TRAVEL TIME RELIABILITY AND TRUCK LEVEL OF SERVICE ON THE STRATEGIC INTERMODAL SYSTEM

BACKGROUND

The goal of the Strategic Intermodal System (SIS) is to provide a transportation system that efficiently serves Florida's citizens, businesses and visitors; helps Florida become a worldwide economic leader; enhances economic prosperity and competitiveness; enriches quality of life; and reflects responsible environmental stewardship. The SIS is composed of transportation facilities and services of statewide and interregional significance. Research on the SIS and its users can provide valuable information for improving and enhancing the system. Two subject areas that warrant investigation are travel time reliability and truck level of service.

Travel time reliability is widely recognized as one of most important performance measures, if not the single most important performance measure, of highway traveler perceptions. However, determining how to measure, quantify, and predict reliability has proved to be elusive.

When describing level of service for highways, the Highway Capacity Manual primarily concentrates on the auto mode. Major research is underway, or has recently been completed, on the transit, bicycle, and pedestrian modes; however, only limited research has been conducted on how truck drivers and freight delivering companies perceive levels of service provided by highways. Commercial trucks, as the leading transportation mode for freight movement, are vital to the economy and quality of life. The importance of this mode has become greater as the demand for just-in-time delivery, lower inventory, electronic commerce, and Less-than-Truck Load (LTL) shipping has increased.

OBJECTIVES

This project was performed in two parts dealing with travel time reliability (Part A) and truck LOS (Part B), respectively.

Part A The objective of this part of the study was to develop new or enhanced models for determining and predicting travel time reliability for travelers and freight. This required establishing an appropriate definition for obtaining travel time reliability and developing preliminary models for estimating the travel time reliability on freeway facilities.

Part B The objective of this part of the study was to determine which areas or issues should be addressed in order to better accommodate truck traffic on state roadway systems.

FINDINGS AND CONCLUSIONS

Part A Researchers concluded that an agency may need to develop two (or more) different performance measuring techniques related to reliability. For the purposes of this project, researchers used the following definition: "Travel time reliability is defined as the percent of trips that reach a

destination over a designated facility within a given travel time (or equivalently, at a given travel speed or higher)." Researchers also developed a framework for estimating travel time reliability based on field data and travel time estimation models for various conditions.

Part B Researchers concluded that the quality of a truck trip depends on three issues: travel safety, travel time, and physical and psychological driving comfort. Truck drivers showed more concern about driving comfort, while truck company managers were more concerned with travel time. Travel safety was a major concern for both groups. Results according to facility type were as follows:

- "Speed Variance" and "Pavement Quality" were the two most important determinants of truck trip quality on freeways.

- Truck trip quality on arterials was primarily dependent on how freely truck drivers can maneuver, and the maneuverability on arterials was a function of multiple factors including "Pavement Quality," "Turning Maneuvers," "Speed Variance," and "Traffic Density."

- "Percent-Time-Being-Followed," "Percent-Time-Spent-Following," and "Travel Lane and Shoulder Widths and their Pavement Quality" were identified as truck LOS determinants on two-lane highways.

BENEFITS

Part A The results provide FDOT with the advantages and disadvantages of using various travel time reliability definitions. They also provide FDOT with a framework for measuring and/or estimating travel time reliability on the freeway network. Furthermore, these results can be used to establish similar methodologies for obtaining travel time reliability for other facility types, as well as other modes.

Part B The results provide FDOT with insight into the issues and factors that are important to the trucking community with regard to roadway LOS. This research offers some direction regarding areas of great concern to the commercial trucking stakeholders, which can be used as input to the FDOT project prioritization process. It can also serve as a foundation for the further development of quantitative LOS estimation methodologies.

Overall, this study will help to optimize the Strategic Intermodal System (SIS), providing users with a more effective and reliable transportation system that contributes to the enhancement of Florida's economic prosperity.

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