

MPC-380

January 1, 2012 – December 31, 2012

Project Title:

Investigation of interactions between traffic law enforcement and driving behavior on rural highways in Colorado

University:

Colorado State University

Principal Investigators:

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Research Needs:

Highways witness thousands of traffic crashes, injury and fatalities every day around the country. Traffic accidents, despite common, are actually very complex in nature, which are influenced by driving behavior and driving conditions. Although a lot of efforts have been put forward on investigating the traffic safety in various driving conditions, the studies related to the driving behavior, especially considering the influence from the effective policing efforts was very rare. It is known that traffic law enforcement, if well designed, can considerably influence unsafe driving habits of drivers and in turn reduce the number of crashes and also the injury severities. To effectively mitigate the traffic crashes and injuries, to understand the complex mechanisms between the traffic law enforcement and driving behavior becomes critical.

Research Objectives:

The objective of this study would be to characterize the basic interactions between the traffic law enforcement and driving behavior on rural highways in Colorado. Colorado is well known for its complex terrain and adverse driving conditions. In the present study, the focus would be on evaluating how the driving behavior would be affected by different law enforcement solutions under different driving conditions. In order to do that, firstly, the study will conduct the survey/interview to narrow down interested law enforcement solutions as well as unsafe driving behavior which are particularly significant in Colorado. Secondly, the historical accident data would be analyzed to identify those critical driving environments which could affect the model to be developed. Finally, the advanced data analysis will be conducted to establish the understanding of how traffic law enforcement affect the driving behavior which is specific to Colorado, but also helpful for other similar states. Given the significance of trucks getting involved into the accidents in Colorado, heavy and commercial trucks will be paid special attention.

Research Methods:

This study will encompass survey, historical data analysis and model developing. Typical statistical analysis tools will be used to analyze the historical data and develop the model. Specifically, the survey will be conducted among the targeted law enforcement practitioners in Colorado (Task 2). Historical data analysis will be conducted with SAP software to analyze the correlation between crash frequency, injury severity and law enforcement practices (Task 3).

Finally the preliminary model to assess and predict the influence from law enforcement will be developed (Task 4).

Expected Outcomes:

Traffic safety on rural highways is a national concern and effective traffic law enforcement is critical with regard to the safety and economy of a modern society. The findings from this study will be discussed with the related people in many agencies, such as state highway patrol, regional and local DOT and emergency management. Better insight about the coupling relationship between accidents, environments and prevention in the region can be expected. This study will lay an important foundation for many further studies which can improve the current law enforcement efforts.

Relevance to Strategic Goals:

This research will directly address several critical issues related to Safety, Economic Competiveness and livable communities such as: 1) High-risk rural roads; 2) Rural transportation operations; 3) Heavy vehicles and commercial trucks.

Educational Benefits:

Graduate students and undergraduate will be involved into this project by serving as research assistants.

Work Plan:

The proposed study will include following tasks:

Task 1. Literature review (Month 1-Month 3)

Extensive literature review will be conducted on the related government reports and existing studies on traffic law enforcement. Particular attention will be paid to existing studies in mountainous states. Some problems and conclusions already made in the existing studies will be gathered for the present study.

Task 2. Characterization of effective law enforcement solutions in Colorado (Month 2- Month 6)

Based on the findings in Task 1, the common law enforcement options, their respective effectiveness/role and the observed unsafe driving behaviors in the law enforcement practices will be identified through surveys and/or interviews with the first-line traffic patrol officers.

Task 3. Identify related driving environment factors (Month 5- Month 12)

Based on the historical accident data in Colorado, the critical driving environment factors which have considerable impacts on law enforcement effectiveness and easiness would be identified. Special attention to heavy and commercial trucks will be given.

Task 4. Establish the preliminary model to characterize the interactions between the law enforcement solutions and the driving behavior. (Month 11- Month 24)

A basic model which can characterize the driving behavior in response to those critical law enforcement solutions will be established based on the analysis of the existing data, including possible high-visibility data, if available.

Project Cost:

Total Project Costs: \$100,000

MPC Funds Requested: \$50,000

Matching Funds: \$50,000

Source of Matching Funds: University, CSP research grant

TRB Keywords: Rural highways; traffic safety; law enforcement; driving behavior

References: NA