Impact of Truck Drivers and Transportation Infrastructure Characteristics on Large Truck Crashes

Project Number:

21SAUTSA01

Start Date:

08/01/2021

Principal Inverstigator(s):

Hatim Sharif

University of Texas at San Antonio

Lead Institution:

University of Texas at San Antonio

Funding Source(s):

Tran-SET

University of Texas at San Antonio

Total Project Cost:

$ 90,000

Identifying the root causes of crashes involving large trucks in Texas

For the past three decades, Texas has had the highest number of fatal crashes involving large trucks in the United States. Other states in Regions 6 also have high rates of large truck crashes. Due to the size and weight of large trucks, their crashes usually are very destructive. Although large trucks have a significant impact on traffic safety in Region 6, very little analysis has been conducted on the risk factors associated with crashes involving large trucks, especially the roadway-related risk factors. The purpose of this research is to perform a comprehensive evaluation of crash and operational data to identify the root causes of crashes involving large trucks in Texas. This includes developments of a database of large truck crash reports in the target area, calculation of crash counts and rates, and identifying road segments and intersections with highly concentrated large truck crashes and the unsafe actions that are contributing to such crashes. The crash data analysis will include detailed review of the crash narratives and diagrams as part of the crash database building process to help elucidate the true causes of the crashes. The evaluation will include operational and physical characteristics of the crash locations, severity of injuries, environmental conditions, characteristics of truck drivers, and road users behaviors as well as the common characteristics of the built environment that contribute to unsafe actions and conditions. The above evaluation shall allow the research team to identify on-system and offsystem segments and intersections with highly concentrated large truck crashes and the unsafe actions that are contributing to these crashes and provide safety countermeasures and recommendations for further study.

Problem Statement

Texas has had the highest number of fatal crashes involving large trucks in the United States for the past few decades. Other states in Regions 6 also have high rates of large truck crashes. Due to the size and weight of large trucks, their crashes usually are very destructive. Although large trucks have a significant impact on traffic safety in Region 6, very little analysis has been conducted on the

risk factors associated with crashes involving large trucks, especially the roadway-related risk factors. The purpose of this research is to perform a comprehensive evaluation of crash and operational data to identify the root causes of crashes involving large trucks in Texas.

Objectives

The main goal of this project is to perform a comprehensive evaluation of crash and operational data to identify the root causes of crashes involving large trucks in Texas. This includes developments of a database of large truck crash reports in the target area, calculation of crash counts and rates, and identifying road segments and intersections with highly concentrated large truck crashes and the unsafe actions that are contributing to such crashes.

Intended Implementation of Research

The proposed research includes collecting and analyzing data from different sources including site visits. Other tasks include analysis and synthesis of safety information and spatiotemporal analysis, crash analysis, development of countermeasures, and reporting. The research findings will be convened in the form of a list of recommendations, a technical brief, an educational PowerPoint presentation targeting local communities, and a final report. The project tasks will be implemented in consultation with Houston and San Antonio traffic engineers and other interested entities within Region 6. To enhance and facilitate engagement of the students in the classrooms across Tran-SET consortium, the research team will require that faculty involved in all research projects engage the college students they teach each semester by including an in-class activity surrounding their research topic. The research is dedicated to infusing innovation in associate, undergrad, and graduate coursework each and every semester and will thus share educational materials resulting

from this project with all members of the consortium. The project PI is involved in K-12 outreach project with local schools and will use that project as a vehicle of Tran-ST outreach activities. We will offer summer research experiences for undergraduate students at UTSA campuses in collaboration with existing programs.

Anticipated Impacts/Benefits of Implementation

This research goal of this study is to perform a comprehensive evaluation of crash causes and risk factors to identify the root causes of crashes involving large trucks in Texas and quantify the interaction of truck drivers and deteriorated roadway infrastructure characteristics on large truck crashes in Texas. The research findings will be convened in the form of a list of recommendations, a technical brief, an educational PowerPoint presentation targeting local communities, and a final report.

Web links

- Tran-SET's website
  https://transet.lsu.edu/research-in-progress/

Tran-SET

Tran-SET is Region 6's University Transportation Center. It is a collaborative partnership between 11 institutions (see below) across 5 states (AR, LA, NM, OK, and TX). Tran-SET is led by Louisiana State University. It was established in late November 2016 "to address the accelerated deterioration of transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovative construction management processes".

Learn More

For more information about Tran-SET, please visit our website, LinkedIn, Twitter, Facebook, and YouTube pages. Also, please feel free to contact Dr. Momen Mousa (Tran-SET Program Manager) directly at transet@lsu.edu.