FACT SHEET

Using the New SHRP2 Naturalistic Driving Study Safety Databases to Examine Safety Concerns for Older Drivers

The New England Transportation Consortium, a cooperative effort of the transportation agencies of the six New England States, funded this research. Through the Consortium, the states pool professional, academic and financial resources for transportation research leading to the development of improved methods for dealing with common problems associated with the administration, planning, design, construction, rehabilitation, reconstruction, operation and maintenance of the region's transportation system.

The NETC is hosted by the University of Vermont Transportation Research Center.

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Introduction

In the U.S. and in New England specifically, drivers age 65 and over have higher rates of crashes and of crash-related fatalities than middle-age drivers. Drivers in this age group are especially over-represented in crashes during left turns at signalized intersections. This study was proposed to learn more about the factors contributing to this trend, utilizing information collected through the SHRP2 (the second Strategic Highway Research Program) naturalistic driving study (NDS) in order to help develop recommendations for improving intersection safety. The study was also designed as a proof of concept project to assess the usefulness of NDS data for examining such research questions.

Methodology

The SHRP2 NDS data for this study was obtained from the Virginia Tech Transportation Institute. The researchers received NDS data for all trips with a driver age 65 or above that included a signalized intersection and a crash or near crash event, plus a sample of random baseline (non-eventful) trips, and comparison data for drivers age 30-49. The data contained information on the drivers and their vehicles collected during pre-study questionnaires and screenings, as well as trip data collected during the study including video clips from an in-vehicle dashboard camera looking out the front windshield. The videos covered up to 2.5 minutes each, from before a subject vehicle entered a signalized intersection until it exited the intersection. The videos were viewed and scored by the researchers to learn about each intersection and the conditions and driver behaviors just before each crash, near crash, and baseline event. The video data was then incorporated along with driver, vehicle, and trip data into a number of regression and machine learning models to develop an understanding of the key factors contributing to driver crashes at signalized intersections, especially for drivers age 65 and over making a left turn.

Conclusion

In the dataset, many of the left-turn crashes for drivers age 65 and over were minor; the most common crashes (71% of the total) involved vehicles hitting a curb or leaving the roadway. Most of the statistically significant variables impacting whether the drivers crashed were related to health, vision, and cognitive factors which affected their ability to monitor oncoming traffic and to see and gauge the edges of the road well. Training for older drivers to help them negotiate signalized intersections and left turns, and adjust to their age and health-related limitations has shown to be beneficial in previous studies. The generalizability of the findings of this study, and the statistical significance of the results, were limited somewhat by the small number of crashes in the dataset.

What are potential impacts?

This research can assist state DOTs and other agencies in learning more about older driver behavior and challenges at intersections. However, the extent to which the SHRP2 NDS data can be useful for helping answer road infrastructure safety questions is still uncertain. Further investigation may be needed.