Travel Time Variability for Freight Flows along a Major Interstate Corridor

Kaushik Bekkem, Teresa M. Adams, Bruce X. Wang

Abstract

Travel time reliability is one of the key indicators for freight performance measurement. Traffic congestion at any time of day and the corresponding variations in travel times causes potentially costly disruptions. Also, the efficient and reliable freight movements allow manufacturers to produce and distribute goods for both local and distant customers. The Value of Delay and travel time variability/reliability are fundamental parameters driving the private sectors’ response to public freight projects and policies such as corridor construction and tolling. This research looks at the travel time variability and related reliability measures of congestion on freight flows along major interstate corridors and help prioritize improvements in to region’s transportation system.

The travel time variability is calculated and analyzed using data including archived truck GPS based data collected and processed results made available by the American Transportation Research Institute (ATRI) through the Freight Performance Measurement Initiative by FHWA, and the HPMS data. The project’s current scope looks at I90/94 interstate freight corridor between Hudson and Chicago. Reduction in travel time variability and any travel time savings has an economic value associated with it and also may result in reduction of vehicle operating costs (VOC). The perceived value of delay by various shippers is determined using a logit-model based evaluation of traveler survey collected from freight shippers in state of Wisconsin. Discrete choice models along with spatial data along I90/94 corridor will be used to study this travel time variability, with respect to factors including time/value of delay, to determine the major factors and thus to help identify & prioritize the transportation congestion improvement projects and reduce the VOC of freight movements.

Keywords: travel time variability, freight corridor, vehicle operating costs, value of delay
Authors

Kaushik Bekkem
Research Intern
Center for Freight & Infrastructure Research and Education
University of Wisconsin - Madison
Email: bekkem@wisc.edu

Teresa M. Adams
Professor
Department of Civil & Environmental Engineering
University of Wisconsin-Madison
Email: adams@engr.wisc.edu

Bruce X. Wang
Assistant Professor
Department of Civil Engineering
Texas A&M University
Email: bwang@civil.tamu.edu