Automotive Safety Council

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U.S. Department of Transportation
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Notice and RFC; Agency Information Collection Activities; Notice and Request for Comment; Distraction: Modern Voice Command Interfaces

[*Docket No. NHTSA–2025–0059*]

Subject: NHTSA Docket ***2025–0059***

The Automotive Safety Council (ASC) is an industry trade association of the world's leading suppliers of Autonomous, Crash Avoidance, Occupant Protection and Vulnerable Road User automotive safety systems to the automobile industry. The mission of the Automotive Safety Council is to improve the safety of people throughout the world through the development, production, and implementation of the latest automotive safety equipment by preventing accidents.

General Comments:

The ASC supports NHTSA's planned research to determine the current state-of-the-art capabilities that Voice Command Interfaces (VCI) provide to vehicle drivers and passengers. The use of human/machine and machine/human VCI through personal electronics and cellular phones is pervasive and growing in all aspects of U.S. society, including use of VCI through in-vehicle wired- or wireless integration of personal cellular phones by vehicle drivers. However, standardization and quality of service for cellular phone integration through the vehicle infotainment and safety infrastructure is an ongoing safety challenge. Also, concerns over the privacy and cybersecurity of driver/occupant raw- and processed voice inputs through vehicle VCI systems should be considered.

The continuing development and integration of OEM standalone telematics systems which often support infotainment, ADAS, Active Safety and limited operational domain hands-free automation and driver safety with

increasing consideration of human machine interface (HMI) design provides an opportunity to eventually reduce the number and/or severity of accidents influenced by driver error, by enabling reliable, naturalistic voice command support. However, with wide variability between the system hardware, software and HMI of OEM-integrated VCI and the challenges of seamless integration with driver and passenger cellular devices, ASC agrees with NHTSA's intention to pursue research which could lead to safer drivers.

Specific suggestions and questions for consideration in the Research Study:

1. Regarding the subject recruitment and sample size:
    a. There is a provision to exclude those who are pregnant; is there a technical reason why this restriction was made?
    b. Are there any constraints regarding health or physical conditions which effect subject voice (e.g. laryngitis, vocal cord injury, …)?
    c. Will additional recruitment be carried out to reach the target sample size and maintain the counter-balancing if needed?

2. Are the full OEM vehicles included in the simulator environment? Will they be fully functional cabins, or an emulation of the cockpit?

3. Regarding the Safety Critical Event (SCE):
    a. Since it can be expected that reactions to the safety critical event vary greatly between individuals, a within-subject manipulation of the task modality (VCI vs. visual-manual) could be considered. To diminish the effect of such an event on subsequent drives, the length of drives could be increased for all tasks ?

4. As the HW/SW and audible path may be different for each tested system, how will these differences be accounted for in the study protocol and/or analysis? (e.g. higher voice amplitude required for one system compared to another, background noise effects, microphone orientation, type, position, …)

5. Regarding metrics of driver performance, particularly for the SCE, the ASC suggests consideration to include driver reaction time (e.g. braking, evasive steering) and time-to-collision be measured and analyzed.

6. For the study, eye-tracking data is specified. How are the visual areas of interest (AOI) defined? NHTSA could perhaps consider alignment with Euro-NCAP's driver engagement protocols (euro-ncap-protocol-safe-driving-driver-engagement-v11.pdf)

7. For the assessment of cognitive workload, response time for the tactile detection response task (TDRT) is specified:
    a. Is there a potential concern about the added workload required?
    b. Could passive measures be used additionally? (e.g. one-item workload measure as described by von Janczewiski (A subjective one-item measure based on NASA-TLX to assess cognitive workload in driver-vehicle interaction - ScienceDirect)

8. Regarding task training:
    a. The study proposal separates training for each task, then practice until 3 trials are completed successfully. Would there be a benefit to block training of all tasks in one sequence (e.g. reinforcing common aspects between the tasks, reducing overall training time, and creating a more realistic scenario)?
9. Regarding study drives:
    a. Will the task used for the SCE be selected randomly from the set of all trained tasks, or the same one used for all subjects?

b. SCE task selection seems critical as it should be selected based on a general workload expectation (e.g. sending an email has higher workload then sending a simple text message such as “on the way”).

10. Regarding drive duration:
    a. As defined, approximately 4 minutes per trial is estimated; is this sufficient duration to allow sufficient immersion by the subject leading to a naturalistic response?
    b. Could multiple tasks be included in longer drives instead?

11. Regarding future research phase study considerations:
    a. Consider cases where the VCI fails to execute the intended task and/or executes the wrong task.
    b. Consider ambient noise and/or cabin noise factors in VCI performance.

Summary

We welcome any invitation to visit the NHTSA office or meet virtually with NHTSA for a detailed discussion of these comments should the opportunity arise.

Sincerely,

Douglas P. Campbell

President

Automotive Safety Council