

## Appendix B – Functional Instrument and Skills Tests Justification

This appendix provides an overview of the functional instruments and skills tests to be used in this study and their relationship to study goals and traffic safety applications. It is important to note scores on these instruments and tests will be compared across study groups.

Please note that the functional instruments have undergone thorough validity (they test the domain they purport to test) and reliability (a person retaking the test would obtain a similar score) testing. The on-road skills test measures a participant’s ability to control a vehicle and navigate a route while following directions from either an electronic navigation system (ENS) or turn-by-turn printed directions with a map. The destination entry task measures a participant’s ability to accurately enter an address into the ENS and identifies the types of errors made, if any. All instruments and tests measure “aptitudes, abilities, and/or knowledge” of participants to determine: 1) if they have the ability to safely operate a vehicle, 2) how well they perform basic driving tasks while following directions, 3) if they can accurately input an address into an ENS, 4) the types of errors made. These data are not considered “information” as defined under the PRA per *Memorandum For The Heads Of Executive Departments And Agencies And Independent Regulatory Agencies*, OMB Regulations, exemption 7 (see page 8), retrieved from [https://www.whitehouse.gov/sites/default/files/omb/assets/infocore/PRAPrimer\\_04072010.pdf](https://www.whitehouse.gov/sites/default/files/omb/assets/infocore/PRAPrimer_04072010.pdf) on August 7, 2015.”

Countermeasures developed from the information collected in this study will include developing guidelines for product developers for ENS design and training considerations, and providing guidance to the public on the safety benefits (or decrements) associated with older driver ENS use.

Domain	Description	Application to Traffic Safety
<b>The Assessment of Motor and Processing Skills</b>		
The domains listed below constitute the Assessment of Motor and Processing Skills (AMPS). This scale is an observational assessment used to score an individual’s motor and process skills while completing tasks involved in daily living. Motor skills are associated with moving objects in the environment or with moving oneself. Process skills are associated with the ability to correctly sequence necessary sub-tasks, and make choices to adapt and facilitate task completion. The AMPS has been shown to effectively discriminate driving ability (Dickerson & Fisher, 1997; Dickerson, A., Reistetter, T., & Trujillo, L., 2010).		
Motor Skills	Skills associated with movement. These include posture, mobility, coordination, strength and effort, and energy.	Allows a driver to effectively move within the vehicle, scan the roadway (front, side and rear) for hazards, exert control input actions, and react to traffic conditions as they emerge.
Process Skills	Skills associated with choice, facilitation, and task completion. These include energy, using knowledge, temporal organization, space and objects, and adaptation.	Supports completion of advanced driving tasks including navigation tasks, changing lanes, traffic monitoring, and planning routes.

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<b>The Miller Road Test</b>		
The Miller Road Test (Carr, Jackson, Madden, & Cohen, 1992) is a standardized driving assessment tool that is utilized to score driving errors and driving ability on the open roadway in live traffic.		
Driving Skills	The participant is scored on his or her driving skills which include, hazardous driving behaviors (e.g., running stop signs or cutting off other drivers); driving substantially over or under the posted speed, slowing or stopping at inappropriate times or locations; accelerating and braking smoothly; maintaining appropriate lane position; signaling turns; Turning into the proper lane; managing lane changes; gap selection when turning across traffic; intersection navigation and performance at other decision points; blind spot checks when merging or changing lanes.	This is the direct observation and measurement of an individual's ability to drive safely.

Domain	Description	Application to Traffic Safety
<b>Destination Entry Task</b>		
This task was created for the current study. It involves the participant entering three addresses into the ENS.		
Motor and Process Skills.	For each address entry task, researchers code the time to complete the task, number of screen touches, and number and type of errors.	This is a direct measurement of a participant's ability to properly enter an address into an ENS and the types of problems encountered. Such devices are only useful if the user can correctly enter a destination.