

TDOT Project: “Freight Flows and Incident Management”

A. Khattak, M. Burton, & D. Clarke, The University of Tennessee, Knoxville

OCTOBER 20, 2016

PURPOSE: Large trucks transport nearly half a trillion dollars of cargo annually in Tennessee and with the growing population of the state, truck traffic is expected to grow. A significant portion of congestion faced by trucks comes from highway incidents, particularly large-scale incidents. The primary goal and purpose of this project is to explore how the statewide Advanced Traveler Information Systems (ATIS) can be used to better deal with incident-induced congestion by not only diverting passenger vehicles but also truck traffic to feasible routes, given the higher value of time for truck freight. Objectives of this project are:

1. Understand the current situation regarding large-scale incidents in Tennessee.
2. Collect information about truck driver route diversion behaviors and model behavior.
3. Simulate truck diversions and consequent outcomes under various disruption scenarios and develop ATIS customized to truck drivers.
4. Quantify benefits from appropriate truck diversion schemes.

SCOPE: The scope of this project will be limited to major highways in Tennessee and large-scale incidents or crashes with durations greater than 2 hours but less than 24 hours.

TASKS: Several tasks and outcomes/deliverables will be generated throughout this project:

1. Conduct up-to-date literature review with focus on State DOTs’ existing practices for diverting trucks and past research on incident management practices in TN and nationally;
2. Determine appropriate data sources for freight diversion analysis including TDOT incident database, E-TRIMS, TDOT Smartway, bridge, and school zones, and other truck flow data;
3. Conduct interviews of TDOT staff for identifying key operational and safety issues pertaining to large-scale crashes and truck diversions; also interview of truck drivers to document their experiences with large-scale incidents and preferences for route diversions.
4. Develop freight diversion analytical approach, e.g., analyze large-scale incidents, prioritize corridors and schemes for diverting passenger vehicle drivers as well as truck drivers;
5. Develop a method to disseminate roadway information, focusing on customized incident information for truck drivers, i.e., feasible diversion routes when large-scale incidents occur;
6. Estimate and evaluate the benefits from freight route diversion, i.e., monetary and qualitative;
7. Write final report and provide recommendations to appropriate TDOT divisions.

Appropriately designed advanced traveler information systems will enable dynamic readjustment of truck (and passenger vehicles) traffic around large-scale incidents. Overall, the study will contribute to economic development by using the transportation infrastructure in TN more efficiently.

PROGRESS: The project start date is October 1, 2016. The proposed period for completion is 12 months including final review and approval of the final report. Data collection, literature review, and IRB approval for human subjects are underway.