legislation. The statutory members, on their own initiative, informally expanded the membership to include other agencies and organizations active and concerned with transportation.

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University President's Message

Joseph A. Chapman, NDSU President

North Dakota needs and deserves a great land-grant university, and North Dakota State University is undergoing a transformation to meet the challenges of the future. The expertise and leadership the Upper Great Plains Transportation Institute provides is important as we move to meet the changing needs of the people we serve.

At this university, our goal is to look more like our national land-grant peers by offering a similar number of graduate programs, outreach services and providing more land-grant services.

Our goals have come about through efforts from more than 500 faculty and staff, and reflect the wishes of the Interim Committee on Higher Education's Report of the Roundtable. They include:

- Continuing to expand our efforts to define and move to the next level of excellence
- Increasing NDSU's national and global reputation
- Increasing business and industry partnerships
- Increasing philanthropy

These efforts will put this university in a leadership role to assist our state, region and nation move forward to the next level of excellence. The fine work of the Upper Great Plains Transportation Institute clearly supports and complements NDSU's objectives.

Advisory Council Chair's Message

A group of North Dakotans are involved in a statewide effort to develop new ideas, to grow the economy and create a more prosperous state. The need for this project is grounded in two critical challenges: (1) North Dakotans must address ongoing economic problems that constantly surface in disturbing demographic trends and (2) we must modernize the state's economy and address new challenges and opportunities posed by new economy factors such as globalization, technological advances and change. Central to this initiative is the need for change.

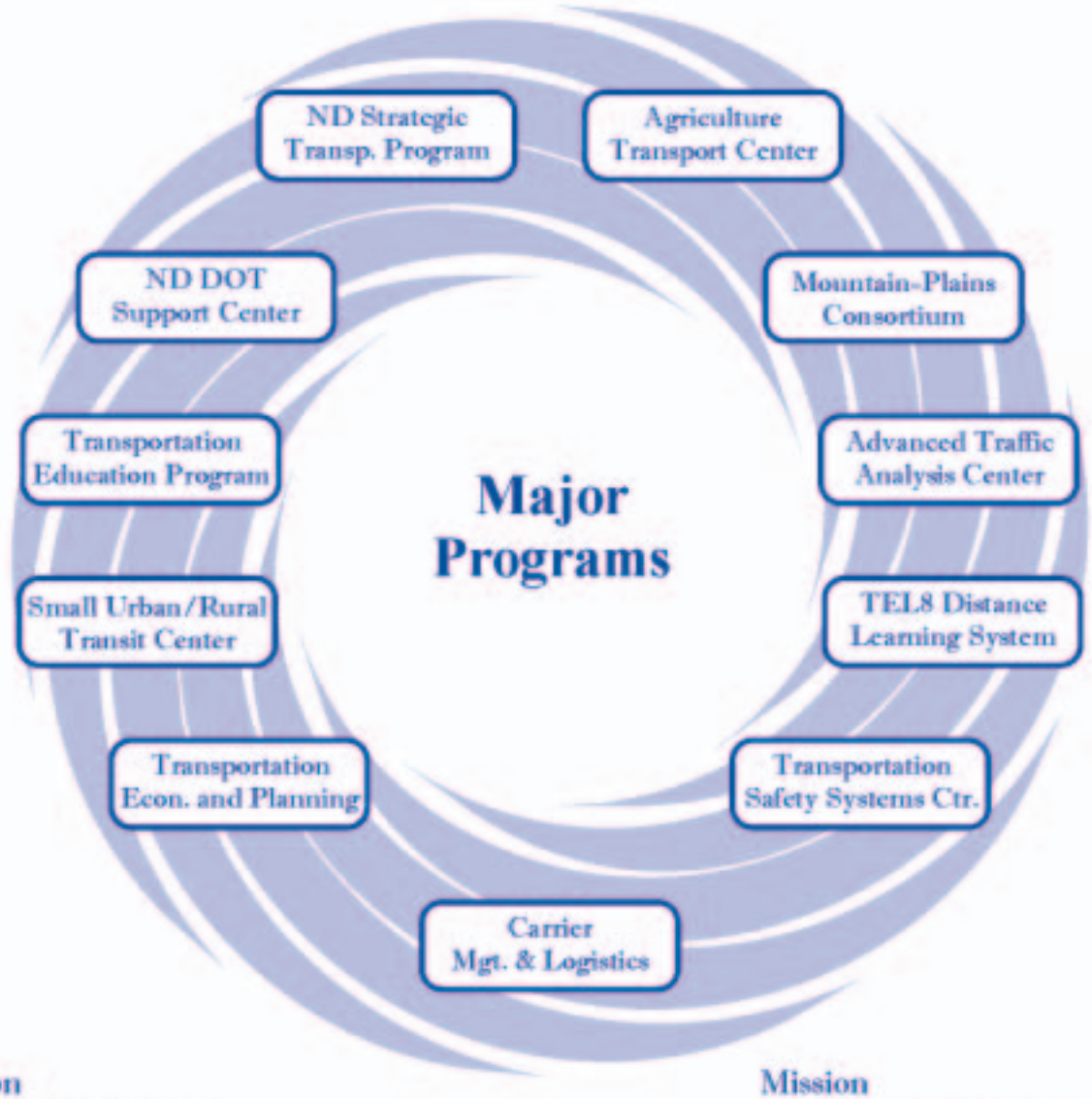
The best way to manage change is through research, knowledge creation and accurate information. The Transportation Institute possesses a unique capacity to conduct research and address public policy issues in a timely, objective manner. With the information available from the Transportation Institute, private and public sector decision makers possess the knowledge to deal with change.

The Transportation Institute's research program is focused on public policy, technology, operations, engineering, economics and management. It is the most entrepreneurial organization of its type in the United States. The staff at UGPTI possess a high degree of objectivity, knowledge, and creativity. These qualities are indicative of the large amount of contract research brought in to support a single project or program. The staff is very professional in walking the fine line to build an outside funding base. Much of the sponsored research provides solutions of importance to North Dakota and the region.

The staff of the Institute is extremely creative and productive. I encourage you to review this report to get acquainted with our staff and the outstanding research projects and programs they are involved in. The information developed through these research leaders and projects will do much to help North Dakotans change in the new economy – today and tommorrow.

Dale Anderson, Chair

Upper Great Plains Transportation Institute
North Dakota State University



Vision

To be recognized as one of the top university transportation centers in the United States

Mission

Make a significant contribution to rural and small urban transportation and logistics through interdisciplinary university education, research, & service

Director's Message

The Transportation Institute has continued to develop at a steady pace this past year. Two additional programs were added to the four existing programs, the *North Dakota DOT Support Center* and the *North Dakota Strategic Transportation Analysis Program* (see Organizational Graphic on opposite page). Further, one research focus area was redefined into a program, the *Transportation Safety Systems Center*. This brings the total number of programs under the administrative responsibility of the Institute to seven. These programs have rapidly begun to replace the Institute's research focus areas.

This development of programs over the past several years begs the question, "What is a program?" A program is defined as a significant area of study/effort which requires administrative responsibilities, permanent dedicated staff, a long term source of funding, and activities that are strategically planned and deemed critical to the long run success of the Institute and NDSU. Ad hoc research projects, which are major sources of funding for the Institute as well, are differentiated from programs in that they do not fit this criteria and are usually funded sporadically or on a one-time basis.

It is anticipated that two additional programs will be added during the next program year, an *Agricultural Transportation Center* and the *Small Urban and Rural Transit Center*. These programs are currently in their developmental stage and it is hoped they will be up and running sometime in the first six months of 2002. What's more, the remaining research focus areas have been collapsed into two programs, *Transportation Economics and Planning*, and *Carrier Management and Logistics*. These programs are in the conceptual stage.

The Institute originally focused on agricultural transportation issues with heavy emphasis on truck and rail bulk movements of grain. However, funding for this research was volatile and there was not much of a systematic effort to plan the research into the future. As the Institute grew, several different focus areas of research were developed in an effort to diversify its program. However, even as funding for different focus areas developed over time, most projects within a focus area were more ad hoc in nature as opposed to being planned. The strategy to develop programs has lent stability and growth, allowing the Institute to continue addressing transportation issues traditionally important to the state and to strategically program its resources at the same time.

Through the development of these programs the Transportation Institute has experienced another successful year of continued contribution to transportation through research, education, and service as evidenced by the projects in this annual report. It could not have been possible without the support of NDSU and the Institute's many valuable partners. A great debt of gratitude is owed to all who have helped make this success possible.

Mobility — a simple word with varied meanings to different people, but at the same time remarkably critical to all of us. It is a first order necessary condition and one of several characteristics of a successful socioeconomic system ranking in importance with health care, education, and public safety. Mobility is so critical to a successful society that we cannot begin to imagine where we would be without the level of spacial versatility available to our society. However, mobility is most often taken for granted until a disaster hits or a major construction project inhibits our ability to move people, packages, and freight. But without it we would be reduced to a barter system wherein standards of living would be drastically reduced and advancement would occur at a glacial pace. That is why transportation, which provides mobility, is so important and needs to be an area of emphasis in our system of higher education.

Transportation is even more important to North Dakota than it is to many, or possibly all of the other states. It is absolutely vital to North Dakota's economic and social well being because of our location, vastness, economy, and sparse population. The state's two largest sectors – production agriculture and manufacturing, which includes agricultural processing – are dependent on transportation for economic survival. What's more, implementing logistics strategy and managing the supply chain is essential for these industries to succeed. Further, the service and knowledge industries, such as software development, are dependent on air transportation at competitive prices and for adequate service. Tourism is also a sector that depends on good transportation and transportation support services. Without the transportation infrastructure and availability of modal choice, tourism would not exist. Further, wholesale and retail trade are totally dependent on transportation of all types.

More importantly, transportation and logistics has become more critical in our evolving economy than in the past. As important as transportation has been in former times, it will be even more important in the 21st Century. There are several underpinning reasons for this. The globalization of the world economy has increased competitiveness making distribution costs more important. An absolute or comparative advantage can quickly disappear in the world market if distribution costs are too great. Another factor is the shift in the economy from one dominated by commodities and durable goods to one in which consumer goods and services make up a growing share of GDP. Additionally, the recognition that inventory and just-in-time service are critical to business success has made transportation and logistics more important. Finally, the whole phenomena of a networked economy and strategic alliances has made business travel more important. North Dakota must take the necessary steps to ensure that the economic sectors and its citizens have a transportation system available that provides them the opportunity for economic and social success.

These are the underpinning reasons for the existence of the Upper Great Plains Transportation Institute at NDSU. This annual report is a reflection of how the University adds value to the transportation process, providing the connectivity necessary to survive and prosper in an advanced socioeconomic system and that continues to become more complex, sophisticated, and global in nature.

North Dakota's Intelligent Transportation Systems Plan
Ayman Smadi, Shawn Birst, Kiel Ova (current)

The ATAC is assisting the NDDOT in conducting a major planning effort for developing a statewide comprehensive ITS plan. The plan examines unique characteristics of the transportation system, users, and agencies in North Dakota to outline potential areas for ITS deployment. The plan also aims at developing a framework for guiding ITS projects in North Dakota in a manner consistent with National ITS Architecture and standards and one that would allow seamless operations of various systems in North Dakota and with other states. Phase 1 of this study identified several ITS services, including traveler information, commercial vehicle operations, and urban traffic management as high priority activities. In the second phase, the ATAC is developing architecture and project level designs for the selected systems, including a possible Traffic Operations Center in the Fargo District. The study is guided by a steering committee of a diverse group of stakeholders, as well as technical panels for individual activities.

Support for I-29 Construction: Traffic Management
Ayman Smadi, Shawn Birst, Kiel Ova (current)

In phase 1 of this project, the ATAC provided support to NDDOT in estimating user costs due to the I-29 work and examined traffic impacts on I-29 and affected routes. As a result, traffic signal operations on several corridors, which accommodated the I-29 traffic, were improved to minimize traffic delays. In Phase 2, the ATAC will be estimating user costs for the 2002 construction. In addition, the ATAC is working with the NDDOT to plan for the necessary communications infrastructure that will support traffic management along the I-29 corridor. Data collected from this study will provide insights on motorist behavior, such as route selection during the construction. That information will be valuable in planning traffic diversion routes throughout upcoming construction activities in the Fargo area for the next several years.

Corridor Signal Timing and Coordination
Shawn Birst, Kiel Ova, Matthew Martimo (current)

ATAC researchers work with local and state transportation officials on improving traffic operations on signalized urban corridors. This work involves extensive data collection of existing conditions (including traffic volumes, turning movements, signal timing plans, and road geometry) and applying state-of-the-art traffic analysis software to improve traffic flow and reduce delay to motorists. There are a number of projects in Bismarck, Grand Forks, Fargo, and West Fargo.

Technical Assistance
Ayman Smadi, Shawn Birst, Kiel Ova, Matthew Martimo (current)

In addition to assisting in traffic operational analysis, the ATAC provides support to local and state transportation agencies through the use of ATAC staff and NDSU faculty and students and ATAC's state-of-the-art traffic data collection equipment. ATAC researchers are working on several projects throughout North Dakota and in Moorhead, Minnesota. Some of this work involves developing timing plans for atypically spaced signalized intersections, evaluating the results of traffic simulation models using field data, and evaluating video detection technology. In addition, the ATAC is developing a CORSIM Support Center which provides CORSIM users across the U.S. with software extensions that allows them to conduct multiple runs and effectively extract the desired output. Finally, the ATAC has been developing a knowledge-base of relevant transportation information, mostly related to traffic operations and ITS, for small to medium cities. The information is available to anyone through the ATAC's web site.

Evaluating Transit Signal Priority in a Medium-Size City: Case Study Fargo, North Dakota
Kiel Ova, Ayman Smadi, Shawn Birst (completed)

In this study, two transit signal priority strategies, early green and extended green, were examined using a case study in the downtown Fargo area. Using the VISSIM traffic simulation model, the impacts on transit bus operations as well as other traffic were estimated. Results from the analysis suggest potential bus travel time reductions as high as 14 percent, with a decrease in bus stopped delay of 38 percent. Side-street person-delay increased as much as 14 percent during the afternoon peak. These encouraging results provide guidance to small to medium cities for possible implementation of transit signal priority.

North Dakota's Commercial Vehicle Operations Business Plan

Ayman Smadi, Shawn Birst (completed)

The UGPTI's ATAC assisted the NDDOT and NDHP in developing a Business Plan for Intelligent Transportation Systems in Commercial Vehicle Operations (ITS/CVO). An assessment of critical administrative, management, and safety issues related to com-mercial vehicle operations in North Dakota was conducted in the plan development. Several ITS/CVO systems with the greatest potential to effectively address these issues were prioritized and formulated into potential projects. Some of these ITS/CVO projects included redesigning existing IRP and IFTA systems in order to create an interface with the new state Registration and Titling System and to become compatible with IRP and IFTA Clearing Houses; evaluating and developing an Electronic Credentials and Tax Filing System to take advantage of EDI and web-based systems efficiencies; establishing a web-based Automated Routing and Permitting System; electronic screening of commercial motor vehicles at fixed weight and safety enforcement locations; and an inter-agency database to share information among agencies and to be used in developing North Dakota's Commercial Vehicle Information Exchange Window (CVIEW).

North Dakota Biennial Strategic Transportation Analysis Program

Mark Berwick, Gene Griffin, John Bitzan, Julie Rodriguez, Rodney Traub (current)

The sector being analyzed for the 2001-2003 biennium is manufacturing. The project will develop a strategic freight analysis focused on the critical role of transportation and logistics in the manufacturing industry in North Dakota.[1] The project will have six focus areas: 1) economic analysis of the manufacturing sector, 2) case studies of North Dakota manufacturing firms, 3) logistics training program for manufacturers and carriers, 4) student intern program, 5) intermodal container facilities evaluation, and 6) statewide and local strategy development.[2]

The aim of this project is three-fold. The first goal is to strengthen the North Dakota manufacturing sector by advancing a competitive advantage by increasing productivity, cost efficiency, and business planning, through the application of supply chain management and business logistics. Logistical factors to consider include location analysis, labor quality and availability, raw material and resource availability, inventory management, technology and communication capabilities, transportation services, community concessions and relations, and quality of life issues. The second goal is to provide the information and analysis necessary to establish a viable intermodal container freight facility that will serve all North Dakota businesses requiring intermodal container services. The third goal is to improve public policy by providing industry leaders and public policymakers with a better understanding of industry transportation and logistical needs.

Goals and Objectives:

The first goal of this project is to make an assessment of the transportation and logistics environment faced by North Dakota manufacturers, and the state-of-the-art in managing that environment.

The second goal is to evaluate emerging trends in the application of transportation management, logistics, and supply chain management and their application in manufacturing.

The third goal is to develop the human capital required to effectively manage transportation and logistics; and the final goal is to evaluate the intermodal infrastructure requirements and feasibility for all sectors of the North Dakota economy.

Gathering data and evaluating trends in transportation and the transportation infrastructure will provide for better management and decision making which will enhance economic development in the state. Providing training and information to manufacturers and carriers may provide a new found competitive advantage for manufacturers and specialty agriculture producers.

This project will continue to develop a strategic freight transportation analysis focused on the critical role of transportation and logistics in North Dakota.

[1]Manufacturing, as defined for this study includes agricultural processing, hard/durable goods, heavy machinery and any other process that transforms raw materials and semi-finished goods into a product for final consumption or adds to another manufacturing process.

[2]Intermodal facilities evaluation will encompass all existing and potential intermodal traffic. This will include manufactured goods, specialized agricultural marketing such as identity preserved, small package delivery, LTL, and any other applicable freight.

Truck Costing Model For Transportation Managers
Mark Berwick, Doug Benson (current)

The motor carrier industry has been a recurrent subject for cost studies. All of the referenced studies use an economic-engineering approach to estimate trucking costs. The economic-engineering model estimates the production function with a given set of factor prices. Most studies use survey as a data collecting tool to arrive at costs by averaging information received from the survey. Cost components are easily identified in the economic-engineering approach and thus cost estimates of a new startup firm are readily available. A weakness of the economic-engineering approach is that results are based on average values of input prices and resource usage. Thus, the results are accurate for a limited population. Furthermore, a new study must be undertaken to update the results.

An Owner/Operator Spreadsheet Costing Model developed in 1996 has been useful, however it is based on a spreadsheet and is not a stand alone model or software product. The model will be a stand alone product that may be employed by transportation managers and researchers. The model will be expanded to include many truck configurations and also capture terminal and line haul costs.

Objectives of the study include developing a stand-alone software program to provide truck cost information to reflect differences in equipment, product, and trip characteristics of an individual firm; and providing additional performance measures for decision makers who use truck cost information. The different performance measures generated can be used by different entities for specific purposes.

Transportation and Logistics Characteristics of the Potato Industry: Implications for Highway Planning • Mark Berwick, John Bitzan, Tara Anderson, David Ripplinger (MPC 01-123, October 2001)

Value-added processing is an important economic development goal in agricultural states and regions. The location of potato processing plants near sources of production is a recent trend that has generated substantial economic benefits. However, the location of potato plants is impacting highway demand and truck use in parts of the Mountain-Plains region. Shifts in production from grains to potatoes or other weight intensive crops can significantly increase the tons produced per acre and thus increase heavy truck traffic in rural areas.

Little information exists regarding the logistical and spatial characteristics of the potato industry and its transportation needs. NDDOT has requested an analysis of the transportation characteristics and highway implications of this industry, including: (1) trends in production and location of facilities, (2) impacts of processing plants on agricultural land use; (3) truck use characteristics; and (4) implications for highway maintenance and planning.

Strategic Freight Analysis for North Dakota
Mark Berwick, John Bitzan, Gene Griffin, Brenda Lantz, Kimberly Vachal (MPC 01-127.1-5, October 2001)

Two courses of action in transportation will influence the destiny of the state. North Dakota can be pro-active and make decisions regarding the nature of the evolving transportation environment, or the state can let decisions be made for them. North Dakota needs to be the master of its own destiny, to the extent possible, in the evolution of the transportation system serving agricultural production and processing. Alternatively, the state can let those decisions be made for them by out-of-state interests.

The North Dakota Strategic Freight Analysis focused on four important areas in transportation. The goal of the project was to gather information and data for the decision makers in the state. There are four topic areas concentrating on grains and oilseeds. They are:

I. Agricultural Processing — Transportation and Logistical Roadblocks
II. Intermodal Transportation Services — Declining Market Channel Alternatives
III. Shuttle Trains — Fewer Elevators, and Highway and Local Road Impacts
IV. Heavy Grain Cars — Fewer Branch Lines and Country Elevators

Commercial Vehicle Roadside and Investigative Systems Software Development

Brenda Lantz, Gary Talpers, Tim Brown, Dottie West, Carl Alyea, Peggy Kaiser, Kathy Short (current)

This project involves the development and maintenance of software systems used by Federal and State motor carrier safety specialists, as well as private industry professionals. Since 1996, many interrelated roadside, investigative, and analytical software programs in use nationwide have been developed. These systems are considered to be mission critical to the Federal Motor Carrier Safety Administration (FMCSA), and are steadily updated and refined to reflect regulatory changes, enforcement policy changes, as well as computer technology changes. The specific software programs include:

(1) ASPEN Driver/Vehicle Inspection Software: This is the driver/vehicle inspection software used by most states and the FMCSA. ASPEN runs on laptops and is used to collect inspection details and print the inspection report. It includes communication features to electronically transfer inspections to national information systems.

(2) CaseRite Software: This program allows the creation of legal enforcement cases for Federal prosecution of FMCSR and FHMR violations.

(3) CAPRI Software Documentation, Compilation, and Installation Programming: This software is used for preparing standard Compliance Reviews as well as specialized cargo tank facility reviews, and HM shipper reviews. CAPRI includes worksheets for collecting (a) hours of service data, (b) driver qualification data, and (c) drug and alcohol compliance data. It also creates the preliminary carrier safety fitness rating and various reports to motor carriers.

(4) CDLIS (Commercial Driver License Information System) Access Software: This is software for retrieving driver status reports from CDLIS. It is coupled to ASPEN and CAPRI, but can be operated as stand-alone software as well.

(5) ISS (Inspection Selection System) Development and Software: This is the primary tool used on the roadside to screen motor carrier vehicles and determine the usefulness of conducting an inspection. ISS returns the carrier snapshot which includes many critical safety performance indicators. It is linked to ASPEN to auto-populate name and address data fields and initiate the inspection. It uses a local database which is refreshed weekly via SAFER. It can also operate as an online query tool.

(6) PIQ (Past Inspection Query) Software and Communications: PIQ accesses a national database of recent inspection reports (those done within the last 60 days), and retrieves copies and summaries. It allows checking for unrepaired defects and driver hours problems.

(7) ProVu Software: ProVu is a viewer which allows Federal, State, and private industry users to electronically analyze standard motor carrier profile reports available from the FMCSA. This application displays nearly every data element found on the hard-copy version of the carrier profile in an easy-to-understand format which can be sorted, filtered, and optimized by users.

(8) UFA (Uniform Fine Assessment) Software: This software allows calculation of a uniform and reasonable fine amount based on the nature of the violations and the various criteria set forth in the FMCSR. UFA is optimized for Federal fine structures and is used with CAPRI and CaseRite.

(9) QC (Query Central): Currently in development, QC will use the latest web-based technology to consolidate inspector queries on drivers, vehicles, and carriers into a single "intelligent" request. It will internally obtain data from several sources, analyze it, and build a prioritized report which identifies any past safety or operational problems.

An Analysis of Commercial Vehicle Driver Traffic Conviction Data to Identify High Safety Risk Motor Carriers

Brenda Lantz (current)

This project explores the idea of using commercial motor vehicle driver traffic conviction data from the Commercial Driver License Information System (CDLIS) to better identify high safety risk motor carriers. CDLIS data is the only existing nationwide source of traffic conviction data. CDLIS is not really a single database, but a linkage between the various distributed state driver records systems. Its successful use as a pointer to high risk motor carriers would eliminate the need to create a new national driver citation/conviction information system. Serious institutional barriers have thus far prevented creation of any such data collection system. The most critical problem with using CDLIS data in this way is that it also does not identify motor carriers employing the driver.

This study uses computer technology to link drivers to motor carriers from their inspection and crash records, and then queries the driving records from CDLIS. An analysis of the drivers' traffic conviction records is conducted and a relative driver quality index is derived for each motor carrier. This index is then compared against the company's crash and inspection history to determine if a correlation exists. In addition, "high risk" carriers identified through this process are compared with those identified through other FMCSA prioritization techniques. Recommendations are given for possible ways that FMCSA could use this information to help improve the effectiveness of their enforcement programs.

American Short Line Railroad Database
Doug Benson (current)

The American Short Line Database completed its sixth year. This project continues to develop an industry database for use in public policy discussions and other areas impacting short line railroads. The project is updated annually and is anticipated to be a long-term effort of the Institute.

Small Railroad Investment Needs and Financial Options
John Bitzan, Doug Benson, Denver Tolliver (current)

This project has the following objectives: (1) identify potential financial performance measures that might assist commercial lenders in making credit available to short line and regional railroads; (2) evaluate the role of light density rail lines in the national transportation system, including their unique function with respect to certain types of industries and certain types of commodities; and (3) demonstrate the extent to which light density railroad freight services relate to the U.S. Secretary of Transportation's responsibilities for providing fast, safe, efficient, and convenient transportation at the lowest cost.

Updating the Uniform Rail Costing System Regressions
John Bitzan, Denver Tolliver (current)

The accuracy of the entire URCS process depends on the accuracy of the Phase I regressions, as these are used to estimate the percent of various cost accounts that are variable. The regression coefficients used to estimate cost variability in URCS reflect 1978-1985 data. Many mergers have occurred since then, and many changes have occurred in the locomotive fleet, traffic control, and other aspects of railroad operations. Many smaller railroads – including some beltway railroads – were included in the 1978-1985 data set. None of the railroads in the 1978-1985 data set approaches the size of the BNSF, the UP, and the CSX and NS systems of today. Because of the concentration that has occurred since 1985, the Class I industry of today may exhibit different characteristics than the industry of the early 1980s. It is important to know if the cost variabilities used in URCS are still reflective of the Class I industry. This study aims to re-estimate the URCS regressions using current data.

Costs, Pricing, and Regulatory Alternatives for Mergers
John Bitzan, Wesley Wilson (current)

Recently, there has been a wave of mergers in the U.S. rail industry. These mergers have included those by the Burlington Northern and Sante Fe Railroads, the Union Pacific and Southern Pacific Railroads, and Conrail with the CSX and Norfolk Southern Railroads.

A recent study sponsored by the Federal Railroad Administration (FRA) found that railroads are natural monopolies when the alternative to a merged railroad is duplicate side-by-side rail networks, but that rail mergers extending the size of rail networks lead to increases in railroad costs. This suggests that further end-to-end mergers are not beneficial unless significant service improvements are obtained.

While the study provides a useful starting point for examining the welfare implications of railroad mergers, it does not provide a detailed analysis of specific rail mergers that have occurred, an assessment of the pricing effects of mergers, or an assessment of the impacts of mergers on service.

This study will build upon the findings of the FRA study and others to provide a detailed analysis of previous rail mergers in terms of costs, pricing, and service, and to discuss the implications of these findings for the future of regulatory oversight of mergers.

The Differential Effects of Deregulation on Rail Rates
John Bitzan, Kimberly Vachal (current)

It is well documented that railroad deregulation in the U.S. has been successful. Studies have shown increased productivity, decreased rates, and increased profitability in the rail industry as a result of deregulation.

However, general evidence suggests that while railroad deregulation has benefitted shippers overall, through continued rail viability, rate savings, and improved service, the benefits have not been evenly shared. For the most part, the effects of deregulation on shippers and carriers have been well documented. However, one component of past regulatory change that is not well documented is the extent of differential rate changes that have been realized as a result of deregulation. A recent study by Wilson (1992) examines the asymmetric effects of deregulation on rates for 34 general commodity classifications, and finds differential effects among commodities. Nonetheless, the study does not assess the differential effects of deregulation on shippers with different transportation options shipping the same commodity. This study investigates the rate structure in the rail industry, and how it has changed as a result of deregulation, highlighting the differential impacts that deregulation has had on rates among commodities, regions, and over time.

ITS Transit Applications Used to Facilitate the Welfare to Work Program
Jill Hough (current)

This study documents the ITS technologies used by transit systems throughout the United States. Transit systems were surveyed to identify the ITS applications being used and to understand the transit managers' perceptions of the usefulness of the technology. Findings from the study will be available the fall of 2001.

Transportation of the Less Fortunate
Jill Hough (current)

There are individuals in North Dakota facing challenging mobility issues. This study will document transportation needs of the less fortunate in hopes of better meeting their requirements for a more fulfilling life.

Bus Rapid Transit: An Examination of Political Feasibility Using Case Studies
Jill Hough (current)

Many cities in the United States would like to implement light rail service. However, the high implementation cost impedes many cities and forces them to look for alternative transportation options. As a result, several cities are considering Bus Rapid Transit (BRT). A BRT system is a progressive transit system that makes use of buses. The buses usually operate in a designated bus lane, but may also operate segments with fixed traffic. Furthermore, the BRT system makes use of technologies to further increase efficiencies of serving the clients, e.g., signal priority, precision docking, etc. The system is much like a light rail system, except it can be implemented and maintained at a fraction of the cost.

This project is using a case study approach. Four cities will be selected and in-depth interviews and surveys will be conducted in each of the cities. Interviews of transit managers and key city officials will be conducted primarily to identify key political factors that may impede or support BRT. In addition, surveys of transit employees and other local officials along with city residents will be conducted to identify their perceptions of the factors involved in the selection of BRT for the city. Economic factors will be evaluated primarily through budgets and revenue forecasts.

County Road Planning Workbook
Jill Hough, Gene Griffin, Kiel Ova (current)

The objective of this study is to develop a workbook to assist counties in the road planning process. This is particularly important due to the shrinking resources and increasing costs counties and townships must address. A case study approach has been taken to develop the workbook. Counties in northern California and North Dakota are included in the development and testing of the planning process. In addition to the workbook, a corresponding Train-the-Trainer program will be developed for LTAP personnel.

An Assessment of Road User Needs in Region 8 States
Jill Hough (current)

This study will document any differences in the perceptions of rural road users' needs and rural road providers' perceptions. A difference in perceptions would provide decision makers an opportunity to reevaluate future rural road decisions and policy.

MISCELLANEOUS

An Evaluation of Region 8 State Departments of Transportation and Metropolitan Planning Organizations GIS Technology Application
Doug Benson, Rob Arthur (current)

GIS resources have become an important tool for transportation analysis and require effective management to fully utilize its technology. This study will identify and assess the current state of GIS in the region's DOTs and MPOs, and develop a resource tool outlining potential areas of coordination and cooperation among GIS users. Additionally, the study will identify GIS resources available for transportation researchers in the region.

Denver Tolliver
Program Director

The Mountain-Plains Consortium (MPC) is a four-university consortium for the development of a transportation education, research, and technology transfer and service program. North Dakota State University is the lead university for this Consortium and the Upper Great Plains Transportation Institute is the administrative home and fiscal agent for the program. The other three universities are the University of Wyoming, Colorado State University and the University of Utah. The MPC is one of 10 competitively selected university transportation centers located throughout the United States in each of the 10 federal regions. MPC represents Region 8, which includes North Dakota, South Dakota, Montana, Wyoming, Colorado, and Utah. The program is funded on a 50-50 matching basis by the U.S. Department of Transportation.

In 2000-01, the MPC continued its strong tradition of distance education. The University of Utah and North Dakota State University offered distance education degree programs for state transportation department employees using interactive video and internet-based media. Altogether, 19 UDOT and NDDOT students were enrolled in graduate courses or worked on theses during the year. The first NDDOT student graduated from the Master of Science program in May after taking all of his courses through distance education. In other distance education news, the MPC initiated a program of short courses for state DOT personnel via the TEL8 network, starting with two pilot courses: PE Exam Preparation and Corrosion Science. More than 120 students from five state transportation departments enrolled in these courses.

In 2000-01, the MPC universities offered 28 graduate-level transportation courses. These courses included: Transportation Engineering, Highway Engineering, Highway Design, Highway Bridge Engineering, Geometric Design of Highways, Traffic Operations, Traffic Engineering, Transportation & Traffic Safety, Quantitative Methods in Transportation, Community Transportation, Transportation Systems, Transportation Modeling, Transportation Planning, Transportation Administration, Public Transportation, Intelligent Transportation Systems, Transportation Infrastructure Maintenance, Pavement Design, Pavement Materials, Pavement Distress & Rehabilitation, Advanced Pavement Analysis, Railroad Planning and Design, and Logistics & Distribution Management.

The MPC continued its strong research effort in 2000-01, publishing ten new peer-reviewed reports: (1) Defining a Road Safety Audit Program for Enhancing Safety and Reducing Tort Liability, (2) Adapting the Road Safety Audit Review for Local Rural Roads, (3) Performance Evaluation of Cement-Treated Roadway Bases, (4) An Evaluation of the Impacts of ITS/CVO Technologies throughout the Supply Chain, (5) Accident Data Availability (6) Evaluation of Road Weather Information System Data & Dissemination of Data to the Public, (7) Inclement Weather Signal Timings, (8) Factors Affecting Rail Car Supply, (9) Incident Detection Algorithm Evaluation, (10) Transportation and Logistics Characteristics of the Potato Industry: Implications for Highway Planning.

Ayman Smadi
Program Director

Mission: Enhancing transportation systems in small to medium size cities through the use of advanced traffic analysis and ITS solutions to safety and mobility problems.

The Advanced Traffic Analysis Center (ATAC) was established in 1998 as a technology support center to address transportation needs and issues of small to medium size cities. The main focus of ATAC activities is to improve traffic operations in small to medium size cities by taking advantage of advanced technologies, the application of powerful traffic analysis tools, effective training, and information dissemination.

Small to medium size cities are home to about 25 percent of the U.S. population (or roughly over 50 million residents). They provide critical economic, social, health, cultural, and shopping opportunities for vast surrounding rural areas. It is not surprising that these areas also experience the largest population growth, and as a result, increased traffic congestion. At the same time, small to medium size cities generally have to work with modest resources in order to meet the increasing transportation challenges in their communities.

The ATAC program was developed with those challenges in mind and guided by extensive input from local, state, federal, and private sector partners. The analysis capabilities that have been developed at the ATAC can be valuable for supporting various transportation decisions, ranging from evaluating proposed roadway designs to enhancing traffic operations. ATAC researchers are also working on building a knowledge-base on ITS planning, evaluation, and deployment that targets rural and small to medium size cities as well as delivering training programs in state-of-the-art analysis tools.

The ATAC's main resources are qualified individuals who are capable of applying traffic analysis software and who have the right background to relate to today's transportation challenges. The ATAC's traffic laboratory houses computer hardware and software used for the analysis and serves as the ATAC training facility. The lab provides hands-on opportunities for exploring various traffic control strategies using traffic signal controllers in combination with traffic simulation. ATAC's Traffic Data Collection System uses video detection technology for acquiring the needed data to support various analysis needs.

Over the last year, ATAC researchers completed projects on transit signal priority, work zone traffic management, ITS planning, and traffic signal operations improvements. The ATAC is offering a basic training course in the traffic simulation model VISSIM. Working with local partners, the ATAC is developing a new focus area which will support travel demand modeling in North Dakota.

The ATAC's staff is growing tremendously with an increase in graduate and undergraduate student involvement. Through partnerships with the civil engineering, communications, computer science, and electrical engineering departments at NDSU, ATAC staff have access to a wide range of expertise in both students and faculty, which allows them to expand potential research areas and better serve customers.

For more information and to become more familiar with its program, please visit the ATAC's web site (www.atacenter.org) which has information on research projects, training opportunities, and links to various transportation resources.

Doug Benson
Program Director

TEL8 is a Federal Highway Administration (FHWA) Region 8 telecommunications system dedicated to transportation. Nine sites participated in the system in 2000-01 including five state departments of transportation (DOTs) in North Dakota, South Dakota, Montana, Wyoming, and Utah; and four Mountain-Plains Consortium (MPC) universities consisting of Colorado State University, North Dakota State University, University of Utah, and University of Wyoming. TEL8 established a unique partnership among the region's DOTs and the MPC transportation research universities with each partner providing programming, training, and technology transfer to the network. The system is governed by a board of directors with representatives from each of the DOTs and MPC universities and the FHWA regional office.

TEL8 had several notable achievements during the past year. Network expansion continued with additional Department of Transportation (DOT) district sites added to the system bringing the total number of sites affiliated with TEL8 to 21. Nine more DOT district sites are projected to be added to the network during the coming year.

Programming expanded as well including the initiation of two new programs, Mountain-Plains Consortium (MPC) short courses and MPCX. The MPC short courses were developed at the MPC universities for video conference delivery to DOT participants while MPCX is a seminar program reporting transportation research results to the network. One MPC short course had 90 students and involved 13 sites 'maxing out' the system's technology.

Existing programming also experienced growth with the doubling of the number of TransX participant groups and the expansion of TransX system-reserved resources. TransX is a DOT developed program focused on specific DOT departments and complements the more general DOT program, InfoX. Moreover, the number of MPC graduate classes and Leadership Development courses increased the past year while the delivery of graduate-level classes, professional management courses and topic-specific seminars continued.

Additionally, TEL8 programming stimulated the development of a proposal this past year to model TEL8's InfoX and TransX programs across the western United States. TEL8 is currently examining the proposal which would expand selective TEL8 programming to approximately ten additional western states.

Dennis Jacobson
Program Director

In fiscal year 2000-01, North Dakota State University (NDSU) and the North Dakota Department of Transportation (NDDOT) established a partnership and created the DOT Support Center (DOTSC) at the Upper Great Plains Transportation Institute. The Center provides NDDOT with NDSU intellectual capital support to solve complex problems in a broad range of academic disciplines that have application to state transportation management issues. The UGPTI, with the support of DOTSC, serves as a portal or gateway to NDDOT for utilizing the intellectual assets of NDSU on transportation-related research activities.

During its first year of operation the DOTSC was initiated with the hiring of a full-time director, and the establishment of two student work centers.

The student engineering work center has completed numerous engineering projects under the direction of NDDOT. These include bituminous surfacing, seal coats and interstate reconstruction to name a few. During the next fiscal year the student engineering center will also be supporting NDDOT transportation research activities. Already identified for study are projects for median crossover design standards, drainage designs for interstates and ride quality analysis.

The student information technology center has completed programs improving the efficiency of traffic sign management, adopt-a-highway programs, high accident location analysis, construction automation, and web site development. The information technology students will be automating additional programs such as the traffic signal database and continue the web site development project and construction automation. In addition, a project which incorporates pocket PC's and maintenance program field data collection and analysis is being developed.

Current projects are papers investigating Innovating Financing, Economic Impacts of Transportation Investments, Roles and Responsibilities for Transportation Management, and a summary report of NDDOT strategies for managing their system.

Brenda Lantz
Program Director

Since 1996, the UGPTI has operated a specialized software development center in Lakewood, Colorado, primarily to develop and maintain mission-critical front-end software for use by State and Federal motor carrier safety specialists nationwide. This center has evolved into the current Motor Carrier Field Systems Program (FSP), with the ultimate goal remaining the same – to improve the safety of our nation's highways. The program helps to accomplish this goal through its software development, as well as through research, training, and education.

The continuing success of the program is made possible through grants from the Federal Motor Carrier Safety Administration (FMCSA) to the North Dakota Highway Patrol (NDHP) under the Motor Carrier Safety Assistance Program. The NDHP partners with the UGPTI to maintain the program.

There are currently eight full-time research staff that comprise the program. These include the program director and analyst, four software programmers and developers, a quality assurance and software test person, a computer network and hardware person, and an administrative assistant and web site developer. The staff work closely with the FMCSA staff, primarily in the Information Systems division, who provide overall strategic direction and advise of policy changes.

The software developed through the program can be divided into two broad areas – roadside systems and investigative systems. The roadside systems include:

(1) the overall driver/vehicle inspection software, ASPEN, that collects the inspection details and transmits the data to national information systems;
(2) the Inspection Selection System that provides an inspection recommendation as well as a carrier snapshot;
(3) the Past Inspection Query that has the capability to retrieve previous inspection reports for a particular vehicle or driver from the last 60 days; and
(4) the Commercial Driver License Information System Access software that can retrieve a driver's status report and their conviction history.

The investigative systems include:

(1) the overall carrier compliance review software, CAPRI, collects the review details, prepares various reports and the preliminary carrier rating, and transmits the data to national information systems (this software is developed through another contractor, but the FSP is responsible for the documentation, compilation, and creation of the install program);
(2) the CaseRite software helps to create legal enforcement cases for Federal prosecution of regulation violations;
(3) the Uniform Fine Assessment software calculates uniform and reasonable fine amounts based on the nature of the violations and other various criteria; and
(4) the ProVu software allows Federal, State, and private industry users to electronically analyze standard motor carrier profile reports available from the FMCSA.

In addition to maintaining these software programs, the FSP is currently involved with two new research and development projects. The first project, Query Central, will use the latest web-based technology to consolidate safety inspector queries on drivers, vehicles, and carriers into a single "intelligent" request. It will internally obtain data from several sources, analyze it, and build a prioritized report which identifies any past safety or operational problems. The second project explores the idea of using commercial motor vehicle driver traffic conviction data from the Commercial Driver License Information System to better identify high safety risk motor carriers. It is anticipated that this information will help improve the effectiveness of FMCSA's enforcement programs. Throughout the year, the staff is also involved with numerous presentations and training sessions to educate users and other interested parties about the software developed and the research conducted.

Denver Tolliver

The UGPTI continues its educational partnerships with the Departments of Agribusiness and Applied Economics and Civil Engineering & Construction, and the College of Business Administration. MS degrees are offered in Agribusiness and Applied Economics and Civil Engineering with options in Transportation. Students pursuing the MBA degree can take two transportation courses as technical electives.

The Transportation Option in Civil Engineering includes a distance education program which allows students at the NDDOT in Bismarck to enroll in the graduate program. In the distance education program, NDSU exchanges courses with Colorado State University, University of Utah, and University of Wyoming. MPC funding is used to support graduate students in several departments.

An exploratory committee has been established to assess the demand for a doctoral degree in Transportation & Logistics and develop a program plan, if warranted. In addition to the UGPTI, the initiative involves three colleges and four departments: Agribusiness & Applied Economics, Business Administration, Civil Engineering & Construction, and Industrial & Manufacturing Engineering. The program will be organized around five multidisciplinary themes: Logistics and Supply Chain Management, Infrastructure Management, Transportation Networks and System Operations, Multimodal Transportation Policy and Regulation, and Application of Advanced Technologies. Partnerships are envisioned with agribusiness, manufacturing, construction, and transportation industries, as well as governmental agencies. Potential sources of grant funding are being evaluated.

John M. Agrey Award

The 2000 John M. Agrey awards were presented to Marshall W. Moore and John I. Finsness at the Annual Awards Banquet held October 5, 2000.

Front Row: Lt. Gov. Rose Marie Myrdal, Marshall Moore, Rose Mary Moore
Back Row: Curt Peterson, NDAGC; Tom Freier, NDDOT

For more than seven years, Marshall W. Moore served as director of the North Dakota Department of Transportation. His position was a capstone for years of service serving North Dakota and the region. Moore distinguished himself as an engineer, legislator, fighter pilot and entrepreneur, earning the respect of lawmakers from North Dakota to Washington, DC. He has been one of few DOT directors who was also an engineer. At NDDOT he addressed transportation needs throughout the state and furthered the growth of information technology. His comprehensive business plan reflected his 30 years in the private sector where he co-founded Moore Engineering, Midwest Technical Laboratory, and the architectural and engineering planning firm of Halvorson, Moore, Strague and Moore.

The late John Finsness served North Dakota transportation through his expertise in common carrier freight rates and rail transportation issues, skills honed from his earliest days working at the Minneapolis and St. Louis Railroad while studying law. A native of St. Paul, Minn., he graduated from the William Mitchell School of Law after military service. In his near four decade career, Mr. Finsness was counsel for the transportation division of the Fargo Chamber of Commerce, railroad rate counsel for the North Dakota Wheat Commission, researcher with the Upper Great Plains Transportation Institute on long-range transportation issues and with the North Dakota Public Service Commission as an expert on freight rates. He also served as a special assistant attorney general for North Dakota in rate litigation before the Interstate Commerce Commission, the federal district courts and several federal circuit courts of appeals. Mr. Finsness made an invaluable contribution to North Dakota's competitiveness through the regulatory process during his career as a transportation attorney.

Paul E.R. Abrahamson Scholarships

The Paul E.R. Abrahamson scholarship awards for 2000 were presented to Eric Berge, Fergus Falls, Minn.; Jennifer Bjorge, Buxton, N.D.; and Brock Lautenschlager, Berthold, N.D. The scholarship is granted to undergraduate students pursuing a degree in agribusiness and applied economics with an interest in transportation.

Eric Berge

Jennifer Bjorge

Brock Lautenschlager

Transportation Engineering Scholarships

Winners of the 2000 Transportation Engineering Scholarship were Derek Kost, Bismarck, N.D., and Jason Link, Hazen, N.D. The scholarship is granted to undergraduate students pursuing a degree at NDSU in Civil Engineering with an interest in transportation.

Derek Kost

Jason Link

Funding for the scholarships is provided by the Mountain-Plains Consortium through a grant from the United States Department of Transportation University Transportation Centers Program. The scholarships were presented to the winners at the UGPTI Annual Awards Banquet October 5, 2000.

Doug Benson

Leading the half million dollar technological reconfiguration of the TEL8 network, Douglas Benson assures the six-state videoconference network will aid effective transportation education. In addition to the TEL8 network, he led the national effort in the western United States for videoconferencing the Transportation Research Board national meeting for 12 states. Devoting a dozen years to transportation research, Benson partners his computer science skills with various transportation modes.

Since 1997, Benson has been executive director for TEL8, an organization that incorporates State Departments of Transportation (DOT) and universities dedicated to transportation research. TEL8 saves funding for training and travel costs by electronically linking the nine sites in the system. This provides education and training opportunities not otherwise available, including TEL8 videoconferences with two secretaries of transportation and other national organizations.

Benson combines his work on short line railroads with his responsibilities as program director for the National Short Line Database. He coordinates many agencies and does economic analyses for major organizations concerned with the economics of railroad systems. His involvement with Class I railroad database systems has helped bring efficiency to the reporting requirements for the database.

Information developed from the National Short Line Database has been used in Congressional hearings for the general development of public policy on railroads.

Among his experiences in computer science, he did operational evolutions of United States military computer systems.

Benson's interest in computerized transportation analysis, railroad operations, developing transportation databases and applications is supported by his education. He holds four bachelor of science degrees from the University of North Dakota and a master of science degree in computer science from North Dakota State University.

Mark Berwick

An associate research fellow, Mark Berwick studies logistics and economic development in transportation, particularly trucking. His study in motor carrier economics aids the industry in planning and development. The logistics of his work show the movement and information associated with a product from raw material to the end-user and back.

Since 1997, when he joined the Upper Great Plains Transportation Institute, Berwick has been the principal investigator on four Mountain-Plains Consortium projects and is the project leader for logistics and economic development.

His expertise in trucking leads to intermodal transportation options with rail carriers. Berwick is researching the potential for locating intermodal facilities on short line railroads. Through his work he develops concepts for mountain and plains manufacturers and processors, as well as evaluating the feasibility of developing a jointly owned, third party logistics firm in North Dakota. Cost undergirds his research, helping the transportation industry develop both domestic and international shipping potentials in a fine-tuned marketing strategy.

His personal business experience gives him an edge in research. Before joining the Institute he operated his own businesses. This gives him a unique vantage point from which to develop the logistics and economic development program at the Institute.

He has also been an instructor in the department of agribusiness and applied economics, teaching a logistics and transportation management course.

Berwick holds a bachelor of science degree with a major in agricultural economics and business and a master of science degree in agribusiness and applied science with an emphasis in transportation and logistics, both from North Dakota State University. He also holds an associate arts degree from the University of North Dakota, Williston, in marketing and management.

Shawn Birst

Shawn Birst is a transportation research engineer, primarily involved with assisting the Fargo-Moorhead metropolitan area and the North Dakota Department of Transportation. He works with transportation operational improvements using traffic signal optimization programs and traffic simulation models. Birst primarily provides technical assistance in advanced traffic analysis tools for the Advanced Traffic Analysis Center (ATAC). He also supervises the activities and projects of temporary help, undergraduate students, and graduate students working at the ATAC.

It is appropriate that he should advise ATAC students because his undergraduate work with ATAC inspired him to pursue his own advanced education in transportation. His studies into transportation issues for second-tier cities assist local and state agencies with traffic operation issues.

He has a special interest in intelligent transportation systems and how they can promote efficiency and safety. His master's thesis provided transportation professionals with numerical information for the potential benefits of implementing intelligent transportation technologies in smaller urban areas. His report helped convince local transportation professionals to install variable message signs that provide traveler information to motorists.

He began at the Upper Great Plains Transportation Institute in 1996 as an undergraduate research assistant and later as a graduate research assistant. He earned both his bachelor of science and master of science degrees in civil engineering at North Dakota State University. Birst is a professional member of the Intelligent Transportation Society of America (ITS America), Institute of Transportation Engineers (ITE), and American Road and Transportation Builders Association (ARTBA).

John Bitzan

An advanced research fellow and adjunct professor in the department of agribusiness and applied economics, Dr. John Bitzan focuses on railroad price and cost analysis, analysis of transportation industry structure, transport regulation and policy analysis, and railroad operations analysis. An economist, his research translates transportation questions regarding railroads, transit performance and cost, commodity movement, and environmental impact.

Dr. Bitzan has worked with the Upper Great Plains Transportation Institute for more than a decade and worked on the first studies the Institute performed on rural transit and rural road financing. His work for the Federal Railroad Administration, the United States Department of Agriculture, and the United States Department of Transportation assists them in making positive economic decisions in transportation development.

The impact of short line railroads to rural and agricultural areas, the structure of railroad costs, and the benefits or costs of mergers and basic railroad costs are all areas in which Dr. Bitzan continues to work. Two of his major research interests are transport industry regulation, and transport industry structure and performance.

In addition to teaching in the agribusiness and applied economics department, Dr. Bitzan teaches a course in international business. He has worked in partnership with others to have a new undergraduate/graduate logistics course approved and to have it used in the graduate transportation program. He is involved in developing a minor in logistics.

Dr. Bitzan earned a bachelor of arts degree in economics at St. Cloud (Minnesota) State University, master of arts in applied economics at Marquette University and a doctoral degree in economics at the University of Wisconsin-Milwaukee. He has published numerous reports and journal articles.

Gene Griffin

Gene Griffin heads the Upper Great Plains Transportation Institute, with an annual budget of more than $3 million and a staff of more than 20. Since 1980, Griffin's vision has taken the Institute on a national and international ride of researching and enhancing transportation. He also has been instrumental in initiating an effort to establish an undergraduate logistics program at North Dakota State University.

His 28 years of experience in transportation and logistics research and as a research administrator contributes to his scholarly work in economics, management, business logistics and public policy. These interests link to rail and motor transport, low-volume roads, economic development and agricultural transportation.

Griffin's tenure at the UGPTI has seen positive growth. He is ultimately responsible for five major programs:

1. The Institute's research and service program
2. The Mountain-Plains Consortium, one of 10 competitively selected regional university transportation centers
3. TEL8, a regional telecommunications system dedicated to transportation training and education
4. ATAC, the Advanced Traffic Analysis Center program for integrating intelligent transportation systems solutions for traffic management in second tier cities
5. The graduate and undergraduate education program

From two staff members and a $175,000 budget when Griffin began at the Institute to the UGPTI earning its present national stature, the thematic emphasis has been on rural and small urban transportation and logistics. Specializing in this thematic area has allowed the Institute to develop a niche expertise that supports North Dakota and similar areas throughout the nation and world. He is active in working with staff members on their research projects, supporting efforts in grant writing and dissemination of the information the Institute delivers to its constituency.

Current research interests for Griffin include truckload driver retention, county road planning, rural and small urban transit with a particular interest in intelligent transportation applications, agriculture's long-term rail needs, and logistics applications in small urban and rural areas. Past research delved into railroad economics; agricultural transportation and marketing; motor carrier management, economics, and safety; low volume roads; rural transit; and transportation policy.

Among his publications are 22 technical research reports, 42 staff papers and 27 verified statements. He continues to testify in regulatory proceedings and does transportation consulting on a national and international basis. Recently, he completed an on-site review of the Russian Far East transportation education program and transportation system.

Griffin earned both his bachelor of science in mathematics and his master of science in economics from North Dakota State University.

Jill Hough

An associate research fellow and transportation economist, Jill Hough has served the Upper Great Plains Transportation Institute since 1990. Hough conducts research in the areas of transit, low volume roads, economic development and logistics. She also served with the Federal Transit Administration in Washington, D.C., as transit intelligent vehicle initiative interim director in 1998.

Her research interests include intelligent transportation systems, public transportation, and low volume roads. She has devoted study to public transportation for the rural transit of people with special needs and how to improve services.

Hough's work has assisted county officials in making decisions about the economic impact and benefits of gravel and paved roads in rural areas. She has a special interest in helping find ways to make the best use of scarce resources.

Her bachelor of science and master of science degrees in agricultural economics are from North Dakota State University. She is currently completing work on her Ph.D. from the University of California-Davis.

Dennis Jacobson

Dennis Jacobson is the program director for the Department of Transportation Support Center (DOTSC). The purpose of this program is to provide NDDOT with NDSU intellectual capital support to solve complex problems in a broad range of academic disciplines that have application to state transportation management issues. The UGPTI, with the support of DOTSC, serves as a portal or gateway to NDDOT for utilizing the intellectual assets of NDSU on transportation-related research activities.

Jacobson came to UGPTI in November 2001. Prior to that he had served in various capacities as an engineer for the North Dakota Department of Transportation. From 1997 to 2001 he served as the East Region Engineer. In this capacity, he was responsible for all program planning, construction and maintenance for the state highways in the eastern half of North Dakota.

Jacobson received his master's degree in civil engineering from NDSU in May 2001. His thesis investigated the relationship of in-place subgrade strength and the actual thicknesses of pavement placed versus what was planned. He has been accepted as a doctoral candidate and is currently working toward his Ph.D. in civil engineering. Jacobson is a registered professional engineer and a member of the professional engineers society and the Association of State Highway Engineers (ASHE).

Jacobson is also a member of the North Dakota National Guard. He currently holds the rank of Colonel and is in command of an engineer brigade for the 34th Infantry Division in Minnesota. He is also in command of three engineer battallions stationed in North Dakota. Jacobson is a 2001 graduate of the Army War College. His centennial war college class was the first class to be awarded masters degrees in strategic studies.

Brenda Lantz

Brenda Lantz is the Program Director for the Transportation Safety Systems Center. This program helps to improve the safety of our nation's highways through roadside and investigative systems software development, research, training, and education.

Since 1990, Brenda Lantz has worked in the areas of commercial vehicle safety systems and analysis, business logistics, and intelligent transportation systems for commercial vehicle operations (ITS/CVO) at the Upper Great Plains Transportation Institute.

Lantz has studied commercial vehicle safety from the perspective of commercial vehicle drivers, company managers, and owner-operators, as well as from the perspective of government officials. Her work in designing a national inspection selection system, which guides the selection of commercial vehicles and drivers for roadside inspections based on prior carrier safety data, promotes safer transportation for commercial and non-commercial vehicles.

In addition to managing the development of the various motor carrier software programs and studying ways to improve their effectiveness, her current research involves an evaluation of the effects of ITS/CVO technologies on motor carrier safety and service, with a supply chain perspective.

Lantz has been a statistical consultant to the Federal Motor Carrier Safety Administration (formerly the Office of Motor Carriers). In 1992, she completed one of the first studies that analyzed the relationship of commercial vehicle roadside inspection data to safety review and accident data maintained by the U.S. Department of Transportation.

A current doctoral candidate in business logistics at Pennsylvania State University, Lantz earned a master of science degree in applied statistics in 1994, and a bachelor of science degree in sociology in 1990, both from North Dakota State University.

Kiel Ova

Kiel Ova is an associate research fellow working with the Advanced Traffic Analysis Center. He supports the ATAC efforts as project manager and researcher for studies evaluating the application of traffic simulation models for traffic engineering and ITS applications.

Kiel's main focus since employment in December 2000 has been the development of training programs for the VISSIM traffic simulation software. The Upper Great Plains Transportation Institute through NDSU's division of continuing education currently provides a national VISSIM basic course for traffic and transportation engineers. Kiel is currently working to expand this effort to include an advanced course. The development of the VISSIM training was a good transition for Ova, since his thesis work used the model to evaluate the transit signal priority strategies for the downtown Fargo area.

One of Ova's most recent accomplishments was his selection as a 2001 Eno Fellow. Kiel found the one week Eno Leadership Development Conference a rewarding experience to learn about transportation issues from leading transportation policy makers and professionals.

Kiel has worked with UGPTI since 1997 as an undergraduate research assistant with the Low-Volume Roads program and as a graduate research assistant with the ATAC program. Kiel utilized the resources at UGPTI to start a local student chapter of the Institute of Transportation Engineers (ITE), which he served as president for two years. He still supports the ITE chapter through the Transportation Student Association, a student organization he helped create during graduate school.

Ova earned a bachelor of science degree and a master of science degree in civil engineering, both from North Dakota State University. Ova is also an associate member of the ITE.

Julie Rodriguez

Within the motor carrier industry, Rodriguez studies motor carrier economics and safety. She works with commercial trucking companies and federal programs for performance-based management. Job satisfaction is a particular area of interest because her research has shown truck drivers like to be truck drivers, yet there is a 100 percent turnover rate in the profession.

Rodriguez conducts surveys of national significance and provides expertise in the area of motor carrier management and safety. Noting that commercial transportation is a matter of competition and cooperation where the fastest, best and least expensive will succeed, Rodriguez helps implement performance-based concepts.

Rodriguez is the TEL8 program director and Franklin Covey workshop facilitator, responsible for planning and scheduling the educational programs of the system. She also is an associate research fellow.

Rodriguez began working for the Institute as a student in 1982. She has since earned both her bachelor of science and master of science degrees in agricultural economics from North Dakota State University.

Ayman Smadi

Dr. Ayman Smadi is director of the Upper Great Plains Transportation Institute's Advanced Traffic Analysis Center. With his leadership, ATAC assists second-tier cities, state Departments of Transportation and others in conducting operational and planning level traffic analysis. ATAC also facilitates the use of advanced traffic modeling tools through technical support, hands-on training and research. The Center supports intelligent transportation systems deployment, including planning, integration, evaluation and funding arrangements for advanced traffic signal control and traveler information systems, incident management systems and integration of advanced systems.

Smadi also is North Dakota State University's program director for the Mountain-Plains Consortium.

Responsible for extensive research, Smadi studies transportation systems and planning, traffic engineering, intelligent transportation systems and computer modeling. Computer modeling supports the development and management of viable research and teaching. He uses a comprehensive, multi-disciplinary approach to research, service, education and training. His work helps public transportation agencies as they face funding challenges while the demand for more and better services continues to increase. Smadi conducts and manages significant research grants.

Efficient transportation is essential for both business and consumer, locally and globally. Smadi's expertise in intelligent transportation systems, traffic engineering and safety, transportation network analysis and computer modeling, and transportation planning and freight transportation demand modeling contribute to that efficiency. Efficiency, in turn, contributes to safe and productive use of roadways at the best dollar value.

Smadi, an advanced research fellow, began his work at the Institute as a research associate and adjunct professor in civil engineering in 1993. In 1996 he became the NDSU program director for the MPC and in 1998 became ATAC director. He received a doctorate in civil engineering from Iowa State University, Ames; a master of science degree in civil engineering from the University of Oklahoma, Norman; and bachelor of science degree in civil engineering from Yarmouk University, Irbid, Jordan.

Denver Tolliver

Dr. Denver Tolliver is program director of the Mountain-Plains Consortium. The MPC is devoted to transportation education, research, and technology transfer and service. North Dakota State University is the lead university for MPC and the Upper Great Plains Transportation Institute is the administrator. The other three partners are the University of Wyoming, Colorado State University and the University of Utah. Tolliver, at NDSU for more than two decades, is a senior research fellow and adjunct professor of agricultural economics and civil engineering.

Much of his research addresses freight and intermodal analysis, statewide transportation planning and highway impact, wrapping environmental analysis into the package. Tolliver also looks at highway investment planning and does analysis for the North Dakota Department of Transportation. His work on investment planning for the NDDOT provides valuable information to better understand and facilitate rail service operations.

Through his efforts, MPC is one of 10 competitively selected university transportation centers in 10 federal regions in the United States. MPC represents Region 8, which includes North Dakota, South Dakota, Montana, Wyoming, Colorado and Utah. The program is funded on a 50-50 matching basis by the U.S. Department of Transportation. The grant has been awarded each year since 1988.

His work in graduate transportation programs at NDSU through the TEL8 telecommunication system provides interdisciplinary multi-modal courses for students in the College of Agriculture and Applied Economics, and Civil Engineering and Architecture. Students in other majors also take the courses as technical electives.

Tolliver expands his work beyond highway and rail to include river transportation and how the entities might interact. The Mississippi River is a transportation corridor to which truck and rail in the Dakotas could link. While this is regional in nature, it can be a financially viable option. He monitors the environmental impact of investments and shifts in rail, highway and river traffic. Through research, education, administration and communication with the public, he encourages effective use of time, energy and funding for transportation.

His doctorate in environmental design and planning and his master of science degree in urban and regional planning are from Virginia Polytechnic Institute and State University; and his bachelor of science degree in geography is from Morehead State University.

Kimberly Vachal

A transportation research economist at the Upper Great Plains Transportation Institute, Kimberly Vachal works with local, regional, and national agricultural groups in addressing logistical opportunities and concerns for the grain industry. Her work focuses on agricultural transportation and promotion of a healthy, competitive logistical system that will enhance the position of agricultural products in domestic and export markets.

Vachal identifies trends of North Dakota grain producers, elevators, agricultural processors and railroads. Her work on North and South Dakota and Minnesota grain movement databases, agricultural transportation, economic development and intermodal marketing all have direct impact on the economy of the Upper Great Plains.

She began her career at the Institute in 1992, taking a one-year sabbatical with the Canadian Pacific Railway. Vachal's tenure there gave her practical railroad experience. She did an internship with Cargill, Inc., in commodity merchandising while a student. Together her experience supports her work in grain and oilseed transportation, railroad services for agriculture, rail service and changing farm-to-market transportation flows. These all connect to have implications for highway and intermodal planning.

In cooperation with the North Dakota Public Service Commission and the North Dakota Wheat Commission, Vachal also has maintained and distributed information.

Vachal earned both her bachelor of science and master of science degrees in agricultural economics with an international trade and marketing emphasis from North Dakota State University. She is currently pursuing a Ph.D. in Public Policy at George Mason University.

Mitchel Hoffart

A telecommunications technician with the Upper Great Plains Transportation Institute for six years, Mitch Hoffart works with software, hardware, networks and telecommunications to support the research staff.

He also travels North Dakota taking transportation related photographs. Several of his photos have been published in the North Dakota Blue Book.

Hoffart conceived and designed the logo for TEL8, the videoconference network administered at the Institute.

He is working on a bachelor of fine arts degree. He holds an AAS degree in industrial electronics and computer science.

Mary Marquart

Mary Marquart is an administrative assistant at the Upper Great Plains Transportation Institute. She assists the directors of the TEL8 and ATAC programs, managing the day-to-day activities with emphasis on financial accounting and reporting.

Marquart attended Bismarck Junior College and has held administrative secretarial positions at colleges in Bismarck, Moorhead, and Fargo.

Kathy McCarthy

Kathy McCarthy, an administrative assistant at the Upper Great Plains Transportation Institute, is the administrative manager of the Institute and the Mountain-Plains Consortium. She maintains all financial accounting records for the two programs and is the office manager.

McCarthy prepares biennial and annual budgets, manages and processes grants and contracts, assists in managing education programs and distance education courses for four consortium universities, and plans and coordinates regional and national meetings. She is also the registrar for students in the MPC distance education program.

With more than 20 years of experience in the secretarial field, McCarthy joined the Institute in 1990.

Susan Peterson

With the Upper Great Plains Transportation Institute for two years, Susan Peterson works with travel vouchers and student time slips, orders supplies and pays the bills, and keeps the library current.

She holds a bachelor of science degree from the University of North Dakota in speech pathology and audiology and a bachelor of science degree in elementary education from Concordia College, Moorhead. She teaches in the transitions program for the Fargo Public Schools.

Beverly Trittin

At North Dakota State University for more than 20 years and with the UGPTI for nine years, Beverly Trittin is a visual communication specialist. She creates the brochures, newsletters and presentations for the Institute.

Active on campus, Trittin has been a representative to the Staff Senate serving on the public relations; scholarship; and campus space and facilities committees.

She graduated from the North Dakota State College of Science with a general office degree.

Permanent Full-Time Staff

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