

January 11, 2021

James C. Owens, Esq.
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

RE: Request for Information; Impaired Driving Technology
REF.: NHTSA Docket No. 2020-0102, 85 Fed. Reg. 71987 (November 12, 2020)

Dear Acting Administrator Owens:

The Alliance for Automotive Innovation (Auto Innovators) appreciates this opportunity to provide information highlighting the benefits and limitations of indirect Driver State Monitoring Systems (DSM) or Driver Behavior Systems (DBS) compared to direct measurement systems, including those being developed by the Driver Alcohol Detection System for Safety (DADSS) Program to detect and mitigate alcohol-impaired driving.

Year after year, NHTSA's crash data identifies alcohol-impaired driving as the single largest contributing factor in roadway fatalities, present in approximately one-third of fatal crashes. Numerous consumer and enforcement campaigns have been conducted at the federal and state level, yet alcohol-impaired driving remains a significant threat and costs the US economy \$194 billion per year¹. Alcohol-impaired driving begins with the misuse or abuse of alcohol which is then compounded by driving after drinking alcohol to excess. Increasingly, auto manufacturers are designing and deploying vehicle-based technologies that help to prevent or compensate for driver errors.

With the recent introduction of driver monitoring/ADAS cameras and sensors combined with emerging artificial intelligence (AI) algorithms, DSM/DBS system capabilities have significantly improved. As such, these are promising technologies that, with continued development, have the potential to significantly reduce distracted and fatigued driving. While these systems may help identify many of the effects of alcohol and drug impairment, we are unaware of existing research demonstrating the robust effectiveness of these systems in detecting alcohol impairment, especially in contrast to pre-operation direct measurement systems being developed by the DADSS program.

Maximizing the safety benefits possible from vehicle-based systems designed to prevent alcohol-impaired driving requires precise and accurate measurement of a driver's blood alcohol concentration (BAC) with respect to the applicable legal limit:

¹ The Economic and Societal Impact of Motor Vehicle Crashes, 2010 (Revised), DOT HS 812 013, May 2015 (Revised).

- DSM/DBS systems infer rather than quantify driver impairment, typically fatigue or distraction, generally using information from a network of sensors on the vehicle that may be used to assess driving behavior or a driver's state. In contrast, the technology being developed by the DADSS Program is able to measure directly, with high precision and accuracy, the amount of ethyl alcohol in a driver's blood stream and compare it to a specific limit.
- DSM/DBS systems, by necessity, must first allow a certain amount of impaired driving in order to make an assessment regarding a driver's degree of impairment and whether it exceeds established legal limits. As Volpe's 2007 report documented, the latency for detection will increase in low traffic conditions and with poorly defined road edges.² Such conditions are more prevalent for late-night driving conditions associated with increased alcohol involvement. Pre-operation systems, such as interlocks or the technologies being developed by DADSS, quantifies a driver's BAC prior to undertaking the driving task.
- DSM/DBS systems' ability to identify high-functioning individuals impaired by alcohol is unknown, but likely poor. Additional research is needed to understand the opportunities and limitations of these systems relative to individual alcohol impairment. Pre-operation systems, including DADSS, are not so limited because they are designed to quantify a driver's BAC.

Maturity of the technology and timelines for deployment should also be considered:

- DSM/DBS systems will require significantly more time and research to address these limitations, compared to DADSS. Research on the DADSS Program is forecasted to conclude no later than 2025 assuming sufficient resources are provided.

New technologies, especially those intended to provide a safety benefit, are subject to much scrutiny. When such technologies impact the autonomy of the driver, they require broad public acceptance:

- DSM/DBS systems are subject to high false negative rates because they are unable to quantify (they make an "educated guess" about) a driver's BAC.
- Given the high false negative rates, consumer acceptance of DSM/DBS systems when used to abate alcohol-impaired driving is likely to be poor.
- In addition, poor drivers, even if sober, will likely experience false positive rates contributing to the consumer acceptance problem.
- Driver's impaired by distraction and to some extent fatigue are likely to be more responsive to warnings and moderate interventions (distraction is in and of itself a transient condition that can be immediately remedied without the extreme interventions required to address alcohol impairment). Given the nature of alcohol impairment, driver warnings and mild interventions will likely be ineffective. As a result, intrusive interventions would be required. If such

² Pollard, J., & Nadler, E. (2007) *Review of Technology to Prevent Alcohol Impaired Crashes (TOPIC)*. Volpe National Transportation Center (DOT HS 810 827) – Pages 6-7

interventions are needed, system accuracy must be very high in order to meet consumer acceptance expectations and avoid consumer backlash³.

- If systems are “detuned” to render false positives to an acceptable level, such systems will likely have significantly less effectiveness.
- Unlike alcohol impairment the highest level of intervention for distraction and fatigue interventions will not likely require the cessation of active driving.

The impact of the intervention also highlights the differences between DSM/DBS systems and DADSS. DSM/DBS systems by necessity must allow a certain amount of impaired driving to make an assessment. As a result, for alcohol impairments which could have been identified by direct measurement systems being developed through DADSS and prevented movement of the vehicle, interventions that require cessation of driving will leave the vehicle and driver stranded in or next to the roadway. Since alcohol abuse is most prevalent at late night/early morning hours, there are safety risks associated with this approach. Automatic 911 calls will help but not eliminate this safety risk.

While additional research is necessary, DSM/DBS systems offer promise as complementary, supplemental, or otherwise beneficial measures for reducing distracted, fatigued, and impaired driving. At present, however, they do not offer the same level of assurance as direct measure technologies.”

As a result, we believe that DADSS research should be supported and completed as an agency priority.

Auto Innovators appreciates the opportunity to provide input to NHTSA on this important topic. We look forward to any follow up with the agency to expand on these comments further.

Sincerely,



Scott Schmidt

Vice President, Safety Policy

³ The 1973 NHTSA seat belt interlock requirement was rescinded in 1974 as a result of significant consumer backlash and subsequent Congressional action that not only ordered the rule rescinded but also stipulates that the agency cannot require such systems.