

Docket: NHTSA-2020-0014
NPRM on Occupant Protection for Automated Driving Systems

May 28, 2020

To: National Highway Traffic Safety Administration
From: Safe Ride News Publications

Re: Comments on NHTSA NPRM: Occupant Protection for Automated Driving Systems

As an advocate for child passenger safety for over 35 years, Safe Ride News Publications (SRN) strongly endorses efforts to keep all vehicle occupants safe, focusing particularly on the safety needs of children. It is well understood that ADS technology holds tremendous promise to save lives, but the process toward its safe implementation comes with many complexities and unknowns. Amidst the effort and excitement of this new chapter in motor vehicle safety, it would be tragic to fail to recognize any aspect that could potentially put children in danger. We know NHTSA shares our commitment to child safety and, in the spirit of keeping children top of mind, we thank the agency for the opportunity to comment on this proposed rulemaking.

While NHTSA has not proposed changes to FMVSS 213—the standard that most directly affects occupant protection systems for children—the long-established approach to child passenger safety (CPS) in the U.S. builds upon certain aspects of several other of the 200-series standards. For instance, tenants of CPS include that babies and toddlers ride facing the rear, with their backs facing the direction of traffic, for proper protection. Child restraints (CRs) of all types are (nearly all) add-on devices, and these devices must be placed on seating that faces forward. CRs couple to vehicle seats using either the vehicle seat belt or LATCH. These and other approaches to CPS derive from (and now rely upon) the givens that have been established through various 200-series regulations; as such, the ability to use CRs is interrelated with these FMVSSs. As we move forward, therefore, we must take into account the fact that changes to the requirements of any standard could have unintended consequences for how children safely ride in vehicles. Of course, it is possible that protection systems used for children could evolve right along with new vehicle technology, introducing currently unimagined approaches. However, those new systems would have to be solidly in place *before* dismantling any regulation that facilitates current CPS approaches.

Non-Traditional Seating Configurations

Although NHTSA hasn't proposed changes to allowed seating configurations at this time, the NPRM mentions that research is underway to consider "modifying current standards to account for and include non-traditional configurations." SRN appreciates the careful consideration that NHTSA is giving this important topic. It seems clear that a side effect of ADS will be a creative rethinking of the occupant compartment (for instance, as mentioned in the NPRM, "carriage-style" and "campfire seating"). SRN warns, however, that such changes in seating configuration would create significant challenges for child passengers, since no CR product currently on the market is designed for use on side- or rear-facing seating, and current instructions disallow this.

Children in the Front Seats: Vehicles With ADS

As noted by NHTSA, even without changing the traditional seating configuration, ADS will alter seating options by opening up the possibility that children will be seated in the left-front position. SRN appreciates the statement in this NPRM: "...NHTSA guidance is, and expected to continue, that children under the age of 13 should be properly restrained in rear seating rows."

However, even today, children sometimes do sit in the front-right seat—despite NHTSA guidance (and some state laws). So it is imperative to bring the safety of children riding in the left-front seat to at least to the same level as the right-front seat. It also seems likely that removing a designated seat for a manual operator could make owners of vehicles that have a *center* front seat more inclined to use that seat for children. In fact, we may see a re-emergence of the center-front seat. Today, this position is largely found only in some pickup trucks. But without a true driver's position, there is a real possibility that manufacturers will become motivated to add this seating position to more types of vehicles.

Therefore, SRN comments in favor of NHTSA's proposals to make current regulations that currently affect the right-front seat apply to the left front *and* center of ADS models, as well. We believe seat-specific advanced air bags that shut off or reduce the force when small occupants are present should protect *all* front seat passengers. We also urge NHTSA to require seat-specific telltales for all front seats in order to alert adults when an air bag is or isn't suppressed. To promote clearer awareness of air bag status, SRN further recommends that each telltale be required to be located on the dash in easy-to-see, logical juxtaposition to the seat for which it applies (presuming that changes in front dash designs will easily accommodate this). Also, the out-of-position occupant tests for air bags should be conducted for all front seats.

Given the likelihood children will more likely use the front seat, SRN encourages some additional updates to enhance child safety in the front row of vehicles. First, NHTSA asked for comments on the occupant protection features of the center front seating position (though no proposal has yet been made). SRN feels this seating position should no longer be allowed to be equipped with Type 1 (lap-only) belts, which are far less protective than Type 2 belts. While this is a general recommendation, it is especially important for ADS vehicles because, as NHTSA notes, it will be more likely that children are seated in the front row of these vehicles.

Secondly, with respect to the lockability requirements of FMVSS 208, SRN encourages NHTSA to remove the exception for the driver position (S7.1.1.5a). Like the air bag proposals NHTSA has made, this would bring both front outboard seats into compliance with lockability for proper installation of CRs. (A lockable feature should be part of a lap-shoulder belt requirement for the center seat, as well.)

Children in the Front Seats: Vehicles With Dual-Mode ADS

SRN also agrees with NHTSA that a motion suppression system must be in place to detect a child in the front seat of a dual-mode ADS vehicle. The industry's prior experience with such sensors for air bags would likely ameliorate the transition to this application. However, SRN questions the age of six as the proposed threshold in the NPRM, and asks NHTSA to consider this with further research. While age six may have been determined to be a reasonable cutoff for air-bag suppression, how has it been determined that this age/weight cutoff is also acceptable for children sitting in the front with a dual-mode ADS? SRN notes that, in recent years, a 10-year-old dummy was introduced. Might it be better to use this dummy for setting a threshold instead? At 77.61 pounds, the 10-year-old dummy would prevent far more children from being dangerously situated in front of stowable controls than the 6-year-old, yet should not interfere with small adults and teens being able to operate the vehicle.

Also on the topic of dual-mode ADS, SRN would like to comment on the steering control (and any other feature changes of the interior brought about by ADS). In this NPRM, NHTSA proposes a verbiage change to "steering control" rather than "steering wheel." This slight change in terminology reflects the fact that some future steering controls may not be circular. SRN cautions that any alternative shape (like an air plane yoke) may have harder points and edges, so these should be assessed with an eye to child safety in a crash (including considering a child seated in the center front seat). In general, FMVSS 201 must be reviewed carefully to ensure that that standard continues to properly cover any innovative dashboard-area hardware, acknowledging that a child may be sitting nearby.

School Buses With ADS

NHTSA also asks for comments on requirements for occupant protection in buses, including school buses, with ADS. SRN is unclear about NHTSA's intentions regarding this line of inquiry.

- NHTSA asks about seat belts in the front rows of buses with ADS. Is the expectation that one or more adults (such as school bus monitors) would occupy the front row, requiring Type 2 seat belts? If so, SRN will note that, while it seems outside the purview of NHTSA, we consider establishing requirements for adult supervision to be one of the most important considerations we'll face regarding the safety of child occupants in autonomous vehicles. Therefore, occupant protection formerly provided for an adult driver should be available for a supervisory adult or adults in school buses with ADS. In addition, SRN is generally in favor of lap-shoulder belts in all buses of all sizes, for the various reasons well known by NHTSA.
- Is NHTSA asking whether to apply the compartmentalized approach now used on large school buses to other large buses with ADS? It is SRN's general observation that compartmentalization is an effective occupant protection system only for a certain set of circumstances: for occupants of vehicles of adequate size who are properly seated forward facing and who are of adequate mass and not fragile (for instance, due to special needs) in frontal or rear-impact crashes. Therefore, while adding compartmentalization may provide *extra* protection in some situations, we would not recommend that it *replace* currently required occupant protection methods. Seat belts are needed to provide protection in side-impact crashes and rollover crashes, as well as for smaller and/or more fragile occupants and for the installation of CRs. In addition, SRN observes that

compartmentalization hinges upon tight fore-aft spacing, which might be highly undesirable outside of student transportation settings.

Dual-Directional Vehicles with ADS and Infants

Although it is not mentioned in the NPRM, SRN would like to take this opportunity to comment on the potential for dual-directional vehicles. Our current rear-facing approach to infant protection is enabled by the fact that traditional vehicles are mono-directional, with a front-end that primarily points in the direction of travel. It is conceivable, however, that a dual-directional ADS vehicle could be made in the future (that is, which simply shifts the back to be the front when a different direction is taken, rather than having to reorient the vehicle). Such vehicles would not be appropriate for use by infants and younger toddlers unless a suitable alternative protection approach has been invented that meets their needs in dual-directional travel.

SRN appreciates the opportunity to comment on NHTSA's proposals. While, in these comments, SRN has attempted to carefully consider the potential implications to child passengers of changes to 200-series standards, we are concerned that unforeseen unintended consequences could nonetheless emerge. Therefore, as we move toward the rollout of this new technology, we will appreciate NHTSA's ongoing vigilance in prioritizing the safety of children in all types of vehicles.



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