



RESEARCH SERVICES SECTION

TECHNICAL SUMMARY

Technical Liaison:

Robert Gale, Mn/DOT
robert.gale@dot.state.mn.us

Administrative Liaison:

Cory Johnson, Mn/DOT
cory.johnson@dot.state.mn.us

Principal Investigator:

Amiy Varma, North Dakota State
University

PROJECT COST:

\$69,000



Trucking increasingly dominates U.S. freight transportation, accounting for 58 percent of freight tonnage in 2002, up from 54 percent in 1993.

Assessing Mn/DOT's Freight Performance Measures

What Was the Need?

Freight is playing an increasingly important role in transportation planning at local, state, regional, national and international levels. As the shipping of commercial and industrial goods becomes more global, it is more dependent on varying infrastructures and operational and logistical systems. Planners must determine if these transportation systems are capable of moving freight effectively and safely.

Mn/DOT currently uses four performance indicators, identified in the [2005 Statewide Freight Plan](#), to assess Minnesota's freight transportation system: shipment rates; mode share, or the percentage of freight moved by a particular mode of transportation; geographic market share; and travel time.

Because of current difficulties in accurately obtaining and modeling freight data, these performance measures need to be evaluated for their clarity, technical adequacy, and the cost and availability of the data required for their application. Additional measures that may be useful also need to be identified. This assessment will assist Mn/DOT's long-range planning efforts to improve its freight transportation system and update the Statewide Transportation Plan.

What Was Our Goal?

The objective of this project was to evaluate Mn/DOT's current freight performance measures by identifying more general industry measures and finding available public and private sector freight information sources required for the application of these measures. In addition, the project assessed the cost of using these information sources and examined the relevance of source data to Mn/DOT and freight movement within and through Minnesota.

What Did We Do?

Investigators conducted a literature review to identify performance measures currently in use by industry. They then identified public and private data sources for these measures and classified them according to mode, market, commodity, provider and performance measure category.

Researchers then assessed the relationship between the various performance measures identified in the previous step and their data sources, the availability of data, the cost of acquiring it and its relevance to Mn/DOT. Finally, they used these analyses to recommend best practices for Minnesota and to identify lessons learned from other efforts, freight industry data and reports to monitor on an ongoing basis, and additional prospective measures that Mn/DOT should further develop.

What Did We Learn?

Researchers found that freight performance measures are often not clearly defined, and it may be costly to develop and maintain the data required to use them. Moreover, freight modes are continually in flux, and much of the data required for developing measures is proprietary or withheld for security reasons. To address these challenges, researchers identified the best sources for freight performance data—including federal databases, past freight studies and information available from the economic development department—and recommended best practices for developing measures, including:

- Identifying the policies and strategic objectives in statewide and district freight plans

continued

“By comparing external data to existing Mn/DOT data, we gained a much better understanding of our performance measures. This data is critical to compiling the state’s transportation plan.”

—Robert Gale,
Planner Principal Transportation, Mn/DOT Office of Freight and Commercial Vehicle Operations

“It can be costly and difficult to obtain the data required to use performance measures. This study helps overcome this challenge by identifying the best data sources and practices for developing the measures most relevant to Mn/DOT’s needs.”

—Amiy Varma,
Associate Professor, North Dakota State University Department of Civil Engineering

Produced by CTC & Associates for:

Minnesota Department
of Transportation
Research Services Section
MS 330, First Floor
395 John Ireland Blvd.
St. Paul, MN 55155-1899

(651) 366-3780

www.research.dot.state.mn.us

Example Performance Measure/Indicator	MD.3 Value of shipments to Minnesota by major commodity groups by different Modes
Goal/Strategic Direction (s)	Strategic Direction 2 – Make the network operate better Strategic Direction 3 – Make Mn/DOT work better
Policy(Policies)	Policy 4 – Provide cost-effective transportation options for people and freight Policy 9 – Inform, involve and educate all potentially affected stakeholders in transportation; Plans and Investment Decision Processes.
Sector(s)/Commodity(ies)	Various
Mode(s)	All
Market(s)/Decision Context(s)	Global, Multinational, National, Multistate, Statewide, Regional
Type of Movement(s)	Only freight
Usage	Currently being used In Minnesota (Policy 4, PI3 MNSFP) – Performance Indicator
Domain(s)	Private
Maturity	Not Mature
Measurement Source(s)	Past Freight Flow studies provided snapshots; CFS, Global Insight’s TRANSEARCH-INSIGHT data, local surveys; FAF data
Challenges	So far snapshots have been developed almost at 5 year interval. Data is available; Mn/DOT Office of Freight with its Freight Planning Support System will be able to provide updates. Data is not good for substate and local freight flows Cost is moderate to high (for Global Insight data); commitment of staff by Mn/DOT will be helpful.

The project report contains numerous snapshot assessments of performance measures, presented by category (for example, access, safety, network/infrastructure), as well as measurement sources.

- Maintaining and improving databases related to interregional corridors, connectors, intermodal facilities, bridges and pavements
- Compiling and analyzing data from freight studies and various government agencies
- Conducting periodic freight flow studies
- Meeting regularly with a freight advisory group of Minnesota stakeholders to identify freight problems
- Establishing innovative practices to address the availability of freight data, including partnerships between public and private agencies, inter- and intra-agency arrangements, surveys of freight stakeholders and facilities, modeling urban freight movement, and the study of travel time and reliability data
- Monitoring industry data sources

Investigators recommended developing the following measures in more detail:

- Modal cost of agricultural shipments by markets
- Shipment rates for agricultural shipments
- Transportation cost as a percent of total cost for timber and lumber industry
- Door-to-door time for manufacturing shipments, especially in last leg of supply chain
- Transportation cost for wholesale by market
- Truck parking shortages along corridors or near major shipment, distribution or inter-modal centers

What’s Next?

Mn/DOT will continue to redefine performance measures and indicators by working with the Freight Advisory Group, government agencies and the private sector to tie measures to the strategic objectives of statewide transportation and freight plans and to identify significant freight corridors and nodes. In the short term, they plan to develop performance measures related to network and infrastructure, safety, travel time and external factors. In the medium term, they will develop access, capacity and reliability-related performance measures. Long-term plans include surveying shippers on a continuing basis concerning inbound and outbound freight movements.

This Technical Summary pertains to Report 2008-12, “Measurement Sources for Freight Performance Measures and Indicators,” published July 2008. The full report can be accessed at <http://www.lrrb.org/PDF/200812.pdf>.