



Florida Department of Transportation Research

Use of Advanced Analysis Tools to Support Freeway Corridor Freight Planning

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Truck traffic is an important component of the nation's transportation system. At an average of 10,000 trucks/day/mile, these trucks carry billions of tons of freight, vital to the nation's economy. The Federal Highway Administration expects truck freight to double by 2035, yet already, highway congestion delays are a significant cost to the trucking industry and in turn to the businesses and consumers they serve. Costs include billions of gallons of wasted fuel, overdue charges, and spoiled merchandise. In addition, truck traffic has significant impacts on the mobility of the transportation system. An effective response to congestion requires tools to assess alternative strategies.

This project investigated methods and tools for use in assessing combined strategies in support of corridor freight planning. Researchers from Florida International University undertook the research to identify and develop tools and methods, identify data sources, and illustrate the use of the tools and methods to assess selected corridor freight management strategies.

The researchers began with a thorough literature review, covering topics such as freight corridor management strategies, analysis approaches, and estimation of time-variant trip matrices required for the analysis. Of many tool types for strategy analysis, dynamic travel assignment (DTA) combined with mesoscopic simulation models seemed most suited for creating a modeling environment for corridor freight management and for assessing strategies on a corridor-wide basis.

Data for the analysis were acquired from the Florida Department of Transportation Intelligent Transportation System (FDOT ITS) data archives that include incident data, traffic detector data, and travel time data. Other sources of data included the FDOT statistics office telemetered traffic monitoring sites (TTMS) and portable monitoring sites. Interfaces to bring data from these sources into the project tools were



In the graphic above, points of recurring congestion on the interstate highway system are marked with circles that are proportional to cumulative truck delays, ranging from 100,000 to 1 million hours. Based on 2006 FHWA data.

programmed. The study area was Jacksonville's interstate highways.

The developed modeling environment integrated the Florida Standard Urban Transportation Model Structure (FSUTMS) demand model with the DTA/mesoscopic simulation tool, DynusT. Additional programming allowed this tool to be applied to the project problem. Software tools were also developed to adapt FSUTMS parameters for use in DynusT. Researchers addressed limitations of the tools and the data, producing measures to assess freight mobility strategies. Processing the data to extend the measures that could be developed from DTA/mesoscopic modeling was also demonstrated.

Finally, the analytical environment developed in the project was applied to Advanced Traveler Information Systems (ATIS) and truck/toll lane strategies. Modeling the two strategies took advantage of the DTA tool's ability to account for different types of road users and vehicles and their different responses to pricing strategies and available traveler information.

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For more information, visit <http://www.dot.state.fl.us/research-center>