

National Institute on Aging (NIA)/National Institutes of Health (NIH): Useful Field of View Test for Older Drivers

A new test of visual function may ultimately help older adults, their families, and physicians decide when it's okay for an older person to continue driving or when it may be time to hang up the car keys. Using a novel "useful field of view" measure to assess how drivers process visual information, researchers at the University of Alabama at Birmingham found that poor performance on the test was linked to an increased risk of car crashes. Drivers who showed a 40 percent or greater impairment in their useful field of view were more than twice as likely to be involved in a crash within 3 years of testing.

Lead Agency:

National Institute on Aging (NIA)

National Institutes of Health (NIH)

Agency Mission:

- Support and conduct genetic, biological, clinical, behavioral, social, and economic research related to the aging process, diseases and conditions associated with aging, and other special problems and needs of older Americans.
- Foster the development of research and clinician scientists in aging.
- Communicate information about aging and advances in research on aging to the scientific community, health care providers, and the public.

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General Description:

A new test of visual function may ultimately help the elderly, their families, and physicians decide when it's okay for an older person to continue driving or when it may be time to hang up the car keys. Using a novel "useful field of view" (UFOV) measure to assess how older adults process visual information, researchers at the University of Alabama at Birmingham (UAB) found that poor performance on the test was linked to an increased risk of car crashes. Drivers who showed a 40 percent or greater impairment in their useful field of view were more than twice as likely to be involved in a crash within 3 years of testing.

The study marks the first time that scientists have attempted to find out whether or not a visual processing test can predict the likelihood of future crashes for individual older adults. The test differs substantially from standard eye exams, which measure acuity or visual function or the ability to see an object at a given distance. To assess their visual processing abilities, participants in this study looked at a computer screen with figures of cars, trucks, and other objects. The drivers were asked to identify a particular object amid different kinds of visual distractions on the screen. The useful field of view was defined as the area in which rapidly presented visual information can be used. People who had measured difficulty with the task were considered to have an impaired useful field of view.

Some 294 drivers ranging in age from 55 to 87 participated in the study. In addition to being tested for visual function, information was collected on the participants' general health, mental status, and how often they drove so that the researchers could determine the factors involved in crashes over the three-year follow-up period from 1990 to 1993. Crash reports involving the participants were collected from a state agency, and researchers compared the useful field of view scores and results from the other types of vision tests with the crash information.

Performance on the useful field of view test was found to be directly related to involvement in a crash. People with a 40 percent or greater impairment in their useful field of view were more than twice as likely to be involved in a crash. For every 10 points of reduction in a driver's useful field of view measure, his or her crash risk rose by 16 percent, regardless of age. Other vision tests did not predict the risk of future crashes.

Excellence: What makes this project exceptional?

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Significance: How is this research relevant to older persons, populations and/or an aging society?

Older drivers are over-represented in fatal crashes per mile driven, and those in oldest age groups are the fastest-growing group in the United States. However, age alone is not a very good predictor of driving ability. There are large differences in the skills and abilities of older drivers, and denying an older adult a driver's license can have significant implications for their mobility and quality of life.

Effectiveness: What is the impact and/or application of this research to older persons?

This evidence-based UFOV test is being effectively translated into practice in the motor vehicle departments in three states to date: California, Maryland, and Florida. State

Farm Auto Insurance Company is also using the test and offering insurance discounts for people who take the UFOV test and "qualify" for a discount.

Innovativeness: Why is this exciting or newsworthy?

The useful field of view test is a demonstrated method of screening high-risk older drivers and may be a more appropriate way to address individual differences than using age-based restrictions on driving.