

# Development of a Self-Screening Instrument for Older Drivers Based on Health Concerns

## Background

The purpose of this project was to improve upon existing self-screening instruments for older drivers by focusing entirely on health concerns that affect driving—that is, the symptoms that people experience due to medical conditions, the medications used to treat them, and the general aging process—rather than the medical conditions or medications themselves. The project created an easy-to-use self-screening instrument for older drivers that would provide several types of individualized feedback including information to increase general awareness and self-awareness relative to declines in driving-related abilities, as well as recommendations for:

- behavioral changes or safety tips to maintain safe driving (e.g., avoiding driving at night, taking a driver refresher course, planning a trip in advance, and writing down the route);
- further evaluation from a physician or other health professional; and
- vehicle modifications to help compensate for driving-related declines.

## Method

Project activities included a literature review, an expert panel to discuss how health-concern severity relates to driving skills and to identify appropriate accommodations for declines in these skills, preliminary development of a self-screening instrument guided by focus group input from older adults, and an evaluation/validation study.

The literature review had two parts. The focus of the first part was to better understand the health concerns that might influence driving. The objective was to develop a list of health concerns and to estimate the severity of these concerns and the conditions under which each concern would most likely occur. The second part was to identify critical driving skills and determine what capabilities would be required to perform each skill adequately.

A panel of subject matter experts then was convened to: (1) help finalize the lists of health concerns and critical driving

skills to be included in the self-screening instrument; (2) discuss how severity levels of the health concerns influence critical driving skills; and (3) consider the content of the self-screening instrument's feedback recommendations for behavioral changes, further evaluation, and vehicle modifications. Panel members were selected from a variety of backgrounds with expertise in geriatrics, driving task analysis, highway safety, and vehicle modifications.

Ensuing development of the self-screening instrument involved five tasks. The first was a series of brainstorming sessions by project team members that focused mainly on comparing the merits of a paper-and-pencil instrument versus an electronic instrument. Team members decided that an electronic (Web site) format was superior. Next was a set of focus groups with drivers 65 and older to obtain reaction to potential Web site issues and features. The third task was to develop the draft Web site for the instrument. Based on earlier project activities, 27 health concerns and 15 critical driving skills were chosen for inclusion in the instrument. Task four was to develop the feedback that would be provided to users based on their individual responses to the questions in the self-screening instrument. The final task was to present and discuss the instrument in a focus group with older adults. This group discussion was to ensure that the questions and feedback were appropriate and understandable, to gather feedback on the Web site format and style, and to determine how users would interact with the Web site.

The evaluation study assessed whether the instrument increased self-awareness of age-related declines in driving abilities and was perceived as useful. It involved obtaining feedback from study subjects after they had completed the self-screening instrument. The validation study assessed how accurately the instrument identified health concerns and potential driving difficulties. It compared subjects' scores on the self-screening instrument to results from an on-road driving assessment and a series of clinical tests to evaluate cognitive, visual, and psychomotor abilities related to driving. Both the clinical evaluation and on-road driving assessment were administered through an established driving assessment program oper-

ated by the University of Michigan and managed by an occupational therapist.

## Evaluation and Validation Results

Sixty-eight older adults participated in the evaluation and validation study. After using the self-screening instrument, the 68 subjects provided feedback in three areas: self-awareness, intentions to make behavioral changes, and perceived utility of the instrument. Regarding self-awareness, 76 percent of subjects thought the self-screening instrument made them more aware of changes that can affect driving, 94 percent thought it served as a useful reminder of things they already knew, and 38 percent discovered changes in themselves of which they were previously unaware.

Many also expressed intentions to make behavioral changes as a result of completing the instrument. Forty-two percent of subjects indicated that after completing the self-screening instrument they were going to make changes in the way they drove, and 33 percent indicated they were now thinking about taking a driving refresher course. More than one-half of subjects (53%) indicated that they were now more likely to discuss health concerns they were experiencing with a doctor. Few subjects (11%), however, reported considering vehicle modifications.

As to perceived utility, 77 percent of subjects indicated that they would use the Web-based instrument again in the future if it was available, 92 percent would recommend it to older friends or family members, and 94 percent thought it would help older adults talk about driving concerns with their families. Overall, 37 percent of subjects rated the instrument extremely useful; 48 percent rated it moderately useful.

The validation study was designed to assess whether the self-screening instrument accurately identified problems with driving, based on health concerns. Subjects' scores on the self-screening instrument were compared to their scores on the on-road driving assessment, and the clinical evaluation. Overall scores on the self-screening instrument were significantly correlated with driving performance measured on the road; that is, those drivers who had a greater number of health concerns as identified by the instrument also tended to have poorer observed driving performance (Table 1). Significant correlations between instrument and on-road driving scores were also found

for the subgroup of drivers 75 and older. Scores from the instrument and on-road assessment were not significantly correlated for other subgroups. Subjects' scores on the self-screening instrument were also significantly correlated with the clinical evaluation performed by a certified driving rehabilitation specialist, due primarily to adults 75 and older, and women. Overall, though several correlations in the study were statistically significant, they accounted for a rather modest amount of total variance.

**Table 1: Correlations Between Self-Screening Instrument-Identified Health Concerns, On-Road Driving Performance, And Clinical Evaluation**

	Overall	Men	Women	Age 65-74	Age 75+
Instrument versus On-Road Driving	-.26*	-.34	-.22	-.02	-.44#
Instrument versus Clinical Evaluation	.26*	.30	.35*	-.07	.54#

\* Significant at the  $p < .05$  level

# Significant at the  $p < .01$  level

## Recommendations

The evaluation/validation study showed the self-screening instrument to have positive value. Subjects considered it useful, and scores derived on the instrument were significantly correlated with actual driving performance and clinical evaluation for older adults 75 and older. It should be noted that the instrument is intended as a first-tier screening tool to determine gross impairment rather than fitness to drive. Fitness to drive should be determined through second-tier screening that requires professional administration. The self-screening instrument does, however, provide recommendations for seeking second-tier screening where appropriate.

## How to Order

For a copy of *Older Driver Self-Screening Based on Health Concerns* (Vol. 1 Technical Report, 26 pages, and Vol. 2 Appendices, 78 pages) prepared by The University of Michigan Transportation Research Institute, write to the Office of Behavioral Safety Research, NHTSA, NTI-130, 1200 New Jersey Avenue SE., Washington, DC 20590, send a fax to 202-366-7394, or download from [www.nhtsa.gov](http://www.nhtsa.gov). Alan Block was the project manager for this study.



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