



# Evaluating Older Drivers' Skills

Research indicates that older adults' crash risk is elevated as compared to that of middle-aged drivers. Crashes involving older drivers will likely increase as baby boomers age, particularly as this cohort is expected to delay retirement. Means of identifying older drivers whose risk is elevated due to the effects of normal aging or to an age-related medical condition would help licensing agencies such as Departments of Motor Vehicles (DMVs) act to reduce risk. Clinicians who work with older adults and their families could use such tools in their efforts to balance the older adult's need for mobility with safety concerns.

## Background

In 2003, the University of Florida held a meeting of experts in older adult mobility and older driver safety to discuss transportation issues specific to older people. The panel discussed the strengths and weaknesses of a variety of professionally administered driver screening and assessment methods as well as driver self-screening tools. The current effort aimed to update the findings from the University of Florida study, and to document strengths and weaknesses of various older drivers screening and assessment methods.

After reviewing the report from the 2003 conference, the research team scanned peer reviewed literature to identify additional older driver screening and assessment methods. Instruments and programs that research indicated had the potential to predict or remediate driving performance fell into five general categories: cognitive; education or training; motor skills; self screening; and vision.

Each category addresses a skill that supports safe driving. Cognitive skills allow a driver to detect and respond appropriately to hazards; training programs can help drivers adjust safely to age-related changes. Self-screening tools allow drivers to monitor their abilities and indicate when they need to seek an evaluation. Measures of strength and flexibility may detect drivers who are unable to make adequately forceful steering or braking maneuvers or turn to check blind spots. Finally, much of the information a driver uses to navigate safely through traffic is visual; a driver with poor vision may find it difficult to manage driving tasks. This report includes a number of measures of visual skills.

## Cognitive Measures

The research team included a number of measures of cognitive skills in this report:

- **Visuospatial ability:** An understanding of spatial relationships among stationary and moving objects. This supports a driver's ability to navigate safely through traffic and to navigate toward a destination.
- **Executive functioning:** A process that regulates other cognitive processes. Executive functioning allows a driver to use information from the driving environment and from previous experience (e.g., rules of the road, vehicle handling) to manage driving tasks. These include maintaining speed and lane position, monitoring the changing traffic situation, assessing progress toward a destination, ignoring task-irrelevant stimuli and responding to unexpected events.
- **Selective attention:** The ability to attend to relevant information in the presence of distracting, irrelevant items. Driving in heavy traffic requires close attention to, for example, movement of vehicles directly ahead, in adjacent lanes, and behind the driver's vehicle. A driver who is distracted by a bumper sticker on another vehicle or a passenger in their own may fail to notice when the car ahead brakes.
- **Short term memory:** The information a person is currently aware of or is thinking about. Short term memory enables a driver to gather information from the driving environment to support executive functioning.
- **Mental status:** Mental status examinations generally screen for some sort of impairment, such as dementia. People who score poorly on these tests may have difficulty managing the multiple tasks that driving demands.

## Education and Training

Traffic laws may have changed dramatically over the past several decades. Training programs update drivers' knowledge of rules of the road and provide strategies to deal with situations that have proven particularly risky for older drivers. Training types include:

- **Classroom training:** Lecture and question-and-answer sessions cover traffic laws and strategies to reduce risk.

- Classroom plus on-road: A driving component complements a classroom course. Driving instructors provide supervision and feedback as drivers apply course recommendations.
- Simulator training: Simulators provide a safe environment for drivers to practice specific tasks.
- Physical fitness: Fitness programs may improve stamina, strength, flexibility and coordination that support driver control of the vehicle. Instructors may tailor a program to an individual driver's needs.
- Cognitive retraining: These programs generally aim to improve cognitive functioning following an injury or diagnosis of a medical condition.

## Motor skills.

As a driver ages, declines in strength, coordination and flexibility may make it difficult to fasten their seat belt, turn their head to do a blind spot check, or brake or turn sharply.

## Self Screening

Self screening tools allow older adults to test their own driving skills and determine whether they need to address declining skills or seek further evaluation. The tools, based on clinical measures, have been redesigned to allow people to test themselves.

## Vision

In order to drive safely, a person needs to be able to see signs, traffic lights, roadway markings and other vehicles, and to do so while moving and under a variety of light and weather conditions. This report includes information about different visual measures:

- Static acuity: The ability to resolve a high contrast image in a well-lit environment. This allows a driver to read street signs.
- Dynamic acuity: The ability to identify objects while the object, the viewer, or both are moving. Drivers use dynamic acuity to track changes in the driving environment.
- Contrast sensitivity: The ability to resolve details in low light conditions. Drivers with poor contrast sensitivity may have difficulty seeing low contrast vehicles (e.g., a gray vehicle against gray pavement) or weathered lane markings, particularly at night or in wet weather.

- Visual field: The area over which a person can see without moving his or her head. Some people have gaps within the central visual field, while others have limited peripheral vision. Both of these can limit a driver's ability to detect and respond quickly to potential hazards.
- Visual attention: The ability to process the information in the visual field. Drivers with visual attention deficits may be unable to process all of the task-relevant information in the visual field within a single glance.

The research team prepared a report describing each instrument or program and summarizing driving safety research documenting the measure's validity. The research focused on relationships between drivers' scores and a variety of outcome measures including on-road performance (e.g., as measured by road tests), performance in a driving simulator, crash risk and violations based on State crash reports, or participants' self-reported crashes.

While a useful instrument predicts driving performance, it must also be feasible to administer. For example, a score on a driver assessment instrument might provide useful information about the driver's skills, but be so expensive or difficult to administer that the benefit is not worth the cost. Some instruments are only appropriate for use in a clinical setting while others could be used in the context of a licensing agency.

A panel that included driver rehabilitation specialists and licensing professionals discussed how well the instruments worked in clinical and DMV settings. They provided opinions on how useful self-screening tools and education programs would be to older drivers. Finally, panelists recommended whether instruments were appropriate only for screening (deciding whether a driver needs further evaluation) or could be used for assessment (determining whether a licensing agency should restrict or revoke a driver's license). The panel described circumstances under which the instrument could be administered (e.g., DMVs, or occupational therapy settings).

The experts noted that, while most of the instruments included in the report would be useful in a clinical and/or DMV setting, many need additional research to document their efficacy in identifying risky drivers.

## How to Order

Download *Evaluating Older Drivers' Skills* (42 pages), prepared by Preusser Research Group, Inc., from <http://www.nhtsa.gov/staticfiles/nti/pdf/811773.pdf>.



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