



Transportation Consortium of South Central States

Key Points

Project Number:

17ITSTSA01

Start Date:

05/08/2017

End Date:

11/08/2018

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University of Texas at San Antonio

Funds Requested to UTC:

\$50,000

Funding Source(s):

Tran-SET

University of Texas at San Antonio

Total Project Cost:

\$100,000

Relationship between Road Network Characteristics and Traffic Safety

Brief Project Description.

The proposed research will perform a thorough analysis of critical intersections with high crashes within the city of San Antonio, TX, and analyze key factors and root causes of crashes and recommend effective safety countermeasures. The evaluation will include both signalized and un-signalized intersections. The study will also include selecting some intersections at crash hot spots to observe traffic flow and driver behavior.

Problem Statement

The fast growth due to the economic development in South Texas as a result of booming oil and gas activities has creating a spike in crashes and fatalities in the region over the last four years. Primarily, these crashes involved commercial vehicles within and outside urban city limits and across the south Texas region. As a result this forced state of Texas, local governments and municipalities to consider it as a focus priority and direct funding to address this problem. The PIs have been challenged to find the data sources to point finger into the root causes for these crashes to identify effective countermeasures to state agencies. Therefore, with direct contact with City of San Antonio (COSA) and Texas Department of Transportation (TxDOT) engineers we identified that leveraging existing databases in state/city/counties as data sources and conducting extensive data analysis with site visits to intersections hot spots will be a first step towards what would be needed moving forward.

Objective

The main objective of this project is “to perform a comprehensive evaluation of urban intersection crashes to identify root causes and recommend countermeasures” with a focus on the city of San Antonio, Texas. The research team will develop a database of hotspot intersections and identify locations with the highest crash rates. The crash data analysis will be based on urban intersection type, traffic control, and proximity to other safety treatments. The evaluation will also include operational and physical characteristics of the hotspot locations and observation of drivers/pedestrians/cyclists’ behavior.

Intended Implementation of Research



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Technology Transfer

The research team will follow this policy and make research results available to potential users in a form that can be implemented, utilized, commercialized or otherwise applied. The PIs will actively engage in information exchanges and will provide service to the research community. They have been and will continue to make presentations at TRB meetings, FHWA expert task group (ETG) meetings, transportation-related association meetings and international, national, and regional transportation conferences. The results of the PIs research efforts have been and will continue to be published in prestigious journals. Semi-annual Tran-SET-related mini-workshops will be organized at some of these meetings.

Education, Workforce Development, and Outreach

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. This will be required as part of the research project and part of the reporting including the sign-in sheet of students, photo waivers, and images. 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-SET outreach activities. We will offer summer research experiences for undergraduate students at UTSA campuses in collaboration with existing programs. We will provide full support to two graduate students to assist in the research activities.

Anticipated Impacts/Benefits of Implementation

- A major outcome of this project is identifying serious crash types on urban intersections in order to meet transportation departments' goals and objectives of reducing fatal and serious injury crashes in urban areas.
- A step-by-step approach to allocate available databases in the state, optimize and filter relevant data, conduct systematic and extensive data analysis and propose solutions for implementations will be developed.
- The approach will help traffic engineers process crash and traffic data, estimate their accuracy, identify and analyze roadways safety problems and opportunities, select the most effective strategies to address them, determine project limits, and evaluate the priority of proposed improvements.
- The developed approach will allow the research team to determine ways to address safety issues at hotspot intersections and provide the safest possible solutions for motorists and members of the local communities.
- This work is also aligned with the TRAN-SET mission to develop a solution to regional priorities.

Weblinks:

- [Tran-SET's website \(http://transet.lsu.edu/completed-research/\)](http://transet.lsu.edu/completed-research/)
- [TRB's Research in Progress \(RIP\) database \(https://rip.trb.org/view/1467307\)](https://rip.trb.org/view/1467307)