



Florida Department of Transportation Research

Effect of Real-time Traffic Data on Truck Diversion Routing on I-75

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Current Situation

The Interstate Highway System provides rapid, efficient freight transportation across the entire U.S. One of the original purposes of this system was to relieve congestion, but Interstate highways are now so heavily used that congestion has become an issue. Traffic incidents and/or congestion on heavily used urban segments can lead to serious slowdowns. Freight traffic, which depends on timely service, can benefit from alternative routes to bypass incident slowdowns. The challenge is to provide this service in real time in response to slowdowns that can build up quickly.

Research Objectives

University of Central Florida researchers developed a system for collecting real-time information about cars and trucks on Interstate highways. A second system uses this data to recommend appropriate diversion routes.

Project Activities

A truck diversion decision-making system must be based on real-time traffic data. The researchers reviewed the many options available for collecting these data, many of which have high costs in labor, equipment, and installation. They devised a novel method of automated data collection that is reliable, inexpensive, and portable using commercial off-the-shelf hardware and custom software. This system can be used to develop both raw traffic counts and freight flow information. Other components of the system included communications and data processing.

The data collection system was installed at two test sites near each other in central Florida, one on I-75 and another one on the Florida Turnpike. These locations allowed the researchers to compare traffic counts from their system with counts taken by loop detectors installed in the highways and with manual counts. The developed system showed good agreement with loop detector and manual data.

The researchers then studied the use of their system as the basis for an automated truck diversion decision-making system. They reviewed documented methods and compiled data from several sources to test the system's decision-making in simulation. First, street and traffic data were collected and processed to build a dynamic routable network dataset of road edges and junctions for all segments of the road network. Second, historical traffic profiles were associated with specific road segments. Third, truck alternative route selection criteria were defined to evaluate the network in terms of suitability for trucks. When the resulting software was tested against three historical incidents, substantial savings were found in time, delay costs, and fuel cost. For example, a truck might need an extra hour to pass an incident on an Interstate, where an alternative might take an extra ten minutes, using half the fuel.

Project Benefits

The system developed in this project provides a model that can lead to increased efficiency on Interstate highways and significant savings for freight traffic.

For more information, please see www.fdot.gov/research/.



The trucks caught in this slowdown on I-75 can experience lengthy and costly delays.