Seniors face serious driving safety and mobility issues.


# Keeping Older Adults Driving Safely: A Research Synthesis of Advanced In-Vehicle Technologies

## A LongROAD Study

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## Title

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## Author

David W. Eby, Lisa J. Molnar, Liang Zhang, Renée M. St. Louis, Nicole Zanier, Lidia P. Kostyniuk

*University of Michigan Transportation Research Institute and the ATLAS Center*

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## About the Sponsor

AAA Foundation for Traffic Safety
607 14th Street, NW, Suite 201
Washington, DC 20005
202-638-5944
www.aaafoundation.org

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## About LongROAD

Safe mobility is essential to healthy aging. Recognizing that lifestyle changes, along with innovative technologies and medical advancements, will have a significant impact on the driving experiences of the baby boomer generation, the AAA Foundation for Traffic Safety has launched a multi-year research program to more fully understand the driving patterns and trends of older drivers in the United States. This multi-year prospective cohort study is being conducted at 5 sites throughout the country, with 3,000 participants, tracking 5+ years of driving behaviors and medical conditions. The multidisciplinary team assembled to investigate this issue is led by experienced researchers from Columbia University, University of Michigan Transportation Research Institute and the Urban Institute.

The LongROAD (Longitudinal Research on Aging Drivers) Study is designed to generate the largest and most comprehensive data base about senior drivers in existence and will support in-depth studies of senior driving and mobility to better understand risks and develop effective countermeasures. Specific emphasis is being placed on issues related to medications, medical conditions, driving patterns, driving exposure, self-regulation, automotive technologies, and crash risk, along with mobility options for older Americans who no longer drive.

## Abstract

### *Background*
Advanced in-vehicle technologies have been proposed as a potential way to keep older adults driving for as long as they can safely do so, by taking into account the common declines in functional abilities experienced by older adults.

### *Objectives*
The purpose of this report was to synthesize the knowledge about older drivers and advanced in-vehicle technologies, focusing on three areas: use (how older drivers use these technologies), perception (what they think about the technologies), and outcomes (the safety and/or comfort benefits of the technologies).

### *Methods*
Sixteen technologies were selected for review and grouped into three categories: crash avoidance systems (lane departure warning, curve speed warning, forward collision warning, blind spot warning, parking assistance, intersection assistance, merging assistance); in-vehicle information systems (navigation assistance, congestion warning, intelligent speed adaptation); and other systems (adaptive cruise control, automatic crash notification, night vision enhancement, adaptive headlight, voice activated control, drowsiness/fatigue warning). A comprehensive and systematic search was conducted for each technology to collect related publications. 298 articles were included into the final review.

### *Results*
Research findings for each of the 16 technologies were synthesized in relation to how older adults use and think about the technologies as well as potential benefits. These results are presented separately for each technology. The paper also addressees training, education, and research needs.

### *Conclusions*
Can advanced in-vehicle technologies help extend the period over which an older adult can drive safely? This report answers this question with an optimistic "yes." Some of technologies reviewed in this report have been shown to help older drivers avoid crashes, improve the ease and comfort of driving, and travel to places and at times that they might normally avoid. Other technologies show promise for providing benefits to older drivers and the development of these technologies continues.