RESEARCH
PROJECT CAPSULE [15- 1SA]

September 2015

Exploring Naturalistic Driving Data for Distracted Driving Measures

POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used Implementation Potential

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PROBLEM

Distracted driving is a dangerous epidemic that continues to cause deaths and injuries in automobile crashes throughout the United States. According to the National Highway Traffic Safety Administration (NHTSA), 3328 people were killed and an estimated additional 421,000 were injured in 2012 from distraction-affected crashes. In Louisiana, a reported 675 people were killed in 2011 from motor vehicle crashes and NHTSA estimates that 10% of these crashes occurred as a result of distracted driving.

Distracted driving involves activities that divert the driver's attention from the driving task and may include eating, adjusting the radio or climate controls, talking to passengers, cell phone use and texting, as well as many other external distractions. Such distractions are likely to affect driving performance and consequently elevate crash risk. There is a need to understand the prevalence of driver distractions in conjunction with crashes and near-crashes.

A recent LTRC study, "Distracted Driving and Associated Crash Risks," concluded that texting and talking to passengers while driving impaired driver performance, but it failed to find any significant effects for cell phone conversation. The study was unable to make any statistical findings based on driver demographics, vehicle description, or road facility type because of the limited sample size.

With the recent availability of data from the Strategic Highway Research Program Naturalistic Driving Studies (SHRP NDS), there may be an opportunity to utilize a bigger sample size in a further study that will allow statistical conclusions to be drawn based on factors such as gender, age, vehicle, road facility type, and time of day. The SHRP NDS data was acquired from over 3000 drivers who volunteered to have their vehicles equipped with a data acquisition system (Figure 1).

However, the SHRP NDS data is relatively new, and it is not clear whether the needs of further studies can be met from the available data. Therefore, this study is a comprehensive exploration of the SHRP NDS data conducted to determine if the data is sufficient for enhanced research on the crash risks of distracted driving. This study will also include an outline for the development of a distraction index, based on the crash risk potential of discrete distraction factors or surrogate measures that combine the effect of several distraction factors.
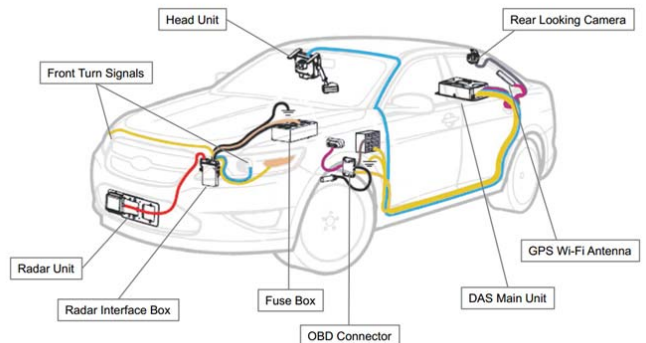

Figure 1
Data acqistiion system

OBJECTIVE

The specific objectives of this study include:

- Conducting a thorough review of nationwide laws regulating distracted driving, with particular emphasis on cell phone conversation and texting;
- Thoroughly exploring the SHRP NDS database;
- Identifying the appropriate performance measures and surrogate measures of distraction;
- Outlining a methodology for development of a distraction index; and,
- Making recommendations for enhanced research on distracted driving based on the SHRP NDS data.

METHODOLOGY

Initially, the research team will document the driver distraction laws of all 50 US states. For those states that have banned use of cell phones while driving, the research team will seek information that guided that decision. The research team will also explore the SHRP NDS data, so the performance measures and surrogate measures of distraction may be identified. The research team will document relevant driver demographic information, vehicle descriptions, and road facility type, then identify a suitable sample for further studies of distracted driving.

A methodology for constructing a "distraction index" will be outlined. This index is a mathematical model that will quantify crash risk potential of various distraction activities that affect drivers.

The entire research effort will be documented in a final report that will include a recommendation regarding the suitability of the SHRP NDS data for enhanced research on distracted driving in Louisiana.

IMPLEMENTATION POTENTIAL

The main focus of this exploratory study is to compile a summary of the capabilities and limitations of the SHRP NDS data for research on distracted driving. Ultimately, such research may provide valid statistical inferences that can be applied to Louisiana drivers based on gender, age, vehicle description, road facility type, and time of day.