



UMTRI

Older Driver Safety and Mobility: Research Interests and Initiatives

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University Approach to Maintaining Safe Senior Mobility

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UNIVERSITY OF MICHIGAN
TRANSPORTATION RESEARCH INSTITUTE



UMTRI Background

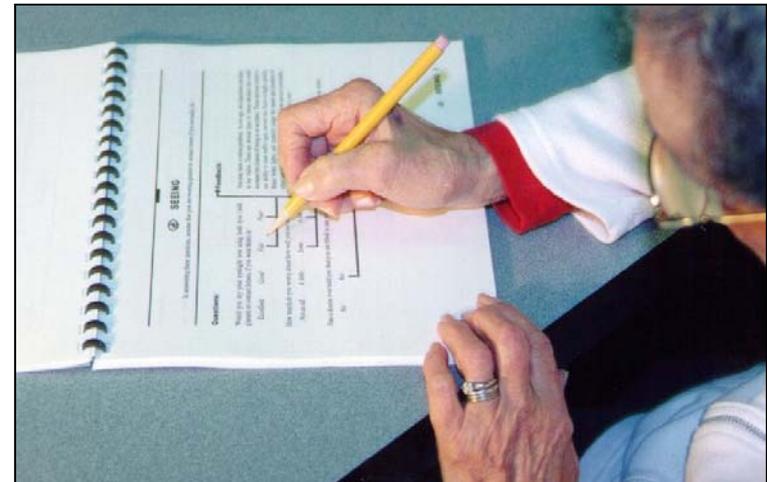


UMTRI Background

- Institute founded as Highway Safety Research Center in 1965
- Committed to interdisciplinary transportation-related research to increase driving safety and further transportation-systems knowledge
- Annual operating budget of about \$17 million
- Funding from federal and state government agencies, motor vehicle manufacturers and suppliers, other organizations

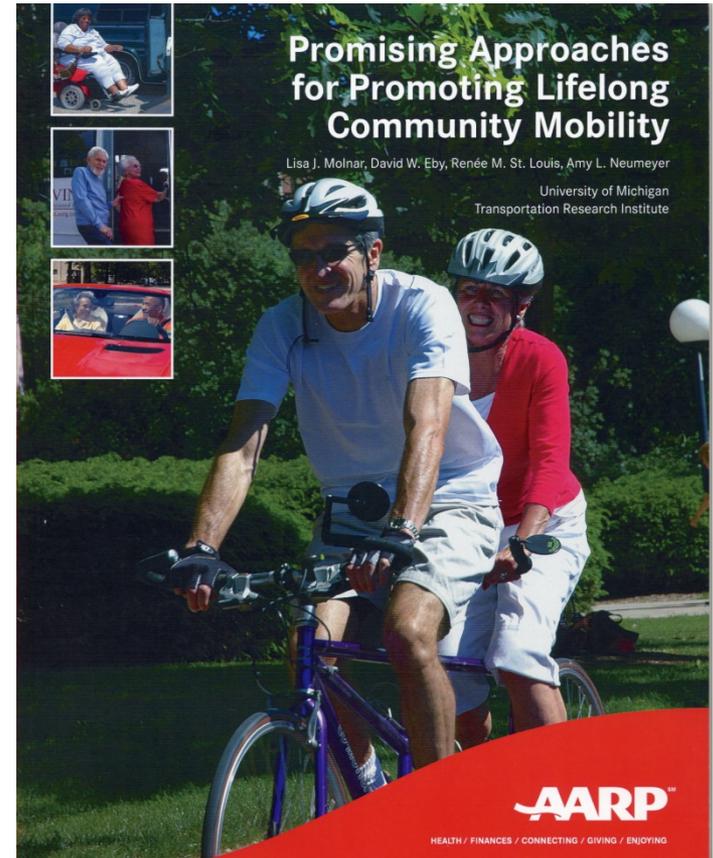
Social and Behavioral Analysis Division

- Conducts research that enhances safety and efficiency of transportation by advancing expert and public understanding of social and behavioral issues important to transportation



Promising Approaches

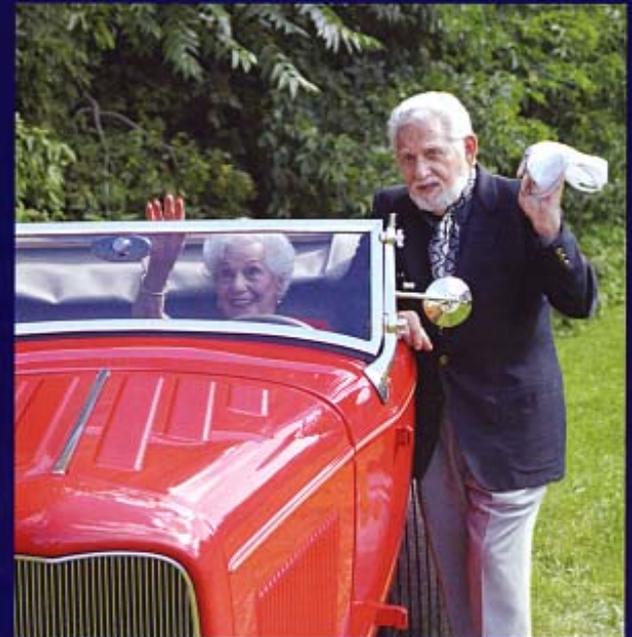
- **Sponsored by AARP**
- **Builds on 2 complementary but interdependent goals for older adults**
 - To help those who are able to drive safely continue to do so
 - To identify community mobility support for those who are unable or choose not to drive



Promising Approaches

- Update of 2003 guide Promising Approaches for Enhancing Elderly Mobility
- Original guide sponsored by Michigan Office of Highway Safety Planning
- Reprinted by AARP

PROMISING APPROACHES FOR ENHANCING ELDERLY MOBILITY



Promising Approaches

- **Driver Screening and Assessment**
- **Education and Training**
- **Vehicle Design and Advanced Technology**
- **Roadway Design**
- **Transitioning from Driving to Non-Driving**
- **Transportation Coordination**
- **Alternative Transportation Options**



Promising Approaches

- Based on literature review/expert opinion
- Focus on US but other jurisdictions included
- Programs selection based on:
 - Available evaluation results
 - Incorporation of components important to promoting community mobility



Promising Approaches

- **General background information**
- **Important components of a promising approach**
- **Especially promising programs/initiatives**
- **Full listing of promising programs with contact information**



SAFER Driving: The Enhanced Driving Decisions Workbook

- Sponsored by NHTSA and UMTRI
- Web-based self-screening instrument for older adults with customized feedback
- Intended to simplify self-screening by focusing on health concerns common to various medical conditions and medications that directly affect critical driving skills



SAFER Driving: The Enhanced Driving Decisions Workbook

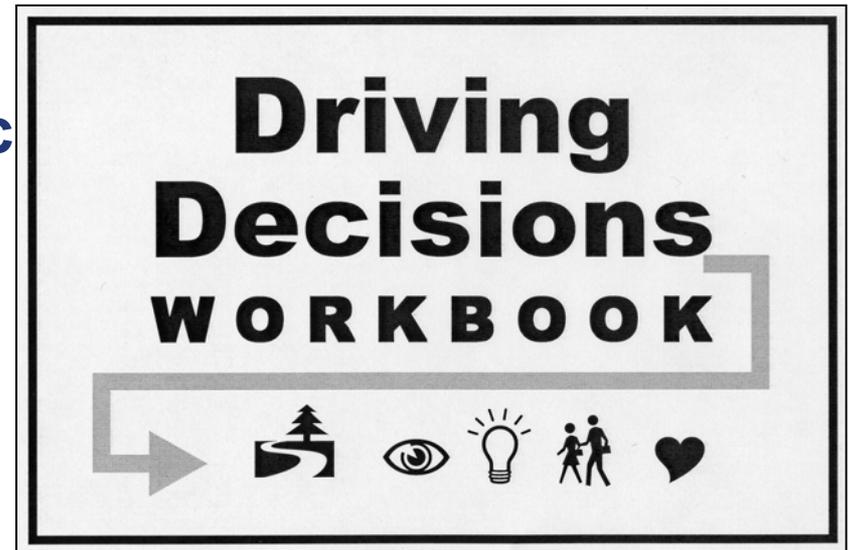
The University of Michigan Transportation Research Institute and The UM Drive-Ability Program

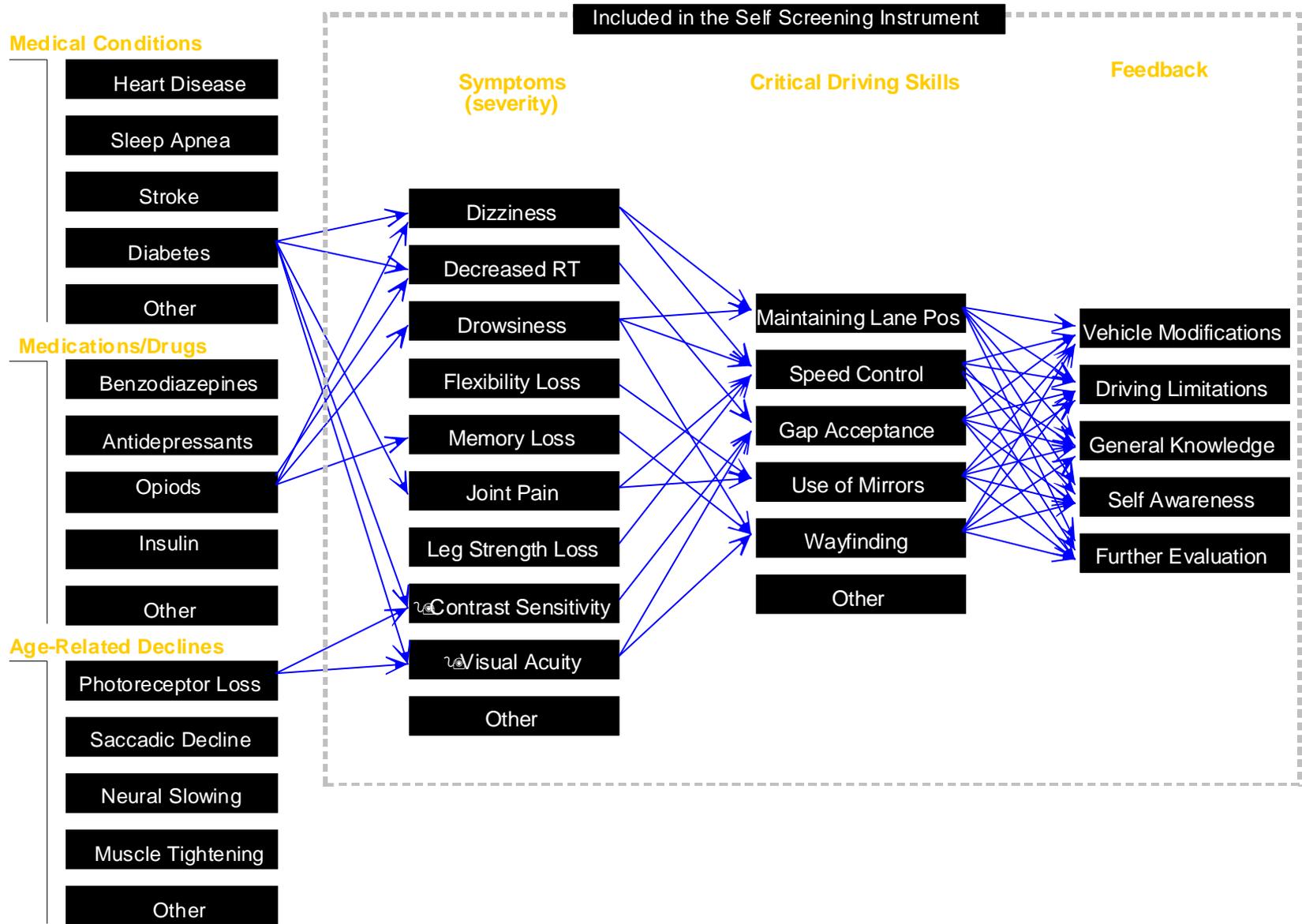
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(Self-Awareness and Feedback for Responsible Driving)

SAFER Driving

- Builds on the Driving Decisions Workbook (DDW), a paper and pencil instrument developed by UMTRI
- DDW sponsored by GM/USDOT
- DDW research published in 2003
(J Saf Res, 34, 371-381)
- DDW available in electronic format through U-M and other websites



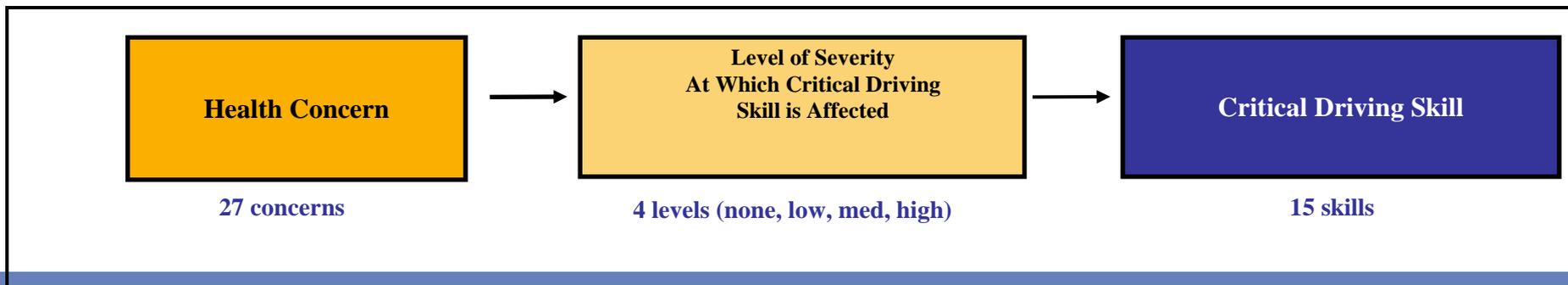


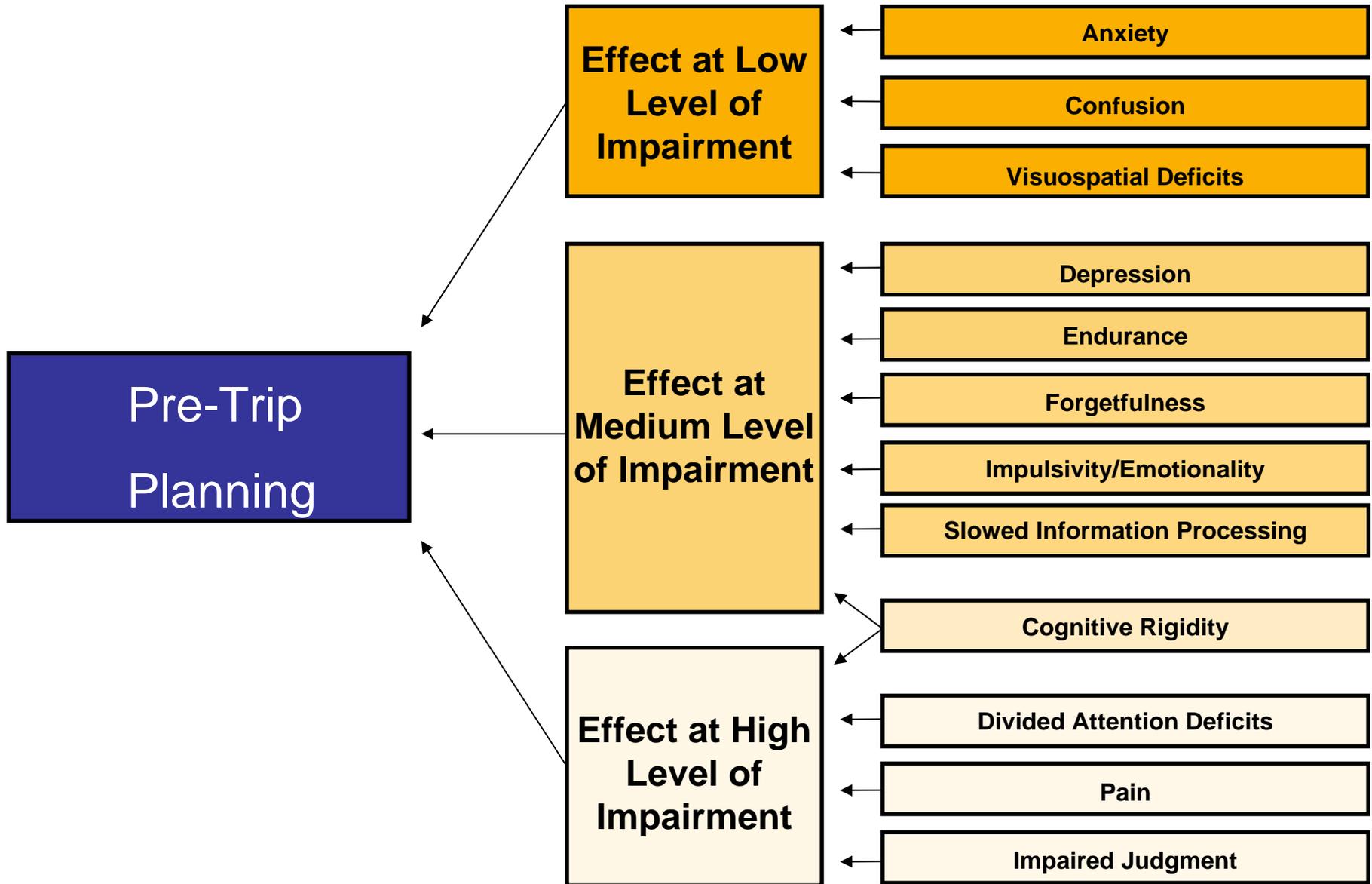
SAFER Driving Development

- **Review of literature and discussion with experts to identify common health concerns and critical driving skills**
- **Expert meeting to discuss linkages between health concerns and driving tasks at various levels of impairment**
- **Development of user-friendly web-based self-screening instrument with focus group input**

SAFER Driving Development

- 27 common health concerns identified:
 - 13 cognitive; 7 motor; 7 visual
- 15 critical driving tasks identified
- Health concerns linked to driving tasks at low, medium, and high levels of impairment, depending on concern





SAFER Driving Feedback

- **After completing self-screening instrument (3-5 questions for each health concern), individualized feedback is provided:**
 - **List of health concerns user may be experiencing with description and implications for safe driving**
 - **List of critical driving skills that may be affected**
 - **Recommendations in three areas:**
 - **See a professional for specialized assessment**
 - **Modify vehicle**
 - **Safe driving tips**
 - **General question and answer section**

SAFER Driving Validation/Evaluation Study

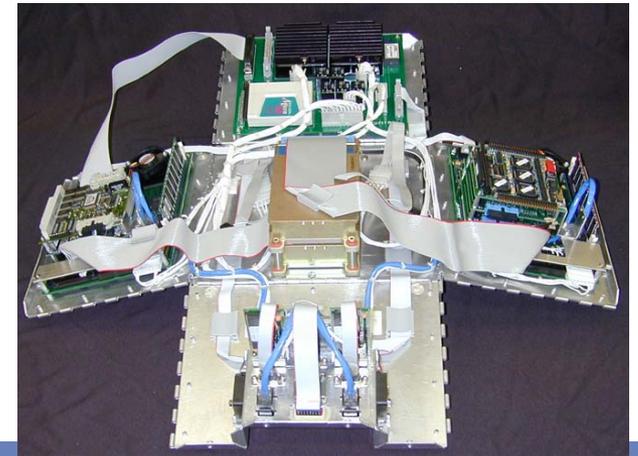
- 68 licensed drivers recruited from patient pool referred to UM Drive-Ability Program and postings for volunteers
- Study administered at UM Drive-Ability Program by OT/certified driving rehabilitation specialist
- Participants completed web-based self-screening instrument and follow-up questionnaire
- Participants completed comprehensive driving assessment (clinical and on-road)
- Self-screening results compared to clinical evaluation and on-road assessment results

SAFER Driving Validation/Evaluation Study

- **Positive feedback from study participants**
 - 76% - made them more aware of changes affecting driving
 - 38% - discovered changes they had not been aware of before
 - 42% - planned to make changes in the way they drive
 - 11% - planned to consider modifying their vehicle
 - 33% - thinking about taking a driver refresher course
 - 36% - more likely to discuss health concerns with doctor
 - 92% - would recommend to older adult friends/family
 - 94% - would help older adults talk with family members
- **Correlations between self-screening instrument and clinical and on-road evaluations**

Early-Stage Dementia and Driving

- Two projects underway (Alzheimer's Association – 2009 completion; NHTSA – 2008 completion)
- Collaborative effort between UMTRI (lead), University of Massachusetts, and University of Houston
- Instrumentation of vehicles of drivers with dementia to obtain objective measures of driving performance



Early-Stage Dementia and Driving Background

- Research has yet to determine the level of cognitive impairment associated with an unacceptable driving risk
- Professionals are often asked to provide guidance about driving for those with dementia
 - Professionals, family members and the drivers themselves may be unaware of the extent of declines in driving skills
- It is unclear how real-world driving performance changes with the progression of dementia



Early-Stage Dementia and Driving Background

- Recent advances in technology make it possible to automatically collect detailed information about driving performance in a person's own vehicle
- Allows for the analysis of objective driving performance data in a naturalistic setting



Early-Stage Dementia and Driving Project Aims

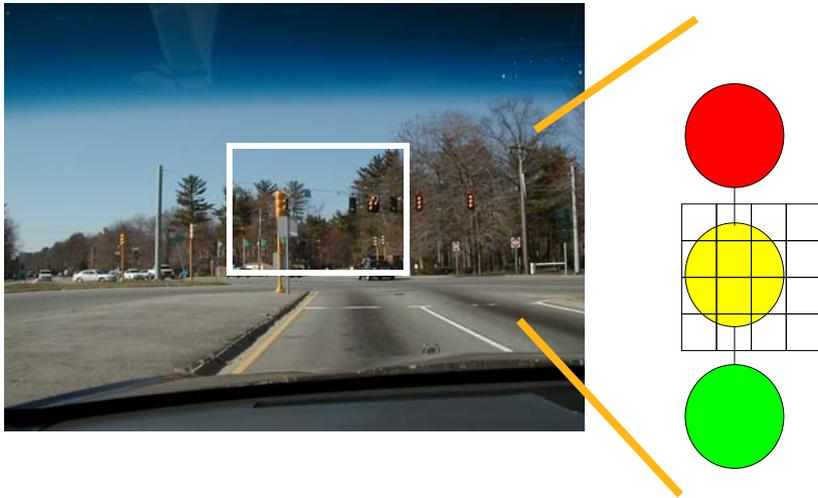
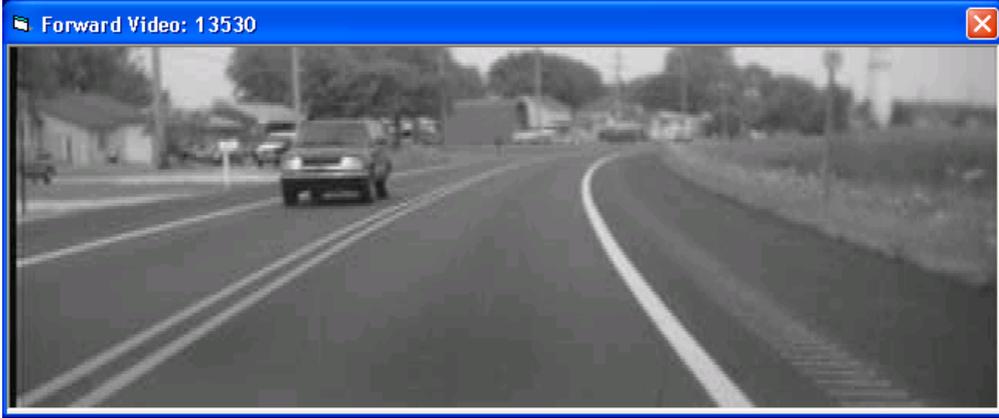
- Demonstrate the feasibility of using in-vehicle data collection to monitor driving actions of individuals with early stage dementia
- Compare multiple forms of assessment of driving skills with naturalistic driving
- Bring greater visibility to deficits in driving performance unique to people with early stage dementia



Early-Stage Dementia and Driving Project Aims

- Increase understanding of behaviors and issues of drivers with dementia and their families
- Inform decision-makers about appropriate intervals for assessing driving competency





Early-Stage Dementia and Driving Critical Driving Skills

Addressing:

- Way finding
- Seat belt use
- Distance (headway) to vehicle ahead
- Appropriate speeds & stopping
- Excessive lane wandering
- Lane change
- Interaction with traffic control devices
- Left turns – gaps rejected
- Signaling (selected)
- Gear & pedal misuse
- Impacts & bumps
- Co-pilots & navigation aids

Not Addressing Directly:

- Pre-trip decisions & plans
- Alcohol use
- Headlight use
- Backing maneuvers
- Steering – fine control
- Lane-keeping except as noted
- Passing on 2 lanes roads
- Left turns – gaps accepted
- Accommodating pedestrians & pedacyclists



Thank You

