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OFFICE OF TRANSPORTATION SYSTEM MANAGEMENT

TECHNICAL SUMMARY

Technical Liaison:
Jason Junge, MnDOT
Jason.Junge@state.mn.us

Project Coordinator:
Bruce Holdhusen, MnDOT
Bruce.Holdhusen@state.mn.us

Principal Investigator:
Lee Munnich, University of Minnesota

PROJECT COST:
$148,033

The Mayo Clinic relies on air service to deliver time-sensitive samples for its growing lab testing business.

Industry Cluster Analysis for Better Transportation Planning

Through industry cluster analysis and interviews with representative businesses, researchers provided insights about industry transportation needs that will be valuable for statewide and regional transportation planning.

What Was the Need?

Many recent studies have concluded that while transportation is necessary for economic development, transportation investments are not by themselves sufficient to spur growth. MnDOT would like to better understand the role that transportation plays in economic competitiveness.

In the past 20 years, significant research has been conducted on the role of clusters—regional concentrations of related industries—in economic development. Last year, Harvard Business School developed the U.S. Cluster Mapping tool for the U.S. Economic Development Administration to help governments, economic developers and businesses understand the competitive landscape for industry clusters and make strategic investments to support them. However, this clustering methodology had not yet been applied to transportation.

What Was Our Goal?

The goal of this project was to examine the impact of transportation networks on several competitive industry clusters in Minnesota to better identify transportation investments that will support economic development.

What Did We Do?

The U.S. Cluster Mapping tool includes 66 industries and 25 distinct metropolitan or micropolitan regions located entirely or partially within Minnesota. Researchers considered 401 regional or cluster pairs to be "competitive" based, among other factors, on having a location quotient—a ratio expressing the concentration of an industry's employment in a given region relative to the nation as a whole—greater than 1.3.

MnDOT and the Minnesota Department of Employment and Economic Development staff selected 12 of these regional/cluster pairs for further analysis, including the forest products cluster in Duluth, the health services cluster in Rochester, the granite cluster in St. Cloud and the recreational vehicle cluster in northwestern Minnesota.

For each regional/cluster pair, researchers interviewed representatives from two to three firms about their industries and the role transportation plays in them. They used this information and other available data to provide an analysis of each that included:

- A cluster dashboard, with data about the cluster's employment in the region, notable companies and an overview of significant transportation issues.
- Descriptions of the cluster's suppliers and customers, including where they are located and the transportation modes they use.
- Details about the major transportation issues and challenges faced by the cluster.
- A description of competitiveness issues in the cluster, including transportation-related advantages and disadvantages, technology and labor supply.

What Did We Learn?

This research offered several specific insights that will be valuable for MnDOT's planning processes. For example, new laser etching technology is an opportunity for the

continued

"Each industry cluster that we studied is facing a different mix of issues. Businesses aren't usually interacting with MnDOT on a regular basis, so this provides a base of information for thinking about their issues."

—Lee Munnich,
State and Local Policy Program Director, University of Minnesota Humphrey School of Public Affairs

"This is one way to show how Minnesota competes with other states, highlight the industries important to the state and maybe talk about how to make their freight movement more efficient."

—John Tompkins,
MnDOT Freight Project Manager

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Research Services & Library
MS 330, First Floor
395 John Ireland Blvd.
St. Paul, MN 55155-1899
651-366-3780
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For the heavy machinery cluster in southwestern Minnesota, road transportation is the primary method of shipping products. As a result, highway service disruptions are particularly costly. Road smoothness and weight restrictions are also significant concerns.

St. Cloud granite industry, but it has also made the cluster more reliant on reliable rail shipments. Laser-etched headstones require black granite that is imported from India and China rather than sourced locally, but one company reported that rail delays between Tacoma, Washington, and Minneapolis caused it to miss Memorial Day deadlines.

The health care industry in Rochester, relies on air travel to bring customers to the Mayo Clinic and to receive time-sensitive samples for laboratory testing. Other industries—including the glass cluster around Owatonna and the medical device industry in the Twin Cities—are concerned about infrastructure condition, particularly pavement smoothness, because their products are fragile and could break in shipment on rough roads.

This project demonstrates an approach that MnDOT or metropolitan planning organizations can use to gather information for transportation planning. Clusters and their location quotients provide an objective way to choose industries for further analysis. High location quotients typically represent industries that have demonstrated a competitive edge in their region and bring new money into a regional economy.

What's Next?

Industry cluster mapping and analysis should be a useful tool for transportation planning. MnDOT's Freight Office is currently updating its Statewide Freight Plan and will likely incorporate information from this project into it. This work will also likely influence other statewide policy and highway investment plans and will allow MnDOT to better understand the transportation needs of prominent local industries.

The cluster approach will also likely be used in regional planning. The District 8 engineer has contacted local manufacturing companies and carriers using an analysis of competitive clusters to select companies to interview. District 4 is conducting a similar outreach effort. Other districts have also expressed interest in using the approach.

In recent years, the Transportation Economic Development and Corridors of Commerce programs have provided funds for transportation infrastructure investments in Minnesota. If these programs are reauthorized, cluster analysis may be a useful tool to help prioritize investments.

This Technical Summary pertains to Report 2015-02, "Transportation Planning to Support Economic Development: An Exploratory Study of Competitive Industry Clusters and Transportation in Minnesota," published January 2015. The full report can be accessed at http://www.lrrb.org/PDF/201502.pdf.