AFB American Foundation for the Blind
Expanding possibilities for people with vision loss

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The Honorable Pete Buttigieg
Secretary, U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20554

Dear Secretary Buttigieg:

The American Foundation for the Blind appreciates the opportunity to respond to the request for comments on the Automated Driving Systems (ADS) Safety Framework. AFB is a national nonprofit working towards a world of no limits for people who are blind or have low vision. Fully autonomous vehicles are widely anticipated to help solve some of the barriers to transportation faced by people who are blind. Therefore, we encourage NHTSA to incorporate a rigorous accessibility framework into any ADS safety framework.

This ANPRM acknowledges that ADS may directly benefit the mobility of people with disabilities. There are more than 7 million people who are blind or have low vision in the US, according to the American Community Survey.[1] Additionally, the Bureau of Transportation Statistics estimates that 25.5 million people in the US have "self-reported travel-limiting disabilities."[2] We believe that many of these people will benefit from the development of fully accessible, fully autonomous vehicles. However, we are concerned that this framework promises benefits of ADS for people with disabilities without proposing a system that ensures their safety. Indeed, the document mentions disability only once – in the section on potential benefits of ADS.[3] This is particularly concerning because many people who cannot currently drive as a result of their visual impairment will be able to travel independently by operating an autonomous vehicle that is fully accessible. These possibilities are contemplated in the AV 3.0 guidance.[4] Therefore, we believe the ADS safety framework must also contemplate where people with disabilities have been excluded from the development of existing safety frameworks and how they should be included as they interact with ADS-equipped vehicles in new ways.

[1] US Census Bureau (2020). Table S1810 Disability Characteristics. 2019 American Community Survey. https://data.census.gov/cedsci/table?q=disability&tid=ACSST1Y2019.S1810&hidePreview=false
[2] Bureau of Transportation Statistics (2021). Travel Patterns of American Adults with Disabilities. https://www.bts.gov/travel-patterns-with-disabilities
[3] "the potential to enhance accessibility (*e.g.,* through allowing personal transportation to people with disabilities or people incapable of driving)," from "Framework for Automated Driving System Safety" ANPRM. December 3, 2020. 85 FR 78058, II(B).
[4] U.S. Department of Transportation (2018). Preparing for the Future of Transportation: Automated Vehicles 3.0. Washington, DC. https://www.transportation.gov/av/3

In most cases, safety principles accommodate both persons with and without disabilities. Yet, there are unique situations that people with disabilities experience that should be explicitly accounted for in safety standards, design, testing, and operation. We encourage NHTSA to design a safety framework that includes people with disabilities in every component of human-vehicle interaction. This includes, but is not limited to, implementing diverse testing for pedestrian safety and understanding that accessibility leads to safety for people with disabilities riding in or operating a vehicle. For example, a 2015 study estimated that the mortality rate of pedestrians who use wheelchairs is 36% higher than for the overall pedestrian population, many crashes occurred when the wheelchair user had the right of way in a crosswalk, and no crash avoidance maneuvers were detected in over 75% of the studied crashes.[5] These data demonstrate that people with disabilities may experience different interactions with vehicles and drivers. Thus, there is a need to incorporate a diverse population in safety testing and design. People with disabilities may have different body types, may use mobility devices or other assistance, and may move through their environment differently than other road users. ADS must anticipate this diversity of appearance, interaction, and movement as a normal part of operation and incorporate disability diversity into the sensing, perception, planning, and control functions.

Moreover, the ADS will benefit people who are not typically considered potential vehicle operators at this time. To the extent that safety is dependent on a user's interaction with the ADS, the ADS must be fully accessible to the full range of potential users. Otherwise, safety will be impacted. Because there are only limited existing standards for the accessibility of vehicles, the opportunity to reimagine the safety framework also offers the opportunity to establish a set of accessibility measures, standards, and designs that contribute to vehicle safety. If ADS are truly to benefit people with disabilities, the safety framework must also include people with disabilities. We provide answers to a selection of the questions asked in the ANPRM.

Question 7. Can you suggest any other core element(s) that NHTSA should consider in developing a safety framework for ADS? Please provide the basis of your suggestion.

We encourage NHTSA to incorporate accessibility as a core safety element. We acknowledge that this proposed framework is limited to the ADS, not the vehicle design, but we believe there are components of the ADS, including identification of and reaction to pedestrians, that must be inclusive of people with disabilities as well as components of the vehicle, such as the human-machine interface, that must be accessible for the ADS to function properly and safety. As an example, any sort of emergency or failure communication produced by the ADS as well as any user input that impacts the planning and control functions must be accessible to blind and low vision riders. There are potentially other use cases that are of even greater importance to the safe operation of the ADS, but without consideration of accessibility as a general metric and the work to develop accessibility safety standards, safety of people with disabilities may be

[5] Kraemer, J.D. & Benton, C.S. (2015). Disparities in road crash mortality among pedestrians using wheelchairs in the USA: results of a capture–recapture analysis. *BMJ Open*. doi: 10.1136/bmjopen-2015-008396

negatively impacted by the ADS whether as passengers, pedestrians, or other road users. Of course, acknowledging the limitations of this ANPRM, we would also encourage NHTSA to develop requirements for the full accessibility of the vehicle as well, since the safety benefits of accessibility are not limited solely to the ADS.[6]

Question 8. At this early point in the development of ADS, how should NHTSA determine whether regulation is actually needed versus theoretically desirable? Can it be done effectively at this early stage and would it yield a safety outcome outweighing the associated risk of delaying or distorting paths of technological development in ways that might result in forgone safety benefits and/or increased costs?

In the case of accessibility, developing standards and regulations that are flexible enough to encourage innovation but directed enough to require a minimum level of accessibility may actually increase investment in innovative research and design that may prove beneficial to people with disabilities in terms of safety and mobility. Because accessibility is not currently a feature of the vehicle safety framework, manufacturers may not be sufficiently motivated or aware of the need to innovate on this element of the vehicle and ADS design. We encourage NHTSA to elevate the role of accessibility and work to develop accessibility standards that both encourage innovation and ensure that ADS is usable by and safe for people with disabilities.

Question 10. Which safety standards would be considered the most effective as improving safety and consumer confidence and should therefore be given priority over other possible standards? What about other administrative mechanisms available to NHTSA?

Accessibility standards have the potential not only to improve safety but also to greatly increase consumer confidence in ADS-equipped vehicles. Having a comparable measure of the accessibility of a particular system is likely to encourage adoption of ADS vehicles by operators with disabilities, reassure pedestrians, cyclists, and other road users who have disabilities, and create a mechanism for comparing systems produced by different companies with a standard accessibility metric. Such benefits are achievable through the development of a standardized and comparable instrument, a requirement for at least a mandatory self-assessment of a vehicle that is written for consumers, and ideally eventual requirements for comprehensive vehicle accessibility and ADS testing on interactions with people with disabilities as part of a complete safety testing mechanism.

[6] For further information, please see: CCD Comments Concerning Agency Information Collection Activities: Automated Vehicle Transparency and Engagement for Safe Testing (TEST) Initiative, Docket Number: DOT-NHTSA-2020-0070 http://c-c-d.org/fichiers/CCD-Transp-TF-Comments-NHTSA-2020-0070-083120.pdf and AV Tenets, https://saferoads.org/wp-content/uploads/2020/11/AV-Tenets-11-24-20-1.pdf

Question 14. What additional research would best support the creation of a safety framework? In what sequence should the additional research be conducted and why? What tools are necessary to perform such research?

We acknowledge that while accessibility standards have been developed in other areas of mobility (e.g. buses and vans, digital applications, etc.), there have been limited efforts to develop a comprehensively accessible ADS. We would encourage NHTSA to partner with other government entities, including the Access Board, FHWA, FTA, the Office of Disability Employment Policy, and others to fund research that addresses how accessibility can be incorporated into a new vehicle safety framework from design to testing to operation. Such research may address safety implications of inputs and outputs from the ADS and perception abilities related to other road users with disabilities. We also encourage NHTSA to identify existing and potential disparities in safety for people with disabilities. For example, only limited research into pedestrian mortality is available, preventing a complete understanding of disparate impacts on pedestrians and cyclists with disabilities. Such research may also reveal further disparities (e.g. in race or geography) that an ADS safety framework must consider.

Conclusion

In enacting the Americans with Disabilities Act, Congress sought to "provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities." As a result, 99% of public buses are equipped with ramps, yet significant barriers to accessible, affordable transportation remain across modes, including access to personal vehicles and ridesharing systems. AFB encourages NHTSA to adopt a rigorous safety framework that fully and comprehensively includes people with disabilities. Such a framework will consider people with disabilities in every role from pedestrian to passenger to operator and the unique safety implications affecting each part of a diverse community.

Thank you for considering these comments. If you have any questions, please reach out to Sarah Malaier at smalaier@afb.org.

Sincerely,

Stephanie Enyart
Chief Public Policy and Research Advisor