2008 and 17 combined years of State data from Kansas, Washington and Nebraska) to estimate the effect of early graduation from CRSs with an internal harness (car safety seats) to booster seats. NHTSA found that among 3- and 4-year-olds, there was as much as a 27 percent increased risk in non-incapacitating to fatal injury when restrained in booster seats compared to car safety seats. The analysis indicated that this effect may be more pronounced for children 3 years old and younger than for older children. These data indicate a need to keep children in CRSs with internal harnesses (car safety seats) until after the child turns 4 years old.[92] NHTSA estimates this change could save 1.2 to 4 lives and prevent 1.6 to 5.2 moderate to serious injuries. In addition, NHTSA's proposed side impact test for CRSs would only apply to child restraints recommended for children weighing less than 18.2 kg (40 lb). Keeping children in car safety seats longer (until at least a weight of 18.2 kg (40 lb)) would enhance their protection in side impacts as well.

2. Labeling of Use Information

The Agency proposes deleting a requirement in S5.5.2(g)(1)(i) that the use information required by S5.5.2(f) must be in a specific warning label. The use information would still be on the CRS in a visible location, but would not have to be part of the ''warning label'' statements. NHTSA tentatively concludes that if S5.5.2(f) is amended as proposed in this NPRM, the use information that S5.5.2(f) provides will be clearer to consumers, and there would not be a need to highlight the information on the specific warning label at issue.

3. Deleting S5.5.2(k)(2)

This NPRM proposes deleting the labeling requirement of S5.5.2(k)(2), as S5.5.2(k)(2) would duplicate the information of S5.5.2(f) if the latter were amended as described above. Both provisions would instruct consumers to use the rear-facing CRS with children weighing under a specified weight limit.

4. Other Requests of Evenflo and Safe Ride News Petition

Evenflo and Safe Ride News (SRN) request that NHTSA amend S5.5.2(k)(2) to reference a turnaround age (of 2 years old). The petitioners refer to the age of 2 based on a then-American Academy of Pediatrics (AAP) recommendation that children use rear-facing CRSs up to at least age 2 or until they reach the highest weight or height of the particular CRS they are using.[93]

NHTSA is denying this request. As explained above, the Agency believes that the label specified by S5.5.2(k)(2) is no longer necessary given the labeling changes proposed in this NPRM, and has proposed deleting that statement. Instead, NHTSA is proposing that manufacturers include statements, or a combination of statements and pictograms, specifying the manufacturer's recommendations for the mass and height ranges of children who can safely occupy the system in each applicable mode (*i.e.,* rear-facing, forward-facing, or booster), subject to NHTSA's amended minimum weight recommendations. NHTSA believes that the proposed change addresses the concerns of Evenflo and SRN's relating to caregiver confusion on the wording of the label, as the requirement to parse the height and weight ranges *by mode* would result in clearer instructions on when to turn a child forward-facing, so that children are not turned forward-facing sooner than recommended.

In addition, the proposed labeling changes align with NHTSA's recommendation that children under age 1 should always ride in a rear-facing car seat, and children 1–3 years old ride rear-facing as long as possible, until they reach the manufacturer-recommended upper height or weight limit for riding rear-facing in the CRS. As discussed above, rear-facing CRSs address the risk of head and spinal cord injury for infants and toddlers, and the longer that these children are transported rear-facing, the longer they can take advantage of the posterior torso, neck, head, and pelvis support that a rear-facing CRS provides.

However, since children of the same age vary by size, NHTSA declines to refer to a hard age on the CRS label. CRSs are made to protect the child occupant based on the management of crash forces based on the child's height and weight, not his or her age. NHTSA's recommendations aim to provide general guidance to the public on what CRSs are appropriate to use during specific child age ranges, as an age-based recommendation is easier for consumers to remember than a weight-based one. Raising the minimum weight for forward-facing CRSs to children that weigh a minimum of 12 kg (26.5 lb), while also including the maximum weight and height for each mode on the label, aligns with NHTSA's recommendations by ensuring children are almost always kept in rear-facing seats until they are at least age 1, while also making clear that children over age 1 who are below the maximum weight and height for a seat's rear facing mode can remain rear-facing. NHTSA continues to recommend that children remain in a rear-facing car seat until he or she reaches the maximum height or weight limit allowed by the CRS manufacturer.

NHTSA believes that it is also important to note that the AAP has since updated their 2011 recommendation on car seat use by removing the specific age 2 milestone.[94] AAP's 2018 best practice recommendation is that, ''All infants and toddlers should ride in a rear-facing CRS as long as possible, until they reach the highest weight or height allowed by their CRS's manufacturer.'' AAP's 2018 recommendation is aligned with NHTSA's recommendation. Accordingly, the Agency believes that, for the CRS label, specifying the appropriate child weight and height ranges is more accurate to identify the child occupant for whom the CRS is designed to protect than specifying an age.

NHTSA is also denying the petitioners' request to delete a requirement that the use information include the heights of the children who can occupy the system safely. The petitioners request that NHTSA delete this requirement because they believe ''overall child height is not the most useful measure.'' The petitioners suggest that consumers be instead directed to ''follow height requirements described in the owner's manual, up to a maximum of ____ inches (____ cm).'' The petitioners believe that the caregiver can determine whether his or her child's height is within the maximum for the seat and can be alerted to important information on height by the CRS owner's manual.

NHTSA denies this request. The Agency does not believe that the caregiver should be referred to the CRS owner's manual for information on the height limits for a child to use the restraint safely, because many consumers do not consult the manual.[95]

[92] A 50th percentile 48-month-old weighs 16.1 kg (35.5 lb).

[93] AAP Updates Recommendation on Car Seats (March 21, 2011), *available at https://web.archive.org/web/20170824075402/https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/aap-updates-recommendation-on-car-seats.aspx.*

[94] Benjamin D. Hoffman, M.D., FAAP, New child passenger safety seat guidance advises kids to rise rear-facing as long as possible; drops age criterion (Aug. 30, 2018), *https://www.aappublications.org/news/2018/08/30/passengersafety083018.*

[95] Findings from NCRUSS (DOT HS 811 679, *https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812142*) indicate that only 66 percent of caregivers consulted the user's manual when installing a child restraint. There was no

The Agency believes that height information should be permanently attached to the CRS where it is readily available and easily accessible.

IX. Streamlining NHTSA's Use of ATDs in Compliance Tests To Reflect CRS Use Today

a. Introduction

To simplify and to make more evaluative NHTSA's compliance testing of CRSs, this NPRM proposes to streamline how the Agency uses ATDs (test dummies) to assess CRS performance. Many of these changes would make the Agency's use of the ATDs more reflective of how CRSs are used today. The proposed changes are discussed below.

By way of background, child restraint systems must meet FMVSS No. 213's performance requirements when dynamically tested with test dummies that represent children of various ages. The current dummies used in compliance testing are the newborn infant, the CRABI–12MO, HIII–3YO, HIII–6YO or the H2–6YO, and the HIII–10-year-old child dummy.

NHTSA selects which test dummy to use based in part on the height and weight of the children for whom the manufacturer recommends for the child restraint (see S7 of FMVSS No. 213). To illustrate, Table 19 below shows which dummies NHTSA uses to test child restraints based on the height and weight recommendations established for the restraint by the manufacturer. If a child restraint is recommended for a range of children whose weight overlaps, in whole or in part, two or more of the weight ranges in the table, the restraint is subject to testing with the dummies specified for each of those ranges. Thus, for example, if a child restraint is recommended for children having weights from 10 kg to 22.7 kg (22—50 lb), it would be subject to testing with the CRABI–12MO, the HIII–3YO, and the HIII–6YO or H2–6YO dummies.

TABLE 19—CURRENT USE OF DUMMIES BASED ON MANUFACTURER'S WEIGHT RECOMMENDATION

[571.213, S7]

CRS recommended for use by children of these weights—	Are compliance tested by NHTSA with these ATDs (subparts refer to 49 CFR part 572)
Weight (W) ≤5 kg (11 lb), Height (H) ≤650 mm (25.5 inches)	Newborn (subpart K).
Weight 5 kg (11 lb) <W ≤10 kg (22 lb), Height 650 mm (25.5 inches) <H ≤850 mm (33.5 inches).	Newborn (subpart K), CRABI–12MO (subpart R).
Weight 10 kg (22 lb) <W ≤18.2 kg (40 lb), Height 850 mm (33.5 inches) <H ≤1100 mm (43.3 inches).	CRABI–12MO (subpart R), HIII–3YO (subpart P).
Weight 18kg (40 lb) <W ≤22.7 kg (50 lb), Height 1100 mm (43.3 inches) <H ≤1250 mm (49.2 inches).	HIII–6YO (subpart N) or H2–6YO (subpart I) (manufacturer's option).
Weight 22.7 kg (50 lb) <W ≤30 kg (65 lb), Height 1100 mm (43.3 inches) <H ≤1250 mm (49.2 inches).	HIII–6YO (subpart N) or H2–6YO (subpart I) (manufacturer's option), and weighted HIII–6YO (subpart S).
Weight greater than 30 kg (65 lb), Height greater than 1250 mm (49.2 inches).	HIII–10YO (subpart T).*

* No HIC measured with HIII–10YO.

(**Note:** CRSs with internal harnesses that weigh more than 30 kg (65 lb) with an ATD are not tested with that ATD on the child restraint anchorage system of the standard seat assembly.)

b. Testing CRSs for Children Weighing 10–13.6 kg (22–30 lb)

Currently under FMVSS No. 213, CRSs labeled for use by children in the weight range 10 kg to 18.2 kg (22 lb to 40 lb) are subject to testing with the CRABI 12MO and the HIII–3YO dummy (S7.1.2(c)). This NPRM proposes to amend these specifications so that child restraints would not be subject to testing with the 3YO dummy unless the recommended weights of children for whom the CRS is marketed is 13.6 to 18.2 kg (30—40 lb). NHTSA proposes this change because, as a practical matter, 3YOs are too large to fit in a CRS recommended for children in the lower end of the 10 to 18.2 kg (22—40 lb) weight range. The intent of this change is to reduce unnecessary test burdens. NHTSA proposes amending S7.1.2(c) by splitting the 10 to 18.2 kg (22—40 lb) weight range into a 10 to 13.6 kg (22—30 lb) and a 13.6 to 18.2 kg (30—40 lb) weight range. CRSs recommended for children in the former range (10 to 13.6 kg (22—30 lb)) would be tested with the CRABI 12MO, while CRSs for children in the latter (13.6 to 18.2 kg (30—40 lb)) would be tested with the HIII–3YO.[96]

NHTSA is particularly mindful of the effect the amendment would have on infant carriers.[97] The current CRS market has infant carrier models recommended for children weighing up to 10 kg (22 lb), 13.6 kg (30 lb), 15.8 kg (35 lb), and 18.2 kg (40 lb) and with child height limits ranging from 736 mm (29 inches) to 889 mm (35 inches). Absent the amendment, these infant carriers would be subject to testing with the HIII–3YO (35 lb) dummy rear-facing. However, the HIII–3YO dummy (stature of 945 mm (37.2 inches)) does not fit easily in infant carriers. Current infant carriers would also likely fail FMVSS No. 213's head containment requirement (S5.1.3.2) with the HIII–3YO without substantial redesign that would add weight, bulk and cost to the CRS.

Given the purpose of infant carriers, there does not seem be a safety need warranting such redesign. Current infant carriers are convenient to use with infants and are popular with parents. The availability and ease-of-use of current carriers may result in more infants riding rear-facing than if the carriers were heavier, bulkier and more expensive.

NHTSA expects that the proposed amendment would not necessitate any design changes in infant carriers. Currently there are a number of infant carriers that are marketed for children weighing up to 15.8 kg (35 lb) or 18.2 kg (40 lb). The Agency expects that manufacturers will reduce the maximum weight recommendations such that the restraints would be

specific detail on what topic in the manual was reviewed.

[96] As a practical matter, most CRS would be subject to testing using at least two ATDs since most CRS are sold for children of weights spanning more than one weight category. A CRS that is recommended for a weight range that overlaps, in whole or in part, two or more of the weight ranges is subject to testing with the ATDs specified for each of those ranges (571.213, S7).

[97] An infant carrier is a rear-facing CRS designed to be readily used in and outside of the vehicle. It has a carrying handle that enables caregivers to tote the CRS plus child outside of the vehicle.

marketed for children up to 13.6 kg (30 lb). Because NHTSA does not believe that the infant carriers are significantly used by children weighing more than 13.6 kg (30 lb),[98] the proposed amendment is not likely to engender an unfulfilled need for the carriers by over-13.6 kg (30 lb) children. On the other hand, if a manufacturer would like to continue marketing its infant carrier for children weighing more than 13.6 kg (30 lb), it may do so, provided it can certify that the CRS can meet the performance requirements of FMVSS No. 213 when tested with the HIII–3YO test dummy. Comments are requested on this issue.

This NPRM also proposes to amend S7.1.2's height specifications for testing with the ATDs so that height categories are consistent with the corresponding weight limits. This is to simplify the standard. This proposal is explained further below.

Currently S7.1.2(b) specifies that the newborn and CRABI–12MO dummies are used to test CRSs recommended for children in a height range from 650 mm to 850 mm. The average height of a 12MO child is 750 mm (29.5 inches), not 850 mm. NHTSA proposes to change the upper end of that height range to 750 mm (29.5 inches), to correspond to the average height of a 12MO child (750 mm (29.5 inches)) (which also is the height of the CRABI–12MO ATD). The revised height range would be part of a new S7.1.1(b).

Similarly, as discussed earlier, proposed S7.1.1(c) specifies that the CRABI–12MO dummy would be used to test a CRS recommended for children weighing 10 to 13.6 kg (22 to 30 lb). A child weighing 13.6 kg (30 lb) on average is about 870 mm (34.3 inches) tall. (The 95th percentile 18MO child weighs about 13.6 (30 lb) and has a corresponding height of about 870 mm (34.3 inches).) Therefore, to make the height specifications for testing with ATDs consistent with the corresponding weight limits, this NPRM proposes that CRSs would be tested with the CRABI–12MO if they are recommended for children in the weight range of up to 13.6 kg (30 lb) or in the height range of up 870 mm (34.3 inches).

c. Testing CRSs for Children Weighing 13.6–18.2 kg (30–40 lb)

This NPRM proposes amendments affecting CRSs labeled for use by children of weights from 13.6 kg to 18.2 kg (30–40 lb). Currently, these CRSs are subject to testing with the CRABI–12MO and the HIII–3YO (S7.1.2(c)).[99] NHTSA has tentatively determined that the CRSs do not need to be tested with the CRABI–12MO, since the 10 kg (22 lb) dummy is not representative of 13.6 to 18.2 kg (30–40 lb) children for whom the restraint is intended.[100] A new S7.1.1(d) would apply to these CRSs.

The new S7.1.1(d) would specify that NHTSA would test CRSs recommended for children in the weight range of 13.6 kg to 18.2 kg (30—40 lb) with the HIII–3YO dummy. Also, to make the height specification for testing with the ATD consistent with the corresponding weight limit proposed in S7.1.1(c), NHTSA proposes to use the HIII–3YO dummy to test CRSs recommended for children in the height range of 870 mm to 1,100 mm (34.3 to 43.3 inches), instead of 850 mm to 1,100 mm (33.5 to 43.3 inches).

d. Testing CRSs for Children Weighing 18–29.5 kg (40–65 lb)

FMVSS No. 213 currently provides child restraint manufacturers the option of having NHTSA use the HIII–6YO or the H2–6YO in compliance tests of CRSs for children weighing 18 to 29.5 kg (40 to 65 lb) (S7.1.3). This NPRM proposes to test these CRSs only with the HIII–6YO. The HIII–6YO is preferred as it is a more biofidelic test device than the H2–6YO dummy, and more and more CRS manufacturers are using the HIII rather than the H2–6YO dummy. Further, it is becoming increasingly difficult to obtain replacement parts for the older H2–6YO dummy.

NHTSA adopted the HIII–6YO in FMVSS No. 213 in response to a mandate in the Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act[101] that directed NHTSA to consider a number of rulemakings to improve CRS safety, including one on incorporating use of the HIII–6YO in FMVSS No. 213 compliance tests. NHTSA incorporated the ATD into FMVSS No. 213 after determining in its rulemaking that the dummy is ''considerably more biofidelic'' than the H2–6YO dummy, and with enhanced capability to measure an array of impact responses never before measured by a child test dummy, such as neck moments and chest deflection.[102]

Problems arose after adoption of the HIII–6YO in FMVSS No. 213, however. The HIII–6YO had been successfully used in low-risk deployment and static suppression compliance tests of advanced air bags under FMVSS No. 208, ''Occupant crash protection.'' However, in the FMVSS No. 213 test environment where no air bag is present, the HIII–6YO exhibited unrealistic chin-to-chest and head-to-knee contact in tests of booster seats, which resulted in inordinately high, often times failing HIC values recorded by the dummy.

NHTSA responded by adopting a provision permitting the optional use of the H2–6YO dummy in place of the HIII–6YO. NHTSA originally intended the matter as an interim measure to provide manufacturers time to adjust to the new ATD, and later, on extension, to provide NHTSA time to develop seating procedures for the dummy.[103] However, in 2011, NHTSA issued a final rule to permit optional use of the H2–6YO ''until further notice.'' The Agency announced that, while the HIII–6YO is an advanced test dummy with state-of-the-art capabilities and is used by some CRS manufacturers in certifying restraints, NHTSA wanted to complete ongoing efforts to improve the HIII–6YO dummy to make it more useful as an FMVSS No. 213 test device before testing child restraints solely with the ATD.[104]

Since 2011, NHTSA has pursued long-term improvements to the biofidelity of the HIII–6YO. Part of NHTSA's work involves development of a Large Omnidirectional Child (LODC) dummy using the HIII–10YO dummy, formulating LODC concepts and mechanisms that can eventually be adapted to the design of a 6YO prototype.[105]

[98] Feedback from child passenger safety technicians involved in child restraint system checks indicates that infants usually outgrow infant carriers because of reaching the height limit of the carrier rather than the weight limit. Further, as an infant reaches a 13.6 kg (30 lb) weight, the weight of the infant and the infant carrier together becomes too heavy for a caregiver to pull out of the vehicle and carry around by a handle. Therefore, parents often switch to a convertible or all-in one CRS as the child weight nears 13.6 kg (30 lb).

[99] The CRABI–12MO is not used to test a booster seat (S7.1.2(c)).

[100] However, if such a CRS were also labeled for use by children weighing less than 13.6 kg (30 lb), then the CRS would be subject to testing with the CRABI–12MO.

[101] November 1, 2000, Public Law 106–414, 114 Stat. 1800.

[102] Final rule, 68 FR 37620, June 24, 2003.

[103] 70 FR 44520, July 28, 2005; 73 FR 45355, August 5, 2008. The Hybrid III ATD was called the ''HIII–6C''and the Hybrid II was called the ''H2–6C'' in these documents.

[104] 76 FR 55825, September 9, 2011.

[105] The improvements in the prototype HIII–10YO LODC dummy include: A head with pediatric mass properties; a neck that produces head lag with free Z-axis rotation at the atlanto-occipital joint; a flexible thoracic spine; multi-point thoracic deflection measurement capability; skeletal anthropometry representative of a seated child; and an abdomen that can directly measure belt loading. More information on the LODC dummy can be found at: *http://www.nhtsa.gov/DOT/NHTSA/NVS/Public%20Meetings/SAE/2016/Development%20of%20the%20LODC%20ATD-SAE2016.pdf.*

Yet also since 2011, new information indicates NHTSA may not need to wait longer to use the HIII–6YO solely as the 6YO child ATD in FMVSS No. 213 compliance tests. While developing this NPRM, NHTSA tested the HIII–6YO in booster seats and in CRSs with internal harnesses (''harnessed-CRSs'') on the proposed standard seat assembly and found that the ATD did not exhibit high head injury measures and high head acceleration spikes in the dynamic tests. Chin-to-chest contact occurred at times, but it was a significantly softer contact than the contact observed in tests on the current seat assembly. On the proposed seat assembly, the high HIC values and the high head acceleration spikes that had been measured by the dummy on the current seat assembly were absent. NHTSA believes this change is due to the firmer seat cushion on the proposed assembly that prevents the CRS from bottoming out against the seat frame.

The difference in head accelerations due to the different seat assemblies is illustrated below. Figure 9 shows the head accelerations of the HIII–6YO in tests on the current FMVSS No. 213 standard seat assembly in booster seats (solid lines), and on the proposed standard seat assembly in booster seats (dashed lines) and in forward-facing harnessed-CRSs (dotted lines). As shown in the figure, the peak head accelerations curves of the HIII–6YO in tests with the proposed standard seat assembly are lower in magnitude than in tests with the current seat assembly and show the absence of severe head acceleration spikes.[106]

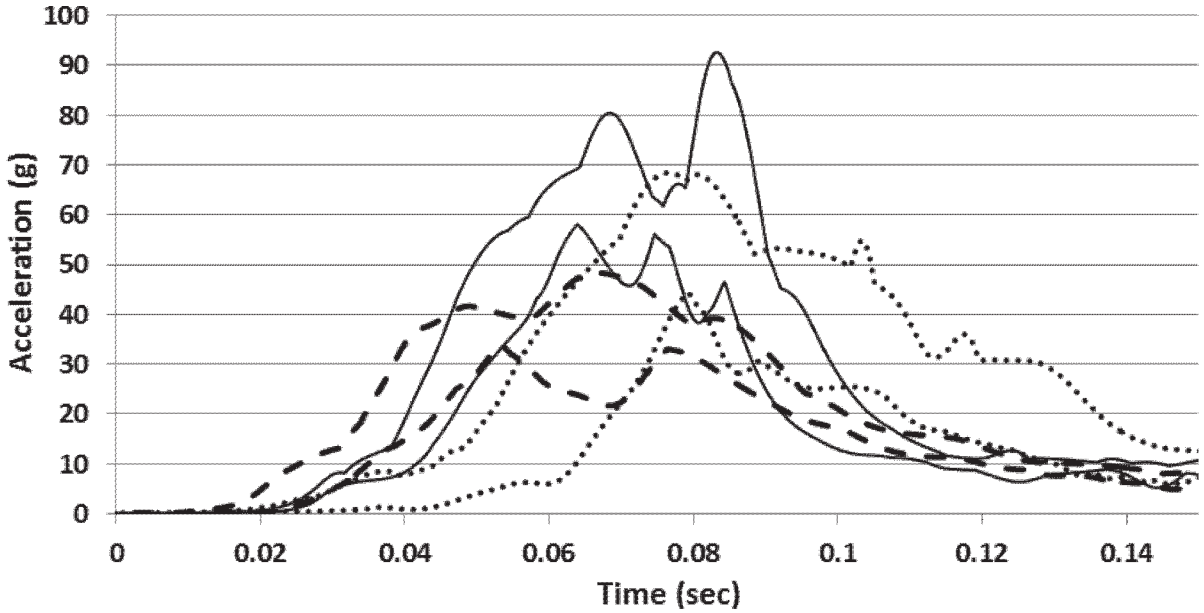

Figure 9. Head acceleration time histories and minimum and maximum corridors in tests with the HIII-6YO dummy with dummy restrained in (1) booster seats on current FMVSS No. 213 standard seat assembly (solid line), (2) booster seats on proposed standard seat assembly (dashed line) and (3) forward-facing CRSs with and without tether attached on proposed standard seat assembly (dotted line).

Those data are consistent with other data showing that the HIII–6YO dummy measures lower peak head acceleration and HIC on the proposed seat assembly than on the current FMVSS No. 213 assembly. As shown in Table 20 below, the average peak head acceleration and average HIC of the HIII–6YO on the proposed standard seat assembly were 52.9 g and 447.4, respectively. The average peak head acceleration and average HIC of the HIII–6YO dummy in tests conducted on the current FMVSS No. 213 standard seat assembly were 77.6 g and 976.2, respectively. This amounted to an average peak head acceleration that was 31.8 percent lower and an average HIC that was 54.2 percent lower when the proposed standard seat assembly is used versus the current seat assembly. Again, we attribute the overall change in magnitude in peak head acceleration to the stiffer seat cushion foam in the proposed standard seat assembly.

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[106] Full detail of the sled tests results are discussed in Section VII of this preamble, *supra.*

Table 20. Peak head acceleration and HIC measures in tests performed with the HIII-6YO and H2-6YO on the current FMVSS No. 213 seat assembly and tests performed with the HIII-6YO dummy on the proposed standard seat assembly.

Bench	Test No and CRS Model	Dummy	Time of peak head acceleration (sec)	Peak head acceleration (g)	HIC
FMVSS No. 213 (Research VRTC)	6769 - Safety 1st Apex 65	HIII	0.070	67.88	733.14
	6770 - Safety 1st Apex 65	HIII	0.068	80.43	862.28
	6773 - Britax Parkway	HIII	0.084	87.90	1195.59
	6774 - Britax Parkway	HIII	0.083	92.61	1192.59
	6771 - Britax Parkway	HIII	0.067	70.63	1043.39
	6778 - Cosco Ventura	HIII	0.078	66.20	829.90
	Average		**0.075**	**77.61**	**976.15**
Proposed Bench	8924 - Cosco Highrise Booster NB	HIII	0.052	40.55	289.92
	8927 - BubbleBum	HIII	0.049	41.66	194.87
	8926 - Harmony Youth NB	HIII	0.069	39.81	297.87
	8921 - Graco Nautilus BPB	HIII	0.067	48.36	374.16
	8922 - Graco TurboBooster	HIII	0.069	46.15	361.08
	8925 - Evenflo Amp HighBack	HIII	0.069	41.18	290.31
	8918 - Graco Nautilus	HIII	0.078	52.99	457.61
	8917 - Evenflo Titan Elite	HIII	0.103	54.87	570.40
	8920 - Recaro PerformanceRide	HIII	0.081	68.05	600.13
	8915 - Britax Marathon	HIII	0.078	64.27	668.36
	8910 - Evenflo Titan Elite	HIII	0.092	53.23	566.03
	8914 - Graco My Ride 65 (tethered)	HIII	0.075	50.41	398.55
	8916 - Chicco Nextfit (tethered)	HIII	0.074	54.82	389.71
	8929 - Graco Nautilus (tethered)	HIII	0.072	55.50	420.50
	8913 - AlphaOmegaElite (tethered)	HIII	0.072	55.66	441.55
	8923 - Evenflo Titan Elite (tethered)	HIII	0.077	60.53	581.27
	8912 - Evenflo Titan Elite (tethered)	HIII	0.080	56.82	518.18
	8919 - Britax Marathon (tethered)	HIII	0.078	56.85	503.83
	8928 - Recaro Performance Ride (tethered)	HIII	0.077	68.43	673.55
	8931 - Graco Nautilus (tethered)	HIII	0.077	47.11	349.81
	Average		**0.074**	**52.86**	**447.38**
FMVSS No. 213 (Compliance MGA)	Dorel Highrise Booster (H2) 213-MGA-12-034	H2	0.058	60.91	478.00
	Evenflo Amp High Back Booster (H2) 213-MGA-12-053	H2	0.078	50.72	424.00
	Graco Turbo Booster (H2) 213-MGA-12-064	H2	0.075	47.35	421.00
	Dorel Alpha Omega Elite (H2) 213-MGA-13-031	H2	0.074	52.72	331.00
	Dorel Highrise (H2) 213-MGA-13-039	H2	0.165	87.99	630.00
	Evenflo Titan (H2) 213-MGA-13-047	H2	0.093	48.65	359.00
	Evenflo Big Kid Sport Amp High Back (H2) 213-MGA-13-053	H2	0.057	49.50	402.00
	Graco MyRide 65 (H2) 213-MGA-13-061	H2	0.087	46.76	236.00
	Average		**0.086**	**55.57**	**410.13**

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In short, these data indicate that updating the standard seat assembly would eradicate the impediments found in the past to using the HIII–6YO dummy in compliance tests. When CRSs are tested on the proposed, more realistic standard seat assembly, the HIII–6YO's chin-to-chest contact is absent or significantly reduced in severity. The absence of contact or softer chin-to-chest contact results in lower

HIC scores compared to the HICs from tests of both the HIII–6YO and the H2–6YO on the current FMVSS No. 213 seat assembly. Thus, we believe we should terminate the optional use of the H2–6YO in compliance tests, as the primary reason NHTSA permitted continued use of the H2–6YO is no longer valid.

Another reason is to improve our overall assessment of CRS performance in the FMVSS No. 213 test. The HIII–6YO dummy is more biofidelic than the H2–6YO dummy.[107] The HIII–6YO has been shown to have good kinematics replicating that of a human in slow speed sled testing, exhibiting similar head and pelvis excursion as human children.[108] Testing CRSs on the updated (proposed) standard seat assembly in itself would yield dummy kinematics more representative of the kinematics of restrained children in real world frontal crashes than current tests, given the proposed seat assembly is specially designed to represent a current vehicle rear seat. However, having the HIII–6YO be a part of the test would amplify that realism.

Importantly, using the HIII–6YO could improve our assessment of CRS performance particularly in the significant safety area of head injury. NASS–CDS data from 1995–2009 show that 39 percent of AIS 2+ injuries to restrained children in frontal crashes are to the head and face, with 59 percent of these injuries due to contact with the seat and back support.[109] Mandatory use of the HIII–6YO in compliance testing could boost those efforts to address the head injury problem.

The HIII–6YO dummy yields a more accurate depiction of the restrained child's head excursion and would help better ensure CRSs are designed to prevent head impacts. Test data indicate the HIII–6YO exhibits more head excursion than the older H2–6YO dummy in FMVSS No. 213 tests. Table 21 shows paired sled test data of the HIII–6YO on the proposed seat assembly and the H2–6YO on the current FMVSS No. 213 seat assembly, with the dummies restrained in the same or equivalent booster seat model. Paired T-tests indicated that the measured differences in HIC and head excursion were significant (p-value <0.01).

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Table 21. Paired comparison of responses of the HIII-6YO on the proposed seat assembly and the H2-6YO on the current seat assembly (compliance test data), using the same booster seats.

Test Number	Seat Name	Dummy	HIC36		Chest Clip		Head Excursion		Knee Excursion	
				(+) Increase (-) Reduction	(g)	(+) Increase (-) Reduction	(mm)	(+) Increase (-) Reduction	(mm)	(+) Increase (-) Reduction
8924	Cosco Highrise Booster NB	HIII-6YO	289.92	-39.3%	42.77	3.3%	510	27.9%	561	20.2%
213-MGA-12-034	Dorel Highrise Booster 22297AOF	H2-6YO	478		41.4		399		467	
8924	Cosco Highrise Booster NB	HIII-6YO	289.92	-54.0%	42.77	-15.0%	510	35.8%	561	9.0%
213-MGA-13-039	Dorel Highrise 22297BHW	H2-6YO	630		50.3		376		515	
8925	Evenflo Amp High Back	HIII-6YO	290.31	-31.5%	45	-3.8%	574	32.3%	618	-6.1%
213-MGA-12-053	Evenflo Amp High Back 31911337	H2-6YO	424		46.8		434		658	
8922	Graco Turbo Booster	HIII-6YO	361.08	-14.2%	38.64	-8.7%	562	7.9%	584	-10.8%
213-MGA-12-064	Graco TurboBooster 1781042	HIII-6YO	421		42.3		521		655	
8926	Harmony Youth NB	HIII-6YO	297.87	-28.2%	43.29	-8.3%	551	26.1%	604	16.0%
213-MGA-12-069	Harmony LiteRider Youth Booster 0304003	HIII-6YO	415		47.2		437		521	
8927	Bubble Bum	HIII-6YO	194.87	-56.2%	48.81	10.7%	541	45.8%	598	10.6%
213-MGA-12-090	Bubble Bum Inflatable Booster	HIII-6YO	445		44.1		371		541	

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The average HIC, chest acceleration, and head and knee excursions are shown in Table 22.

[107] HIII–6YO also has extended instrumentation capability in many areas, such as in the neck and chest, which would be advantageous in the event a need should arise to measure the corresponding risk of injury to children in child restraints.

[108] Seacrist, T., et al., ''Kinematic Comparison of the Hybrid III and Q-Series Pediatric ATDs to Pediatric Volunteers in Low-Speed Frontal Crashes,'' 56th Annals of Advances in Automotive Medicine, October 2012.

[109] In a study of 28 cases of children ages 0 to 15 who sustained AIS 2+ head or face injuries in a frontal crash, researchers found that the front row seat back and the B-pillar were the most commonly contacted components. Arbogast, K.B., S. Wozniak, Locey, C.M., Maltese, M.R., and Zonfrillo, M.R. (2012). Head impact contact points for restrained child occupants. *Traffic Injury Prevention,* 13(2):172–81.

TABLE 22—AVERAGE HIC, CHEST ACCELERATION, HEAD EXCURSION, AND KNEE EXCURSION OF THE HIII–6YO ON THE PROPOSED SEAT ASSEMBLY AND THE H2–6YO ON THE CURRENT SEAT ASSEMBLY USING THE SAME BOOSTER SEAT MODEL

ATD	HIC	Chest acceleration	Head excursion	Knee excursion
HIII–6YO on proposed seat assembly	288	43 g	537 mm	584 mm
H2–6YO on current seat assembly	492	46 g	416 mm	533 mm

T-test showed that there was no significant difference (p-value<0.15) between the chest acceleration and knee excursion measures of the HIII–6YO in the proposed seat assembly and the H2–6YO on the current standard seat assembly when restrained in the same booster seat model.

NHTSA requests comments on whether using the HIII–6YO and the updated seat assembly would examine more closely the ability of CRSs to manage the kinematics of a restrained child in modern vehicles than a test with the H2–6YO.

NHTSA is also concerned that replacement parts for the ATD are becoming increasingly more difficult for the agency to procure. Although NHTSA's crash test dummies are designed to be durable and capable of withstanding crash testing without unreasonably breaking, all test dummies need refurbishment and parts replacement from time to time. As the H2–6YO is not a state-of-the-art dummy, it has become more difficult for NHTSA to obtain replacement parts for the ATD. The Agency is concerned that as parts become harder to obtain, NHTSA's inability to obtain parts will delay and impede its compliance test program. Ending the optional use of the H2–6YO dummy in compliance testing would avoid that potential problem.

NHTSA does not believe that terminating the optional use of the H2–6YO dummy would affect the manufacture of current child restraints significantly. First, while the head and knee excursions of the HIII–6YO dummy were greater than those of the H2–6YO, the excursion levels were well below FMVSS No. 213's excursion limits.[110]

Second, most CRS manufacturers are already using the HIII–6YO dummy to test some or all of their CRS models. Information from manufacturers to NHTSA in 2014 showed that 43 percent of CRS manufacturers use the HIII–6YO to test their CRSs, 21 percent use the H2–6YO and 36 percent use both dummies for testing their various CRS models. Manufacturers using both the H2–6YO and HIII–6YO dummies test at least 50 percent of their models using the HIII–6YO dummy.

For the above reasons, NHTSA is proposing to specify in FMVSS No. 213 that the agency will only use the HIII–6YO and not the H2–6YO dummy, with provision of sufficient lead time (*e.g.,* 3 years after publication of a final rule) for the change. Comments are requested on the issues discussed above.

e. Positioning the Legs of the HIII–3YO Dummy in Rear-Facing CRSs

Because CRSs labeled for use by children in the 10 kg–18.2 kg (22–40 lb) weight range are often sold to be used rear-facing, we seek to make more evaluative our compliance testing of these CRSs when so used.

Under current FMVSS No. 213, rear-facing CRSs labeled for use by children in the 10 kg–18.2 kg (22–40 lb) weight range are subject to testing with the (33 lb) HIII–3YO test dummy. In the past, testing with the 3YO dummy rear-facing has been complicated by the dummy's legs oftentimes getting crammed against the seat back[111] and the Agency not knowing how it ought to position the ATD's legs in the compliance test. In this NPRM, we propose a dummy leg positioning procedure that calls for placing the ATD's legs up against the seat back and removing the test dummy's knee joint stops to allow the leg to extend at the knee in the dynamic test. The procedure is already used by some commercial test labs and CRS manufacturers to test rear-facing CRSs for older children.

The positioning procedure is based on data analyzing toddler lower extremity postures when seated in rear-facing CRSs. NHTSA initiated a research project conducted by the University of Michigan Transportation Research Institute (UMTRI) to identify toddlers' common lower extremity postures.[112] UMTRI evaluated 29 subjects ages 18- to 36-months in two rear-facing conditions (wide and narrow seat).[113] UMTRI took anthropometry measures, surface scans and coordinate measures to evaluate the toddler seating postures.

UMTRI found that the most common seating postures for toddlers in rear-facing restraints are with the child's legs bent and ''relaxed'' with the bottom part of the feet up against the seat back, and with the child's legs spread and ''feet flat against each other.'' These seating positions are not achievable by the HIII–3YO dummy due to the dummy's limited hip range of motion. However, the children also frequently sat with their legs bent and elevated against the vehicle seat back. The HIII–3YO's legs are able to achieve this bent and elevated position.

We have tentatively decided to position the HIII–3YO's legs bent and elevated in rear-facing seats as shown by many of the children in the UMTRI study. Positioning the ATD's legs this way would replicate a typical position many children take in a rear-facing CRS. As noted above, the proposed procedure is already used by some commercial test labs and CRS manufacturers to test rear-facing CRSs for older children.

As part of the study, UMTRI conducted sled tests to compare the proposed positioning protocol to those used by Transport Canada in Canadian Motor Vehicle Safety Standard (CMVSS) No. 213 and by various commercial test labs and CRS manufacturers, to assess differences, if any, in CRS performance and the ease-of-use of the procedures.[114] UMTRI evaluated the following protocols: (a) Positioning the ATD in an unaltered state (baseline);[115] (b) removing knee joint stops to allow the leg to extend at the knee (NHTSA's proposed procedure); (c) removing lower leg completely (used by CMVSS

[110] Since not every CRS on the market was tested, there may be some that may need some design changes to meet the head excursion limit when tested with the HIII–6YO on the proposed seat assembly. However, the design changes would be warranted for child safety, as using the HIII–6YO better replicates the kinematics of an actual child than the H2–6YO.

[111] Positioning the HIII- 3YO dummy in a rear-facing CRSs has proven difficult in laboratory tests because of the bracing interaction between the legs of the dummy and the seat which can change the pre-test set recline angle of the rear-facing CRS and the pre-test applied lap belt tension.

[112] ''Toddler Lower Extremity Posture in Child Restraint Systems,'' March 2015, UMTRI–2014–8.

[113] UMTRI also identified the children's common lower extremity postures in forward-facing seats (long and short cushion). *Id.*

[114] ''Assessment of ATD Selection and Use for Dynamic Testing of Rear Facing Restraint Systems Designed for Larger Toddlers.'' UMTRI–2014–12. March 2015.

[115] Experienced bracing between the seat and CRS because of the legs.

No. 213); (d) removing lower leg and attaching the shank mass to the sides or top of thigh (used by CMVSS No. 213); and (e) bending the leg at the knee. The sled tests were conducted using three convertible child restraints (Graco Comfort Sport, Cosco Scenera and Cosco Scenera 40RF).

Test results in Table 23 show that the different seating procedures had little effect on the response data (HIC, chest acceleration, seat back rotation) obtained from tests of the three restraints.[116] Table 23 shows that the coefficient of variation of the different dummy configurations in three different CRSs was less than 10 percent except for one that showed an 11 percent CV for HIC.

TABLE 23—HIII–3YO RESPONSES IN SLED TESTS WITH DIFFERENT SEATING CONFIGURATIONS

UMTRI test number (NT12##)	CRS	Dummy configuration	Max seat back angle (degrees)	HIC	Chest acceleration 3 ms clip (g)
53	Cosco Scenera	A–Baseline	57	342	39
54	Cosco Scenera	B–Kneestop	59	293	38
55	Cosco Scenera	D–Shank	56	296	39
52	Cosco Scenera	E–Bent Knee	57	334	37
Average			57.3	316.3	38.3
Standard Deviation			1.3	25.4	1.0
CV			2%	8%	3%
50	Cosco Scenera 40	A–Baseline	55	383	38
49	Cosco Scenera 40	B–Kneestop	55	359	40
48	Cosco Scenera 40	D–Shank	54	361	40
51	Cosco Scenera 40	E–Bent	55	337	37
Average			54.8	360.0	38.8
STD			0.5	18.8	1.5
CV			1%	5%	4%
41	Graco Comfort Sport	A–Baseline	54	358	41
42	Graco Comfort Sport	B–Kneestop	54	350	45
45	Graco Comfort Sport	C—No leg	51	364	41
46	Graco Comfort Sport	D–Shank	51	436	35
44	Graco Comfort Sport	E–Bent	55	334	40
Average			53	368.4	40.4
STD			1.9	39.4	3.6
CV			4%	11%	9%

UMTRI also found that sled testing went more smoothly with some of the procedures than with others. An unaltered HIII–3YO dummy installation (baseline) created the most interaction (bracing) between the dummy's legs and the standard seat assembly. Removing the HIII–3YO knee joint and bending the legs at the knee (proposed procedure) were found to be easy to do in the lab and added little time to the testing process. Removing the HIII–3YO lower legs and attaching them to the upper leg was not a simple task; the reattached segments were not sufficiently coupled using tape and it added bulk to the thigh area of the dummy. We are also concerned that the added bulk of the reattached segments can create fit issues in narrow CRSs.[117]

In summary, more and more CRSs are sold for use rear-facing with older children. The proposed positioning procedure would facilitate NHTSA's compliance testing of the CRSs to the requirements of FMVSS No. 213. The procedure involves removing the dummy's knee joint stops to allow the leg to bend freely at the knee. Removing the knee joint stops results in a seating posture that toddlers adopt in real life, minimizes the possibility of bracing between the CRS and the standard seat assembly, is a task easily accomplished in the test lab and minimizes changes to the HIII–3YO dummy.[118]

f. Table Summarizing Proposed Amendments

Table 24 below illustrates this NPRM's proposed weight categories discussed above.

[116] ''Assessment of ATD Selection and Use for Dynamic Testing of Rear Facing Restraint Systems Designed for Larger Toddlers,'' *supra.*

[117] UMTRI also tested a CRABI–18MO by adding mass to the torso and thigh of the dummy to achieve a 33–35 lb weight. UMTRI found that while adding mass to the CRABI–18MO dummy was not difficult, the flexible weights have to be attached around the torso of the dummy which changes the shape of the dummy and may affect the ATD's biofidelity. In addition, the CRABI–18MO is not incorporated into 49 CFR part 572. Therefore, the CRABI–18MO was not further considered.

[118] NHTSA and UMTRI explored making changes to the HIII–3YO dummy to allow it to achieve the ''relaxed'' and ''feet flat against each other'' postures shown by toddlers in the study. Efforts involved reshaping the dummy's thigh flesh and changing the thigh joint to a ball-and-socket joint to improve the range of motion of the dummy's hips. However, prototypes showed that making those changes yielded little improvement in the seating posture and that a more involved effort would be needed to attain the postures. Since the test data indicated that different seating procedures had little effect on the response data, we decided there was not a sufficient need to pursue modifying the HIII–3YO dummy. ''Toddler Lower Extremity Posture in Child Restraint Systems,'' *supra.*

TABLE 24—PROPOSED USE OF DUMMIES BASED ON MANUFACTURER'S WEIGHT AND HEIGHT RECOMMENDATIONS

CRS recommended for use by children of these weights and heights—	Are compliance tested by NHTSA with these ATDs (subparts refer to 49 CFR part 572)
Weight (W) ≤5 kg (11 lb), Height (H) ≤650 mm (25.5 inches)	Newborn (subpart K).
Weight 5 kg (11 lb) <W ≤10 kg (22 lb), Height 650 mm (25.5 inches) <H ≤750 mm (29.5 inches).	Newborn (subpart K), CRABI–12MO (subpart R).
Weight 10 kg (22 lb) <W ≤13.6 kg (30 lb), Height 750 mm (29.5 inches) <H ≤870 mm (34.3 inches).	CRABI–12MO (subpart R).
Weight 13.6 kg (30 lb) <W ≤18.2 kg (40 lb), Height 870 mm (34.3 inches) <H ≤1100 mm (43.3 inches).	HIII–3YO (subpart P).
Weight 18.2 kg (40 lb) <W ≤22.7 kg (50 lb), Height 1100 mm (43.3 inches) <H ≤1250 mm (49.2 inches).	HIII–6YO (subpart N).
Weight 22.7 kg (50 lb) <W ≤29.5 kg (65 lb), Height 1100 mm (43.3 inches) <H ≤1250 mm (49.2 inches).	HIII–6YO (subpart N) and weighted HIII–6YO (subpart S).
Weight greater than 29.5 kg (65 lb), Height greater than 1250 mm (49.2 inches).	HIII–10YO (subpart T*).

*HIC is not a pass/fail criterion when testing with the HIII–10YO dummy.

(**Note:** CRSs with internal harnesses exceeding 29.5 kg (65 lb) with an ATD are not tested with that ATD on the child restraint anchorage system of the standard seat assembly.)

g. Consistency With NHTSA's Use of ATDs in the Proposed Side Impact Test

NHTSA requests comment on the merits of adopting the above proposed dummy selection categories in the January 28, 2014 proposed side impact test for CRSs, regarding CRSs for children weighing up to 18.2 kg (40 lb). The January 28, 2014 NPRM referred to the weight categories currently in FMVSS No. 213 to determine which ATD NHTSA would use in a side impact compliance test. That is, NHTSA proposed to use the CRABI–12MO dummy to test CRSs designed for children weighing up to 10 kg (22 lb), and to use a newly-developed side impact ATD (called the ''Q3s'') to test CRSs for children weighing 10 to 18.2 kg (22–40 lb). To align the side impact test with this frontal impact test proposal, NHTSA is considering using the CRABI–12MO to test CRSs designed for children weighing up to 13.6 kg (30 lb), and using the Q3s (3YO dummy) to test CRSs designed for children weighing 13.6 to 18.2 kg (30–40 lb) in the side impact test. The Agency's reasons for considering this change are the same ones discussed above in this NPRM relating to fitting the ATDs in the CRSs and how representative the ATDs are of the children who would be using the CRS. Further, NHTSA believes it would make sense for CRSs to be tested with the same ATDs in both the frontal impact and side impact tests.

X. School Bus CRSs

FMVSS No. 213 permits a type of CRS that is designed for exclusive use on school buses. The CRS type is a ''harness,'' which the standard defines in S4 as ''a combination pelvic and upper torso child restraint system that consists primarily of flexible material, such as straps, webbing or similar material, and that does not include a rigid seating structure for the child.'' NHTSA amended FMVSS No. 213 to accommodate harnesses manufactured for use on school bus seats because many school districts and school bus operators needed a product with a seat back mount to transport preschoolers, children who need help sitting upright, and children who need to be physically restrained because of physical or behavioral needs.[119] The seat back mount of the specialized harnesses manufactured for use on school bus seats does not use a seat belt to attach to the seat and thus can be used on large school buses without seat belts, which most large school buses do not have.

NHTSA has become aware of a CRS that is also designed exclusively for school bus use. The CRS uses a seat back mount to attach to the school bus seat without the use of a seat belt. However, because the CRS is not a harness, it does not qualify as a school bus harness under the wording of the standard and is not permitted under FMVSS No. 213.[120]

NHTSA proposes amendments to FMVSS No. 213 to make the standard more design-neutral regarding CRSs that are designed for exclusive use on school bus seats. To permit restraints for exclusive school bus use other than harnesses, the proposed amendments would include a new design-neutral definition for this type of CRS.

NHTSA proposes to amend FMVSS No. 213 so that CRSs manufactured for exclusive use on school bus seats could be certified using a seat back mount or a seat back and seat pan mount attachment method. Specifically, NHTSA proposes to add a definition of ''school bus child restraint system'' in S4 of FMVSS No. 213 that would define the term as a child restraint system (including harnesses), sold for exclusive use on school bus seats, that has a label conforming with S5.3.1(b) of FMVSS No. 213.

NHTSA proposes amending S5.3.1(b) to require school bus CRSs to bear a permanent warning label, depicted in Figure 12 of FMVSS No. 213, that is permanently affixed to the part of the harness or strap that attaches the CRS to a vehicle seat back. This label must be plainly visible when installed and easily readable, the message area must be white with black text and no less than 20 square centimeters, and the pictogram shall be gray and black with a red circle and slash on a white background and no less than 20 mm in diameter.

NHTSA proposes to amend table S5.1.3.1(a) which specifies the head and knee excursion requirements. School bus CRSs would be subject to the current excursion limit requirements for harnesses manufactured for use on school bus seats when installed using a seat back mount or seat back and seat pan mounts. Also, NHTSA proposes to amend the table to S5.3.2 to indicate that school bus CRSs must meet the relevant requirements of the standard when attached with a seat back mount or seat back and seat pan mounts.

This NPRM also proposes to amend S5.6.1.11 of FMVSS No. 213 to require that printed instructions accompanying these school bus CRSs include the warning statement: ''WARNING! This restraint must only be used on school bus seats. Entire seat directly behind must be unoccupied or have restrained occupants.''

[119] 69 FR 10928, March 9, 2004.

[120] NHTSA letter to IMMI, September 21, 2016 *https://isearch.nhtsa.gov/files/14-001678%20IMMI%20STAR%20crs.htm.*

School bus CRSs would not be required to have lower attachments to install the CRS using the child restraint anchorage system, nor would they be required to meet performance requirements when tested using seat belt and lower anchorages attachment methods. School bus CRSs would not need to have alternative methods of attachments other than the seat back mount or seat back and seat pan mounts because school bus seats do not always have seat belts and/or lower anchorages.

XI. Child Passenger Safety Issues Arising From Research Findings

NHTSA requests comment on several developments in child passenger safety that have arisen in the research context. The Agency would like commenters' views on how best to approach those developments. The Agency has docketed a paper that discusses these issues in more detail.

1. NHTSA has reviewed research reports on testing done on certain kinds of child restraints—CRSs not yet widely available in the U.S—that raise concerns about a potential unreasonable risk of submarining [121] or ejection from these devices in some crash scenarios. The CRSs in question are inflatable booster seats, and ''shield-type'' child restraints (shield-only-CRSs) available in markets overseas. Comments are requested on the findings of the reports.[122]

(a) *Inflatable booster seats:* Transport Canada conducted 25–30 mph frontal impact crash tests of different vehicle models, with the HIII–6YO and HIII–10YO dummies restrained in inflatable boosters in rear seats. In the tests, the dummies experienced significant submarining due to excessive compression of the inflatable booster during the crash event. Booster seats sold in Canada are required to compress by not more than 25 mm when subjected to a 2,250 N quasi-static compression force. Inflatable booster seats cannot meet the requirements of this quasi-static compression test and so inflatable boosters are not sold in Canada. Comments are requested on the findings of the research crash tests conducted in Canada, on the booster seat compression test requirements in Canada, and on the safety need to have a compression test in FMVSS No. 213.

(b) *Shield-only-CRSs:* Shield-only-CRSs only have a shield to restrain a young child's upper torso, lower torso, and crotch. While such CRSs are currently not available in the U.S., there are a wide variety of shield-only-CRSs in Europe intended for children weighing less than 13.6 kg (30 lb). Child dummies (representing children aged 18-months old and 3-years-old) restrained in shield-only-CRSs in simulated vehicle rollover tests, 64 km/h (40 mph) offset frontal impact vehicle crash tests, and in 64 km/h (40 mph) Allgemeiner Deutsher Automobil-Club (ADAC) type frontal impact sled tests were completely or partially ejected from the CRSs. These test results raise concern about the ability of a shield-only-CRS to retain small children in the CRS in certain crashes or in a rollover. NHTSA seeks comment on the findings of these research tests. Should FMVSS No. 213 require shield-only-CRSs to have additional shoulder belts and a crotch strap, similar to the requirements for child restraints that have belts designed to restrain the child (S5.4.3.3)?

2. NHTSA requests information on a matter showing up in the field concerning children under 1YO outgrowing infant carriers by height much earlier than by weight. Research studies conducted at UMTRI [123] show that some infant carriers marketed as suitable for children up to 13.6 kg (30 lb), which is greater than the weight of a 95th percentile 1 YO and an average 1.5 YO, cannot ''fit'' the height of a 95th percentile 1 YO or an average 1.5 YO.[124] NHTSA believes that infant carriers' height and weight recommendations should better match the children for whom the CRS is recommended. NHTSA seeks comment on UMTRI's research findings regarding how current infant carriers fit children that they are designed for. Should infant carriers' height and weight recommendations better match up to better accommodate the children for whom the CRS is recommended?

3. NHTSA has supported the development of computer models of children of different weights and heights to assist CRS manufacturers in designing child restraints that better fit the children for whom the CRS is recommended.[125] These virtual models are available to the public to improve the fit of CRSs to children.[126] NHTSA requests comments from manufacturers and other parties on whether they used the models and whether the models were helpful.

XII. Proposed Lead Time

This NPRM proposes that the compliance date for most of the amendments in this rulemaking action would be three years following the date of publication of the final rule in the **Federal Register**, with optional early compliance permitted (exceptions are discussed below). NHTSA tentatively believes that a 3-year period is in the public interest because CRS manufacturers would need to gain familiarity with the new standard seat assembly and new test protocols, and would need time to assess their products' conformance to the new FMVSS No. 213 test requirements. They would need time to implement design and production changes as needed. A 3-year lead time also aligns with the typical design cycle of child restraints.

Exceptions to the proposed 3-year compliance date would be as follows. NHTSA proposes a 180-day compliance date for the proposed changes to registration card requirements and the proposed changes to permit school bus child restraint systems (early optional compliance would be permitted). A 1-year compliance date is proposed for labeling requirement changes (early optional compliance would be permitted). NHTSA would like to implement these changes as early as possible to attain the safety benefits they can achieve. The proposed time should provide enough time to change the card and labels. The proposed 180-day compliance date would be sufficient for school bus CRSs since the proposed amendment would remove a restriction on the manufacture of such products.

XIII. Corrections and Other Minor Amendments

This NPRM proposes a few housekeeping and other amendments to the text of FMVSS No. 213.

a. Correct Reference

The Agency would amend S5.5.2(l)(3)(i) of FMVSS No. 213 by correcting a reference to ''S5.5.2(l)(3)(A)(i), (ii), or (iii).'' The reference would be corrected to refer to ''S5.5.2(l)(3)(i)(A), (B), or (C).''

[121] ''Submarining'' refers to the tendency for a restrained occupant to slide forward feet first under the lap belt during a vehicle crash, which could result in serious abdominal, pelvic, and spinal injuries.

[122] Reports documenting vehicle crash tests using inflatable and shield-type CRSs are available in the docket for this NPRM.

[123] Manary. M., et al., ''Comparing the CRABI–12 and CRABI–18 for Infant Child Restraint System Evaluation.'' June 2015. DOT HS 812 156. The report is available in the docket for this NPRM.

[124] Field experience indicates that children at the higher end of growth charts typically outgrow the carriers by height at around 9–10 months.

[125] NHTSA has sponsored an UMTRI project developing toddler virtual dummies for use in improving of the fit of CRSs to child passengers. Information on a 2015 UMTRI workshop describing development of the toddler virtual fit dummies can be found at: *http://umtri.umich.edu/our-results/projects/umtri-workshop-new-tools-child-occupant-protection.*

[126] Toddler virtual models available for download at: *http://childshape.org/toddler/manikins/.*

b. Section 5.1.2.2

The Agency is removing and reserving S5.1.2.2 because it applies to CRSs manufactured before August 1, 2005 and so is no longer applicable.

c. Table to S5.1.3.1(a) and Test Configuration II

The Agency is correcting the table to S5.1.3.1(a), which specifies performance criteria and test conditions for FMVSS No. 213's occupant excursion requirements for add-on forward-facing CRSs. When NHTSA created the table the agency inadvertently did not include a reference to Test Configuration II of FMVSS No. 213.[127] NHTSA seeks to correct this oversight.

Test Configuration II is a 32 km/h (20 mph) ''misuse'' test that applies to CRSs that are ''equipped with a fixed or movable surface described in S5.2.2.2.'' [128] (S6.1.2(a)(2).) [129] In Test Configuration II, NHTSA tests those types of CRSs without attaching ''any of the child restraint belts unless they are an integral part of the fixed or movable surface.'' [130] In addition, the child restraint is untethered (S6.1.2(a)(2)(i)). The tested child restraint must meet all the dynamic performance requirements of the standard, not just excursion requirements, when tested in this manner.[131] Test Configuration II is intended to address the possibility that the restraint's internal belt system will be misused or not used at all by the caregiver. If this happens, Test Configuration II ensures that the restraint will offer some minimal protection even when the CRS is not properly used.

d. Updating Reference to SAE Recommended Practice J211/1

Current specifications of the test device for built-in child restraints in FMVSS No. 213 (S6.1.1(a)(2)(i)(B) and S6.1.1(a)(2)(ii)(G)) require that instrumentation and data processing be in conformance with SAE Recommended Practice J211 (June 1980), ''Instrumentation for Impact Tests.'' SAE Recommended Practice J211 has been revised several times since June 1980 and most test facilities are currently using newer versions of the document. FMVSS No. 208, ''Occupant crash protection,'' currently refers to the document as SAE Recommended Practice J211/1 (March 1995). The 1995 version of SAE J211/1 is consistent with the current requirements for instrumentation and data processing in FMVSS No. 213. Using the same Recommended Practice J211/1 (1995) in S6.1.1(a)(2)(i)(B) and S6.1.1(a)(2)(ii)(G) would update the FMVSS No. 213 provisions and facilitate the processing of test results when combining a test of built-in child restraints with an FMVSS No. 208 test. Therefore, NHTSA proposes updating the reference to SAE Recommended Practice J211(1980) in sections S6.1.1(a)(2)(i)(B) and S6.1.1(a)(2)(ii)(G) to SAE Recommended Practice J211/1 (1995).[132]

XIV. Regulatory Notices and Analyses

Executive Order (E.O.) 12866, E.O. 13563, and DOT Rulemaking Procedures

The Agency has considered the impact of this rulemaking action under E.O. 12866, E.O. 13563, and the Department of Transportation's administrative rulemaking procedures set forth in 49 CFR part 5, subpart B. This rulemaking is not considered significant and was not reviewed by the Office of Management and Budget under E.O. 12866, ''Regulatory Planning and Review.''

Estimated Benefits and Costs

The NPRM proposes to amend FMVSS No. 213 by (a) updating the standard seat assembly to represent better the rear seating environment in the current vehicle fleet, (b) amending several labeling and owner information requirements to improve communication with today's CRS owners and to align with current best practices for child passenger safety, and (c) amending how NHTSA uses ATDs to make the Agency's compliance tests more evaluative of CRS performance. The proposal would provide some safety benefits with, at most, minimal incremental costs.

Updated Sled Assembly

The proposed updates to the sled test would better align the performance of CRSs in compliance tests to that in real world crashes.

NHTSA tested 24 CRS models representing the market of infant carrier, convertible, all-in-one, and booster type CRSs on the proposed standard seat assembly with the appropriate size dummies. All but one forward-facing CRS models met the current and proposed performance requirements. The Diono Radian tested with the HIII–10YO dummy met all performance requirements except for the head excursion limit in the untethered condition. Based on these data, the Agency believes that only a few CRSs may need minor redesign to meet the requirements in the proposed standard seat assembly (V2).[133]

NHTSA believes that a lead time of three years is sufficient for the redesign. The Agency has not estimated a cost of this redesign, assuming the redesign could be incorporated into a typical business model involving manufacturers refining child restraint designs to freshen their product lines. The refinements result in new product offerings that appeal to consumers and help manufacturers remain competitive.

There would be costs involved in changing the standard seat assembly used by NHTSA to assess CRS compliance. Manufacturers are not required to use the standard seat assembly, but as a practical matter they usually choose to do so, to test their CRSs as similarly to the tests conducted by NHTSA. The one-time cost of the updated standard seat assembly sled

[127] NHTSA adopted the table into FMVSS No. 213 in a March 5, 1999 final rule establishing the requirements for child restraint anchorage systems for vehicles and corresponding requirements for CRSs (64 FR 10786).

[128] S5.2.2.2 states that each forward-facing child restraint system shall have no fixed or movable surface: (a) directly forward of the dummy and intersected by a horizontal line, parallel to the seat orientation reference line (term defined in S4 of FMVSS No. 213), in the case of the add-on child restraint system, or parallel to a vertical plane through the longitudinal center line of the vehicle seat, in the case of a built-in child restraint system, and (b) passing through any portion of the dummy, except for surfaces which restrain the dummy when the system is tested in accordance with S6.1.2(a)(2), so that the child restraint system shall conform to the requirements of S5.1.2 and S5.1.3.1.

[129] S6.1.2(a)(2)(i) and (ii) also state that Test Configuration II applies to ''backless child restraint system[s] with a top anchorage strap'' and to a ''built-in booster seat with a top anchorage strap.'' NHTSA is proposing to remove references in FMVSS No. 213 to those CRSs because such restraints are no longer or have never been produced.

[130] See FMVSS No. 213 S10.2.1(b)(2) and S10.2.2(c)(2).

[131] The CRSs must also meet the requirements of FMVSS No. 213 when tested to Test Configuration I's 48 km/h (30 mph) tests. The CRSs' internal belts are attached in Test Configuration I but the top tether cannot be attached to meet FMVSS No. 213's head excursion limit of 813 mm (32 inches) and the other dynamic performance requirements in S5.1 of the standard.

[132] NHTSA would also reference the updated SAE J211/1 in the compliance test procedure proposed for FMVSS No. 213a's side impact test. See 79 FR at 4603, S6.1.2(f).

[133] Preliminary tests with the proposed standard seat assembly using an average 23.3 g peak acceleration pulse and an average 47.5 km/h (29.5 mph) velocity within the FMVSS No. 213 acceleration corridor showed dummy HIC and chest accelerations in some booster seats, tested with the HIII–6YO and HIII–10YO dummies, near or exceeding allowable threshold levels. While NHTSA expects that some booster seats may need to be redesigned to meet the performance measures when tested with a higher acceleration pulse, these redesigns could be accomplished without additional material cost. For example, different foams could be used in the CRS seating cushions that work better with the proposed stiffer standard seat cushion foam to lower the HIC and chest g values.

buck is about $8,000. If a manufacturer chooses to build the assembly itself or uses one at an independent test facility, either way there would be minimal cost impacts when the cost of the assembly and testing CRSs is distributed among the hundreds of thousands of CRSs that would be sold by each manufacturer.

Labeling and Owner Registration

The Agency believes that the proposed updates to the labeling requirements would benefit safety by reducing the premature graduation of children from rear-facing CRSs to forward-facing CRSs, and from forward-facing CRSs to booster seats. The Agency estimates 1.9 to 6.3 lives would be saved and 2.6 to 8.7 moderate-to-critical severity injuries would be prevented annually by aligning FMVSS No. 213's use instructions with current best practices on transporting children.[134]

The proposed changes to the labeling requirements would have minimal or no cost impacts, as mostly they are deregulatory. Manufacturers would be given the flexibility to provide required information in statements or a combination of statements and pictograms at locations that they deem most effective. Manufacturers may provide the recommended child weight and height ranges for the use of CRSs in a specific installation mode on existing voluntary labels by simply changing the minimum child weight limit values. Since no additional information would be required on the labels by this NPRM, the size of the label would not need to be increased. Thus, there would be minimal or no additional cost for the label. There would also be no decrease in sales of forward-facing car safety seats or of booster seats as a result of the proposal to raise the minimum child weight limit values for forward-facing CRSs and booster seats. Most forward-facing CRSs cover a wide child weight range, so the labeling changes would only affect how consumers use the products and not the sale of them. For example, consumers would still purchase forward-facing car safety seats but would wait to use them forward-facing until the child is at least 1. They would still purchase convertible CRSs, but will delay turning the child forward-facing until the child is at least 1. Consumers would still purchase booster seats, but would use them only from when the child reaches 18.2 kg (40 lb).

The proposed changes to the registration program generally lessen restrictions and are optional for manufacturers to implement. These proposed changes to the registration card would provide flexibility to manufacturers in how they communicate with consumers and would likely help improve registration rates and recall completion rates. NHTSA cannot quantify the benefits at this time.

NHTSA estimates there would be no costs associated with the proposed changes. While the changes could affect the collection of information pursuant to the Paperwork Reduction Act (which is discussed later in this section), there would be no additional material cost associated with the proposed changes to the registration card or to the CRS label or owner manual pertaining to registration. Manufacturers could use the same card and labels and just change the wording on them.

ATDs

The proposed updates of how ATDs are used in the sled test for assessing CRS performance better accords with current CRS designs and best practices for transporting child passengers compared to the current specifications in FMVSS No. 213. NHTSA cannot quantify the possible safety benefits at this time.

Some of the proposed changes lessen testing burdens by reducing the extent of testing with ATDs. For example, the NPRM proposes that CRSs for children weighing 10 kg to 13.6 kg (22 to 30 lb) would no longer be subject to testing with the HIII–3YO dummy. NHTSA estimates a reduction in testing cost of $540,000 for the current number of infant carrier models in the market.[135] Also, CRSs for children weighing 13.6–18.2 kg (30–40 lb) would no longer be tested with the CRABI–12MO. However, the Agency does not expect any reduction in testing costs from this latter modification since all CRSs with internal harnesses are sold for children weighing less than 13.6 kg (30 lb), and so would still be subject to testing with the CRABI–12MO in that regard. The proposed positioning procedure for the legs of the HIII–3YO dummy in rear-facing CRSs is unlikely to have cost implications because the procedure is the same as that currently used by manufacturers.

Similarly, NHTSA believes that testing CRSs solely with the HIII–6YO rather than the H2–6YO dummy would not have significant cost implications. This is because there would be little or no design changes needed for the CRSs due to this proposed update since nearly all the CRSs tested with the HIII–6YO in the proposed standard seat assembly complied with all the FMVSS No. 213 requirements.[136] NHTSA's testing also showed that CRSs that currently comply with FMVSS No. 213 using the H2–6YO dummy also met all the performance requirements in the standard when tested using the HIII–6YO dummy in the proposed standard seat assembly. In addition, manufacturers are increasingly certifying at least some of their CRS models for older children using the HIII–6YO dummy rather than the H2–6YO and so most manufacturers already have access to the HIII–6YO dummy and would not need to purchase the dummy as a result of this proposed update. Most CRS manufacturers hire commercial test labs to test their CRSs for conformance with FMVSS No. 213 requirements. These labs already have the HIII–6YO dummy since some of their CRS manufacturer clients currently want to certify their CRSs based on tests with the HIII–6YO dummy. Thus, there would not be a cost increase to purchase and test with the dummy.

NHTSA believes that a lead time of three years is sufficient for redesigning CRSs that may need modifications to comply with the proposed updates to ATD selection for the sled test because most CRSs would need minor or no modifications as a result of the proposed updates. Further, a 3-year time frame aligns with the typical design cycle for CRSs. The Agency notes also that manufacturers have the option of not changing CRS designs in some instances, and may instead change the weight of the children for whom the CRS is recommended. Narrowing the population of children for whom the CRS is recommended could result in reducing the number of ATDs NHTSA and manufacturers use in compliance and certification tests, respectively.

School Bus Child Restraint Systems

The proposed changes to include in FMVSS No. 213 a new type of CRS

[134] Details of the benefits analysis are provided in the Appendix to this NPRM.

[135] There are currently 45 infant carrier models with recommended upper weight limit exceeding 10 kg (22 lb). Each rear-facing CRS is tested in three different configurations on the standard seat assembly with each dummy used for testing the CRS: (1) CRS installed using seat belts, (2) CRS installed using the lower anchors and no tether, and (3) CRS installed without the base using the lower anchors and no tether. The cost of a sled test is estimated at $4,000. Therefore, the cost savings by not testing the 45 infant carrier models using the HIII–3YO dummy is estimated to be $540,000 (= $4,000 × 3 × 45). Since manufacturers typically conduct more than one test in each of the CRS installation configurations, NHTSA expects the actual cost savings to be greater than the estimated $540,000.

[136] Of 21 tests with the HIII–6YO in the proposed seat assembly, all passed the performance metrics, except for one that failed head excursion limits.

manufactured for exclusive use on school bus seats would allow the sale of these products. The Agency estimates there would be no cost impacts associated with the proposed changes because the amendment would permit more products to be sold for school bus use. The benefits of the proposed changes are associated with the popularity of such CRSs in the pupil transportation industry for transporting preschool and special-needs children. However, NHTSA cannot quantify these benefits at this time.

Executive Order 13771

Executive Order 13771 titled ''Reducing Regulation and Controlling Regulatory Costs,'' directs that, unless prohibited by law, whenever an executive department or agency publicly proposes for notice and comment or otherwise promulgates a new regulation, it shall identify at least two existing regulations to be repealed. In addition, any new incremental costs associated with new regulations shall, to the extent permitted by law, be offset by the elimination of existing costs. Only those rules deemed significant under section 3(f) of Executive Order 12866, ''Regulatory Planning and Review,'' are subject to these requirements. As discussed above, this rule is not a significant rule under Executive Order 12866 and, accordingly, is not subject to the offset requirements of 13771.

This proposed rule is expected to be an E.O. 13771 deregulatory action because NHTSA believes it would reduce the cost of complying with NHTSA's requirements. The proposed rule would amend FMVSS No. 213 to update the standard seat assembly and reduce costs by eliminating unnecessary or outdated requirements, such as unnecessary testing of infant carriers with the 3YO dummy. The proposal to eliminate unnecessary testing with the 3YO test dummy would result in a reduction in testing costs of $540,000 for the current number of infant carrier models in the market. Removing the restrictions in the owner registration program will enable manufacturers to interact with consumers using modern methods of communication, which should encourage design innovation and productivity. Proposals to update labels and owners' manuals would not increase costs, as manufacturers would be replacing current labels and manuals with updated versions. NHTSA estimates that virtually all CRSs made in the U.S. would meet FMVSS No. 213's performance requirements on the proposed seat assembly.

Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of proposed rulemaking or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.,* small businesses, small organizations, and small governmental jurisdictions), unless the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. Agencies must also provide a statement of the factual basis for this certification.

I certify that this proposed rule would not have a significant economic impact on a substantial number of small entities. NHTSA estimates there to be 29 manufacturers of child restraints, none of which are small businesses. Even if there were a small CRS manufacturer, the impacts of this proposed rule would not be significant. NHTSA believes that virtually all CRSs would meet FMVSS No. 213's requirements on the new seat assembly without modification. Manufacturers may need to change the labels on their child restraints pursuant to the proposed requirements, but the changes are minor and would entail switching out values on current labels.

National Environmental Policy Act

NHTSA has analyzed this proposed rule for the purposes of the National Environmental Policy Act and determined that it would not have any significant impact on the quality of the human environment.

Executive Order 13132 (Federalism)

NHTSA has examined this proposed rule pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999) and concluded that no additional consultation with States, local governments or their representatives is mandated beyond the rulemaking process. The Agency has concluded that the rulemaking would not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement. The proposed rule would not have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

NHTSA rules can preempt in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision: When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. 49 U.S.C. 30103(b)(1). It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance.

The express preemption provision described above is subject to a savings clause under which ''[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.'' 49 U.S.C. 30103(e). Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of such State common law tort causes of action by virtue of NHTSA's rules, even if not expressly preempted. This second way that NHTSA rules can preempt is dependent upon there being an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer, notwithstanding the manufacturer's compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist—for example, when the standard at issue is both a minimum and a maximum standard—the State common law tort cause of action is impliedly preempted. See *Geier* v. *American Honda Motor Co.,* 529 U.S. 861 (2000).

Pursuant to Executive Orders 13132 and 12988, NHTSA has considered whether this proposed rule could or should preempt State common law causes of action. The Agency's ability to announce its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation. To this end, the agency has examined the nature (*e.g.,* the language

and structure of the regulatory text) and objectives of this proposed rule and finds that this proposed rule, like many NHTSA rules, would prescribe only a minimum safety standard. As such, NHTSA does not intend that this proposed rule would preempt State tort law that would effectively impose a higher standard on motor vehicle manufacturers than that established by this proposed rule. Establishment of a higher standard by means of State tort law would not conflict with the minimum standard proposed here. Without any conflict, there could not be any implied preemption of a State common law tort cause of action.

Civil Justice Reform

With respect to the review of the promulgation of a new regulation, section 3(b) of Executive Order 12988, ''Civil Justice Reform'' (61 FR 4729, February 7, 1996) requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect; (2) clearly specifies the effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) clearly specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. This document is consistent with that requirement.

Pursuant to this Order, NHTSA notes as follows. The preemptive effect of this proposed rule is discussed above. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceeding before they may file suit in court.

National Technology Transfer and Advancement Act

Under the National Technology Transfer and dvancement Act of 1995 (NTTAA) (Pub. L. 104–113), all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments. Voluntary consensus standards are technical standards (*e.g.,* material specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the International Organization for Standardization (ISO) and the SAE International (SAE). The NTTAA directs agencies to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards. NHTSA searched for but did not find voluntary consensus standards directly applicable to the amendments proposed in this NPRM, other than the minor proposal to update the reference to SAE Recommended Practice J211/1 to the March 1995 version.

However, consistent with the NTTAA, NHTSA reviewed the procedures and regulations developed globally to test child restraints dynamically and found areas of common ground.[137] While there is no single procedure or regulation of another country that sufficiently replicates frontal crashes occurring in the U.S., the agency considered various aspects of international regulations pertaining to the testing of child restraint systems. NHTSA analyzed aspects of the seating assemblies used by NPACS, ECE R.44 and Transport Canada's CMVSS No. 213 and the frontal test speeds used worldwide in sled tests. NHTSA proposes a requirement to test CRSs with Type 2 (3-point) seat belts, which is consistent with CMVSS No. 213. NHTSA tentatively concludes that the provisions would increase CRS safety, and would promote harmonization of our countries' regulatory approaches in testing CRSs.

Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, requires Federal agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually (adjusted for inflation with base year of 1995). Adjusting this amount by the implicit gross domestic product price deflator for the year 2010 results in $136 million (110.993/81.606 = 1.36). This NPRM would not result in a cost of $136 million or more to either State, local, or tribal governments, in the aggregate, or the private sector. Thus, this NPRM is not subject to the requirements of sections 202 of the UMRA.

Executive Order 13609 (Promoting International Regulatory Cooperation)

The policy statement in section 1 of E.O. 13609 provides, in part:

> The regulatory approaches taken by foreign governments may differ from those taken by U.S. regulatory agencies to address similar issues. In some cases, the differences between the regulatory approaches of U.S. agencies and those of their foreign counterparts might not be necessary and might impair the ability of American businesses to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

NHTSA requests public comment on the ''regulatory approaches taken by foreign governments'' concerning the subject matter of this rulemaking. In the discussion above on the NTTAA, NHTSA has noted that it has reviewed the procedures and regulations developed by Transport Canada regarding testing CRSs with Type 2 (3-point) seat belts, and tentatively agrees with the merits of the CMVSS No. 213 provision. Comments are requested on the above policy statement and the implications it has for this rulemaking.

If you have any responses to these questions, please write to NHTSA with your views.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995, a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. Before seeking OMB approval, Federal agencies must provide a 60-day public comment period and otherwise consult with members of the public and affected agencies concerning each collection of information requirement. NHTSA believes the proposed changes to the owner registration program (571.213, S5.8) constitute changes to a ''collection of information'' requirement for child restraint system manufacturers. NHTSA is providing a 60-day comment period on reporting burdens and other matters associated with the proposal.

OMB has promulgated regulations describing what must be included in the request for comment document. Under OMB's regulation (at 5 CFR 1320.8(d)), an agency must ask for public comment on the following:

Whether the proposed collection of information is necessary for the proper

[137] The NTTAA seeks to support efforts by the Federal government to ensure that agencies work with their regulatory counterparts in other countries to address common safety issues. Circular No. A–119, ''Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities,'' January 27, 2016, p. 15.

performance of the functions of the agency, including whether the information will have practical utility;

The accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

How to enhance the quality, utility, and clarity of the information to be collected;

How to minimize the burden of the collection of information on those who are to respond, including the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.* permitting electronic submission of responses.

In compliance with these requirements, NHTSA asks for public comments on the following proposed collection of information:

Title: ''Consolidated Child Restraint System Registration, Labeling and Defect Notifications.'' *OMB Control Number:* 2127–0576.

Requested Expiration Date of Approval: Three years from the approval date.

Type of Request: Revision of a currently approved collection.

Affected Public: Businesses, Individuals and Households.

Summary of the Collection of Information:

Child restraint manufacturers are required to provide an owner registration card for purchasers of child restraint systems in accordance with title 49 of the Code of Federal Regulations (CFR), part 571, section 213, ''Child restraint systems.'' The registration card is required to be perforated into two parts. The top part (information part) contains a message and suitable instructions to be retained by the purchaser. The size, font, color, and layout of the top part are currently prescribed in Figures 9a and 9b,[138] as is the attachment method (fold/perforation) of the information card to the lower part of the form (the mail-in card). The top part of the registration card sets forth: (a) Prescribed wording advising the consumer of the importance of registering; (b) prescribed instructions on how to register; and (c) prescribed statements that the mail-in card is pre-addressed and that postage is already paid.

The bottom part (the mail-in card) is to be returned to the manufacturer by the purchaser. The bottom part includes prepaid return postage, the pre-printed name/address of the manufacturer, the pre-printed model and date of manufacture, and spaces for the purchaser to fill in his/her name and address. Optionally, child restraint manufacturers are permitted to add to the registration form: (a) Specified statements informing CRS owners that they may register online; (b) the internet address for registering with the company; (c) revisions to statements reflecting use of the internet to register; and (d) a space for the consumer's email address.

Child restraint manufacturers are also required to provide printed instructions with new CRSs, with step-by-step information on how the restraint is to be used, and a permanently attached label that gives ''quick look'' information on matters such as use instructions and information on registering the CRS.

Under this NPRM, the Agency is proposing to amend the requirements that prescribe wording advising the consumer of the importance of registering and instructing how to register. NHTSA proposes to stop prescribing the wording. Instead, CRS manufacturers would be given leeway to use their own words to convey the importance of registering the CRS and to instruct how registration is achieved. NHTSA would allow statements instructing consumers to use electronic (or any other means) of registering, as long as instructions are provided on using the paper card for registering (including that the mail-in card is pre-addressed and that the postage is pre-paid). NHTSA also proposes to permit or possibly require a statement that the information collected through the registration process will not be used by the manufacturer for any purpose other than contacting the consumer in the event of a recall.

The Agency also proposes to remove restrictions on manufacturers on their use of size, font, color, layout, and attachment method of the information card portion. NHTSA proposes to continue a current provision that prohibits any other information unrelated to the registration of the CRS, such as advertising or warranty information.

If the proposed changes to the information card are adopted, NHTSA anticipates a change to the hour burden or costs associated with the revised information card, labels and owner's manuals. Child restraint manufacturers produce, on average, a total of approximately 15,000,000 child restraints per year. NHTSA estimates there are 29 CRS manufacturers with 159 distinct CRS models.

The hour burden associated with the revised label consists of the child restraint manufacturer: (a) Designing the information card with statements to instruct how to register, encourage registration and optionally, how to register electronically and how the submitted information will be used; and (b) updating this information on the existing information card, label and instruction manual. NHTSA assumes for purposes of this NPRM analysis that each manufacturer would design the registration information on the information card, label and manuals 5 times per year, whether it is to use different registration cards designs in different CRS models or to adapt the design to improve registrations. The Agency estimates 50 hours of additional burden per child restraint manufacturer for the designing of the registration card (information card portion), labels and manuals that no longer have prescribed text (50 hours × 5 designs/year × 29 CRS manufacturers = 7,250 hours annually).

Estimated Additional Annual Burden: 7,250 hours.

Comments are invited on: Whether the proposed collection of information is necessary for the proper performance of the functions of the Department, including whether the information will have practical utility; the accuracy of the Department's estimate of the burden of the proposed information collection; ways to enhance the quality, utility and clarity of the information to be collected; and ways to minimize the burden of the collection of information on respondents, including the use of automated collection techniques of other forms of information technology.

You may submit comments (identified by the DOT Docket ID Number above) by any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Mail:* Docket Management Facility: U.S. Department of Transportation, 1200 New Jersey Avenue SE, West Building Ground Floor, Room W12–140, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590–0001 between 9 a.m. and 5 p.m. ET, Monday through Friday, except Federal holidays.
- *Fax:* 202–493–2251.

Regardless of how you submit your comments, you should mention the docket number of this document. You may call the Docket at (202) 366–9826. Please identify the proposed collection of information for which a comment is provided, by referencing its OMB

[138] Prescribed in FMVSS No. 213, ''Child restraint systems.'' As discussed in this preamble, this NPRM proposes to relieve some of those restrictions.

clearance number. It is requested, but not required, that two copies of the comment be provided. Note that all comments received will be posted without change to *http://www.regulations.gov,* including any personal information provided. Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78).

Regulation Identifier Number

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulatory and Deregulatory Actions. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

Plain Language

Executive Order 12866 requires each agency to write all rules in plain language.

Application of the principles of plain language includes consideration of the following questions:

- Have we organized the material to suit the public's needs?
- Are the requirements in the rule clearly stated?
- Does the rule contain technical language or jargon that isn't clear?
- Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?
- Would more (but shorter) sections be better?
- Could we improve clarity by adding tables, lists, or diagrams?
- What else could we do to make the rule easier to understand?

NHTSA has considered these questions and attempted to use plain language in writing this proposed rule. Please inform the agency if you can suggest how NHTSA can improve its use of plain language.

Incorporation by Reference

In updating the standard seat assembly used in the FMVSS No. 213 frontal test, NHTSA would incorporate by reference a drawing package titled, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2019,'' dated May 2019, into FMVSS No. 213 (49 CFR 571.213). The drawing package consists of detailed drawings of and other materials related to the proposed standard seat assembly. Interested persons could use the drawing package to manufacture the standard seat assembly for their own use if they wished to do so.

NHTSA has placed a copy of the drawing package in the docket for this NPRM. Interested parties can download a copy of the drawing package or view the materials on line by accessing *www.Regulations.gov.* We also will place a copy of the drawing package in the docket of the final rule that incorporates the new standard seat assembly into FMVSS No. 213.

This NPRM also proposes to change an incorporation by reference of SAE Recommended Practice J211, ''Instrumentation for Impact Tests,'' revised 1980, to a 1995 version of J211 (J211/1). SAE J211/1, Revised March 1995, ''Instrumentation for Impact Test—Part 1—Electronic Instrumentation,'' provides guidelines and recommendations for techniques of measurement with electronic instrumentation used in impact tests. These include a series of performance recommendations for data channels, guidelines for selecting a frequency response class for electronic instrumentation, and guidelines on sign convention and digital data processing. The Director of the Federal Register has already approved the incorporation by reference of SAE Recommended Practice J211/1 (1995) into 49 CFR part 571 (see 49 CFR 571.5(l)(4)). Interested parties can obtain a copy of the SAE Recommended Practice J211/1 (March 1995) ''Instrumentation for Impact Test—Part 1—Electronic Instrumentation,'' from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096. Telephone: (724) 776–4841, website: *www.sae.org.*

XV. Public Participation

How do I prepare and submit comments?

To ensure that your comments are correctly filed in the Docket, please include the Docket Number in your comments.

Your comments must be written and in English. Your comments must not be more than 15 pages long. NHTSA established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments, and there is no limit on the length of the attachments.

If you are submitting comments electronically as a PDF (Adobe) file, NHTSA asks that the documents be submitted using the Optical Character Recognition (OCR) process, thus allowing NHTSA to search and copy certain portions of your submissions.

Please note that pursuant to the Data Quality Act, in order for substantive data to be relied on and used by NHTSA, it must meet the information quality standards set forth in the OMB and DOT Data Quality Act guidelines. Accordingly, NHTSA encourages you to consult the guidelines in preparing your comments. DOT's guidelines may be accessed at *https://www.transportation.gov/regulations/dot-information-dissemination-quality-guidelines.*

Tips for Preparing Your Comments

When submitting comments, please remember to:

Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).

Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.

Describe any assumptions you make and provide any technical information and/or data that you used.

If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

Provide specific examples to illustrate your concerns, and suggest alternatives.

Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

To ensure that your comments are considered by the agency, make sure to submit them by the comment period deadline identified in the **DATES** section above.

For additional guidance on submitting effective comments, see https://www.regulations.gov/docs/Tips_For_Submitting_Effective_Comments.pdf.

How can I be sure my comments were received?

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you

should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT**. In addition, you should submit a copy from which you have deleted the claimed confidential business information to the docket. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation. (49 CFR part 512.)

Will the Agency consider late comments?

NHTSA will consider all comments that the docket receives before the close of business on the comment closing date indicated above under **DATES**. To the extent possible, NHTSA will also consider comments that the docket receives after that date. If the docket receives a comment too late for the agency to consider it in developing a final rule, NHTSA will consider that comment as an informal suggestion for future rulemaking action.

How can I read the comments submitted by other people?

You may read the comments received by the docket at the address given above under **ADDRESSES**. You may also see the comments on the internet (*http://regulations.gov*).

Please note that even after the comment closing date, NHTSA will continue to file relevant information in the docket as it becomes available. Further, some people may submit late comments. Accordingly, the agency recommends that you periodically check the docket for new material.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78).

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, and Tires; Incorporation by Reference.

In consideration of the foregoing, NHTSA proposes to amend 49 CFR part 571 as set forth below.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

■ 1. The authority citation for Part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.95.

■ 2. Section 571.5 is amended by adding and reserving paragraphs (k)(5) through (8), adding paragraph (k)(9), and revising paragraph (l)(4), to read as follows:

§ 571.5 Matter incorporated by reference.

* * * * *

(k) * * *

(5) [Reserved.]

(6) [Reserved.]

(7) [Reserved.]

(8) [Reserved.]

(9) Drawing Package, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2019,'' (consisting of drawings and a bill of materials), May 2019, into § 571.213.

(l) * * *

(4) SAE Recommended Practice J211/1, revised March 1995, ''Instrumentation for Impact Test—Part 1—Electronic Instrumentation'' into §§ 571.202a; 571.208; 571.213; 571.213a 571.218; 571.403.

* * * * *

■ 3. Section 571.213 is amended by—

■ Adding, in alphabetical order, a definition of ''school bus child restraint system'' to S4;

■ Removing and reserving S5.1.2.2;

■ Revising S5.1.3.1(a);

■ Revising S5.3.1(b);

■ Revising S5.3.2;

■ Revising the introductory text of S5.5.2;

■ Revising S5.5.2(f), S5.5.2(g)(1)(i), removing and reserving S5.5.2(k)(2);

■ Removing and reserving S5.5.2(l)(2), revising S5.5.2(l)(3)(i);

■ Revising S5.5.2(m), S5.5.5(f), S5.5.5(k), S5.6.1.7, S5.6.1.11, S5.6.2.2, S5.8.1, S5.8.2, and S5.9(a);

■ Adding S6.1.1(a)(1)(i) and revising S6.1.1(a)(1)(ii);

■ Revising S6.1.1(a)(2)(i)(B) and S6.1.1(a)(2)(ii)(G);

■ Removing and reserving S6.1.1(c);

■ Revising S6.1.2(a), S6.1.2(a)(1) and S6.1.2(a)(2) and S6.2(d)(1)(ii);

■ Adding S7.1.1;

■ Revising the introductory paragraph to S7.1.2;

■ Revising S7.1.3, and,

■ Adding S10.2.2(e), and Figures 1D, 1D', 1E, 1E', 9c and 9d.

The revised and added text and figures read as follows:

§ 571.213 Child restraint systems.

* * * * *

S4. Definitions * * *

School bus child restraint system means a child restraint system (including a harness) manufactured and sold only for use on school bus seats, that has a label conforming with S5.3.1(b).

* * * * *

S5.1.2.2 [Reserved]

* * * * *

S5.1.3.1 * * *

(a)(1) For each add-on child restraint system manufactured before [*date 3 years after date of publication of final rule*]—

(i) No portion of the test dummy's head shall pass through a vertical transverse plane that is 720 mm or 813 mm (as specified in table 2 to this S5.1.3.1(a)) forward of point Z on the Standard Seat Assembly No. NHTSA–213–2003, measured along the center SORL (as illustrated in figure 1B of this standard); and

(ii) Neither knee pivot point shall pass through a vertical transverse plane that is 915 mm forward of point Z on the Standard Seat Assembly No. NHTSA–213–2003, measured along the center SORL. * * *

(2) For each add-on child restraint system manufactured on or after [*date 3 years after date of publication of final rule*]—

(i) No portion of the test dummy's head shall pass through a vertical transverse plane that is 720 mm or 813 mm (as specified in table 3 to this S5.1.3.1(a)) forward of point Z on the Standard Seat Assembly No. NHTSA–213–2019, measured along the center SORL (as illustrated in figure 1D of this standard); and

(ii) Neither knee pivot point shall pass through a vertical transverse plane that is 915 mm forward of point Z on the Standard Seat Assembly No. NHTSA–213–2019, measured along the center SORL.

TABLE 2 TO S5.1.3.1(a)—ADD-ON FORWARD-FACING CHILD RESTRAINTS MANUFACTURED BEFORE

[Date 3 years after date of publication of final rule]

When this type of child restraint	Is tested in accordance with—	These excursion limits apply	Explanatory note: in the test specified in 2nd column, the child restraint is attached to the test seat assembly in the manner described below, subject to certain conditions
Harnesses, backless booster seats and restraints designed for use by physically handicapped children.	S6.1.2(a)(1)(i)(A) ...	Head 813 mm; Knee 915 mm	Attached with lap belt; in addition, if a tether is provided, it is attached.
School bus child restraint systems.	S6.1.2(a)(1)(i)(A) ...	Head 813 mm; Knee 915 mm	Attached with seat back mount, or seat back and seat pan mounts.
Belt-positioning seats	S6.1.2(a)(1)(ii)	Head 813 mm; Knee 915 mm	Attached with lap and shoulder belt; no tether is attached.
Child restraints other than harnesses, backless booster seats, restraints designed for use by physically handicapped children, school bus child restraint systems, and belt-positioning seats.	S6.1.2(a)(1)(i)(B) ...	Head 813 mm; Knee 915 mm	Attached with lap belt; no tether is attached.
	S6.1.2(a)(1)(i)(D) ...	Head 813 mm; Knee 915 mm	Attached to lower anchorages of child restraint anchorage system; no tether is attached.
	.....	.....	Attached with lap belt; in addition, if a tether is provided, it is attached.
	.....	.....	
	S6.1.2(a)(1)(i)(A) ...	Head 720 mm; Knee 915 mm	
	.....	.....	
	S6.1.2(a)(1)(i)(C) ...	Head 720 mm; Knee 915 mm	Attached to lower anchorages of child restraint anchorage system; in addition, if a tether is provided, it is attached.
Child restraints equipped with a fixed or movable surface described in S5.2.2.2 that has belts that are not an integral part of that fixed or movable surface.	S6.1.2(a)(2)(i)	Head 813 mm; Knee 915 mm	Attached with lap belt or lower anchorages of child restraint anchorage system; no tether is attached.

TABLE 3 TO S5.1.3.1(a)—ADD-ON FORWARD-FACING CHILD RESTRAINTS MANUFACTURED ON OR AFTER

[Date 3 years after date of publication of final rule]

When this type of child restraint	Is tested in accordance with—	These excursion limits apply	Explanatory note: in the test specified in 2nd column, the child restraint is attached to the test seat assembly in the manner described below, subject to certain conditions
Harnesses and restraints designed for use by physically handicapped children.	S6.1.2(a)(1)(iv)(A)	Head 813 mm; Knee 915 mm.	Attached with lap and shoulder belt; in addition, if a tether is provided, it is attached.
School bus child restraint systems.	S6.1.2(a)(1)(iv)(A)	Head 813 mm; Knee 915 mm	Attached with seat back mount, or seat back and seat pan mounts.
Booster seats	S6.1.2(a)(1)(iv)(B)	Head 813 mm; Knee 915 mm	Attached with lap and shoulder belt; no tether is attached.
Child restraints other than harnesses, restraints designed for use by physically handicapped children, school bus child restraint systems, and booster seats.	S6.1.2(a)(1)(iv)(B)	Head 813 mm; Knee 915 mm	Attached with lap and shoulder belt; no tether is attached.
	S6.1.2(a)(1)(iv)(D)	Head 813 mm; Knee 915 mm	Attached to lower anchorages of child restraint anchorage system; no tether is attached.
	.....	.....	Attached with lap and shoulder belt; in addition, if a tether is provided, it is attached.
	S6.1.2(a)(1)(iv)(A)	Head 720 mm; Knee 915 mm	
	.....	.....	Attached to lower anchorages of child restraint anchorage system; in addition, if a tether is provided, it is attached.
	S6.1.2(a)(1)(iv)(C)	Head 720 mm; Knee 915 mm	
	.....	.....	
	.....	.....	
Child restraints equipped with a fixed or movable surface described in S5.2.2.2 that has belts that are not an integral part of that fixed or movable surface.	S6.1.2(a)(2)(i)	Head 813 mm; Knee 915 mm	Attached with lap and shoulder belt or lower anchorages of child restraint anchorage system; no tether is attached.

* * * * *

S5.3.1 * * *

(b) School bus child restraint systems must have a label, that conforms in content to Figure 12 and to the requirements of S5.3.1(b)(1) through S5.3.1(b)(3) of this standard, and that is permanently affixed to the part of the school bus child restraint system that attaches the system to a vehicle seat back.

(1) The label must be plainly visible when installed and easily readable.

(2) The message area must be white with black text. The message area must be no less than 20 square centimeters.

(3) The pictogram shall be gray and black with a red circle and slash on a white background. The pictogram shall be no less than 20 mm in diameter.

S5.3.2 Each add-on child restraint system manufactured before [*date 3 years after date of publication of final rule*] and each add-on child restraint

system manufactured on or after [*date 3 years after date of publication of final rule*] shall be capable of meeting the requirements of this standard when installed solely by each of the means indicated in the following tables 5 and 6, respectively, for the particular type of child restraint system:

TABLE 5 TO S5.3.2 MEANS OF INSTALLATION FOR CHILD RESTRAINTS MANUFACTURED BEFORE
[Date 3 years after date of publication of final rule]

Type of add-on child restraint system	Type 1 seat belt assembly	Type 1 seat belt assembly plus a tether anchorage, if needed	Child restraint anchorage system	Type 2 seat belt assembly	Seat back mount, or seat back and seat pan mounts
School bus child restraint systems					X
Other harnesses		X			
Car beds	X				
Rear-facing restraints	X		X		
Belt-positioning seats				X	
All other child restraints	X	X	X		

TABLE 6 TO S5.3.2 MEANS OF INSTALLATION FOR CHILD RESTRAINTS MANUFACTURED ON OR AFTER
[Date 3 years after date of publication of final rule]

Type of add-on child restraint system	Type 2 seat belt assembly plus a tether anchorage, if needed	Child restraint anchorage system	Type 2 seat belt assembly	Seat back mount, or seat back and seat pan mounts
School bus child restraint systems				X
Other harnesses	X			
Car beds			X	
Rear-facing restraints		X	X	
Booster seats			X	
All other child restraints	X	X	X	

* * * * *

S5.5.2 The information specified in paragraphs (a) through (e) and paragraphs (g) through (m) of this section shall be stated in the English language and in letters and numbers that are not smaller than 10 point type. Unless otherwise specified, the information shall be labeled on a white background with black text. Unless written in all capitals, the information shall be stated in sentence capitalization.

* * * * *

(f) Statements or a combination of statements and pictograms specifying the manufacturer's recommendations for the mass and height ranges of children who can safely occupy the system in each applicable mode (rear-facing, forward-facing, booster), except manufacturers shall not recommend forward-facing child restraint systems with internal harnesses for children of masses less than 12 kg (26.5 lb), and shall not recommend booster seats for children of masses less than 18.4 kg (40 lb). For seats that can only be used as belt-positioning seats, manufacturers must include the maximum and minimum recommended height, but may delete the reference to maximum weight.

* * * * *

(g) * * *

(1) * * *

(i) As appropriate, the statements required by the following sections will be bulleted and placed after the statement required by 5.5.2(g)(1) in the following order: 5.5.2(k)(1), 5.5.2(h), 5.5.2(j), and 5.5.2(i).

* * * * *

(k)(1) * * *

(2) [Reserved]

* * * * *

(l) * * *

(2) [Reserved]

(3) * * *

(i) If the child restraint is designed to meet the requirements of this standard when installed by the child restraint anchorage system according to S5.3.2, and if the sum of the weight of the child restraint and the maximum child weight recommended for the child restraint when used with the restraint's internal harness or components is greater than 65 lb when used forward-facing or rear-facing, include the following statement on this installation diagram: ''Do not install by this method for a child weighing more than *.'' At the manufacturer's option, ''*'' is the child weight limit in English units in accordance with S5.5.2(l)(3)(i)(A), (B) or (C). The corresponding child weight limit in metric units may also be included in the statement at the manufacturer's option.

* * * * *

(m) Statements informing the owner of the importance of registering the child restraint for recall purposes and instructing the owner how to register the child restraint at least by mail and by telephone, providing a U.S. telephone number. The following statement must also be provided: ''For recall information, call the U.S. Government's Vehicle Safety Hotline at 1–888–327–4236 (TTY: 1–800–424–9153), or go to *www.NHTSA.gov.*''

* * * * *

S5.5.5 * * *

(f) The same statement(s) provided under S5.5.2(f).

* * * * *

(k) Statements informing the owner of the importance of registering the child restraint for recall purposes and instructing the owner how to register the child restraint at least by mail and by telephone, providing a U.S. telephone number. The following statement must also be provided: ''For recall information, call the U.S. Government's Vehicle Safety Hotline at 1–888–327–4236 (TTY: 1–800–424–9153), or go to *www.NHTSA.gov.*''

* * * * *

S5.6.1.7 Statements informing the owner of the importance of registering the child restraint for recall purposes and instructing the owner how to register the child restraint at least by mail and by telephone, providing a U.S. telephone number. The following statement must also be provided: ''For recall information, call the U.S. Government's Vehicle Safety Hotline at 1–888–327–4236 (TTY: 1–800–424–9153), or go to *www.NHTSA.gov*.''

* * * * *

S5.6.1.11 For school bus child restraint systems, the instructions must include the following statement:

''WARNING! This restraint must only be used on school bus seats. Entire seat directly behind must be unoccupied or have restrained occupants.'' (The instruction's reference to a ''restrained occupant'' refers to an occupant restrained by any user-appropriate vehicle restraint or child restraint system (*e.g.,* lap belt, lap and shoulder belt, booster seat or other child restraint system.)

* * * * *

S5.6.2.2 The instructions for each built-in child restraint system other than a factory-installed restraint shall include statements informing the owner of the importance of registering the child restraint for recall purposes and instructing the owner how to register the child restraint at least by mail and by telephone, providing a U.S. telephone number. The following statement must also be provided: ''For recall information, call the U.S. Government's Vehicle Safety Hotline at 1–888–327–4236 (TTY: 1–800–424–9153), or go to *www.NHTSA.gov*.''

* * * * *

S5.8.1 *Attached registration form.*

(a) Each child restraint system, except a factory-installed built-in restraint system, shall have a registration form attached to any surface of the restraint that contacts the dummy when the dummy is positioned in the system in accordance with S6.1.2 of Standard 213. The form shall not have advertising or any information other than that related to registering the child restraint system.

(b) Each attached form shall provide a mail-in postcard that conforms in size, and in basic content and format to the forms depicted in Figures 9c and 9d of this section.

(1) The mail-in postcard shall:

(i) Have a thickness of at least 0.007 inches and not more than 0.0095 inches;

(ii) Be pre-printed with the information identifying the child restraint for recall purposes, such as the model name or number and date of manufacture (month, year) of the child restraint system to which the form is attached;

(iii) Contain space for the owner to record his or her name, mailing address, email address, and other pertinent information; and

(iv) Be addressed to the manufacturer, and be postage paid.

(c) The registration form attached to the child restraint shall also provide information:

(1) Informing the owner of the importance of registering the child restraint; and,

(2) Instructing the owner how to register the CRS.

(3) Manufacturers must provide statements informing the purchaser that the registration card is pre-addressed and that postage has been paid.

(4) Manufacturers may provide instructions to register the child restraint electronically. If an electronic registration form is used, it must meet the requirements of S5.8.2 of this section.

(5) Manufacturers must provide statements to the owner explaining that the registration card is not a warranty card, and that the information collected from the owner will not be used for marketing purposes.

S5.8.2 *Electronic registration form.*

(a) Each electronic registration form must meet the requirements of this S5.8.2. Each form shall:

(1) Contain statements at the top of the form:

(i) Informing the owner of the importance of registering the CRS; and,

(ii) Instructing the owner how to register the CRS.

(2) Provide as required registration fields, space for the purchaser to record the model name or number and date of manufacture (month, year) of the child restraint system, and space for the purchaser to record his or her name and mailing address. At the manufacturer's option, a space is provided for the purchaser to record his or her email address.

(b) No advertising information shall appear on the electronic registration form.

(c) The electronic registration form may provide information identifying the manufacturer or a link to the manufacturer's home page, a field to confirm submission, and a prompt to indicate any incomplete or invalid fields prior to submission.

(d) If a manufacturer printed the electronic address (in form of a website or code) on the attached registration form provided pursuant to S5.8.1, the electronic registration form shall be accessed directly by the electronic address. Accessing the electronic address (in form of a website or code) that contains the electronic registration form shall not cause additional screens or electronic banners to appear.

S5.9 * * *

(a)(1) Each add-on child restraint system manufactured before [*date 3 years after publication date of final rule*], other than a car bed, harness, school bus child restraint system, and belt-positioning seat, shall have components permanently attached that enable the restraint to be securely fastened to the lower anchorages of the child restraint anchorage system specified in Standard No. 225 (§ 571.225) and depicted in Drawing Package SAS–100–1000, Standard Seat Belt Assembly with Addendum A or in Drawing Package, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2003'' (both incorporated by reference, see § 571.5). The connectors must be attached to the add-on child restraint by use of a tool, such as a screwdriver. In the case of rear-facing child restraints with detachable bases, only the base is required to have the components. [*NHTSA notes: inclusion of the following text was proposed by a January 23, 2015 NPRM, 80 FR 3744, 3775. ''The connectors designed to attach the add-on child restraint to the lower anchorages of the child restraint anchorage system shall be permanently marked with the pictogram in Figure 15. The pictogram is not less than 9 mm in diameter.*'']

(2) Each add-on child restraint system manufactured on or after [*date 3 years after publication date of final rule*], other than a car bed, harness, school bus child restraint system and belt-positioning seat, shall have components permanently attached that enable the restraint to be securely fastened to the lower anchorages of the child restraint anchorage system specified in Standard No. 225 (§ 571.225) and depicted in Drawing Package, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2019'' (incorporated by reference, see § 571.5). The connectors must be attached to the add-on child restraint by use of a tool, such as a screwdriver. In the case of rear-facing child restraints with detachable bases, only the base is required to have the components. [*NHTSA notes: inclusion of the following text would be consistent with a January 23, 2015 NPRM, 80 FR at 3775. ''The connectors designed to attach the add-on child restraint to the lower anchorages of the child restraint anchorage system shall be permanently marked with the pictogram in Figure 15.*

The pictogram is not less than 9 mm in diameter.'']

* * * * *

S6.1.1 * * *

(a) * * *

(1) * * *

(i) The test device for add-on restraint systems manufactured before *date 3 years after publication date of final rule*] is a standard seat assembly consisting of a simulated vehicle bench seat, with three seating positions, which is depicted in Drawing Package, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2003,'' (consisting of drawings and a bill of materials) dated June 3, 2003 (incorporated by reference; see § 571.5). The assembly is mounted on a dynamic test platform so that the center SORL of the seat is parallel to the direction of the test platform travel and so that movement between the base of the assembly and the platform is prevented. As illustrated in Figures 1A and 1B of this standard, attached to the seat belt anchorage points provided on the standard seat assembly are Type 1 seat belt assemblies in the case of add-on child restraint systems other than belt-positioning seats, or Type 2 seat belt assemblies in the case of belt-positioning seats. These seat belt assemblies meet the requirements of Standard No. 209 (§ 571.209) and have webbing with a width of not more than 2 inches, and are attached to the anchorage points without the use of retractors or reels of any kind. As illustrated in Figures 1A' and 1B' of this standard, attached to the standard seat assembly is a child restraint anchorage system conforming to the specifications of Standard No. 225 (§ 571.225).

(ii) The test device for add-on restraint systems manufactured on or after [*date 3 years after publication date of final rule*] is a standard seat assembly consisting of a simulated vehicle rear seat which is depicted in Drawing Package, ''NHTSA Standard Seat Assembly; FMVSS No. 213, No. NHTSA–213–2019,'' (consisting of drawings and a bill of materials) dated May 2019 (incorporated by reference; see § 571.5). The assembly is mounted on a dynamic test platform so that the center SORL of the seat is parallel to the direction of the test platform travel and so that movement between the base of the assembly and the platform is prevented. As illustrated in Figures 1D and 1E of this standard, attached to the seat belt anchorage points provided on the standard seat assembly is a Type 2 seat belt assembly. The seat belt assembly meets the requirements of Standard No. 209 (§ 571.209) and has webbing with a width of not more than 2 inches, and are attached to the anchorage points without the use of retractors or reels of any kind. As illustrated in Figures 1D' and 1E' of this standard, attached to the standard seat assembly is a child restraint anchorage system conforming to the specifications of Standard No. 225 (§ 571.225).

(2) * * *

(i) * * *

(B) The platform is instrumented with an accelerometer and data processing system having a frequency response of 60 Hz channel frequency class as specified in SAE Recommended Practice J211/1 (1995), ''Instrumentation for Impact Tests,'' (incorporated by reference, see § 571.5). The accelerometer sensitive axis is parallel to the direction of test platform travel.

(ii) * * *

(G) All instrumentation and data reduction is in conformance with SAE Recommended Practice J211/1 (1995), ''Instrumentation for Impact Tests,'' (incorporated by reference, see § 571.5).

* * * * *

S6.1.1(c) [Reserved]

S6.1.2 *Dynamic test procedure.*

(a) Activate the built-in child restraint or attach the add-on child restraint to the seat assembly in any of the following manners, at the agency's option.

(1) *Test configuration I.*

(i) *Child restraints other than belt-positioning seats, manufactured before [date 3 years from date of publication of final rule].* Attach the child restraint in any of the following manners specified in S6.1.2(a)(1)(i)(A) through (D), unless otherwise specified in this standard.

(A) Install the child restraint system at the center seating position of the standard seat assembly, in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1, except that the standard lap belt is used and, if provided, a tether strap may be used. Attach school bus child restraint systems in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1, *i.e.,* the seat back or seat back and seat pan mounts are used.

(B) Except for a harness, a school bus child restraint system, a backless child restraint system with a tether strap, and a restraint designed for use by physically handicapped children, install the child restraint system at the center seating position of the standard seat assembly as in S6.1.2(a)(1)(i)(A), except that no tether strap (or any other supplemental device) is used.

(C) Install the child restraint system using the child restraint anchorage system at the center seating position of the standard seat assembly in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1. The tether strap, if one is provided, is attached to the tether anchorage.

(D) Install the child restraint system using only the lower anchorages of the child restraint anchorage system as in S6.1.2(a)(1)(i)(C). No tether strap (or any other supplemental device) is used.

(ii) *Belt-positioning seats manufactured before [date 3 years from date of publication of final rule].* A belt-positioning seat is attached to either outboard seating position of the standard seat assembly in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1 using only the standard vehicle lap and shoulder belt and no tether (or any other supplemental device). Place the belt-positioning seat on the standard seat assembly such that the center plane of the belt-positioning seat is parallel and aligned to the center plane of the outboard seating positions on the standard seat assembly and the base of the belt-positioning seat is flat on the standard seat assembly cushion. Move the belt-positioning seat rearward on the standard seat assembly until some part of the belt-positioning seat touches the standard seat assembly back. Keep the belt-positioning seat and the seating position center plane aligned as much as possible. Apply 133 N (30 pounds) of force to the front of the belt-positioning seat rearward into the standard seat assembly and release.

(iii) In the case of each built-in child restraint system, activate the restraint in the specific vehicle shell or the specific vehicle, in accordance with the manufacturer's instructions provided in accordance with S5.6.2.

(iv) *Child restraints other than booster seats, manufactured on or after [date 3 years from date of publication of final rule].* At the agency's option, attach the child restraint in any of the following manners specified in S6.1.2(a)(1)(iv)(A) through (D), unless otherwise specified in this standard.

(A) Install the child restraint system on the standard seat assembly, in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1, except that the standard lap and shoulder belt is used and, if provided, a tether strap may be used. Attach the school bus child restraint system in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1, *i.e.,* the seat back or seat back and seat pan mounts are used.

(B) Except for a harness, a school bus child restraint system, and a restraint designed for use by physically handicapped children, install the child restraint system on the standard seat assembly as in S6.1.2(a)(1)(iv)(A), except that no tether strap (or any other supplemental device) is used.

(C) Install the child restraint system using the child restraint anchorage system on the standard seat assembly in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1. The tether strap, if one is provided, is attached to the tether anchorage.

(D) Install the child restraint system using only the lower anchorages of the child restraint anchorage system as in S6.1.2(a)(1)(iv)(C). No tether strap (or any other supplemental device) is used.

(v) Booster seats manufactured on or after *[date 3 years from date of publication of final rule].* A booster seat is attached to the standard seat assembly in accordance with the manufacturer's instructions provided with the system pursuant to S5.6.1 using only the standard lap and shoulder belt and no tether (or any other supplemental device). Place the booster seat on the standard seat assembly such that the center plane of the booster seat is parallel and aligned to the center plane of the standard seat assembly and the base of the booster seat is flat on the standard seat assembly cushion. Move the booster seat rearward on the standard seat assembly until some part of the booster seat touches the standard seat assembly back. Keep the booster seat and the seating position center plane aligned as much as possible. Apply 133 N (30 pounds) of force to the front of the booster seat rearward into the standard seat assembly and release.

(2) *Test configuration II.* (i) In the case of each add-on child restraint system manufactured before *[date 3 years from date of publication of final rule]* which is equipped with a fixed or movable surface described in S5.2.2.2 that has belts that are not an integral part of that fixed or movable surface, install the add-on child restraint system at the center seating position of the standard seat assembly using only the standard seat lap belt to secure the system to the standard seat. Do not attach the top tether. In the case of each add-on child restraint system manufactured on or after *[date 3 years from date of publication of final rule]* which is equipped with a fixed or movable surface described in S5.2.2.2 that has belts that are not an integral part of that fixed or movable surface, install the add-on child restraint system on the standard seat assembly using only the lap and shoulder belt to secure the system to the standard seat, or at NHTSA's option, only the lower anchorages of the child restraint anchorage system. Do not attach the top tether.

(ii) In the case of each built-in child restraint system which is equipped with a fixed or movable surface described in S5.2.2.2 that has belts that are not an integral part of that fixed or movable surface, activate the system in the specific vehicle shell or the specific vehicle in accordance with the manufacturer's instructions provided in accordance with S5.6.2.

* * * * *

(d) Belt adjustment.

(1) * * *

(i) * * *

(ii) All Type I belt systems used to attach an add-on child restraint to the standard seat assembly, and any provided additional anchorage belt (tether), are tightened to a tension of not less than 53.5 N and not more than 67 N, as measured by a load cell used on the webbing portion of the belt. All belt systems used to attach a school bus child restraint system are also tightened to a tension of not less than 53.5 N and not more than 67 N, by measurement means specified in this paragraph.

* * * * *

S7.1.1 Child restraints that are manufactured on or after *date three years after date of publication of the final rule*], are subject to the following provisions.

(a) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass of not greater than 5 kg (11 lb), or by children in a specified height range that includes any children whose height is not greater than 650 mm, is tested with a 49 CFR part 572 subpart K dummy (newborn infant dummy).

(b) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 5 kg but not greater than 10 kg (11 to 22 lb), or by children in a specified height range that includes any children whose height is greater than 650 mm but not greater than 750 mm, is tested with a 49 CFR part 572 subpart K dummy (newborn infant dummy), and a part 572 subpart R dummy (CRABI 12-month-old infant dummy).

(c) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 10 kg but not greater than 13.6 kg (22 to 30 lb), or by children in a specified height range that includes any children whose height is greater than 750 mm but not greater than 870 mm, is tested with a part 572 subpart R dummy (CRABI 12-month-old infant dummy).

(d) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 13.6 kg but not greater than 18.2 kg (30 to 40 lb), or by children in a specified height range that includes any children whose height is greater than 870 mm but not greater than 1100 mm, is tested with a part 572 subpart P dummy (Hybrid III 3-year-old dummy).

(e) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 18.2 kg (40 lb) but not greater than 22.7 kg (50 lb), or by children in a specified height range that includes any children whose height is greater than 1100 mm but not greater than 1250 mm is tested with a 49 CFR part 572, subpart N dummy (Hybrid III 6-year-old dummy).

(f) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 22.7 kg (50 lb) but not greater than 29.5 kg (65 lb) or by children in a specified height range that includes any children whose height is greater than 1100 mm but not greater than 1250 mm is tested with a 49 CFR part 572, subpart N dummy (Hybrid III 6-year-old dummy) and with a part 572, subpart S dummy (Hybrid III 6-year-old weighted dummy).

(g) A child restraint that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 29.5 kg (65 lb) or by children in a specified height range that includes any children whose height is greater than 1250 mm is tested with a 49 CFR part 572, subpart T dummy (Hybrid III 10-year-old dummy).

S7.1.2 Child restraints that are manufactured before [*date three years after date of publication of the final rule*], are subject to the following provisions and S7.1.3.

* * * * *

S7.1.3 *Voluntary use of alternative dummies.* For child restraint systems

manufactured before [*date 3 years after date of publication of a final rule*], at the manufacturer's option (with said option irrevocably selected prior to, or at the time of, certification of the restraint), when this section specifies use of the 49 CFR part 572, subpart N (Hybrid III 6-year-old dummy) test dummy, the test dummy specified in 49 CFR part 572, subpart I (Hybrid II 6-year-old dummy) may be used in place of the subpart N test dummy.

* * * * *

S10.2.2 * * *

(e)(1) When using the Hybrid III 3-year-old (part 572, subpart P) dummy in a rear-facing child restraint system with an internal restraint system, remove the knee stop screw (210–6516 in drawing 210–5000–1,-2; incorporated by reference, see § 571.5) from the right and left knee so as to let the knees hyperextend.

(2) Place the Subpart P dummy in the forward- or rear-facing child restraint system being tested so that the back of the dummy torso contacts the back support surface of the system. For a child restraint system equipped with a fixed or movable surface described in S5.2.2.2 that is being tested under the conditions of test configuration II, do not attach any of the child restraint belts unless they are an integral part of the fixed or movable surface. For all other child restraint systems and for a child restraint system with a fixed or movable surface that is being tested under the conditions of test configuration I, attach all appropriate child restraint belts and tighten them as specified in S6.1.2. Attach all appropriate vehicle belts and tighten them as specified in S6.1.2. Position each movable surface in accordance with the instructions that the manufacturer provided under S5.6.1 or S5.6.2.

Figures to § 571.213

* * * * *

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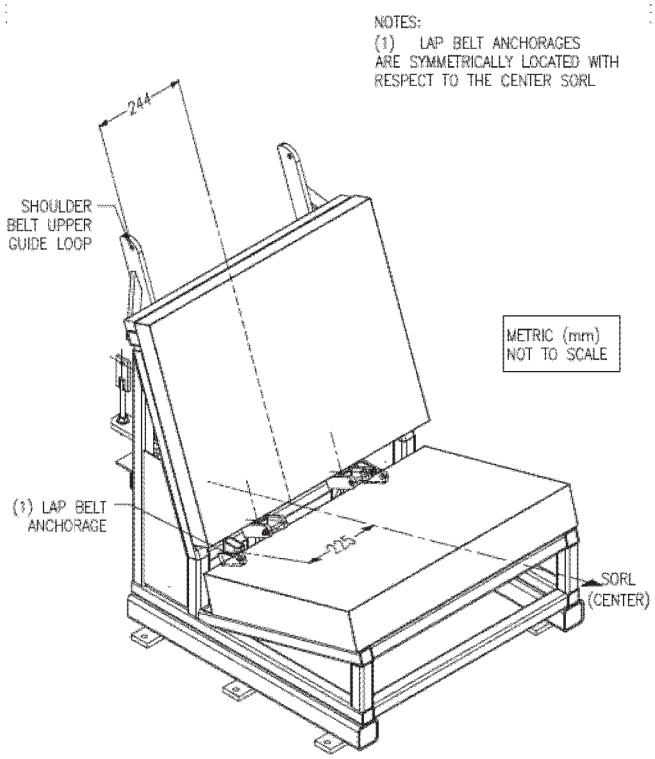
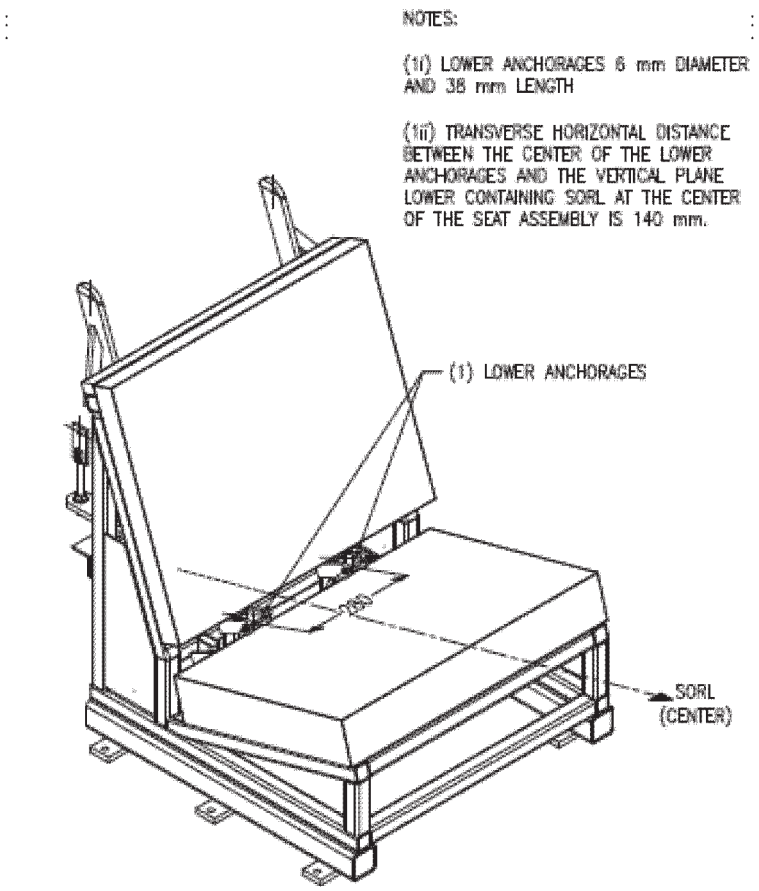


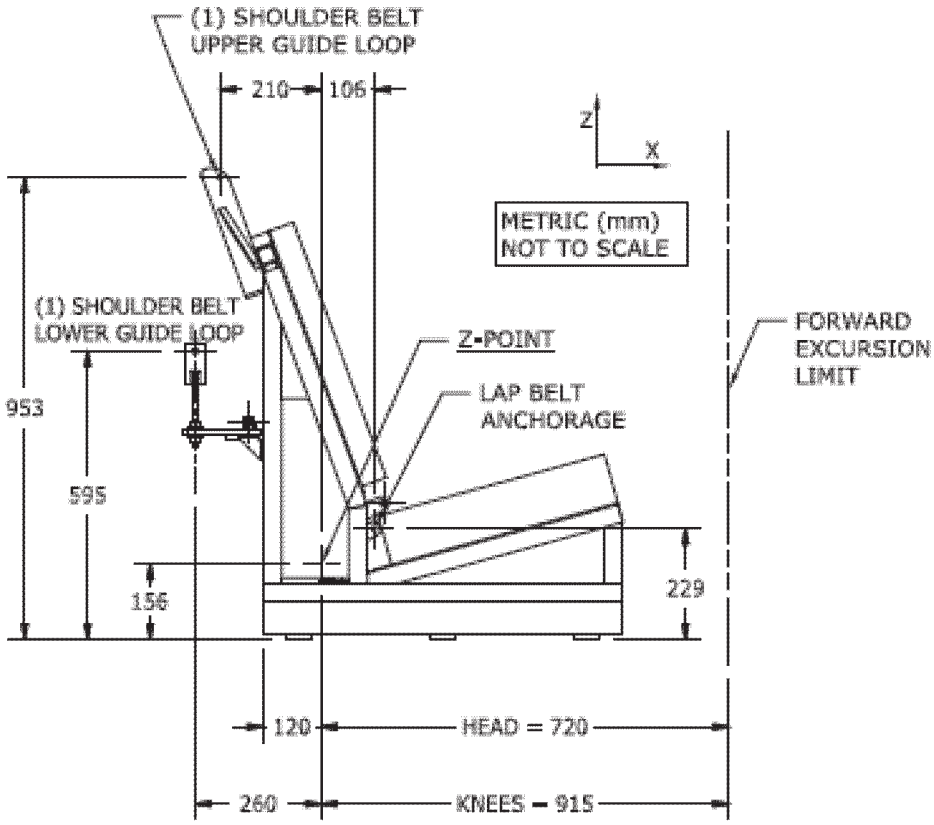
SEAT ORIENTATION REFERENCE LINE AND SEAT BELT ANCHORAGE POINT LOCATIONS ON THE STANDARD SEAT ASSEMBLY

Figure 1D



SEAT ORIENTATION REFERENCE LINE AND LOCATION OF THE LOWER ANCHORAGES OF THE CHILD RESTRAINT ANCHORAGE SYSTEM ON THE STANDARD SEAT ASSEMBLY

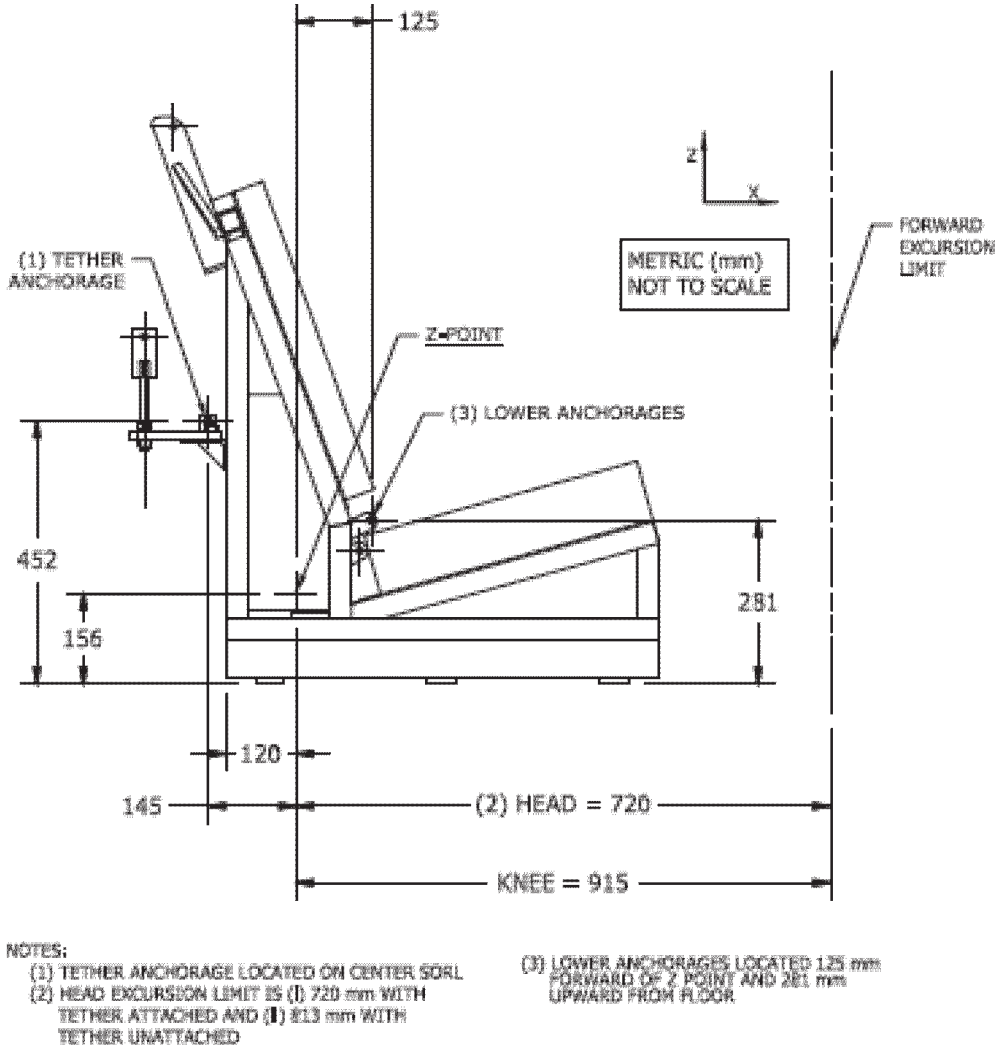
Figure 1D'



NOTES:
(1) SHOULDER BELT UPPER AND LOWER GUIDE LOOPS ARE LOCATED 244 mm RIGHT AND LEFT OF THE CENTER SORL AS SHOWN IN FIGURE 1A

LOCATION OF SHOULDER BELT UPPER AND LOWER GUIDE LOOPS AND FORWARD EXCURSION LIMITS ON THE STANDARD SEAT ASSEMBLY

Figure 1E



LOCATION OF THE CHILD RESTRAINT ANCHORAGES AND FORWARD EXCURSION LIMITS ON THE STANDARD SEAT ASSEMBLY

Figure 1E'

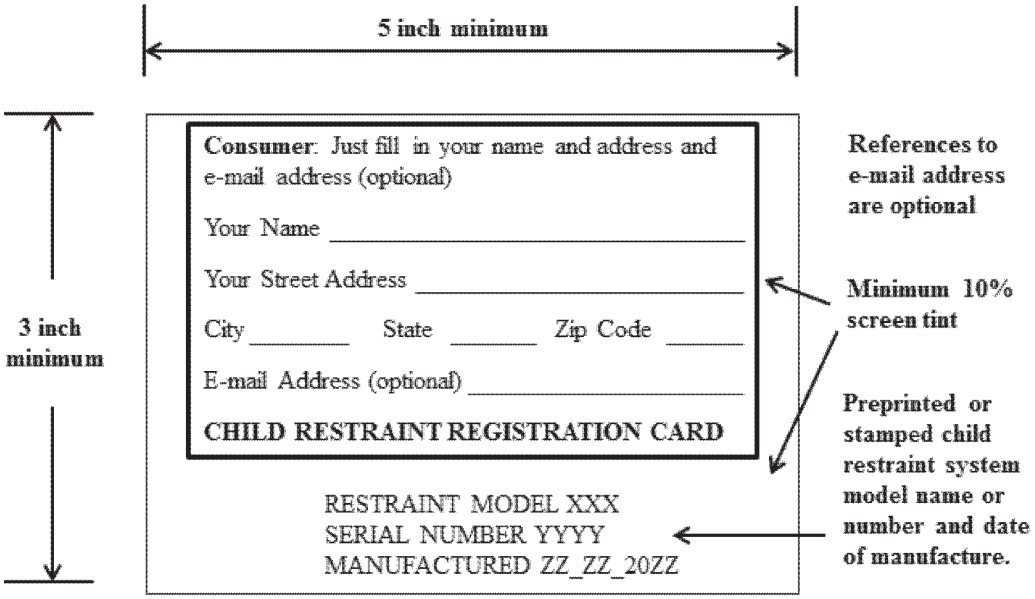


Figure 9c – Registration mail-in postcard for child restraint systems – product identification number and purchaser information side

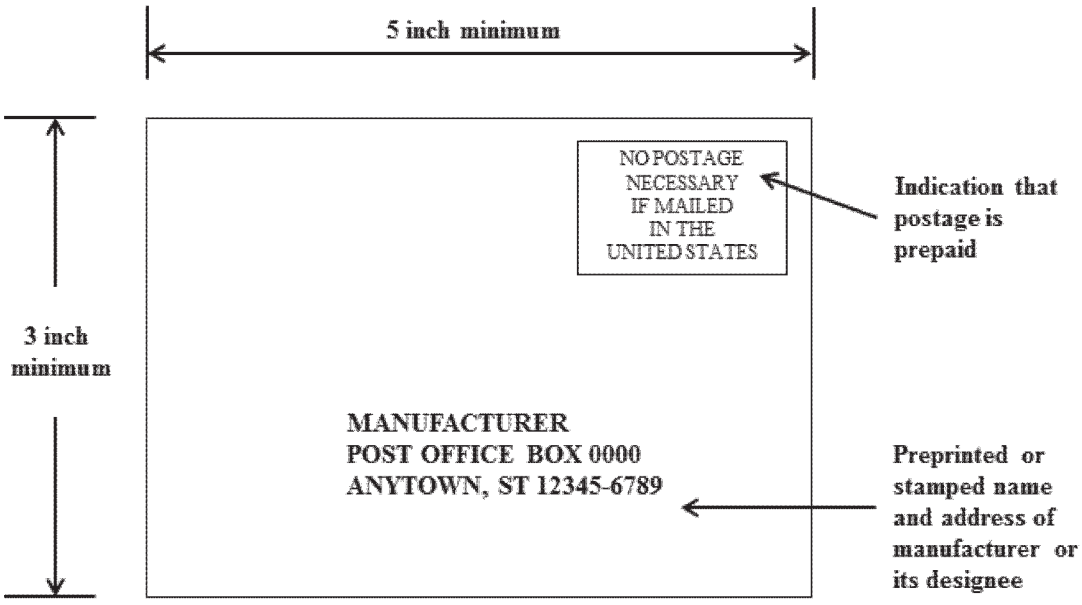


Figure 9d – Registration mail-in postcard for child restraint systems – address side

BILLING CODE 4910–59–C

Note: The following appendix will not appear in the Code of Federal Regulations.

Appendix to Preamble

Estimation of Potential Benefits From the Proposed Increase in the Manufacturer-Recommended Minimum Child Weight for Use of Forward-Facing CRSs and Booster Seats

Under FMVSS No. 213, manufacturers label their child restraints with information about the children for whom the CRS is recommended, based on the children's height and weight. Children should be rear-facing until they are at least 1 year in age, as physically they are safer riding rear-facing so that their head and neck are supported by the CRS back structure in a crash. Currently, the standard requires forward-facing child restraints to be recommended for children weighing a minimum of 9 kg (20 lb). This NPRM proposes to raise this minimum to 12 kg (26.5 lb), because 12 kg (26.5 lb) corresponds to the weight of a 95th percentile one-year-old. In addition, FMVSS No. 213 currently requires booster seats to be recommended for children weighing at least 13.6 kg (30 lb). This NPRM proposes to raise that weight limit to 18.2 kg (40 lb). The proposed increase in the manufacturer-recommended minimum child weight for forward-facing CRSs reduce the premature graduation from rear-facing CRSs to forward-facing CRSs, and from forward-facing car safety seats to booster seats. The proposed changes would align the standard with current best practices on child passenger safety and are anticipated to have a beneficial effect on child passenger safety. This appendix provides the data and analysis methodology to illustrate and estimate that beneficial effect, in terms of potential lives saved and injuries prevented.

(1) Increasing Manufacturer-Recommended Minimum Child Weight for Forward-Facing CRS Use From 9 kg to 12 kg (20 lb to 26.5 lb)

Increasing the manufacturer-recommended minimum child weight for use of forward-facing CRSs from 9 kg to 12 kg (20 lb to 26.5 lb) could potentially reduce premature graduation of children to forward-facing CRSs. NHTSA recommends [139] that all children up to the age of one year should always ride in rear-facing CRSs and that children 1 to 3 years of age ride in rear-facing CRSs as long as possible and until they reach the upper height or weight limit allowed by the CRS's manufacturer. By supporting the entire posterior torso, neck, head, and pelvis, a rear-facing CRS distributes crash forces over the entire body rather than focusing them only at belt contact points as with a forward-facing CRS. Therefore, biomechanical experts, together with the child passenger safety community, recommend rear-facing CRS use for infants and toddlers.

To determine the potential lives saved and injuries prevented by this proposal, the Agency reviewed literature and analyzed available data for: (a) Estimating the incremental effectiveness of rear-facing CRSs over forward-facing CRSs in protecting children in crashes; (b) determining the number of children killed and injured in CRSs categorized by age of child; (c) the percentage of children by age in rear-facing and forward-facing CRSs; (d) the percentage of children by age weighing less than 12 kg (26.5 lb); and, (e) the percentage of caregivers who would follow manufacturer's instructions provided on CRS labels and the users' manual regarding use of the CRS.

Incremental Effectiveness of Rear-Facing CRSs Over Forward-Facing CRSs

McMurry, et al.[140] examined the National Automotive Sampling System—Crashworthiness Data System (NASS–CDS) data files for the years 1988–2015 to compare the injury risk for children up to the age of 2 years in rear-facing CRSs and forward-facing CRSs. The data showed an extremely low injury rate in children up to 2 years of age in both rear-facing CRSs and forward-facing CRSs. McMurry noted that children 2–YO and younger experienced lower rates of injury when restrained in rear-facing CRSs than when restrained in forward-facing CRSs, but this difference was not statistically significant. Due to the absence of any other field data to estimate the incremental effectiveness of rear-facing CRS over forward-facing CRSs for children up to 2 years of age, NHTSA used the weighted data in NASS–CDS reported by McMurry, as shown in Table A–1. Though the weighted data is provided as a percentage, it can still be used to determine incremental effectiveness of rear-facing CRS over forward-facing CRS since effectiveness is estimated from a ratio of injured to uninjured occupants.

TABLE A–1—NUMBER OF INJURED AND UNINJURED CHILD OCCUPANTS BY AGE AND CRS ORIENTATION (RFCRS OR FFCRS) ALONG WITH SURVEY-WEIGHTED PERCENTAGES

[NASS–CDS 1988–2015]

Age	RFCRS	FFCRS
Infants (0–11 months)		
Uninjured	551 (99.4%)	71 (99.3%)
Injured	27 (0.6%)	3 (0.7%)
Effectiveness of RFCRSs over FFCRSs	=1-(0.6/99.4)/(0.7/99.3) = 0.144	
1 year-olds (12–23 months)		
Uninjured	98 (99.8%)	339 (99.5%)
Injured	3 (0.2%)	14 (0.5%)
Effectiveness of RFCRSs over FFCRSs	=1-(0.2/99.8)/(0.5/99.5) = 0.601	

McMurry's data in Table A–1 shows that the effectiveness of rear-facing CRSs over forward-facing CRSs for 0–11 months is 14.4 percent and that for 12–23 months is 60.1 percent. Based on biomechanical testing, the incremental protection offered by rear-facing CRSs over forward-facing CRSs should be greater for smaller/younger children than larger/older children. The 60.1 percent incremental effectiveness of rear-facing CRSs over forward-facing CRSs for 12–23 month-old children seems to be rather high considering the low fatality and injury rates for this age group, so the agency used the same effectiveness rate for this age group as that computed for the 0–11 month age group. Therefore, for estimating the potential benefits of raising the minimum child weight limit for forward-facing CRSs from 9 kg to 12 kg, the incremental effectiveness of 14.4 percent was used for rear-facing CRSs in preventing fatalities among children 0 to 23 months over that of forward-facing CRSs.

Number of Children Retrained in CRSs Killed Annually in Motor Vehicle Crashes

The Fatality Analysis Reporting System (FARS) data files for the 5-year period from 2010 to 2014 were analyzed to determine the annual average number of children restrained

[139] NHTSA's Car Seat Recommendations: *https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/nhtsacarseatrecommendations.pdf.*

[140] McMurry, T.L., Arbogast, K.B., Sherwood, C.P., Vaca, F., Bull, M., Crandall, J.R., Kent, R.W., ''Rear-facing versus forward-facing child restraints: an updated assessment,'' Injury Prevention, 2017;0:1–5.doi:10.1136/injuryprev-2017–042512.

in CRSs killed in motor vehicle crashes (see Table A–2). These data files were also analyzed to determine the percentage of fatally injured children in different types of CRSs (rear-facing CRSs, forward-facing CRSs, and booster seats) (see Table A–3).

TABLE A–2—AVERAGE ANNUAL FATALITIES AMONG 0–7 YEAR-OLD CHILDREN RESTRAINED IN CRSS IN REAR SEATING POSITIONS OF LIGHT VEHICLES

[2010–2014 FARS]

	Age (years)									
Crash mode	<1	1	2	3	4	5	6	7	Total	Percent total
Rollover	9.4	8.2	6.6	6.2	6.2	6.2	3.6	2.2	48.6	28.0
Front	9.2	11.8	9	11.8	8.8	5.8	4.6	2.2	63.2	36.4
Side	8.2	6.2	5.4	6	3.6	3	2.6	1.8	36.8	21.2
Near-side	5.2	3.8	3.6	4	1.8	1.8	1.8	1.2	23.2	13.4
Far-side	3	2.4	1.8	2	1.8	1.2	0.8	0.6	13.6	7.8
Rear	4.2	5.6	4.2	3	3.2	2.6	1.4	0.8	25.0	14.4
Total	31	31.8	25.2	27	21.8	17.6	12.2	7	173.6	100.0

TABLE A–3—PERCENTAGE OF FATALLY INJURED CHILDREN RESTRAINED IN DIFFERENT CRS TYPES OF CRSS IN REAR SEATING POSITIONS OF LIGHT VEHICLES BY AGE OF CHILD

[FARS 2010–2014]

	Age (years)							
CRS type	<1 (percent)	1 (percent)	2 (percent)	3 (percent)	4 (percent)	5 (percent)	6 (percent)	7 (percent)
RFCRS	73.5	11.9	1.6	0.0	0.0	0.0	0.0	0.0
FFCRS	26.5	85.1	78.7	58.2	38.5	36.5	23.1	11.1
Booster	0.0	3.0	19.7	41.8	58.5	63.5	76.9	88.9

Percentage of Children 0 to 3–YO Weighing Less Than 12 kg (26.5 lb)

The percent of children weighing less than 12 kg (26.5 lb) for children of age less than 1 year, 1-year, 2 years, and 3-years was determined using the 2000 Center for Disease Control (CDC) Growth Charts. The percent of girls and boys weighing less than 12 kg from the growth charts for each month from newborn to 36 months of age was determined and averaged for 12-month periods to determine the percentage of children weighing less than 12 kg for less than 1-year, 1-year, 2-years, and 3-years of age (see Table A–4).[141]

TABLE A–4—PERCENT OF CHILDREN WEIGHING LESS THAN 12 kg (26.5 lb) BY CHILD AGE

[2000 CDC growth charts]

	<1 YO (percent)	1 YO (percent)	2 YO (percent)	3 YO (percent)
Percentile	99.8	71.4	22.3	0

Percentage of Caregivers Following Information on CRS Use on CRS Labels or the Users' Manual

The proposed raising of the manufacturer-recommended minimum child weight for use of forward-facing CRSs from 9 kg to 12 kg could reduce premature graduation of children from rear-facing CRSs to forward-facing CRSs. However, this is contingent upon caregivers reading and following the manufacturer-supplied information on CRS use on the CRS labels and the Users' manual.

There is no field data on the percentage of caregivers who would follow the information on CRS labels or the manual but inferences can be made from studies on CRS misuse. NHTSA conducted a detailed review of side impact crashes for the years 2002—2009[142] and frontal impact crashes for the years 2003–2013[143] where a CRS restrained child was killed. This review showed that, among survivable side and front crashes with a child fatality, nearly half the children were incorrectly restrained in CRSs, meaning that the CRSs were either not installed appropriately in the vehicle and/or the children were not restrained correctly in CRSs in accordance with manufacturer's instructions. Further, NHTSA's National Child Restraint Use Special Study (NCRUSS) published in 2015 noted CRS misuse of about 46 percent (DOT HS 812 157). This high rate of CRS misuse means that a change in the minimum child weight for use of forward-facing CRSs that is provided on CRS labels and in the Users' manual is highly unlikely to lead to all caregivers making the switch, as existing instructions themselves are not followed by all caregivers.

The Agency does not have further information on the efficacy of instructions on CRS labels and the manual and is therefore using the low rates of 15 percent and 50 percent of caregivers that would follow the instructions on the CRS labels and manual for forward-facing CRS use.

Estimating Lives Saved

Using the information derived from field data on the incremental effectiveness of rear-facing CRSs over forward-facing CRSs, the number of children killed who are restrained in forward-facing CRSs, the percentage of children weighing less than 12 kg, and the assumptions regarding caregivers following CRS use instructions supplied by the

[141] Data from 2000 CDC *http://www.cdc.gov/growthcharts.*

[142] PRIA for the January 28, 2014 NPRM to include a side impact test in FMVSS No. 213 (79 FR 4570, Docket No. NHTSA–2014–0012).

[143] This NPRM upgrading the frontal sled test in FMVSS No. 213.

manufacturer, the agency estimates that the lives of 0.7–2.3 children 0–2 YO could be saved (see Table A–5) by raising the manufacturer-recommended minimum child weight for use of forward-facing CRSs from 9 kg to 12 kg.

TABLE A–5—ESTIMATE OF POTENTIAL LIVES SAVED FROM THE PROPOSED INCREASE IN THE MANUFACTURER-RECOMMENDED MINIMUM CHILD WEIGHT FOR USE OF FORWARD-FACING CRSS FROM 9 kg TO 12 kg

	Age (years)		
	<1	1	2
Average Annual Fatalities (a)	31	31.8	25.2
Percent in FFCRS (b)	26.5%	85.1%	78.7%
Percent weight less than 26.5 lb (c)	99.8%	71.4%	22.3%
Target Population (d) = (a)×(b)×(c)	8.2	19.3	4.4
Effectiveness of RFCRSs vs FFCRSs (e)	14.4%	14.4%	14.4%
Percent people following instructions (f)	15%–50%	15%–50%	15%–50%
Benefits for 15% follow instructions (d)×(e)×0.15	0.2	0.4	0.1
Benefits for 50% follow instructions (d)×(e)×0.5	0.6	1.4	0.3

Moderate-to-Critical Injuries Prevented Among Children Restrained in CRSs in Motor Vehicle Crashes

The agency analyzed NASS–CDS data files for the year 2010–2014 to determine average annual Abbreviated Injury Scale (AIS) [144] 2+ injured children who are restrained in CRSs in rear seating positions of light vehicles. On an annual average, there were 31 children under 1 year of age and 77 children 1–2 years old that sustained AIS 2+ injuries for the period 2010–2014 (See Table A–6).

TABLE A–6—AVERAGE ANNUAL ESTIMATES OF 0 TO 7 YEAR-OLD CRS RESTRAINED CHILDREN WITH AIS 2+ INJURIES IN REAR SEATING POSITIONS OF LIGHT PASSENGER VEHICLES INVOLVED IN MOTOR VEHICLE CRASHES BY CRASH MODE

[Weighted data NASS–CDS 2010–2014]

	Age (years)				
Crash mode	Under 1	1–2 YO	3 YO*	4–7 YO	Total
Rollover	0	0	0	172	172
Front	0	55	37	47	139
Side	30	14	10	1	55
Near-side	29	5	4	0	38
Far-side	1	9	6	1	17
Rear	1	7	5	73	86
Total	31	77	51	293	452

*NASS–CDS data have very few cases of restrained injured children. For this reason, the ages are grouped together. About 40% of AIS 2+ injuries among AIS 2+ 1–3 YO children are to 3-year-old children. Therefore, the number of 1–2 YO children injured is 128*0.6 = 77.

The information on whether children were restrained in RFCRS or FFCRS was not available in many cases in the NASS–CDS data files so this information was obtained from the National Child Restraint Use Survey System (NCRUSS) [145] as shown in Table A–7.[146]

TABLE A–7—TYPE OF CRS USED TO RESTRAIN CHILDREN IN NON-FATAL CRASHES

[NCRUSS]

	RFCRS percent	FFCRS percent	Booster percent	Seat belt percent
under 1YO	96	4	1	.....
1–2YO	11	86	2	1
3 YO	.....	76	22	2
4–7YO	.....	30	64	6

As before, 15 percent to 50 percent of caregivers were assumed would follow the manufacturer's instructions on CRS labels or the Users' manual regarding CRS use and would keep children weighing less than 12 kg (26.5 lb) in rear-facing CRSs. Using these assumptions along with the percentage effectiveness of RFCRSs over FFCRS and the 2010–2014 NASS–CDS data, the agency

[144] The Abbreviated Injury Scale is a 6-point ranking system used for ranking the severity of injuries. AIS2+ Injuries means injuries of severity level 2 (moderate), 3 (serious), 4 (severe), 5 (critical) according to the Abbreviate Injury Scale. *www.aaam.org.*

[145] National Child Restraint Use Special Study, DOT HS 811 679, *https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812142.* NCRUSS is a large-scale nationally-representative survey that involves both an inspection of the child passenger's restraint system by a certified child passenger safety technician and a detailed interview of the driver. The survey collected information on drivers and child passengers ages 0–8 years between June and August 2011.

[146] Tables C–5 and C–6 of DOT–HS–812142.

estimated that 1.0–3.5 AIS 2+ injuries could be prevented for children 0–2 YO (see Table A–8) by the proposed change in the manufacturer-recommended minimum child weight limit for forward-facing CRS use.

TABLE A–8—ESTIMATE OF INJURIES PREVENTED FROM THE PROPOSED INCREASE IN THE MANUFACTURER-RECOMMENDED MINIMUM CHILD WEIGHT FOR USE OF FORWARD-FACING CRSS FROM 9 kg TO 12 kg

	Age (years)	
	<1	1–2
Average Annual AIS 2+ injured children (a)	31	77
Percent in FFCRS (b)	4.0%	86.0%
Percent weight less than 12 kg (26.5 lb) (c)	99.8%	71.4%
Target Population (d) = (a)x(b)x(c)	1.2	47.3
Effectiveness of RFCRSs vs FFCRSs (e)	14.4%	14.4%
Percent people following label (f)	15%–50%	15%–50%
Benefits for 15% follow label (d)x(e)x0.15	0.0	1.0
Benefits for 50% follow label (d)x(e)x0.50	0.1	3.4

The agency estimates that the increase in the minimum child weight from 9 kg to 12 kg for FFCRS use could potentially save 0.7–2.3 lives and prevent 1.0–3.5 AIS 2+ injuries.

(2) Increasing Manufacturer-Recommended Minimum Child Weight for Booster Seat Use

Increasing the manufacturer-recommended minimum child weight for booster seat use from 13.6 kg to 18.2 kg (30 lb to 40 lb) would reduce premature graduation from forward-facing CRSs to booster seats. NHTSA determined that among 3- to 4-year-olds, there is a 27 percent increased risk of moderate to fatal injuries when restrained in booster seats compared to forward-facing CRSs.[147] The effectiveness of FFCRS over booster seats is likely reduced for older children who may be taller and have improved belt fit in a booster seat. So, for children 5—7 years of age, NHTSA assumed that there is a 10 percent increased risk of fatal injuries when restrained in booster seats compared to forward-facing CRSs. An average 3-year old weighs 13.6 kg (30 lb) and an average 4-year old weighs 16.1 kg (35.5 lb). Using the 2000 Center for Disease Control (CDC) Growth Charts, the agency determined the percentage of children weighing less than 18.2 kg (40 lb) for each age group (see Table A–9).

TABLE A–9. PERCENT OF CHILDREN WEIGHING LESS THAN 18.2 kg (40 lb) BY AGE OF CHILD

[2000 CDC growth charts]

	2 YO (percent)	3 YO (percent)	4 YO (percent)	5 YO (percent)	6 YO (percent)	7 YO (percent)
Percentile	100	100	82.5	50	20	4

To determine the lives saved by increasing the minimum child weight for booster seat use, the agency: (1) Used the fatality data in Table A–2, the percentage of children in booster seats in Table A–3, and the percentage of children weighing less than 18.2 kg (40 lb) in Table A–9; (2) made the same assumptions that 15 percent to 50 percent of caregivers would follow manufacturer's instructions in the CRS labels and/or Users' manual and keep children weighing less than 18.2 kg (40 lb) in CRSs with internal harnesses, and (3) followed a similar analysis method as in Table A–5. Based on this analysis, the agency estimates that 1.2- 4 lives could potentially be saved (see Table A–10) by raising the manufacturer-recommended minimum child weight for booster seat use from 13.6 kg to 18.2 kg (30 lb to 40 lb).

TABLE A–10—ESTIMATE OF LIVES SAVED FOR PROPOSED LABEL CHANGE INCREASING WEIGHT OF CHILDREN IN BOOSTER SEATS FROM 13.6 TO 18.2 kg

[30 to 40 lb]

	Age					
	2	3	4	5	6	7
Average Annual Fatalities (a)	25.2	27	21.8	17.6	12.2	7
Percent in booster seats (b)	19.7%	41.8%	58.5%	63.5%	76.9%	88.9%
Percent weight less than 18.2 kg (40 lb) (c)	100.0%	100.0%	82.5%	50.0%	20.0%	4.0%
Target Population (d) = (a)x(b)x(c)	5.0	11.3	10.5	5.6	1.9	0.2
Effectiveness of FFCRSs vs Boosters (e)	27.0%	27.0%	27.0%	10.0%	10.0%	10.0%
Percent people following label (f)	15%-50%	15%-50%	15%-50%	15%-50%	15%-50%	15%-50%
Benefits for 50% follow label (d)x(e)x0.15	0.2	0.5	0.4	0.1	0.0	0.0
Benefits for 15% follow label (d)x(e)x0.5	0.7	1.5	1.4	0.3	0.1	0.0

[147] DOT HS 811 338 July 2010—Booster seat effectiveness estimates based on CDS and State data.

Using the data in Table A–6 and Table A–7 and following the analysis as shown in Table A–10, the number of AIS 2+ injuries were estimated that could potentially be prevented by the proposed increase in the minimum child weight recommendation for booster seat use from 13.6 to 18.2 kg (30 to 40 lb). This analysis, shown in Table A–11, estimated that 1.6–5.2 AIS 2+ injuries could be prevented.

TABLE A–11—ESTIMATE OF INJURIES PREVENTED FOR PROPOSED INCREASE IN MANUFACTURER-RECOMMENDED MINIMUM CHILD WEIGHT FOR BOOSTER SEAT USE FROM 13.6 TO 18.2 kg

[30 to 40 lb]

	Age	
	1–3	4–7
Average Annual AIS 2+ injured children (a)	128	293
Percent in Boosters (b)	9.0%	64.0%
Percent weight less than 18.2 kg (40 lb) (c)	100.0%	39.1%
Target Population (d) = (a)×(b)×(c)	11.5	73.4
Effectiveness of FFCRSs vs. boosters (e)	27.0%	10.0%
Percent people following label (f)	15%–50%	15%–50%
Benefits for 70% follow label (d)×(e)×(f)	0.5	1.1
Benefits for 15% follow label (d)×(e)×0.15	1.6	3.7

The agency estimates that the increase in the minimum child weight for booster seat use from 13.6 kg to 18.2 kg (30 lb to 40 lb) could potentially save 1.2–4 lives and prevent 1.6–5.2 AIS 2+ injuries.

In summary, the proposed increase in the manufacturer-recommended minimum child weight for forward-facing CRS use and booster seat use could potential save 1.9 to 6.3 lives and prevent 2.6 to 8.7 AIS 2+ injuries.

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James C. Owens,

Deputy Administrator.

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