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Dear Administrator,

Thank you for the opportunity to comment on the proposed changes to FMVSS 213. We welcome many of the improvements that they propose.

SafetyBeltSafe U.S.A. (SBS USA) is the national non-profit agency dedicated to promoting child passenger safety. Offering more than forty years of experience in this field, we focus on provision of technically accurate, best-practice information and education to parents, practitioners and specialists in the field of child passenger safety. We maintain a strong, grassroots focus in order to inform our advocacy and regulatory work. This focuses our continued attention on reducing deaths and injuries to children by the consistent, correct use of child restraints.

First, we join other commenters who are asking for:

- a focus on the impact of incorrect use on each component of the proposals;
- the suggestion that the side-impact aspect of the proposal be severed from the other components to allow labeling and some of the other issues to be addressed more quickly, while also recognizing the importance of the side-impact testing initiative.

1. Changes to the vehicle bench for testing child restraints (CRs):

SBS USA welcomes the proposal to amend the standard seat assembly so that it more closely resembles a real-world motor vehicle rear seat. However, we make the following comments:

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Removal of requirement for testing with lap-only belt

While we are supportive of testing with lap-shoulder (Type 2) belts, we also strongly recommend that the requirement for CRs to meet the FMVSS 213 requirements when attached with a lap-only (Type 1) belt is **NOT** deleted. We reject the argument that this requirement is obsolete for the following reasons:

- The average age of passenger vehicles currently in use in the United States was 11.9 years in January 2020; one in four vehicles are older than model year 2005 (IHS Markit, 2020). The sharp slowdown in vehicle sales as a result of the pandemic and subsequent economic difficulties is likely to push the average age of vehicles higher.
- The requirement to install Type 2 (lap-shoulder belts) in all seating positions in passenger vehicles today dates back only to MY 2008. Thus, about half of vehicles currently in use were manufactured **before** lap-shoulder belts were mandated in all rear passenger seating positions. It is therefore premature to state that the passenger vehicle fleet is “predominately” comprised of vehicles with 3-point belts in all rear seating positions.¹
- The age of the vehicle fleet means that large numbers of children currently ride in safety seats installed with lap-only belts. The exposure of children to these installations is likely increased by the fact that lap-only belts are most frequently found in the center rear seating position, specifically in vehicles made between 1989 and 2008: this is both the position recommended to parents as the safest location for the installation of CRs and is also a position required for use by many families with multiple children due to state requirements that children ride in the rear seat.
- 41% of U.S. children live in low-income families. These children are more likely to be transported in older vehicles. These children also are known to be at greater risk of injury in traffic collisions and, therefore, require special consideration for protection under federal regulations.
- Under current regulations, the top tether may be used to supplement the safety belt attachment (or lower-anchor attachment in newer vehicles) in order to meet the strictest performance requirements; however, a lesser performance standard is stipulated that must be met with installation by safety belt alone. This is very important as a large proportion of seats currently in use forward facing are installed without the top tether strap attached. This can be the result of misuse – failure to use the tether system is the most common misuse of safety seats (Bachman et al., 2016) – or because of the absence of tether anchors in the vehicle (pre-1999-2001). Failure to use the top tether is also a key cause of increased risk of injury (Manary et al., 2019).
- Using a shoulder-lap belt during crash testing should mitigate the effect of lack of tether use by providing some additional restraint to the upper part of the seat that is not in place when the seat is installed with a lap-only belt. (In fact, there is a safety seat that specifically requires a different belt path if the seat is not

¹ Historical notes relevant to the current proposal: Staff and supporters of SafetyBeltSafe U.S.A. have been engaged in the development of child passenger safety improvements since the 1970's. Until 1981, crash-testing of safety restraints for children was not required; it took grassroots efforts to attain that. Tether straps were part of safety seats from the 1970's but despite adoption of requirements for tethers in Canada in 1980, were not required in the U.S. until 1989-2001. Fortunately, U.S. vehicles often had predrilled holes with or without weld nuts by the late 1980's due to sales of vehicles in Canada. Early work in the U.S. entailed teaching parents to drill holes in metal to accept the metal attachment points that came with the safety seats themselves. Rear-seat shoulder-lap belts were not required until 1989 and then, only on outboard locations, despite acceptance in 1988 of the SBS USA federal petition for shoulder-lap belts in all rear locations; to achieve this for the center took 20 years more with Congressional action required. Long lead times mean that with some vehicles in use for many decades and many families not able financially to acquire vehicles with the latest safety features, changes in testing need to consider the current impact of these historical factors.

tethered and a shoulder-lap belt is available.) This creates a testing scenario that does not reflect the real-world installation scenario of many children who are riding in untethered seats secured with lap-only belts.

- Comparisons with Canada are a false equivalence. Use of the tether is mandatory under both state and provincial law leading to significantly higher use rates and therefore significantly fewer children at risk of riding in restraints restrained by lap-belt only. The average age of the vehicle fleet is also significantly younger at 9.7 years (Automobile Industries Association of Canada, 2018).
- There is a risk that if child restraints are not tested with lap-only belts, manufacturers might restrict the use of their products to restraint systems that they are tested with (lap/shoulder belts and lower anchors). This would be extremely problematic for families transporting children in vehicles with lap-only belts.
- For these reasons, we believe that it is premature to remove the requirement for testing with lap-only belt. We strongly recommend that lap-only belt tests continue to be required alongside lap-shoulder belt tests **unless** it can be firmly established that lap-shoulder and lap-only belt installations do not perform significantly differently, particularly without a tether attached.
- We are unable to quantify the costs of this suggestion but believe this is important to ensure equal protection for the thousands of children who will continue to ride in older vehicles for years to come. Perhaps, for seats that meet the stricter performance standard with lap-only belt, a subsequent test with the shoulder-lap belt might be omitted to reduce costs.

The denial of a floor for the vehicle bench

While we note the reasoning behind the denial of adding a floor for the test vehicle bench, and especially recognize the value of standardization as one factor in increasing correct use of child restraints, we recommend that this issue be reconsidered. We raise the following points:

- Use of a load leg reduces the rotation of rear-facing seats and therefore reduces crash force on the occupant. Tests have shown a reduction of average head-injury risk of 46% through use of a load leg, which thus provides “a clear crash-protection benefit” (Thomas & Bartlett, 2020). In addition, some seats have load legs that can be used forward facing, again reducing rotation in frontal crashes, usually the most violent and deadly.
- Load legs have not been found to increase difficulty of installation: all 11 seats using them were rated ‘Very Good’ or ‘Excellent’ for ease-of-use by Consumers Union (Thomas & Bartlett, 2020).
- For these reasons, load legs are a promising technology in improving safety for rear-facing children and as such, should be encouraged. However, without a test floor, this aspect of safety seat design cannot be tested officially.
- While the issue of incompatibility between safety seat design and vehicle interiors is very important, the number of vehicle models that are incompatible with load leg use has not been quantified. We recommend that at the very least before making this decision, NHTSA screen the vehicle manufacturers’ inventory to see how many fit into this category and compare this figure with the rate of incompatibility created by other recent safety innovations such as inflatable safety belts, now discontinued, and new head restraint designs.

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- If this request were to be granted, SBS USA suggests that seats with load legs be tested with and without the leg in place ensuring that seats at least meet the standard without the load leg and exceed it when the leg is used (much as is currently done with the top tether). If this were done, it becomes a choice point for parents: do they seek a seat with a load leg or not? This potentially broadens the availability of this promising component of safety seat design.

Lack of Front Seat Structure

SBS USA welcomes the initiative to amend the standard seat assembly so that it more closely resembles a real-world motor vehicle rear seat. One important area which the proposed rulemaking does not address is the lack of a front seat structure. The proposed rule does, in fact, refer to this as a cause of unrepresentative kinematics during crash testing but cites it as a reason to downplay the significance of poor performance (Federal Register, 2020, p.69408). In fact, there is evidence that contact with the front seat structure is a significant cause of injury to children in real-world crashes (Bohman et al., 2011; Jakobsson et al., 2011; NHTSA, 2020). SBS USA suggests that the addition of a front seat structure to crash testing protocols has the potential to significantly increase fidelity with real-world kinematics and thus to improve child passenger safety. While we do not suggest a delay to the current process, we ask that consideration be given to this possibility in future rulemaking.

2. Raising the minimum weight recommendations for forward-facing and for booster use:

This is a very positive step forward. Already most boosters start at 40 lbs., some having changed in anticipation of this regulatory improvement. This recognises the changes in the child restraint market, a market which now offers many options to harness children weighing more than 30-40 lbs. It is also an important change, given that rising obesity rates mean that an increasing number of children are reaching these weight thresholds at younger ages.

In addition, we welcome an increase in the lower forward-facing weight proposed for safety seats with internal harnesses. We have noted that most manufacturers have supported keeping children facing rear until at least age 2 and included this in their instructions; however, for what seem competitive reasons, the same manufacturers list 22 lbs. as the initial weight for use forward facing. Making this change has the best interests of children at its heart.

However, we also would like to call attention to the following issues surrounding public messaging of these changes:

- Currently the focus of much education on booster use is children 4-7 years old, despite the fact that research has shown for twenty years that children require boosters until age 10-12 (Reed and Klinich, 2016; Anderson et al., 2017). SBS USA data on more than 12,000 children show that at age 10, barely half of children fit in shoulder-lap belts correctly (Tombrello, 2001; Tombrello, 2019). Moreover, data on hip bone development show that not until age 10 does this area of physical development begin to provide some protection: before this stage, children cannot keep the lap belt on the upper thighs or on the hip bones without the re-positioning of a booster. It is critical that the government and industry adopt communications and designs that emphasize that boosters are for “big kids” through advocacy for changes in legislation and public education.
- Both CR labelling and public messaging around the increase of the minimum forward-facing weight limit should be careful not to conflict with either best-practice recommendations or state laws that stipulate required periods for children to ride rear facing. 26.5 lbs. is rarely the correct weight for children to ride forward facing by these metrics.

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3. Changing language for products for use on school buses:

SBS USA supports changes that would increase the products available to improve safe transport in school buses, especially for younger children. The products should be labeled **clearly** for use on school buses only, given the difference in the kinds of vehicle seats in passenger cars and school buses.

We note that now that school bus manufacturers have designed adjustable 3-point belts for school buses used in California, there is a greater prospect of success for advocacy that other states or even smaller government districts might adopt similar legislation to improve protection over no belts at all or lap belts.

4. Labels and registration of CRs:

Improving labelling is key to meeting the challenges of promoting correct use and tackling misuse of safety seats for children. Efforts should include making sure that the labels holding the manufacturing date and model information are based on best-practice recommendations and are designed to last legibly.

We strongly support grouping information on usage, including weight range, by rear-facing, forward-facing, and booster modes. Our experience in the field demonstrates that this is often a source of confusion for parents and caregivers. Frequently occurring examples include parents confusing the top weight rating for booster use with the harness weight rating and parents turning a child forward facing at 22 lbs. as they mistakenly believe that the label information **requires** this rather than allowing the child to rear face to the higher weight limit. Multi-function seats already risk significant misuse because of the changes in seat configuration parents must make; at least if the information is grouped by function, there is a lower chance of misunderstanding.

We also strongly support removing standard design requirements for labelling and registration cards and hope that manufacturers use this flexibility to research designs, wording, and pictograms that best promote correct use in a wide range of users. This is an excellent opportunity to focus on best practice messaging in the design of instructional materials (see comment below on height/weight limits). Recognising that families often use seats from several manufacturers, we recommend that NHTSA encourage an **industry-wide approach** to redesign of these materials to ensure consistency of public messaging and to guard against conflicting design protocols being established by different manufacturers.

Increasing rates of registration of child restraints from the current level of one in four is very important. New ideas to promote compliance are needed from manufacturers, retailers, and advocates. SBS USA covers this issue in our community education and also requires that the completed registration cards of seats we distribute are given to us and thus, we take responsibility for their filing. A focused campaign pointing out the benefits and perhaps incorporating a 'carrot,' such as extended warranty, already offered by some manufacturers, might be beneficial. Reassuring purchasers that the information collected through product registration will be used only for the purposes of communicating safety recall information will remain important. The use of newer technologies to allow easy online registration, such as QR codes, would be very helpful.

5 Comments on CPS issues arising from research findings:

Inflatable boosters; shield-only child restraints; fake and counterfeit products

- We have limited experience with inflatable boosters, and it was not very positive: we found that they led to

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poor belt fit and poor positioning of the child, including children slipping off the seat in normal driving. We note that inflatable seats cannot be sold in Canada. It does seem that replication of the Canadian research would be helpful to ascertain the effectiveness of these products.

- We have no current experience with shield seats. Noting that there were some effective shield seats in the past, the availability of rear- and forward-facing restraints with internal harnesses rated to higher weights now seems to obviate the need for these products. Any concerns about specific models should be examined thoroughly through crash testing.
- Of much greater concern to us than these issues, however, is the increasing prevalence of fake and counterfeit products in the U.S. market. Until recently in our forty-year history, we had only come across one counterfeit product in the Los Angeles market. However, in recent years we have reports of fake and counterfeit child restraints at community events on a regular basis and have learned of child injury due to sale of a legal product for an incorrect use with children. Typically, these have been bought from 'mainstream' websites, such as Amazon and Walmart, which have allowed retailers, usually based overseas, space to offer unsafe items that do not meet federal standards. This is a significant and growing problem which requires a federal response.

Use of height/weight limits:

SBS USA notes that the University of Michigan Transportation Research Institute researchers have found a discontinuity between weight limits and height limits in rear-facing safety seats so that children typically do not "fit" to upper weight limits because they are officially too long (Manary et al., 2015). There is a great deal of variation in body proportions among children, and tying height and weight recommendations too tightly may lead to limits that require children to move to forward-facing seats unnecessarily early.

Instructional materials, especially graphics, that focus on the **relevance of height information for fit** would be our strong preference e.g. emphasizing the importance of the child's head being at least one inch lower than the top of the shell rear facing; the shoulders of the forward-facing child being at or below the top harness slots; or the tops of the child's ears being no higher than the seat back forward-facing. Errors in all of these areas are seen frequently when parents come for assistance or usage surveys are conducted.

We therefore strongly recommend that NHTSA reconsider the petition of Evenflo and Safe Ride News to delete the requirement to use height as a criterion for use. Overall child height is not a useful measure in child passenger safety, for several reasons:

- Parents typically do not know the heights of their children. This is not a regularly obtained measurement, and our experience at community events is that it is rarely known with any accuracy.
- Height gives little useful information about whether or not a child will fit in a specific child restraint. Body proportions, not height, are the most useful guide to good fit.
- The ongoing reliance on height within CPS has been very unhelpful: for example, unsafe recommendations focused on 4' 9" persist years after this was shown not to be a useful benchmark for determining belt fit. Research into booster fit conducted by SBS USA showed that of those children who fit the shoulder-lap belt properly, 5% were under 4'9"; while 27% of those who did not yet fit the shoulder-lap belt were 4'9" or more (unpublished data, see Appendix). A subsequent research study showed similar calibrations, especially in 'family vehicles' such as vans (Morse et al., 2017).

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The proposed deregulation of label design offers an opportunity for significant improvement in the design of educational components on child restraints by developing intuitive, clear, pictorial messages. Messaging on overall height is a distraction from this aim and is confusing to users. Instead, labels should be designed to communicate key elements of correct use and fit, such as top of head 1" lower than the shell.

With the development of multi-functional seats, the challenges to correct use have grown. There are many examples on the market of good design that fosters correct use intuitively; yet we still see incorrect use at the 90% level. Given the huge imbalance between number of users and available child passenger safety resources, enabling users to achieve correct use through seat design features is vital. There is no prospect that every family will have even a single safety seat checkup with a Child Passenger Safety Technician; however, children go through at least 4 major transitions in their first 12 years. All proposed change should be assessed in relation to this goal.

Additional challenges

Tackling misuse:

The Notice of Proposed Rulemaking rightly identifies the misuse rate of CRs as a critical issue in improving protection for child passengers.² SBS USA endorses this view. It is vital that technically accurate information is presented to users; however, unfortunately, the majority of images of restrained children circulating contain misuse. This includes a majority of images in the mass media (many of which feature overseas seats that do not meet FMVSS 213), and the issue is seen even in photographs and drawings on the NHTSA Website and in other CPS resources. Given the power of 'social norms' – the concept that people typically do what they see people around them doing (Bruce et al., 2011) – it is very important that all materials, including visuals, are screened for technical accuracy. SBS USA offers a review and screening service to media and CPS organizations to assist with this priority.

Side-impact testing protocol:

Side-impact crashes are a significant cause of injury to children. We urge NHTSA to finalize standards for near- and far-side side-impact testing of child restraints as soon as possible.

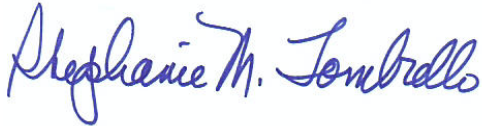
In summary:

- SBS USA welcomes the addition of crash testing with lap-shoulder belts but considers that it is premature to end testing with lap-only belts which should, instead, continue in parallel, especially in the misuse test for seats not attached with their tether straps.
- Reconsider the denial of a floor for the vehicle bench in order to encourage the development of a promising new technology.
- Address as a matter of urgency the problem of fake and counterfeit CRs entering the U.S. market.
- Reconsider the benefits of removing height information as the basis for guidance on appropriate seat choices, and instead tackle widespread misuse by emphasizing messages of appropriate fit.

² "These effectiveness estimates would be further enhanced if the misuse rate of CRSs is reduced." Federal Register, 2020, p.69404.

- In the longer term, evaluate the feasibility and benefits of adding a front seat structure to crash test rigs to improve fidelity with real-world kinematics.
- Introduce side-impact testing of child restraints.

Thank you again for the opportunity to comment on this proposed rulemaking. We look forward to continuing to engage with you on these important issues.



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APPENDIX

Raw data from SafetyBeltSafe U.S.A. 5-Step Test Events

BELT FIT				
	Pass 5ST	Fail 5ST	% passing	% failing
Kids under 4'9" (57")	32	673	5%	95%
Kids 4'9" and above	80	30	73%	27%
	112	703		

