



Children in Automated Vehicles

The Consortium reviewed all Federal motor vehicle safety standards and found the ones shown here to have aspects that are especially relevant to the safety of child passengers.

Analysis of U.S. Federal Vehicle Safety Standards: Child Passengers and AVs

Occupant Protection: 200 Series

Standard No.	Topic	Aspect(s) related to children	Child safety considerations to bear in mind if standard is targeted for amendment to remove AV barriers
201	Occupant Protection in Interior Impact	Currently only an adult headform is tested	Probably not, but it should be kept under review. For example, if different seating and/or restraint practices in AVs increase the risk of child head contact with the interior, it might be necessary to test interiors with child headforms.
202a	Head Restraints	Children in backless boosters, safety vests, or seat belts are sometimes tall enough to be protected by the vehicles head restraint.	Probably not, but it should be kept under review. Different seating configurations could affect how the head restraint works. Also, current regulation specifies some design and performance element for all vehicle head restraints but requires them only in front seat positions. This may not be adequate in reconfigured vehicles.
206	Door Locks and Door Retention Components	Requirements for door locks, latches, retention systems with the purpose of minimizing occupant ejection.	This standard could include future provisions to ensure an unsupervised child could not get locked inside an AV.
207	Seating Systems	Child restraints are designed to be properly installed given the known characteristics of regulated seating systems. Very interrelated with the next few standards (208-210)	Since NHTSA has redefined "driver" to include a computer operator, the driver seat requirement seems very likely to come under scrutiny for AV exemption. This standard (or related parts 571.3 and 571.10) seem particularly suitable for a potential amendment to consider children in AVs, since it would be a natural place to require seating that is suitable for traditional child restraints to be installed (forward facing).
208	Occupant Crash Protection	Child restraints are designed to be properly installed given the known characteristics of regulated seat belt systems.	Because all car seats can be installed using seat belts, and all boosters rely on lap-shoulder belts to restrain child passengers, any updates to seat-belt related standards should be scrutinized carefully for compatibility with available CR models.



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209	Seat Belt Assemblies	Child restraints are designed to be properly installed given the known characteristics of regulated seat belt systems, including the quality of the components.	Because all car seats can be installed using seat belts, and all boosters rely on lap-shoulder belts to restrain child passengers, any updates to seat-belt related standards should be scrutinized carefully for compatibility with available CR models.
210	Seat Belt Assembly Anchorages	Child restraints are designed to be properly installed given the known characteristics of regulated seat belt systems, including the strength of their attachment to the vehicle.	Because all car seats can be installed using seat belts, and all boosters rely on lap-shoulder belts to restrain child passengers, any updates to seat-belt related standards should be scrutinized carefully for compatibility with available CR models.
213	Child Restraint Systems	Sets safety standards for any child restraint for use by children weighing up to 80 pounds.	While not likely to be seen as a barrier to AVs, this standard must be understood and considered from the perspective of interconnectedness with other standards.
214	Side Impact Protection	Adult occupant protection assessed only	This standard should be kept under review. If different seating and restraint practices in AVs emerge, the situation may influence the compatibility with (and performance of) child restraint system.
217	Bus Emergency Exits and Window Retention and Release		This standard interrelated with FMVSS 220 in that in it that it stipulates the continued functionality of emergency exits under an application of roof force.
220	School Bus Rollover Protection	School-bus regulations always affect children. Covers roof crush/strength and emergency exit integrity	Must ensure that compartmentalization continues to adequately protect school-age children or, if not, that alternative restraints are provided.



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221	School Bus Body Joint Strength	School-bus regulations always affect children.	Must ensure that compartmentalization continues to adequately protect school-age children or, if not, that alternative restraints are provided.
222	School Bus Passenger Seating and Crash Protection	School-bus regulations always affect children. Covers requirements seat belts and LATCH in buses $\leq 10,000$ GVWR and for compartmentalized protection in larger buses.	Must ensure that compartmentalization continues to adequately protect school-age children or, if not, that alternative restraints are provided.
225	Child Restraint Anchorage Systems (LATCH)	Regulates that vehicles be equipped with a universal CR anchorage system that aligns with required anchorage features on car seats (as specified in FMVSS 213)	Vehicle makers could target this standard for amendment as a barrier to AVs if certain types of AVs are identified as not being likely to carry children, and therefore should be exemption. (Experience would indicate that this would likely be short sighted, as children end up riding in all sorts of vehicles.) If vehicles begin to have non-traditional seating configurations, this standard could be amended to require a certain number of forward-facing seats with LATCH in vehicles that are designated for "child ridership."
226	Ejection Mitigation	Currently only an adult headform is tested	Although this standard includes testing using an adult headform, children benefit from it. Children riding in a properly installed child restraint are less likely to be ejected, but any modifications to this standard to reflect AVs should consider the future riding habits of children in those vehicles.