

April 1, 2021
James C. Owens
Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Ave. SE, Washington, D.C. 20590

Dear Deputy Administrator Owens:

I am a third-year law student studying regulatory law. I respectfully submit my comment in response to the request from the National Highway Traffic Safety Administration (“NHTSA”) on its Advance Notice of Proposed Rulemaking (“ANPRM”) concerning Automated Driving Systems (“ADS”).¹ My suggestions include pursuing the development of an iterative testing simulation, the adoption of a dual physical and simulation-based test for safety, and more research into the safety for both people of color and disabled riders. A large majority of these suggestions can be achieved under NHTSA’s authority under the Motor Vehicle Safety Act.²

Question 9. How can NHTSA validate standards without ADS being widely available? How will it impact design and remain consistent with NHTSA’s legal obligations?

To validate safety standards for non-commercially available ADS, NHTSA should develop an iterative testing simulation similar to developers. Simulation-based testing will allow a process that is closer to the one employed by the developers, rather than an abstract process that would force developers to shift gears late in the process. In late 2019, NHTSA undertook a literature review of the existing simulation frameworks from the leading ADS developers, which will allow it to develop its own testing software without starting from scratch.³ Developing simulation-based testing also allows NHTSA to become familiar with the process and technology, which will likely gain the trust of the industry and the public. The government is usually seen as “behind the times” with technology and adopting and/or developing a testing simulation will allow NHTSA to be seen as able to keep up with changing tech to adapt to the changing safety needs. Developing technology for testing will allow NHTSA to test the designs as they become available and repeatedly test new situations and test without physical ADS-equipped vehicles and further public trust and safety.

In addition to furthering public trust and safety, each FMVSS must be objective and capable of replication and since simulations can be repeated and are subject to objective measurements, simulation-based testing would meet such criteria.⁴ Simulation-based testing will allow NHTSA to recreate the exact situation for each ADS including environmental conditions, which are difficult to recreate in physical testing. The ability to recreate the testing conditions as well as apply them objectively to all ADS’ will satisfy NHTSA’s legal obligations. Also, since ADS will likely be very expensive upon first release, simulation-based testing is preferable to physically crashing or otherwise incapacitating incredibly expensive machinery since it will be very difficult to replicate.

¹ 85 Fed. Reg. 78058 (Dec. 3, 2020), Docket No. NHTSA-2020-0106.

² 49 U.S.C. § 301 et seq. (2018).

³ NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., REVIEW OF SIMULATION FRAMEWORKS AND STANDARDS RELATED TO DRIVING SCENARIOS, REPORT NO. DOT HS 812 815 (2019).

⁴ 49 U.S.C. § 30111(a) (2018).

Question 5. How can NHTSA best assess whether the manufacturers have adequately demonstrated the extent of the ADS' ability to meet the prioritized elements of safety?

The assessment should include a mix of physical tests (the obstacle course) and the simulation data mentioned previously. If NHTSA does not develop its own testing simulation, the data should be gathered from a third party rather than manufacturer. As noted in the ANPRM, it will be nearly impossible to test every possible situation on a course and terribly unsafe to test unsafe scenarios on an open road. The best solution would be to allow simulation data for these situations that are difficult or dangerous to physically undertake.⁵ Approval for obstacle course testing can be granted with the use of simulation testing data as well to prevent accidents on the testing course. It would be unwise to allow completely untested, unpredictable vehicles onto a course, even if it closed; therefore, preliminary approval via simulation data should be employed to protect those on the course.

The creation of new FMVSS is inadvisable as there is just not enough data to ensure that innovation is not stymied nor are additional safety concerns introduced (both of which NHTSA has stated are concerns).⁶ The creation of new FMVSS at this time could fall outside of NHTSA's authority due to the requirement for the FMVSS to be "objective and practicable."⁷ Without knowing that testing standards are replicable and that the safety standards are practicable for the developers without inadvertently creating additional hazards, it cannot be known that the FMVSS are both objective and practicable and therefore meeting the statutory requirements. To avoid this issue, I recommend that NHTSA use the current FMVSS to assess the ADS' ability to meet safety guidelines. In order to gain NHTSA's approval, developers should demonstrate that their ADS can meet the current FMVSS until standards that meet the statutory requirements can be set.

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

Safety Considerations for the Disabled Community

First, research into considerations for disabled people should be undertaken. One in five Americans have some sort of disability.⁸ Driverless vehicles have the ability to change the world for disabled people, as many cannot drive which leads to a lack of employment and other obstacles.⁹ Disabled people have needs in vehicles that differ from non-disabled people that will likely impact safety and usability. These needs are diverse among the community and must be researched thoroughly. Preparing ADS for deployment for disabled consumers will likely not require additional authority, as design changes by developers will be necessary to keep disabled people safe in driverless vehicles.¹⁰ NHTSA should work with disability rights organizations in order to gain insight on the varied needs of the

⁵ Framework for Automated Driving System Safety, 85 Fed. Reg. 78058, 78071 (proposed Dec 3, 2020) (to be codified at 49 C.F.R. pt. 571).

⁶ *Id.* at 78070.

⁷ 49 U.S.C. § 30111(a) (2018).

⁸ HENRY CLAYPOOL, AMITAI BIN-NUN, JEFFERY GERLACH, THE RUDERMAN WHITE PAPER 10-12 (2017).

⁹ *Id.* at 7.

¹⁰ Paul Herriots, *Autonomous Cars Could Revolutionise Transport for Disabled People – If We Change the Way We Design*, THE CONVERSATION (May 20, 2020), <https://theconversation.com/autonomous-cars-could-revolutionise-transport-for-disabled-people-if-we-change-the-way-we-design-137684>.

disabled community. The following are my recommendations for further research in order to develop a framework to keep disabled people safe on the roads in driverless vehicles:

- Wheelchair accessibility – Wheelchair ramps, door width, lifts, and wheelchair securements will need to be considered.
 - The vehicle must not be able to move with ramps or lifts in motion or deployed. The ramps and lifts must deploy to create level surfaces.
 - Additional research must be done to determine how to handle sensors on wheelchair securements, as the vehicle should not move with an improperly secured wheelchair. However, if no wheelchair is present, the vehicle should be able to register this.
- Communication with disabled passengers – with the advent of ADS, deaf, hard of hearing, and blind passengers are likely to take advantage of this new technology. The system must be able to communicate effectively with these passengers.
 - Research must be undertaken to ensure the safety of the passengers in the case of communication difficulties.
 - Research should also be undertaken to ensure that first responders will be able to communicate effectively through the vehicle to disabled passengers.
- Licensing for disabled people – will disabled people need to obtain a license for a truly driverless vehicle?
 - Nevada already requires those operating ADS-equipped vehicles to have a driver’s license, which is a barrier to disabled people. Research should be undertaken to determine if this is a necessity in truly driverless vehicles.¹¹

University of California, Davis submitted a comment with similar recommendations, and I would like to associate myself with their comment as well.

The best way to undertake the research for the disabled community would be reaching out to the disabled community to gauge their needs. This community knows their needs better than anyone else does and reaching out to advocacy organizations will allow NHTSA to gather large amounts of data related to the needs of disabled communities.

Safety Considerations for Communities of Color

Artificial Intelligence sensors and unanswered questions in law enforcement both pose additional research questions for ADS-equipped vehicles in relation to safety for People of Color. Systemic racism has been pervasive in our country and our automated systems have learned it from us. NHTSA will not need additional authority to research or create guidelines around safety considerations in ADS as the statutory authority defines motor vehicle safety as nonoperational and operational safety equipment.¹² The following will need to be researched before a safety framework can be put in place and developers can deploy vehicles:

¹¹ Holton Westbrook, “Look Ma, No Hands: Providing Automated Vehicle Regulations and Precedents Inclusive of Disabled Individuals,” 19 TEX. TECH. L.J. 385, 388-89 (2018).

¹² 49 U.S.C. § 30102(a)(9) (2018).

- Research into unresolved questions of how law enforcement will treat ADS should be undertaken to minimize risk to the public. Law enforcement officers are unsure of how to police ADS vehicles and this could create many issues for the public.¹³
- Officers need clear answers on their ability to request a vehicle pull to the side of the road (where safe) or the ability to force vehicles to pull over.¹⁴
 - Without clear answers both the public and officers are at risk, as situations are likely to escalate.
 - NHTSA should conduct research to determine what authority law enforcement officers have to force ADS to stop and to obey commands as well as what rights passengers have when there is no driver behind the wheel.
 - This would ordinarily be outside of the scope of NHTSA’s statutory authority, however due to the driverless nature of the vehicles and NHTSA’s prior regulation of vehicle software, it is likely that NHTSA can regulate and investigate in this area.
- Research into racial bias considerations should also be undertaken in building a safety framework.
 - We have well documented evidence that many sensors have difficulty registering darker skin tones or prioritize lighter skin tones.¹⁵
 - NHTSA must ensure that these vehicles do not prioritize safety of one group over another, even accidentally. If these vehicles do not register darker skin tones, they are more likely to harm Black people and people of color.
 - With unresolved issues of law enforcement abilities and passenger rights, racial bias is of utmost concern. Black people in the U.S. are 3.23 times more likely to be killed by an officer during an encounter with police (according to a Harvard study).
 - NHTSA has a duty to prevent deaths by and injuries resulting from both operational and non-operational safety issues. Concerns about how ADS performs in response to law enforcement commands that are unresolved and seemingly not yet considered would be both operational (if the vehicle is in motion and stops suddenly) and non-operational (if the vehicle is stopped and locks the passenger in the vehicle to prevent escape or if the vehicle takes off on the user’s command).

NHTSA will need to work with several groups to resolve these concerns including law enforcement, racial advocacy groups, and the developers of sensor technology to ensure that racial bias is taken into

¹³ Thomas J. Cowper & Bernard H. Levin, *Autonomous Vehicles: How Will They Change Law Enforcement?*, FBI LAW ENFORCEMENT BULLETIN (Feb 13, 2018), <https://leb.fbi.gov/articles/featured-articles/autonomous-vehicles-how-will-they-challenge-law-enforcement>.

¹⁴ Patrick Hurtado, *Implications of Self-Driving Vehicles*, POLICE CHIEF MAGAZINE (2020), <https://www.policechiefmagazine.org/implications-of-self-driving-vehicles>.

¹⁵ Peter Y. Kim, “Where We’re Going, We Don’t Need Drivers: Autonomous Vehicles and AI Chaperone Liability,” 69 CATH. UNIV. L. REV. 341, 358 (2020).

consideration. This research will necessitate work with both law enforcement agencies, advocacy organizations, legal scholars, and likely the Department of Justice.

Conclusion

NHTSA should create or adopt simulation-based testing to validate the safety standards while ADS' remain commercially unavailable. As simulation software allows for easily replicated testing applied to all systems, it will satisfy NHTSA's legal obligations. Simulation-based testing combined with physical obstacle course testing should also be used to assess safety standards achieved by manufacturers. As ADS' must be able to respond to more conditions than regular vehicles, physical testing alone is insufficient and placing these vehicles on open roads during testing will prove to be dangerous. Using simulation-based testing, NHTSA can supplement physical course tests to approve and deploy ADS' to consumers with confidence. Since new FMVSS could cut off innovation or bring unintended safety concerns, the current FMVSS should be used to approve ADS for deployment until more data is available. More research is needed to protect People of Color and disabled people because NHTSA has a duty to prevent accidents and deaths as a result of operational and nonoperational safety. This includes concerns of racially biased A.I. and wheelchair accessibility. It is my sincere hope that NHTSA considers these safety issues and uses its authority to create a more accessible world for all of us.

Sincerely,

A handwritten signature in black ink, appearing to read "Cassidy Crockett-Verba". The signature is fluid and cursive, with a prominent loop at the end.

Cassidy Crockett-Verba