Information Collection Request Supporting Statement: Section A
Older Driver Rearview Video Systems

The National Highway Traffic Safety Administration (NHTSA) proposes to collect information from older licensed drivers about their driving performance, driving habits, and levels of familiarity with rearview video systems (RVSs), and to measure their ability to avoid obstacles while backing using an RVS as compared to using only mirrors and shoulder checks. Following initial data collection, the research team will develop a training protocol based on common errors participants made during the first study segment. During the training segment of the study, a new sample of participants will complete backing tasks similar to those in the first segment. Then participants will be randomly assigned to either a training group or a placebo group. Following training all participants will again complete a series of backing tasks. Analyses will test whether the training improved drivers' ability to use the RVS appropriately. This research would give the traffic safety community greater insight into the extent to which older drivers are able to use RVSs effectively and whether training in proper use of the devices improves their ability to use the systems to back safely.

Study participation will be voluntary and will be solicited among residents of residential communities, senior centers, and/or service- or faith-based organizations in the southeastern Pennsylvania area through community newsletters and other community media. Interested older adults will attend a public meeting to learn about the research opportunity including inclusion and exclusion criteria. Following the meeting, interested older adults will provide their name and telephone number on a signup sheet. A project assistant will then call individuals on the signup sheet and conduct a brief telephone pre-screening to ensure that all participants meet inclusion and exclusion criteria; the project assistant will also answer questions about study participation. For interested candidate participants who meet inclusion criteria, the project assistant will make appointments to conduct either a controlled, off-road backing performance evaluation or a training protocol evaluation, at a mutually convenient time. At the beginning of the appointment, the project assistant will obtain a signature from each participant on an informed consent. A driving rehabilitation specialist (DRS) will then conduct the off-road backing performance evaluation or training protocol evaluation. Participants will then receive compensation of $100 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.

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 traffic safety programs. Older adults comprise an increasing proportion of the driving population.[1] 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

[1]National Center for Statistics and Analysis. (2017, February). 2015 older population fact sheet. (Traffic Safety Facts. Report No. DOT HS 812 372). Washington, DC: National Highway Traffic Safety Administration. Available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812372.

activities that support quality of life. New vehicle technologies, like RVS, may help compensate for some age-related deficits and keep older adults driving safely.

The theory underpinning the assumption that older drivers have an elevated safety risk associated with backing crashes is based upon known age-related deficits. Many older drivers have musculoskeletal difficulties that limit their ability to turn and scan behind the vehicle. For example, a 2015 article published in *Experimental Gerontology* found that older drivers had less neck and trunk rotation and were less successful in detecting targets requiring body rotation in a driving simulator (Chen, K.B., Xu, X., Lin J.H., and Radwin, R.G. 2015. "Evaluation of older driver head functional range of motion using portable immersive virtual reality." *Experimental Gerontology* 70:150-6). Aging also diminishes the visual search, visual information processing and divided attention capabilities needed to be alert to possible conflicts from cross traffic when backing from a driveway or parking space. Deficits in visual scanning among older drivers have been reported in numerous studies. For example, a 2012 article published in *Current Directions in Psychological Science* found that older drivers were less likely to focus their visual attention on areas with potential hazards than younger experienced drivers at intersections in a simulator and on-the-road (Pollatsek, A., Romoser, M.R.E., and Fisher, D.L. 2012. "Identifying and remediating failures of selective attention in older drivers." *Current Directions in Psychological Science* 21(1): 3-8).

In addition, the most recent release of NHTSA's Non-Traffic Surveillance from 2012 through 2014 indicates older drivers are involved in an estimated 19,000 backing crashes a year that result in death or injury. This represents 22% of all non-traffic backing crashes, which frequently occur in parking lots and driveways. During this same period, older drivers represented 17% of all licensed drivers, indicating an over-representation in non-traffic backing crashes per licensed driver. Studies have found that the most frequent error among older drivers involved in crashes is failure to yield the right-of-way. For example, a 2015 study published in *Accident Analysis and Prevention* found that "the most frequent error made by crash-involved drivers ages 70 and older was inadequate surveillance, which included looking but not seeing and failing to look" (Cicchino, J.B. and McCartt, A.T. 2015. Critical older driver errors in a sample of serious U.S. crashes. *Accident Analysis and Prevention* 80:211-19). The fact that older drivers are at elevated risk of crashes due to inadequate surveillance compared to younger drivers may explain their over-representation in backing crashes per licensed driver.

RVS is expected to offer more potential benefits to older drivers than younger drivers because older drivers have more room for improvement due to the age-related decline in the ability to rotate one's body. It may also compensate for the fact that older drivers are more likely to have inadequate surveillance or scanning than younger drivers. While NHTSA research in support of the Federal Motor Vehicle Safety Standard No. 111, ''Rear visibility," did not focus on how effectiveness varies by age, a recently published article addressed this question. A 2017 article published in *Traffic Injury Prevention* found that RVS reduced backing crash involvement among drivers 70 and older by 36% compared to 16% for drivers less than 70, but the difference was not statistically significant. The study also found that backing sensors reduced backing crash involvement for drivers 70 and older by 38% compared to no effectiveness for drivers less than 70, which was a statistically significant difference (Cichino, J. B. 2017. "Effects of rearview

cameras and rear parking sensors on police-reported backing crashes." *Traffic Injury Prevention*. 18(8): 859-65).

b. Statute authorizing the collection of information

Title 23, United States Code, Chapter 4, Section 403 gives the Secretary authorization to use funds appropriated 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.

TransAnalytics, LLC, will conduct this study under a contract with NHTSA. Study participation will be voluntary and solicited through informational sessions delivered by a research team member at senior centers, places of worship and continuing care retirement communities. The session will provide an overview of the research opportunity as well as inclusion and exclusion criteria. Qualifying older adults will express their interest in participating by adding their name and phone number to a signup sheet. A project assistant will contact each interested participant and administer the attached screening questions (Form 1398) over the phone. Those who do not meet eligibility requirements will be thanked for their time and informed that they are not eligible. Those who meet eligibility requirements and agree to participate in the study will provide informed consent and complete study activities. NHTSA will use the data collected from the instrumented vehicles to evaluate the effectiveness of RVS training for older driver 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.

No automated, electronic, mechanical, or other technological collection techniques are planned to obtain the screening information. A project assistant will engage in telephone calls with drivers who have indicated interest in participating by signing their name on a signup sheet to collect the initial qualifying information. During the field experiment, all driving performance information will be collected automatically using an instrumented vehicle used by all drivers for the study. Driving behaviors captured during the field experiment will include glances to mirrors and RVS, speed and lane position while backing, distance and time to detect backing obstacles, and the percentage of backing obstacles detected. A Driving Rehabilitation Specialist (DRS) will be in control of the instrumented vehicle at all times using a passenger-side brake, and a

confederate field worker will assist with various tasks outside of the instrumented vehicle. However, neither will collect any data.

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.

NHTSA has not conducted a similar study of RVS training for older drivers and is not aware of other publicly available studies that address this research question. RVS is a relatively new technology on passenger vehicles, becoming required equipment on new passenger vehicles by May 2018. To qualify for this study, drivers must specify their level of RVS familiarity and meet other study inclusion criteria. There is no source of this information other than direct inquiry to the participant. Similarly, there is no available source of information regarding drivers' driving performance during backing tasks while using RVSs. This information collection request is necessary for NHTSA to evaluate the effectiveness of RVS training for older driver safety.

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 except insofar as the data will be collected by a small business contractor to NHTSA.

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.

A 2014 final rule issued by NHTSA (Federal Motor Vehicle Safety Standard No. 111, ''Rear visibility'') requires rear visibility technology in all new vehicles with a Gross Vehicle Weight Rating (GVWR) under 10,000 pounds by May 2018, but the anticipated safety benefits can be enhanced by drivers who understand and use the technology as intended. The expanding population of older drivers, in particular, could realize benefits from RVS technology if they use it effectively. Many older drivers have musculoskeletal difficulties that limit their ability to turn and scan behind the vehicle, and aging diminishes the visual search, visual information processing and divided attention capabilities needed to be alert to possible conflicts from cross traffic when backing from a driveway or parking space.

As described in response to A.1, NHTSA's Non-Traffic Surveillance from 2012 through 2014 indicates that older drivers are involved in an estimated 19,000 backing crashes a year that result in death or injury. This represents 22% of all non-traffic backing crashes. Older drivers represented 17% of all licensed drivers but accounted for 22% of all non-traffic backing crashes during this period, indicating an over-representation in non-traffic backing crashes per licensed driver. In addition, studies have found that the most frequent error among older drivers involved in crashes is failure to yield the right-of-way. The fact that older drivers are at elevated risk of

crashes due to inadequate surveillance compared to younger drivers may explain their over-representation in backing crashes per licensed driver.

RVS is expected to offer more potential benefits to older drivers than younger drivers because older drivers have more room for improvement due to the age-related decline in the ability to rotate one's body. It may also compensate for the fact that older drivers are more likely to have inadequate surveillance or scanning than younger drivers. If this collection is not conducted, NHTSA would not have the evidence it needs to determine whether training could enhance the effectiveness of RVS for older drivers and could miss an opportunity to help reduce older drivers' crash risk.

Under the current contract, data collection is scheduled to begin in February of 2018. Delay in approval of this ICR will likely result in contract modifications and additional costs to the government.

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 citation for 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.

A copy of the 60-day 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 July, 20, 2017 (Vol. 82, No. 138, Pages 33554-33555). The notice did not receive any comments.

A copy of a second, 30-day Federal Register Notice (Vol. 82, No. 211, Pages 50937-50938), which announced that this information collection request will be forwarded to OMB, was published on November 2, 2017.

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 (screening). Those who qualify for the study and choose to participate will receive a $100 payment at the completion of the study. Our past experience indicates that anything less than the proposed $100 compensation would likely result in failure to recruit enough participants to provide adequate statistical power. In addition to the time demands related to the training and evaluations, many older adults avoid driving evaluations such as is included in the proposed study because they believe that a poor score will lead to their losing their license, even though this could not happen to participants in the proposed study. Recent studies by NHTSA have confirmed that this level of compensation is necessary to meet recruiting requirements. These studies, which are still in the field or in final report preparation, include Older Driver

Compliance with Licensing Restrictions (OMB 2127-0702, expires 8/31/2017), Older Drivers and Navigation Devices (OMB 2127-0710, expires 9/30/2018) and Mild Cognitive Impairment and Driving Performance (OMB 2127-0712, expires 9/30/2018). These three studies used incentives ranging from $100 to $150 per participant, and yet recruitment remained difficult.

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 form (attached Form 1399). The consent form promises that no individual results and no personal information will be published and that no personal results will be shared with any licensing regulatory authority. All published results will provide only aggregate (summary) statistics that cannot be used to identify any individual or individual's data.

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 commonly considered private or sensitive in nature will be asked as part of this study.

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

The total estimated burden for this information collection is 360 hours. The following table summarizes the calculation of this estimated burden.

Table 1. Calculation of Burden Hour

	Respondents	Minutes per respondent	Estimated burden hours
Form 1398			
Telephone Screening	300	5	25
Form 1399			
Informed Consent	200	15	75
Backing Performance Evaluation	200	60	200
Training Protocol/Placebo	120	30	60
Total Form 1399			*335*
Total estimated burden hours			***360***

It is estimated that 300 one-time telephone conversations will be conducted with those who sign up after the public meeting to yield 200 participants who meet the study criteria. The 300 telephone pre-screenings will average five minutes in length including introduction, qualifying questions, potential participant questions, logistical questions, and conclusion for an estimated total burden of 25 hours. Of the 200 study participants, all 200 will read and sign the informed consent (15 minutes per respondent for a total of 75 hours) and complete a one-time controlled, off-road backing performance evaluation (60 minutes per respondent for a total of 200 hours). The 120 participants taking part is the training evaluation will also complete the one-

time training protocol or equal time placebo activity (30 minutes per respondent for 60 hours). The burden associated with the informed consent and the associated experiment is 335 hours.

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, and there is no preparation of data required or expected of respondents. Participants do not incur either (a) capital and start-up costs, or (b) operation, maintenance, and purchase costs as a result of participating in the study. We expect that most respondents will be retired from employment. The opportunity costs to respondents for participation in all study activities 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). The estimated total annual cost to respondents would be opportunity costs of about $8,943 (360 hours X $24.84/hour).

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

The estimated contract cost to the government for this one-time information collection is $60,820. The estimated cost in terms of government time is approximately 120 hours for the Contracting Officer's Representative (COR) and 20 hours for the supervisor for about $9,000 in wages. Since data collection is expected to take less than a year, the annualized cost is the same.

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 360 hours for the new information collection to NHTSA's existing burden.

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

The current plan is for the contractor to produce a draft technical report in 2019 with publication of a final technical report in 2020. The technical report will provide aggregate (summary) statistics and tables as well as the results of statistical analysis of the information, but it will not include any personal information. These plans are based upon data collection starting in February of 2018. Delays in approval of this ICR could delay publication of the final technical report and will likely result in contract modifications and additional costs to the government.

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.