

Information Collection Request: Older Drivers' Self-Regulation and Exposure Supporting Statement A

Project Overview

Older adults comprise an increasing proportion of the population.¹ Research has shown people ages 70 and older are less likely to be licensed to drive compared with younger people.² There is an indication, however, that today's drivers 70 and older are keeping their licenses longer and driving more miles than in the past.³ This is potentially concerning since the fatal crash rate per mile traveled increases for drivers over 70 years of age and peaks for drivers aged 85 and older.⁴

Advancing age typically coincides with declines in cognitive, physical, and psychomotor abilities that can make it more difficult for older drivers to adequately scan the environment around their vehicle, to make decisions based upon that information, and to react to sudden changes. Older drivers tend to be somewhat aware of the effects these physical and cognitive changes can have on their driving safety. As a result, many older drivers incorporate some kind of compensatory or self-regulatory behaviors in their driving. These may include slowing down, braking earlier, limiting the conditions or times of day in which they drive, driving with a partner to act as a second set of eyes, or in some cases, voluntarily giving up driving. This study aims to assess the methods used and the extent to which older drivers appropriately regulate their driving habits in response to age-related functional changes. Data collected during the study will include: initial qualification interview questions to determine eligibility for study participation; functional/clinical evaluations; a professional driving evaluation; and driving performance data obtained via the installation of data collection devices in participants' vehicles.

The National Highway Traffic Safety Administration (NHTSA) will use the information gained in this study to understand the extent to which older drivers appropriately regulate their driving habits in accord with age-related functional changes. Knowing the degree to which older drivers self-regulate, and if so, under which conditions they self-regulate appropriately will likely help clinicians who work with older adults to guide their clients in matching their decisions concerning when and where to drive to their abilities. Such information would also guide development of effective safety educational materials for older drivers. The findings will not be used to support regulatory actions but rather to provide guidance regarding older driver safety to States as well as to older drivers, their family members, and to health care providers concerned with the safety of their older patients' driving safety.

¹ U.S. Census Bureau. 2014. *Projections of the population by age and sex for the United States: 2015 to 2060 (Table NP2014-T9)*. Washington, DC in Insurance Institute for Highway Safety. *Older Drivers: Overview*. Retrieved November 20, 2015, from <http://www.iihs.org/iihs/topics/t/older-drivers/topicoverview>.

² Thomas, F.D., Blomberg, R.D., Knodler, M., & Romoser, Matthew R.E. (2013). *Licensing Procedures for Older Drivers* (Final No. DOT HS 811 833). Washington, D. C.: National Highway Traffic Safety Administration.

³ Insurance Institute for Highway Safety. 2014. Unpublished analysis of data from the 2008 National Household Travel Survey and 1995 Nationwide Personal Transportation Survey. Arlington, VA. Retrieved November 20, 2015, from <http://www.iihs.org/iihs/topics/t/older-drivers/qanda>.

⁴ Insurance Institute for Highway Safety. *Older Drivers Fatality Facts*. Retrieved November 20, 2015, from <http://www.iihs.org/iihs/topics/t/older-drivers/fatalityfacts/older-people>.

The objectives of this project are to assess the extent to which older drivers appropriately regulate their driving habits in response to age-related functional changes. Data collection and analyses will address the following research questions:

1. Analyses of clinical scores, driving evaluation scores, and naturalistic driving performance by age group (60-69, 70-79, and 80+) will address the following questions regarding the effects of age:
 - a. Do the groups differ on clinical measures of skills that underlie driving performance?
 - b. Do the groups differ on measures of driving performance?
 - c. Do the conditions under which participants tend to drive differ across these age groups?
2. Analyses of clinical and driving evaluation scores will address relationships among participants' functional abilities and their ability to control a vehicle and maneuver safely through traffic. Research questions include:
 - a. What is the relationship between specific clinical scores and participants' ability to monitor surrounding traffic to maintain awareness of traffic conditions and potential hazards through scanning and use of mirrors?
 - b. Which clinical measures are related to participants' ability to control the vehicle as determined through driving evaluations, including the ability to:
 - i. respond appropriately to traffic control signals
 - ii. respond to the actions of other drivers
 - iii. use turn signals appropriately
 - iv. stop in a proper position at intersections
 - v. maintain speed and lane position
 - vi. select appropriate gap choices when merging or turning across traffic
 - vii. accelerate and decelerate smoothly
 - viii. coordinate steering and pedal movements required when turning, backing, and parking?
3. Analyses of naturalistic data and clinical scores will explore relationships among various clinical measures and participants' driving exposure and habits, including but not limited to examining:
 - a. The relationship between specific clinical measures and participants' total mileage, total driving time, distance travelled from home, and number of unique destinations.
 - b. The ability of clinical measures to predict participants' likelihood to drive on high-speed and/or limited access roadways or the time of day that participants drive; e.g., the probability they will drive at night or during rush hour.
4. Analyses of driving evaluation measures and naturalistic driving data will examine the likelihood that drivers with poorer driving skills are more likely to limit their overall driving (time and/or miles), avoid potentially difficult conditions such as night or rush hour driving, or otherwise self-regulate appropriately.

NHTSA proposes a quasi-experimental driving performance and exposure study to document differences in functional abilities, driving performance and self-regulated driving exposure among participants aged 60-69, 70-79, and 80+ years of age. Data collected through the study will include:

1. Driving exposure: Measures will be created from data collected using instrumentation installed in participants' own vehicles for approximately one month of naturalistic data collection.
2. Driving evaluation: Measures of driving performance will be created from data collected during a driving evaluation conducted by a certified driving rehabilitation specialist (CDRS).
3. Functional skills: Cognitive and physical function will be measured using clinically recognized instruments.

Dunlap & Associates, Inc. will conduct this study under an Indefinite Delivery Indefinite Quantity (IDIQ) contract with NHTSA. A single questionnaire will be used for this study, a screening questionnaire for recruitment. NHTSA intends to recruit potential participants through public postings in the vicinity of Raleigh, Durham, Chapel Hill, and Burlington, North Carolina. Postings will include flyers with information about the project placed at locations frequented by older adults, including senior centers and libraries; announcements in newsletters and on community listservs; and/or sign-up sheets at local gatherings such as health fairs and farmers' markets. People interested in participating will contact a designated staff member through the toll-free number to enroll, or will respond to questions in person at events.

All 60 study participants will undergo the same six-step process:

1. Initial recruitment and completion of qualifying interview
2. Signing of informed consent upon qualifying
3. Installation of data collection device in participant's vehicle
4. Data collection for one month of naturalistic driving (no actions required of participant beyond normal driving)
5. Cognitive and functional assessment using standard instruments administered on a desktop computer
6. On-road driving evaluation by a CDRS.

Potential participants will complete the initial qualification interview which will be administered orally by research staff in person or over the telephone. Because the purpose of this study is to assess the extent to which older drivers appropriately regulate their driving habits in response to age-related functional changes, we plan to ask questions to ascertain the age, driver license status, and self-reported driving exposure of each respondent. Each participant will have a data collection system installed in the vehicle. As such, additional items will focus on the availability of a driver-owned or controlled vehicle for the study. Drivers who are not in the desired age groups, who do not hold a valid driver's license, who do not have access to a vehicle for which they are the primary driver, or who do not meet minimum driving exposure criteria will not be included in the study.

To ensure prospective participants meet the study needs, we propose to ask the following questions of each respondent to the solicitation:

1. Will you be spending the next 60 days in this area and be available to participate in this study?
2. What is your date of birth?
3. Do you have a valid driver's license, and if so, when does it expire?

4. Do you have any restrictions on your driver's license?
5. Do you use adaptive controls in your car?
6. About how many times per typical week do you drive?
7. Do you drive one particular vehicle for 90% or more of these trips?
8. Do you have to get anyone's approval or permission each time you want to use that vehicle?
9. Is this vehicle available to use as your primary vehicle for at least the next 30 days as part of this study?
10. Who owns the vehicle?
11. Which statement best describes who drives this vehicle?
12. Do you drive the majority of trips for your household?
13. Are there any types of roadways, traffic situations, or weather conditions you try not to drive in?

If the answer to any question renders the volunteer ineligible for the study, the interview will stop immediately. For example, if the volunteer indicates they will not be spending the next 60 days in the study locale, they will only be asked the first question.

Following qualification of respondents to participate in the research effort, we propose that our researcher will invite each qualified respondent to join the study. Those who opt to participate in the study will then read and sign informed consent documents approved by the study's IRB.

After consenting to participate, an in-vehicle data collection system will be installed in each participant's car to obtain driving exposure information. This equipment will remain in the participant's car for a 30-day interval during which it will record the time of day and the starting and ending point for each trip, the trip length in miles and duration in minutes, the track or route the car follows in driving between the starting and ending points, and images of the driver's face during each trip taken in the car to confirm that the participant is the one who is driving. Installations may be performed at the recruitment site, at participants' residences, or at any public meeting place convenient to a given participant if she or he prefers. All of the data logger installations (and removals) will be performed by a trained technician. The equipment we plan to install in each participant's car includes a GPS data logger and a miniature camera, collectively referred to as a data acquisition system (DAS). All study data collection devices will be removed from the participant's vehicle once the 30 day study period is complete. The DAS we plan to use will not deface the participant's car nor be inordinately obvious to either the participant as driver or to any passengers she or he might carry. It will not interfere with driving or require any actions on the part of the driver.

Clinical and on-road assessments will take place after the 30-day driving exposure portion of the study. We intend to collect clinical and on-road assessment data on the same day for a participant. In order to increase study efficiency, we will schedule multiple participants on the same day for the clinical measures and on-road assessments. We will use the computer-based functional screening battery and protocols recently, and successfully, utilized by NHTSA in its study of older driver safety and exposure.⁵ These procedures emphasize cognitive performance domains, specifically visuospatial ability, speed of (visual) information processing, divided

⁵ *Functional Assessments, Safety Outcomes, and Driving Exposure Measurement*. Contract DTNH2209D00135L, Task Order No. 01.

attention, visual search, working memory, response planning/executive function, and response inhibition. The measures, in the order participants will complete them, are listed below for convenience:

- Visual acuity and Contrast sensitivity
- Brake response time (simple and choice RT)
- Working memory (cued recall)
- Visualizing missing information (MVPT-visual closure)
- Visual attention (Useful Field of View subtests 1 and 2)
- Visual search (Trail-making Test)
- Route planning (maze completion).

Visual acuity is measured by a test administrator using a simple handheld card for near acuity and a wall chart for distance acuity. Instructions for the other measures are available as text on the computer screen; they can also be delivered or repeated by the test administrator as needed for each participant. When all of the functional measurements described above are completed by a participant, she or he will move on to the on-road driving performance evaluation.

The final assessment participants will undergo is a driving performance evaluation performed by a CDRS. The driving performance evaluation planned for this study will be carried out by the CDRS using a dual-control vehicle. The CDRS will develop a standardized test route that begins and ends at a central point near where the participants reside. The route will take approximately one hour to complete in order to provide a complete examination of a driver's skill. Driving behaviors observed/scored during the CDRS evaluation will include (but not be limited to) the following measures widely used by driving rehabilitation specialists:

- Maintenance of speed and lane position
- Exhibiting 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
- Signaling turns
- Turning into the proper lane
- Managing lane changes and merges, including checking blind spots
- Selecting appropriate gaps when turning across traffic
- Navigating intersections correctly and performing properly at other decision points.

NHTSA will use the information gained in this study to inform recommendations to the public regarding the extent to which older drivers appropriately regulate their driving habits in accord with age-related functional changes. Knowing the degree to which older drivers self-regulate, and if so, under which conditions they self-regulate appropriately could help clinicians who work with older adults to guide their clients in matching their decisions concerning when and where to drive to their abilities. Such information would also guide development of effective safety educational materials for older drivers.

A. Justification

The National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation (USDOT) is seeking approval from the Office of Management and Budget (OMB) to conduct a qualifying interview with prospective participants in a study about the effects of age-related functional changes on the self-regulation of driving exposure. The information from this qualifying interview will be used by NHTSA to determine eligibility for study participation.

A.1. Explain the circumstances that make the collection of information necessary. Identify any Legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

a. Circumstances making the collection necessary

NHTSA was established to reduce the number of deaths, injuries, and economic losses resulting from motor vehicle crashes on the Nation's highways. As part of this statutory mandate, NHTSA is authorized to conduct research as a foundation for the development of motor vehicle standards and highway safety programs.

Older adults comprise an increasing proportion of the driving population. The independent mobility that driving confers improves older adults' access to the goods and services they need and enhances their ability to take part in community and family activities that support quality of life. Driving cessation has been associated with decreased mobility, and consequently, poorer quality of life. Advancing age typically coincides with declines in cognitive, physical, and psychomotor abilities that can make it more difficult for older drivers to adequately scan the environment around their vehicle, to make decisions based upon that information, and to react to sudden changes. Older drivers tend to be somewhat aware of the effects these physical and cognitive changes can have on their driving. Previous research indicates that older drivers may already self-regulate their driving and reduce their exposure to driving situations that may place them at higher crash risk. NHTSA needs to learn more about the relationships among age, physical and cognitive function, and self-regulation to support the development of recommendations and educational and outreach materials aimed at improving older drivers' safety.

b. Statute authorizing the collection of information

Title 23, United States Code, Chapter 4, Section 403 (Appendix A) gives the Secretary authorization to use funds appropriated to carry out this section to conduct research and development activities, including demonstration projects and the collection and analysis of highway and motor vehicle safety data and related information needed to carry out this section, with respect to all aspects of highway and traffic safety systems and conditions relating to - vehicle, highway, driver, passenger, motorcyclist, bicyclist, and pedestrian characteristics; accident causation and investigations; and human behavioral factors and their effect on highway and traffic safety, including distracted driving. [See 23 U.S.C. 403(b)(1)(A)(i), 23 U.S.C. 403(b)(1)(A)(ii), 23 U.S.C. 403(b)(1)(B)(iii)].

A.2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

This is a new collection of information.

NHTSA will use the information gained in this study to understand the extent to which older drivers appropriately regulate their driving habits in accord with age-related functional changes. Knowing the degree to which older drivers self-regulate, and if so, under which conditions they self-regulate appropriately will likely help clinicians who work with older adults to guide their clients in matching their decisions concerning when and where to drive to their abilities. Such information would also guide development of effective safety educational materials for older drivers. The findings will not be used to support regulatory actions but rather to provide guidance regarding older driver safety to States as well as to older drivers, their family members, and to health care providers concerned with the safety of their older patients' driving safety.

A.3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical or other technological collection techniques or other information technology. Also describe any consideration of using information technology to reduce burden.

NHTSA intends to recruit potential participants through public solicitations to residents of one or more planned communities in the vicinity of Raleigh/Durham/Chapel Hill/Burlington, North Carolina. Solicitations will be in the form of flyers posted at a community center, and/or announcements in newsletters and on community listservs, and/or sign-ups at a weekly farmer's market and other local events. Interested residents will be interviewed in-person if at a live event, or will be able to contact a designated NHTSA research team member through a toll-free telephone number or via email to complete the initial interview. During the brief in-person or telephone interview, a researcher will determine if a candidate meets the study inclusion criteria for participation in the study.

To collect this qualifying information, researchers will engage in an in-person or telephone interview with a driver who has responded to the public solicitation. No automated, electronic, mechanical, or other technological collection techniques are planned to obtain this qualifying information. In-person or telephone interview is the least burdensome method to respond to potential interested participants in this case.

Once an individual has been qualified and has elected to participate in the study and provided written consent to this effect, driving exposure data collection will be automated using unobtrusive data collection devices installed in the participant's vehicle; thus, instrumentation will be largely invisible to the participant, and participation does not require the participant to provide or use any personal equipment other than their vehicle for the 30-day driving period. Clinical functional data will be collected electronically using a computer on the same day as the on-road evaluation.

A.4. Describe efforts to identify duplication. Show specifically why any similar information, already available cannot be used or modified for use for the purposes described in Item 2 above.

To qualify for this study drivers must engage in a specified amount of driving (trip frequency) and meet certain age requirements. There is no other source of this information other than direct inquiry to the participant. The single direct in-person or telephone conversation proposed in this application is not only an efficient means of acquiring the necessary qualifying information, it also permits the driver to ask any questions he/she may have about study participation. Similarly, there is no source of information regarding these drivers' functional abilities, driving performance and exposure, or about the relationship between age, driving performance, and self-regulated exposure.

A.5. If the collection of information involves small businesses or other small entities, describe the methods used to minimize burden.

The collection of information does not involve small businesses or other small entities.

A.6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

The population of older drivers is expanding. With advancing age people may or may not recognize functional decline, and therefore may or may not regulate their driving exposure appropriately. This has direct implications for driver safety. NHTSA has a responsibility to provide guidance to physicians, driver rehabilitation specialists, and other healthcare providers who advise older adults about the potential to extend their safe driving years through improved decision making. The planned study will provide the input information NHTSA needs to develop such guidance. Such information must be obtained from properly qualified older drivers who represent the population of interest. Qualification of participants for inclusion in the study is essential to the development of useful and reliable data.

A.7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with the guidelines set forth in 5 CFR 1320.6.

No special circumstances require the collection to be conducted in a manner inconsistent with the guidelines in 5 CFR 1320.6.

A.8. Provide a copy of the FEDERAL REGISTER document soliciting comments on extending the collection of information, a summary of all public comments responding to the notice, and a description of the agency's actions in response to the comments. Describe efforts to consult with persons outside the agency to obtain their views.

FEDERAL REGISTER NOTICE: A copy of the Federal Register Notice which notified the public of NHTSA's intent to conduct this information collection, and provided a 60-day

comment period, was published on March 25, 2015 (Vol. 80, No. 57, Pages 15866-15867 (Appendix B). No comments were entered into the NHTSA docket in response to the 60-day Federal Register Notice.

A copy of a second, 30-day Federal Register Notice (Vol. 80, No. 152, Page 47555), which announced that this information collection request will be forwarded to OMB, was published August 7, 2015 (Appendix C).

A.9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

No payment or gift will be provided to respondents for the qualifying interview. Those older drivers who qualify for the study and choose to participate will receive an initial payment of \$50 for allowing installation of the data collection device in their vehicle. Upon completion of the 30-day driving period, clinical assessment, and driving evaluation, the participant will receive an additional \$150. Participants will also receive confidential feedback from the CDRS regarding their performance on the driving evaluation (a \$350 value). Researchers arrived at this incentive level taking into consideration that participants are to travel to the research site and complete two hours of data collection activities, as well as the rigor of the functional and driving performance evaluations. Experience in previous NHTSA studies of older drivers' performance, including *Older Drivers and Navigation Devices*, which included functional testing as well as driving with an evaluator in the vehicle; *Mild Cognitive Impairment and Driving Performance*, which required functional testing and installation and removal of a DAS; and *Older Drivers' Compliance with License Restriction*, which required installation and removal of a DAS; has shown that this level of incentive is necessary to successfully recruit participants in a study such as this one.

A.10. Describe any assurance of confidentiality provided to respondents

Older drivers who are qualified and choose to participate in this study will be asked to execute an Informed Consent document that promises that no individual results and no personal information will be published or shared with any licensing or other regulatory authority. All published results will provide only summary statistics that cannot be used to identify any individual or an individual's responses/performance.

A.11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior or attitudes, religious beliefs, and other matters that are commonly considered private.

No questions of a sensitive nature are being asked as part of this study.

A.12. Provide estimates of the hour burden of the collection of information on the respondents.

Information collection to identify respondents who are eligible for the study will be conducted in person or by telephone interview with an estimated 180 older drivers in order to

identify 60 older drivers who are properly qualified and choose to participate in the study. As shown in Table 1, respondents will take an estimated five minutes to complete the interview. The interview form is in Appendix D, and Appendix E contains a justification of the questions, The 60 selected participants will review and sign the consent form (Appendix F), have data collection systems installed in the vehicle and complete the clinical and on-road assessments for an estimated two hours. Table 2 estimates burden hours for each of the study-related activities..

We expect that most respondents will be retired from employment. If employed, costs to respondents for the planned collection of qualifying information by NHTSA can be calculated based on mean hourly wages provided by the Bureau of Labor Statistics for All Occupations (http://www.bls.gov/oes/current/oes_va.htm#00-0000). This source indicates mean hourly wage equals \$24.40.

Table 1. Burden Hours and Costs

	Form	Participants	Time per participant	Burden hours	Cost per participant	Total cost
Recruitment (Appendix D)	1295	180	5 minutes	15	\$2.03	\$365.40
Study	1332	60	2 hours	120	\$48.80	\$2,928.00
Total				135		\$3,293.40

Table 2. Study Burden Hours: Activity Level Effects

	Participants	Hours per participant	Burden hours
Consent Form (Appendix F)	60	0.25	15
Functional measures and on-road driving performance evaluation with certified driving rehabilitation specialist (see Appendix G)	60	1.50	90
Install, remove data acquisition system	60	0.25	15
TOTAL	60	2.00	120

The clinical assessment tools are the same ones that were recently reviewed and approved by OMB under the submission with Control Number 2127-0711. Justification for these measures (which is the same as that previously submitted to OMB for other studies) may be found in Appendix G of this package.

A.13. Provide an estimate of the total annual cost to the respondents or record keepers resulting from the collection of information.

There are no record keeping costs to the respondents. Thus, there is no preparation of data required or expected of respondents. Participants do not incur: (a) capital and start-up costs, or (b) operation, maintenance, and purchase costs as a result of participating in the study.

A.14. Provide estimates of the annualized cost to the Federal Government.

Total estimated one-time cost to the Government for data collection for this study is as follows (note that this does not include costs for project administration, study design, data analyses or report writing):

Table 3: Cost to the Government

	Cost
Contractor	
Initial Interview	\$1,500
Consent	\$1,500
DAS Installation	\$1,350
Clinical/Driving performance evaluations	\$21,000
Participant payments	\$12,000
TOTAL ESTIMATED COST TO GOVERNMENT	\$37,350

A.15. Explain the reasons for any program changes or adjustments in Items 13 or 14 of the OMB 83-I.

This is a new information collection. As such, it requires a program change to add the estimated hours for the new information collection to NHTSA’s overall burden hours.

A.16. For collection of information whose results will be published, outline plans for tabulation and publication.

When study findings are published, they will not include personal information. An exact publication date has not been established but would occur no sooner than Quarter 4 of Fiscal Year 2017.

A.17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

NHTSA will display the expiration date for OMB approval.

A.18. Explain each exception to the certification statement identified in Item 19, “Certification for Paperwork Reduction Act Submissions” of the OMB Form 83-I.

No exceptions to the certification are made.