Truck and Auto Performance Measurement Using Probe-Based Speed Data: Case Study of I-95 Corridor in Maryland

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Abstract

The mobility performance measures are calculated based on the National Performance Management Research Data Set (NPMRDS) on the I-95 corridor in Maryland. Separate performance measures are computed for each of the three data sets within NPMRDS: auto, truck, and all vehicles. Cross classification is done to understand the similarities between the three data sets. Performance measures used in this study are Travel Time Index (TTI) and Planning Time Index (PTI) as the indicators of congestion and reliability respectively. Cross classification results indicate all three data sets exhibit similar congestion performance measure, while the reliability performance measure rarely matched.

Introduction

The Moving Ahead for Progress in the 21st Century (MAP-21) Act requires state transportation agencies and Metropolitan Planning Organizations (MPOs) to establish performance measures to track the effectiveness of their investments over time and to inform their decision making.

Freight movement performance measurements are one of the important areas for which MAP-21 has explicit provisions. MAP-21 legislation states that freight performance measures on the Interstate Highway System in each state, and Metropolitan Planning Organization (MPO) projections are required to be established.

This study estimates the modal speed-based mobility performance measures on the I-95 corridor in Maryland. The speed data used is obtained through the National Performance Management Research Data Set (NPMRDS) which is an archive of the probe-based passenger and freight vehicles speed measurements.

MOBILITY PERFORMANCE MEASURES:

- Travel time index (TTI)
- Planning time index (PTI)

TTI Cross Classification Summary

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<th>All</th>
<th>Truck</th>
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PTI Cross Classification Summary

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Conclusions

- Truck congestion performance measure (TTI) classification can be achieved correctly using Auto/All data in 90%-95% of the time
- Truck reliability performance measure (PTI) classification can be achieved correctly using Auto/All data in only 10%-15% of the time
- Truck data paints a different picture for reliability of freight travel times on the road than other vehicles
- At this point it is not clear whether the source of this difference is non-filtered/non-validated data, or something more intrinsic is occurring
- While all data probably will be used in most performance measurement efforts, it really masks what is going on when one looks separately at Auto and Truck data

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