Title:	Develop a Real-Time Decision Support Tool for Rural Roadway Safety Improvements
The Problem:	The Texas Strategic Highway Safety Plan (SHSP) identifies roadway departure and speeding related crashes as two of the seven emphasis areas for 2017-2022. These two types of crashes are dominant on rural roadways. One of the most significant limitations of conventional crash risk analysis is the omission of real-time speed, volume, and weather data from nearly all aspects of safety predictive methods. At least three national databases can be combined and used to mitigate the current research gap: 1. The National Performance Management Research Data Set (NPMRDS) with passenger and freight travel time data sets for the National Highway System (NHS) and other roadways. 2. Travel Monitoring Analysis System (TMAS) data with traffic volume data through both temporary traffic counting and continuous traffic counting programs. 3. Real-time weather data from National Oceanic and Atmospheric Administration (NOAA). Traffic fatalities on rural roadways in Texas are over-represented compared to urban crashes. In 2017, 53 percent of total fatalities happened on rural roadways in Texas. Research is needed to target the reduction of rural roadway crashes, with the ability to achieve SHSP goals related to roadway departure and speeding emphasis areas, and increased ability to allocate resources for rural roadway safety improvements. The research findings must be adaptable to be integrated into TxDOT's future vision plans.

Technical Objectives:	The objective of this research is to explore the development of short-term crash prediction models to predict the safety performance of rural roadways for specific geometric, operational, and exposure characteristics.
	
	The researchers shall address the following:
	    1. Synthesize the best practices and insights on rural roadway safety improvements.
	    2. Analyze the latest five years of rural roadway Crash Records Information System (CRIS) data incorporating real-time speed, volume, and weather data.
	    3. Develop rural roadway safety performance functions incorporating speed, volume, and weather data.
	    4. Provide a decision support tool, with interactive GIS maps, based on the Empirical Bayes (EB) method of expected crashes.
	    5. Provide recommendations for site specific countermeasures..
	
	The expectation of this project is that the end product will obtain a TRL level 8.

Desired Deliverables:	1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the final research report. 4. Research report documenting the findings of the research, including an interactive web tool for a decision support tool, with usage guidelines. 5. Project Summary Report.
Proposal Requirements:	1. Utilize the "Proj/Agre" and "PA_Form" templates located at the TxDOT RTI website. 2. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in RTI's University Handbook, which is also located at the RTI website. 3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation. 4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.