Information Collection Request Supporting Statements: Part A
Older Driver Rearview Video Systems
OMB Control No. 2127-0731

Abstract:

The National Highway Traffic Safety Administration of the U.S. Department of Transportation is seeking approval to reinstate an information collection to recruit 120 older licensed drivers, 60 between ages 60 and 69 and 60 age 70 and older, for a one-time voluntary research study to assess whether training on the use of Rear Video Systems (RVS) improves the ability of older drivers to back safely. NHTSA expects 180 volunteers will complete screening over the telephone or in-person to determine their eligibility for the study. Recruiting participants for the reinstated collection has an estimated burden of 15 hours (five minutes per respondent). NHTSA expects that among the 180 who are screened, 120 will be eligible and willing to participate in the study. These 120 participants will complete informed consent forms (15 minutes per participant or 30 burden hours), participate in either RVS training or an equal-time placebo group (30 minutes per participant or 60 burden hours), and complete a series of backing tasks on a closed test-track (60 minutes per participant or 120 burden hours). The overall expected burden for screening (15 hours) and the experiment (210 hours) is 225 hours.

NHTSA previously obtained clearance to conduct this one-time study. However, NHTSA was unable to complete the study as a result of the public health emergency in 2020 and 2021. The requested reinstatement is 125 fewer burden hours than the previous information collection request because the reinstatement is for 120 rather than 200 participants. The reinstatement requests fewer burden hours because NHTSA has completed the first phase of this study, observing older drivers while they completed backing tasks, to determine which tasks had the highest error rates. These tasks were incorporated into the training. NHTSA is now requesting a reinstatement to allow it to complete the second part, assessing the effects of the training.

NHTSA will use the information to produce a technical report containing summary statistics and tables. No identifying information or individual responses will be reported. The technical report will be made available to a variety of audiences interested in improving highway safety through the agency web site and the National Transportation Library. This project involves approval by an institutional review board, which the contractor will obtain before contacting potential participants. This collection will inform the development of behavioral safety countermeasures to improve older driver safety, particularly older driver training.

A. Justification

1. Explain the circumstances that make the collection of information necessary. Identify any legal and 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

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 activities that support quality of life. Newer vehicle technologies, like rearview video system (RVS), (often called "backing cameras") 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, Chen et al. (2015) found that older drivers had less neck and trunk rotation and were less successful in detecting targets requiring body rotation in a driving simulator.[2] 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, Pollatsek et al. (2012) 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.[3]

An analysis of NHTSA's Non-Traffic Surveillance from 2012 through 2014 indicated that older drivers were involved in an estimated 19,000 backing crashes a year that resulted in death or injury. This represented 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. Studies have found that the most frequent error among older drivers involved in crashes is failure to yield the right-of-way. For example, Cicchino and McCartt (2015) 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."[4] The fact that older drivers are at elevated risk of crashes due to inadequate surveillance compared to younger drivers

[1]National Center for Statistics and Analysis. (2022, July). 2020 older population fact sheet. (Traffic Safety Facts. Report No. DOT HS 813 341). National Highway Traffic Safety Administration. Available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812372.

[2] Chen, K. B., Xu, X., Lin J. H., & Radwin, R. G. (2015). "Evaluation of older driver head functional range of motion using portable immersive virtual reality." *Experimental gerontology, 70,* 150–156. https://doi.org/10.1016/j.exger.2015.08.010

[3] Pollatsek, A., Romoser, M. R., & Fisher, D. L. (2012). "Identifying and remediating failures of selective attention in older drivers." *Current directions in psychological science, 21*(1), 3-7. https://doi.org/10.1177/0963721411429459

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. A recently published article addressed this question. Cichino (2017) found that RVS reduced backing crash involvement among drivers 70 and older by 36% compared to 16% for drivers younger than 70, but the difference was not statistically significant.[5]

b. Statute authorizing the collection of information

Title 23, United States Code, Chapter 4, Section 403 authorizes NHTSA 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. [*See* 23 U.S.C. 403(b)(1)(A)(i)-(ii), (1)(B)].

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, and its subcontractor, the Virginia Tech Transportation Institute (VTTI), will conduct this study under a contract with NHTSA. This collection will explore the effects of a RVS training video on older drivers' use of an RVS while backing. The training video describes and demonstrates the proper way to complete common backing tasks (e.g., backing into and out of a parking space) correctly and safely and includes tasks which participants in the initial phase of the project found difficult. The contractor will collect participants' backing data using a data acquisition system (DAS) installed in a study-provided vehicle while the participants complete a series of backing tasks directed by a researcher. The DAS includes video cameras and sensors, and it will collect data as participants complete driving tasks on VTTI's Smart Roads, a closed driving course. The contractor will use the information gathered to produce a technical report that presents the results of the study. The report will provide summary

[4] 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*, 211–219. https://doi.org/10.1016/j.aap.2015.04.015
[5] Cichino, J. B. (2017). "Effects of rearview cameras and rear parking sensors on police-reported backing crashes." *Traffic injury prevention, 18*(8), 859–865. https://doi.org/10.1080/15389588.2017.1317758

statistics and aggregate tables, and the contractor will provide NHTSA with a de-identified data set. The report will not include any personally identifiable information. The technical report will be available to stakeholders interested in improving older driver safety as well as State Highway Safety Offices through the National Transportation Library (https://ntl.bts.gov). The report will provide important information needed by NHTSA to develop, implement, and maintain effective behavioral countermeasures that meet the Agency's mandate to improve traffic safety. NHTSA will use the study results to inform traffic safety stakeholders and will guide development of behavioral countermeasures to address driver errors and possible misconceptions regarding the use of RVS.

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 forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. 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 and informed consent. While participants may choose to receive electronic copies of the informed consent form in advance to review, they will indicate consent on paper when they are at the site to complete the training and backing tasks. This study will use a DAS to capture and synchronize video and sensor input data from the study-provided vehicles. The DAS includes multiple cameras to capture driver face, driver feet, forward roadway, rear roadway/parking space, vehicle left side, and vehicle right side. The system also includes dGPS to provide precise vehicle and target location information, and multi-axis accelerometers to record hard braking or acceleration events.

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.[6] RVS is a relatively new technology on passenger vehicles, becoming required on new passenger vehicles by May 2018. The training video for this study was developed to address errors and performance decrements documented in participants' backing performance during the earlier phase of the study. To qualify for this study phase, drivers must specify their level of RVS familiarity and meet other study inclusion criteria. There is no source of this

[6] Although NHTSA previously received approval to conduct this study, it was unable to do so as a result of the public health emergency in 2020 and 2021.

information other than direct inquiry of participants. Findings from the initial phase of the study, which has been completed, were used in developing the RVS training. This information collection request is necessary for NHTSA to evaluate the effectiveness of RVS training for older driver safety and cannot be obtained through existing information.

5. **If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.**

   There is no burden on small businesses or other small entities for this collection of information request. Respondents are individuals meeting certain criteria and who volunteer for the study.

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’’) required rear visibility technology in all new passenger vehicles (with a Gross Vehicle Weight Rating under 10,000 pounds) by May 2018. While the rule is expected to improve motor vehicle safety, NHTSA believes that the anticipated safety benefits may be enhanced if drivers understand and use the technology as intended. More specifically, older drivers could realize benefits from RVS technology if they use it effectively. Many older drivers have musculoskeletal conditions 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 indicate 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 lack the evidence needed to determine whether training enhances the effectiveness of RVS for older drivers and may miss an opportunity to help reduce their crash risk.

Under the current contract, data collection is scheduled to begin in 2023. Delay in approval of this ICR will likely result in contract modifications and additional costs to the government.

7. **Explain any special circumstances that would cause an information collection to be conducted in a manner:**
    a. **requiring respondents to report information to the agency more often than quarterly;**
    b. **requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**
    c. **requiring respondents to submit more than an original and two copies of any document;**
    d. **requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records, for more than three years;**
    e. **in connection with a statistical survey, that is not designed to produce valid and reliable results that can be generalized to the universe of study;**
    f. **requiring the use of a statistical data classification that has not been reviewed and approved by OMB;**
    g. **that includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or**
    h. **requiring respondents to submit proprietary trade secrets, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.**

    No special circumstances require this collection to be conducted in a manner inconsistent with **5 CFR 1320.5(d)(2)**.

8. **If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to the comments. Specifically address comments received on cost and hour burden. Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format, and on the data elements to be recorded, disclosed, or reported.**

    NHTSA published a 60-day notice on 01/12/2023 (88 FR 2168-70) requesting comment on NHTSA's intention to submit this ICR to OMB for approval (88 FR 2168-70). NHTSA received one comment.

One organization, the National Association of Mutual Insurance Companies (NAMIC) submitted comments. NAMIC noted support for the project, specifically that the proposed information collection is necessary for the proper performance of the functions of NHTSA and indicated that there is every reason the believe that the results of the study will have great practical utility. NAMIC went on to recommend that NHTSA "continue to seek input from the insurance industry," as they may be able to provide input on metric, performance indicators, and measures of success. They added that NAMIC would be interested in working with NHTSA on these areas of study and analysis. While NHTSA has not worked with NAMIC on this project, under Part 1 of the project, the contractors conducted a literature review of research in older driver safety that focused on performance in backing maneuvers. That review included research from the Insurance Institute for Highway Safety. This review, combined with analyses of older adults' backing performance collected in Part 1 of the project informed both the training and data collection protocols.

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 $50 payment at the completion of the study. Experience indicates that anything less than the proposed $50 compensation would likely result in failure to recruit enough participants to provide adequate statistical power. Recent studies by NHTSA have confirmed that this level of compensation is necessary to meet recruiting requirements. These studies include Older Driver Compliance with Licensing Restrictions (OMB 2127-0702, expired 8/31/2017), Older Drivers and Navigation Devices (OMB 2127-0710, expired 9/30/2018) and Mild Cognitive Impairment and Driving Performance (OMB 2127-0712, expired 9/30/2018). These three studies used incentives ranging from $100 to $150 per participant, and yet recruitment remained difficult. The tasks included in the proposed study require less time for each participant than the earlier studies cited, so the $50 incentive should be adequate to meet recruiting needs for this project.

10. **Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy. If the collection requires a systems of records notice (SORN) or privacy impact assessment (PIA), those should be cited and described here**.

No assurances of confidentiality will be provided to respondents. Older drivers who are qualified and choose to participate in this study will be asked to execute an informed consent form (Form 1399). As indicated in the consent form, no individual results and no personal information will be published, and 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. This collection is covered by NHTSA's existing Office of Behavioral Safety Research

(OBSR) Research Studies Privacy Impact Assessment (https://www.transportation.gov/individuals/privacy/nhtsa-office-behavioral-safety-research-obsr-research-studies).

11. **Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.**

    The information collection includes a screening questionnaire that asks about the respondents' medical history. While NHTSA does not believe any of the questions are of a sensitive nature, they do ask about matters that respondents may consider private. These questions are necessary to the collection, however, to qualify and select appropriate volunteers and ultimately to protect the safety of the participants and the researchers. The responses are not used in the analysis.

12. **Provide estimates of the hour burden of the collection of information on the respondents and estimates of the annualized labor cost to respondents associated with that hour burden.**

    The contractor will use a screening questionnaire (Form 1398) to identify 120 drivers (60 between ages 60 and 69 and 60 age 70 and older) who are properly qualified and choose to participate in the study. Participants will answer the screening questionnaire items either over the phone or in person to determine if they qualify for the study. Respondents are expected to take an estimated average of 5 minutes to complete the initial screening, resulting in 15 burden hours for screening up to 180 potential participants.

    It is estimated that 65% of those who begin the screening process will be eligible and interested in participating. As such, we anticipate screening up to 180 individuals to recruit an estimated 120 potential participants for the consenting process. The consenting process includes an overview of the study and an explanation of the form (Form 1399). Respondents are expected to take an average of 15 minutes for the consenting process including reviewing and completing the form resulting in 30 burden hours.

    The 120 participants will complete the following study activities with an estimated burden of 90 minutes per participant for a total estimated burden of 180 hours:

- RVS or placebo training (30 minutes per participant) – Participants will view a video on either proper RVS use or an unrelated traffic safety issue immediately after completing the enrollment process. The backing tasks and maneuvers emphasized in the training video will reflect *a)* tasks where participants in the preceding backing performance study experienced difficulty; *b)* situations where a failure to detect an obstacle when backing holds the greatest potential for damage or injury; *c)* backing maneuvers that are most common in everyday driving, or a combination of these characteristics.
- Backing tasks (60 minutes per participant) – Data collection will be conducted on a controlled test track facility by a trained researcher who has completed VTTI-approved IRB training as well as specific training on working with older drivers, including the operation of the secondary vehicle brake. This training will be based on a curriculum used to gain certification as a Certified Driving Rehabilitation Specialist (CDRS), although it should be noted that the experimenter will not be a CDRS. The experimenter will be assisted by one or more research assistants who will serve as confederates in various supporting roles, including surreptitious object placement and removal, as needed. Participants will complete eight backing trials for the field experiment. All backing tasks [backing out of a garage (x2); long backing with curve; backing into and out of a parking spot (x2 each maneuver); and a surprise trial] will be completed by all participants. The presence versus absence of an obstacle will be tested only for three of the four maneuvers; no obstacles will appear in the long backing with curve task. The final surprise trial will also include an obstacle. The long backing, backing-in, and backing-out of spot trials will be counterbalanced across participants, as all participants will start by backing out of the garage and finish with a surprise trial after they believe the experiment has concluded. For the three conditions that have obstacles, obstacle presentation will be counterbalanced. The experimenter will initiate the first trial by signaling the field crew.

Table 1 describes estimated burden hours for a total of 225 annual burden hours. To calculate the opportunity cost to participants in this study, NHTSA used the average (mean) hourly earnings from employers in all industry sectors in the State of Virginia, which the Bureau of Labor Statistics lists at $28.92.[7] NHTSA estimated the opportunity cost for each form (and associated study activities) and arrived at a total opportunity cost of $6,057.

Table 1: Burden Estimates

[7] May 2021. See https://www.bls.gov/oes/current/oes_va.htm#00-0000.

	Burden (minutes) per respondent	Labor cost per respondent	New respondents	New total burden hours	New total labor costs
Form 1398					
Telephone Screening	5	$2.41	180	15	$434
Form 1399					
Informed Consent	15	$7.23	120	30	$868
Backing Performance Evaluation	60	$28.92	120	120	$3,470
Training Protocol/ Placebo	30	$14.46	120	60	$1,735
Total Form 1399				210	$6,073
Total estimated burden hours				***225***	***$6,558***

13. Provide an estimate of the total annual cost burden to respondents or record keepers resulting from the collection of information. Do not include the cost of any hour burden already reflected in the response provided in question 12.

There is no preparation of data required or expected of respondents, thus there are no record keeping costs to the respondents.

14. Provide estimates of annualized costs to the Federal government. Provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.

The data collection portion of this study is slated to take place over an 8-month period. Total estimated annualized cost to the Government for data collection for this study is $281,426. This is comprised of $252,242 for contract costs, plus $29,184 in estimated costs for government time and compensation.

Contract costs include $23,281.52 for contractor labor, $117,376 for subcontractor labor, $61,936 for subcontractor ODCs, $600 for incentives, and $48,648.20 for G&A on ODCs (27.04%). This comes to a total of $252,241.72

Estimated government time ($18,094) and compensation ($11,090) totaled $29,184 and was calculated as follows. The estimated cost in terms of government time is approximately 240 hours for the Contracting Officer's Representative (COR) and 20 hours for the supervisor for a total estimated cost of $18,094 in wages and an estimated

total compensation of $29,184. To estimate total compensation costs, NHTSA used the Bureau of Labor Statistics' estimate that wages and salary only represent 62.0% of total employee compensation cost for State and local employees,[8] NHTSA calculated the wages associated with the COR's time by using the hourly wage for a GS-14, Step 5, in Washington, DC of $68.55 times 240 hours for a total wages of $16,452.[9] Using the annual salary of $170,800 for a GS-15, Step 6, in Washington, DC, the estimated cost of wages for the supervisor is $1,642 (20 × $82.12).

15. Explain the reasons for any program changes or adjustments reported on the burden worksheet. If this is a new collection, the program change will be the number of burden hours reported in response to question 12 and the entire burden cost reported in response to question 13. If this is a renewal or reinstatement, the change is the difference between the new burden estimates and the burden estimates from the last OMB approval.

This reinstatement of this collection will decrease the burden by 135 hours from the last OMB approval of 360 hours to the new burden estimate of 225 hours. The decrease is because NHTSA is only requesting to reinstate the parts of the previous collection that could not be completed under the previous approval due to the public health emergency in 2020 and 2021.

16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions as applicable.

The current plan is for the contractor to produce a draft technical report in 2024 with publication of a final technical report in 2025. 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 2023 and are contingent on approval of this ICR in Spring 2023. Delays in starting the data collection approval could delay publication of the final technical report and will likely result in contract modifications and additional costs to the government.

[8] Employer Costs for Employee Compensation, https://www.bls.gov/news.release/archives/ecec_03182022.pdf. Accessed 03/22/22.
[9] 2022 General Schedule hourly rate with Washington DC locality pay: https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2022/DCB_h.pdf. Accessed 03/22/2022.

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.

18. Explain each exception to the topics of the certification statement identified in "Certification for Paperwork Reduction Act Submissions." The required certifications can be found at 5 CFR 1320.9.

No exceptions to the certification statement are made.