

Older Driver Fitness-to-Drive

Background

They are the most experienced drivers on the road, but according to the Centers for Disease Control and Prevention (CDC) seniors are among the highest risk for crashes on roadways. Studies have shown that as we age we are at a higher risk of being in a crash and are more susceptible to injuries, which are often fatal (CDC, 2013). According to the Federal Highway Administration (FHWA, 2014), adults 65 and older accounted for 33 million licensed drivers in 2009. In fact, over the past decade more than 20 percent of Americans in that age group have been licensed drivers. It is clear that a large majority of the population of older drivers are still driving.

Given this substantial number of older drivers on the road, it is becoming more important to develop standards for evaluating and measuring fitness-to-drive for those responsible for making these determinations. This includes state driver's licensing authorities, physicians, occupational therapists, and certified rehabilitation specialists. A recent study, *Older Driver Fitness-to-Drive Evaluation Using Naturalistic Data*, was conducted by NSTSCE researchers with the goal of doing just that.

Who Makes the Decision?

The evaluation of fitness to drive has been a hot topic for the past 50 years. This decision is most often determined by the family physician. Despite how that final decision may impact others on roadways, medical professionals have often been hesitant to make the call due to the impact on existing physician-patient relationships. While tools have been developed through the years to assist in evaluation, there has been no valid test for identifying specific medical conditions and how these conditions may relate to driving risk and behavior.



Measuring Fitness-to-Drive

This NSTSCE project set out to predict safety-related driving outcomes in a naturalistic setting associated with functional assessments. In naturalistic driving studies, cameras, data recorders, and other instrumentation are installed unobtrusively in vehicles in order to observe driving behaviors and events in their most natural state. This groundbreaking study was the first of its kind to use naturalistic driving as a tool to evaluate fitness-to-drive for older drivers.

During the testing phases, more than 4,000 driving hours were logged by 20 participants. The study focused on several components, including the incidence rate of crashes and near-crashes. A crash is defined as a vehicle making contact with another vehicle(s) and/or objects(s) on or off the road. (This includes roadside barriers [guardrails], pedestrians, cyclists, and animals.) A near-crash is a "rapid, evasive maneuver by a participant or any other vehicle" to avoid the previously mentioned objects (Guo, Fang, & Antin, 2014). While crashes are rare, near-crashes, on average, occur 10 times more frequently than crashes.

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NSTSCE Study: Older Driver Fitness-to-Drive Evaluation Using Naturalistic Data

Did You Know?

According to the National Highway Traffic Safety Administration (NHTSA), there were 36.8 million licensed drivers in the U.S. over the age of 65 in 2013 and the U.S. Census Bureau predicts that will jump to over 60 million by 2030.

The main goal of this study was to evaluate the relationship between older drivers' fitness profiles and driving risk with the primary component being crash/near-crash events. There were three functional dimensions in the fitness model applied in this study: perceptual (vision), physical (strength), and visual-cognitive. During the naturalistic driving hours documented, 80 crash/near-crash events were documented and more than 1,000 risky behaviors were observed. The study found that crash/near-crash events are associated with the physical and mental capabilities of the driver. Primarily, it was found that a driver's visual contrast sensitivity has a significant impact on crash risk.

Additionally, the drivers were asked to perform a self-assessment of their driving performance. Older drivers who remained objective and provided a more realistic evaluation of their own driving performance tended to be more aware of their cognitive abilities; thus, they were aware of their limitations and adjusted their driving performance accordingly.

Future work with larger naturalistic driving populations will further refine and validate these findings, which can then be applied wherever older driver fitness-to-drive screenings are administered.

Final Report: Guo, F., Fang, Y., & Antin, J. (2014). Older Driver Fitness-to-Drive Evaluation Using Naturalistic Data. <http://vtechworks.lib.vt.edu/handle/10919/54824>

Resources:

Centers for Disease Control and Prevention (CDC). Older Adult Drivers: Get the Facts. (2013, January 31). Retrieved from: http://www.cdc.gov/motorvehiclesafety/older_adult_drivers/adult-drivers_factsheet.html

Federal Highway Administration, Department of Transportation (US). Highway Statistics 2012. Washington (DC): FHWA. [cited 2015 Mar 25]. Available from URL: <https://www.fhwa.dot.gov/policyinformation/statistics/2012/>

National Highway Traffic Safety Administration, Department of Transportation (US). Older Driver Program Five-Year Strategic Plan 2012-2017. Washington, DC: NHTSA; December 2010. Retrieved from: www.nhtsa.gov/staticfiles/nti/pdf/811432.pdf



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