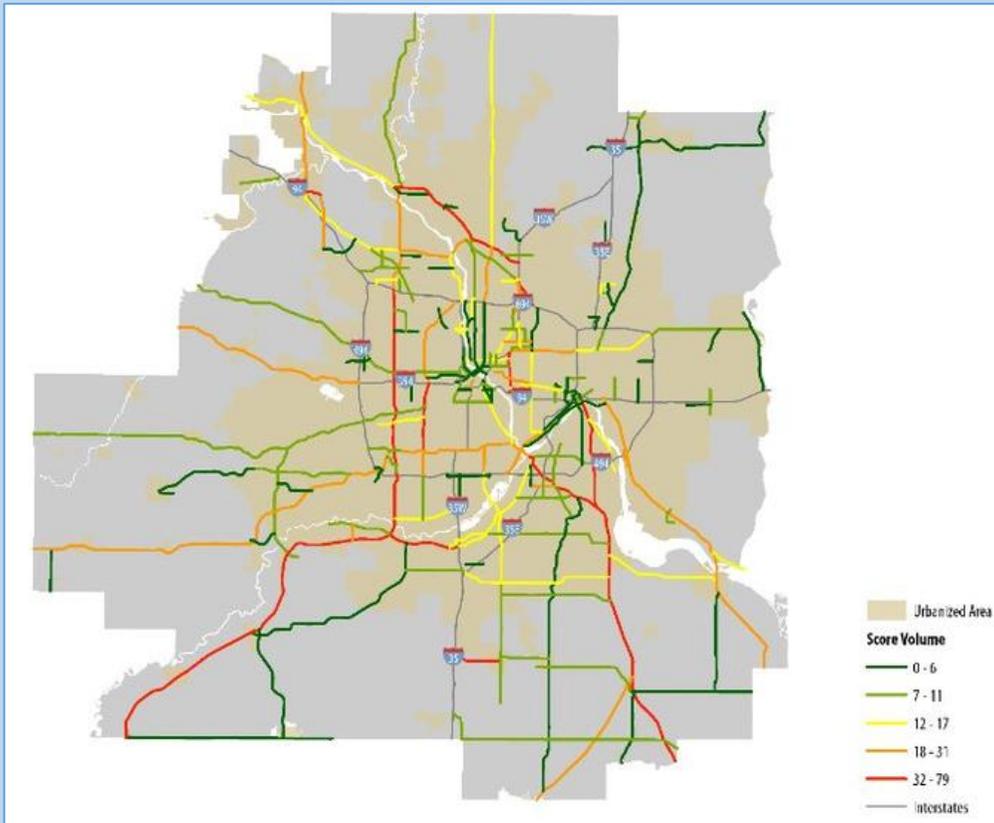


Minneapolis-St. Paul Truck Corridors

*CASE
STUDY*

Fusing truck trip and economic data to help prioritize freight-relevant infrastructure projects.

| | |
|------------------------------|--|
| Freight Challenges | Land Use, Congestion, Last Mile Access |
| Data Sources Used | Administrative Records, Global Positioning System |
| Analytical Approaches | Speed, Location, Classification |



Corridors Scored According to Truck Volume

Source: Metropolitan Council, "Regional Truck Highway Corridor Study", May 2017.

WHAT ARE THE FREIGHT CHALLENGES?

Freight is a driver of economic activity, and the efficiency of freight movement can have an impact on the relative competitiveness of a region. Particular challenges that impact the movement of freight in the Twin Cities include overall traffic congestion, congested or complicated "last mile" routes between highways and freight facilities, and competing land uses, such as industrial facilities adjacent to neighborhoods.

WHAT WAS THE GOAL OF THE PROJECT?

The Minneapolis-St. Paul Metropolitan Council sought to understand how freight activity and truck trips were related to different economic sectors such as manufacturing or agriculture. The overall goal of the project was to assist in the prioritization of future freight-related highway projects.

WHAT DATA SOURCES WERE USED?

For this project, planners used two truck traffic data sources: GPS data from ATRI, and traffic counts from the Minnesota DOT (MnDOT). Information on freight-relevant businesses came from InfoUSA's ReferenceUSA database, which maintains a set of administrative records that include business attributes such as location, employee count, and sales volume. Additional administrative resources included information on the location of major freight facilities such as intermodal ramps, airports, and barge terminals.

WHAT ANALYTICAL APPROACHES WERE APPLIED?

ATRI's truck GPS records are a set of billions of time-stamped observations of hundreds of thousands of trucks' locations and speeds. These observations can be mapped to specific segments of a roadway and used to determine truck speeds at specific times for specific portions of a road network. However, ATRI's GPS records do not include all trucks, so estimates of a road's truck counts derived directly from ATRI's GPS records only reflect a portion of truck traffic.

Minneapolis-St. Paul Truck Corridors

WHAT ANALYTICAL APPROACHES WERE APPLIED (Cont.)?

The advantage of using ATRI data is the ability to see truck speed and ATRI-instrumented truck volumes for a wider range of roads than is possible with public data. By comparison, MnDOT's truck counts are only available for select sections of roadway, but these counts include all trucks, not just those participating in ATRI's GPS program. Researchers were able to estimate what proportion of the region's truck volume was captured by ATRI's data by comparing ATRI's count of trucks at locations where MnDOT recorded official truck counts. Using this proportion, ATRI's data could be used to develop estimates of truck counts for a wider range of roads in the region.

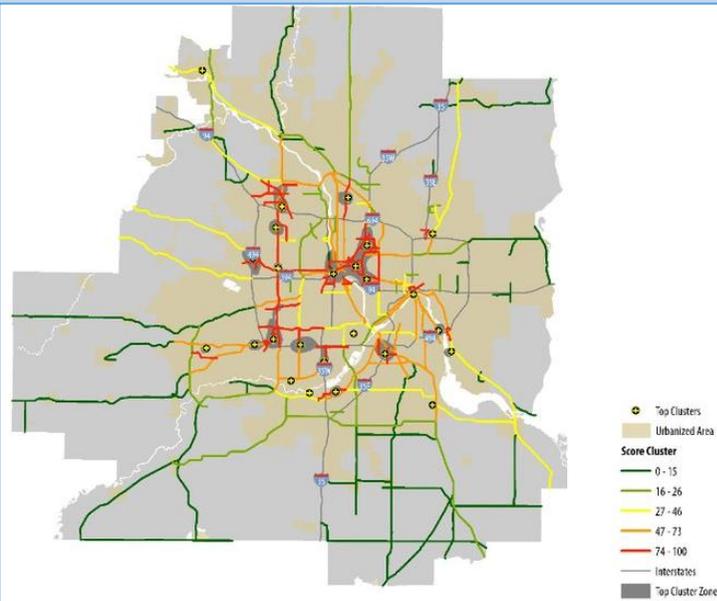
Next, information on business establishments and major freight terminals were mapped to determine where different industries were clustered in the region, and where specific freight facilities were located. A sample of this cluster map work is shown at left. Once this mapping was complete, specific road corridors were evaluated across four factors: average annual truck volume, the truck percentage of total traffic, proximity to freight clusters, and proximity to freight facilities. Using weighted criteria associated with each of the four factors, corridors were scored and assigned to one of three tiers intended to assist with project prioritization in the future. Rankings of each corridor were validated through consultations with staff from each county in the MPO and interviews with private sector stakeholders.

WHAT WERE THE RESULTS?

The project created a final tiered hierarchy of freight corridors which has been used to aid in the identification of freight-relevant performance issues, such as areas of high truck delays or chases. In terms of best practices, this project demonstrates the importance of fusing GPS with other data sources like truck counts and establishment data. It also demonstrates how examining freight fluidity at a systematic regional level can aid in project prioritization for investment decisions.

HOW WERE THE RESULTS VISUALIZED OR COMMUNICATED?

The map on the previous page shows corridors scored according to truck volume and the map on the left shows corridor scoring based on proximity to freight facilities, with tier 1 corridors in red, tier 2 in yellow, and tier 3 in green. These maps showcase a good practice for visualization: the creation of specific maps that show how each element of the system is ranked in regards to truck volume, truck percentage, proximity to freight facilities, and proximity to freight clusters. Producing this set of maps gives readers a greater understanding of how overall rankings were derived, and allows readers to further explore specific aspects of system performance in specific areas.



Corridors Scored According to Proximity to Freight Facilities

Source: Metropolitan Council, "Regional Truck Highway Corridor Study", May 2017.

Contact Information

Metropolitan Council. [Online]. Available: <https://metrocouncil.org/Transportation/Contact-Us.aspx>