

Table A1: Rear-facing CRS analyzed.

	<b>Manufacturer</b>	<b>Model</b>	<b>Type</b>
CRS010	Baby Trend	Flex-Loc	Infant
CRS044	Britax	B-safe	Infant
CRS008	Chicco	KeyFit30	Infant
CRS042	Combi	Shuttle 35	Infant
CRS005	Evenflo	Embrace	Infant
CRS009	Graco	SnugRide30	Infant
CRS011	Graco	SnugRide	Infant
CRS040	Graco	Snugride Click to Connect	Infant
CRS043	Graco	Snugride 35	Infant
CRS045	Graco	Snugride 35 Click Connect	Infant
CRS041	Maxicosi	Mico	Infant
CRS025	Britax	Marathon Classic	RF/FF Convertible, as RF
CRS035	Britax	Pavilion	RF/FF Convertible, as RF
CRS037	Britax	Boulevard 70 G3	RF/FF Convertible, as RF
CRS007	Cosco	Apt40RF	RF/FF Convertible, as RF
CRS015	Eddie Bauer	XRS65	RF/FF Convertible, as RF
CRS002	Evenflo	Tribute/ Tribute 5	RF/FF Convertible, as RF
CRS012	Evenflo	SureRide	RF/FF Convertible, as RF
CRS017	Evenflo	Triumph LX	RF/FF Convertible, as RF
CRS019	Graco	My ride 65	RF/FF Convertible, as RF
CRS023	Graco	Head Wise 70	RF/FF Convertible, as RF
CRS051	Lamaze	True Fit G	RF/FF Convertible, as RF
CRS029	Maxi-Cosi	Pria 70 Air	RF/FF Convertible, as RF
CRS033	Preg Perego	Primo Viaggio Sip	RF/FF Convertible, as RF
CRS021	Safety 1st	Complete Air 65	RF/FF Convertible, as RF
CRS047	Safety 1st	Aquos 65	RF/FF Convertible, as RF
CRS049	Safety 1st	Easy Fit 65	RF/FF Convertible, as RF
CRS027	Evenflo	Symphony 65	3-in-1, as RF
CRS031	Graco	Smartseat Signature	3-in-1, as RF
CRS004	Safety 1st	Alpha Omega Elite	3-in-1, as RF
CRS039	Safety 1st	S1 Alpha Elite 65	3-in-1, as RF

Table A2: Forward-facing CRS analyzed.

	<b>Manufacturer</b>	<b>Model</b>	<b>Type</b>
CRS024	Britax	Marathon Classic	RF/FF Convertible, as FF
CRS034	Britax	Pavilion 70	RF/FF Convertible, as FF
CRS036	Britax	Boulevard 70 G3	RF/FF Convertible, as FF
CRS006	Cosco	Apt40RF	RF/FF Convertible, as FF
CRS014	Eddie Bauer	XRS65	RF/FF Convertible, as FF
CRS001	Evenflo	Tribute/ Tribute 5	RF/FF Convertible, as FF
CRS013	Evenflo	SureRide	RF/FF Convertible, as FF
CRS016	Evenflo	Triumph LX	RF/FF Convertible, as FF
CRS018	Graco	My Ride 65	RF/FF Convertible, as FF
CRS022	Graco	Head Wise 70	RF/FF Convertible, as FF
CRS050	Lamaze	True Fit G	RF/FF Convertible, as FF
CRS028	Maxi-Cosi	Pria 70 Air	RF/FF Convertible, as FF
CRS032	Preg Perego	Primo Viaggio Sip	RF/FF Convertible, as FF
CRS020	Safety 1st	Complete Air 65	RF/FF Convertible, as FF
CRS046	Safety 1st	Aquos 65	RF/FF Convertible, as FF
CRS048	Safety 1st	Easy Fit 65	RF/FF Convertible, as FF
CRS026	Evenflo	Symphony 65	3-in-1, as FF
CRS030	Graco	Smartseat Signature	3-in-1, as FF
CRS003	Safety 1st	Alpha Omega Elite	3-in-1, as FF
CRS038	Safety 1st	S1 Alpha Elite 65	3-in-1, as FF
CRS055	Baby Trend	TrendZ Fast Back 3-in-1	FF/Booster Combo
CRS057	Britax	Frontier 85 Combo	FF/Booster Combo
CRS059	Cosco	High Back Booster Seat	FF/Booster Combo
CRS058	Eddie Bauer	Deluxe High Back	FF/Booster Combo
CRS052	Evenflo	Maestro	FF/Booster Combo
CRS053	Evenflo	Securekid 400	FF/Booster Combo
CRS054	Graco	Nautilus 30-in-1	FF/Booster Combo
CRS056	Graco	Argos	FF/Booster Combo

Table A3: Vehicles analyzed.

<b>Manufacturer</b>	<b>Model</b>	<b>Year</b>	<b>Type</b>
Chevrolet	Aveo LT	2009	Subcompact Car
Honda	Fit	2009	Subcompact Car
Hyundai	Genesis	2010	Subcompact Car
Mini	Cooper	2010	Subcompact Car
Nissan	Versa S	2011	Subcompact Car
Audi	A4 2.0T	2009	Compact Car
Chevrolet	Camaro SS	2011	Compact Car
Honda	Civic	2004	Compact Car
Honda	Civic	2007	Compact Car
Mercedes-Benz	C300 Sport	2011	Compact Car
Subaru	Impreza WRX	2009	Compact Car
Volkswagen	GTI	2011	Compact Car
Cadillac	CTS	2010	Mid-Size Car
Cadillac	CTS	2011	Mid-Size Car
Chevrolet	Malibu LS	2010	Mid-Size Car
Dodge	Avenger SXT	2008	Mid-Size Car
Ford	Fusion SE	2010	Mid-Size Car
Honda	Accord	2008	Mid-Size Car
Mazda	Mazda 6	2010	Mid-Size Car
Mercury	Milan Premier	2010	Mid-Size Car
Mitsubishi	Galant FE	2011	Mid-Size Car
Nissan	Altima	2011	Mid-Size Car
Toyota	Camry	2007	Mid-Size Car
Toyota	Camry	2012	Mid-Size Car
Volkswagen	CC Sport	2009	Mid-Size Car
Chevrolet	Impala	2011	Full-Size Car
Chrysler	300	2007	Full-Size Car
Dodge	Charger SRT8	2010	Full-Size Car
Ford	Taurus	2010	Full-Size Car
Lexus	LS 460	2007	Full-Size Car
Lincoln	Towncar	2007	Full-Size Car
Lincoln	MKS	2010	Full-Size Car
Nissan	Maxima S	2010	Full-Size Car
Pontiac	G8 GT	2009	Full-Size Car
Acura	RDX	2010	Compact CUV/SUV
Ford	Escape	2011	Compact CUV/SUV
Honda	CRV EX	2012	Compact CUV/SUV
Honda	Element Ex	2005	Compact CUV/SUV
Kia	Soul	2010	Compact CUV/SUV
Nissan	Rogue S	2010	Compact CUV/SUV
Saturn	VUE XE	2008	Compact CUV/SUV
Ford	Explorer XLT	2010	Mid-Size CUV/SUV
Honda	Pilot	2012	Mid-Size CUV/SUV
Hummer	H3	2007	Mid-Size CUV/SUV
Infiniti	FX45	2006	Mid-Size CUV/SUV
Jeep	Grand Cherokee	2004	Mid-Size CUV/SUV
Lexus	RX 300	2003	Mid-Size CUV/SUV

[Table A3 continued]

<b>Manufacturer</b>	<b>Model</b>	<b>Year</b>	<b>Type</b>
Lincoln	MKX	2011	Mid-Size CUV/SUV
Cadillac	Escalade	2008	Full-Size CUV/Minivan
Chrysler	Town and Country	2012	Full-Size CUV/Minivan
Dodge	Durango	2008	Full-Size CUV/Minivan
Dodge	Grand Caravan SE	2010	Full-Size CUV/Minivan
Ford	Flex	2012	Full-Size CUV/Minivan
GMC	Acadia	2012	Full-Size CUV/Minivan
Honda	Odyssey	2010	Full-Size CUV/Minivan
Hyundai	Entourage Limited	2008	Full-Size CUV/Minivan
Volkswagen	Routan SE	2012	Full-Size CUV/Minivan
Chevrolet	Silverado	2011	Small/Standard Pickup Truck
Dodge	Ram	2011	Small/Standard Pickup Truck
Ford	F-150	2010	Small/Standard Pickup Truck
Nissan	Frontier	2006	Small/Standard Pickup Truck

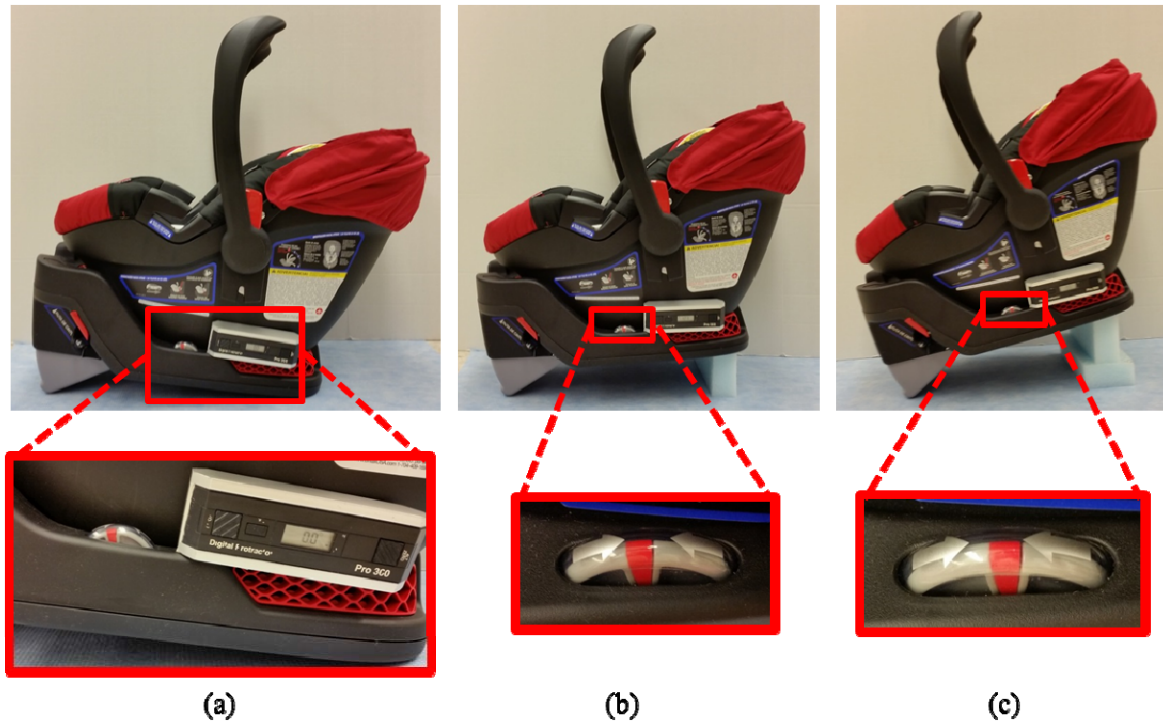


Figure A1: Measuring the base angle range of a RF CRS with a gravity wheel angle indicator. First, the CRS was placed on a flat surface and a digital inclinometer was held or affixed firmly to its side (a). The inclinometer was zeroed in this position to indicate that this is the position of the CRS when horizontal. Notice that the gravity wheel angle indicator is not within the acceptable range in this position. Next, the CRS was tilted forward until the angle indicator reached the beginning of its acceptable angle range (b). This angle was recorded as the minimum acceptable angle. In this example, the angle read  $12.3^{\circ}$ . Then, the CRS was tilted further forward until the maximum range of its angle indicator was reached (c). This occurred at an angle of  $19.5^{\circ}$  in the above example. The total acceptable angle range of this CRS at this base setting was  $12.3^{\circ}$  to  $19.5^{\circ}$ . No additional tolerance range was added since the manufacturer has specified a tolerance via the wheel. Additionally, since this CRS had a base foot with several RF settings, these measurements were repeated with the foot in the opposite extreme position and the acceptable ranges were merged to find the total acceptable base angle range for this CRS. For example, the acceptable range with the foot fully retracted was  $1.6^{\circ}$  to  $10.3^{\circ}$ , so the total acceptable range for this CRS was  $1.6^{\circ}$  to  $19.5^{\circ}$ . This CRS would be compatible with any vehicle whose seat pan angle is within this range.



Figure A2: Measuring the base angle range of a level-to-ground line RF CRS. The angle of the level-to-ground line was measured from the horizontal with the CRS resting on a flat surface. This angle reflects the angle at which the base of the CRS should be tilted forward in order to make the line perfectly horizontal. Since the foot on the base of some CRS have more than one RF setting, the two most extreme positions of the foot were analyzed and the total combined range was used in the analysis. In this example, the level-to-ground line was at  $5.9^\circ$  with the foot fully retracted (a). Since no vehicle is likely to have this exact seat pan angle, a tolerance of  $\pm 5.0^\circ$  was added to the original value to make an acceptable range of  $0.9^\circ$  to  $10.9^\circ$  in this setting. Next, the base foot was fully extended (b). The measurement was read at  $15.0^\circ$  which corresponds to an acceptable range of  $10.0^\circ$  to  $20.0^\circ$ . Thus, the total acceptable angle range for this CRS was  $0.9^\circ$  to  $20.0^\circ$ , and it would be compatible with any vehicle whose seat pan angle is within this range.

Table A4: Summary values of key dimensions

<b>CRS dimensions</b> mean $\pm$ standard deviation (minimum, maximum)		<b>Vehicle dimensions</b> mean $\pm$ standard deviation (minimum, maximum)	
<b>Base width (cm)</b>	RF: $28.2 \pm 6.3$ (19.0, 42.0) FF: $29.6 \pm 3.9$ (25.5, 43.5)	<b>Bight width (cm)</b>	$31.3 \pm 4.8$ (19.0, 45.5)
		<b>Bolster width (cm)</b>	$43.0 \pm 6.9$ (19.0, 55.0)
<b>Base length (cm)</b>	RF: $42.3 \pm 6.8$ (28.5, 57.0) FF: $38.7 \pm 4.5$ (28.5, 46.0)	<b>Seat pan length (cm)</b>	$47.4 \pm 3.0$ (41.0, 54.0)
<b>Height of belt path opening (cm)</b>	RF: $20.1 \pm 4.6$ (6.0, 28.0) FF: $21.3 \pm 4.3$ (6.0, 29.5)	<b>Belt buckle height (cm)</b>	$12.9 \pm 4.0$ (4.5, 21.5)
<b>Horizontal length (cm)*</b>	RF: $72.0 \pm 3.7$ (62.0, 78.2) FF: N/A	<b>Front row clearance at mid-height level (cm)</b>	Fully back: $66.6 \pm 6.7$ (49.3, 85.5) Mid-track: $78.7 \pm 6.9$ (60.4, 99.0) Fully forward: $90.8 \pm 7.4$ (71.5, 112.5)
<b>Horizontal length + clearance (cm)*</b>	RF: N/A FF: $58.7 \pm 4.5$ (48.5, 66.0)	<b>Front row clearance at low level (cm)</b>	Fully back: $66.3 \pm 6.8$ (48.0, 84.0) Mid-track: $78.3 \pm 7.0$ (59.1, 96.5) Fully forward: $90.3 \pm 7.5$ (69.0, 110.0)
<b>Base angle range (degrees)</b>	RF Min: $0.6 \pm 7.8$ (-15.2, 12.5) RF Max: $16.5 \pm 11.3$ (-4.6, 39.6) FF: N/A	<b>Seat pan angle (degrees)</b>	$13.5 \pm 3.2$ (7.1, 22.0)
<b>Maximum tether length (cm)</b>	RF: N/A FF: $174.3 \pm 21.7$ (132.0, 216.0)	<b>Tether route length (cm)</b>	$104.4 \pm 20.3$ (63.0, 150.0)
<b>Back height (cm)</b>	RF: N/A FF: $67.3 \pm 4.3$ (57.5, 76.5)	<b>Seat back height (cm)</b>	Non-removable head restraints: $61.4 \pm 4.4$ (50.0, 68.0)

\*The RF and FF CRS horizontal clearance lengths displayed in Table A4 are from the raw data, and were adjusted later according to each vehicle's seat pan angle for each combination comparison.

Table A5: All data collected from RF CRS, summarized by CRS type

All entries: Mean $\pm$ $\sigma$ (min, max)	All RF CRS	Infant	RF/FF Convertible, as RF	3-in-1, as RF
Overall Size Dimensions	n=31	n=11	n=16	n=4
Base width, along bight edge (cm)	28.2 $\pm$ 6.3 (19.0, 42.0)	22.7 $\pm$ 2.0 (20.5, 28.0)	30.8 $\pm$ 5.9 (19.0, 42.0)	33.0 $\pm$ 5.7 (26.1, 40.0)
Base width, through middle (cm)	31.5 $\pm$ 5.8 (24.0, 48.0)	30.5 $\pm$ 5.4 (24.0, 39.0)	31.3 $\pm$ 5.2 (24.5, 39.0)	34.9 $\pm$ 9.2 (28.0, 48.0)
Base width, along front edge (cm)	29.7 $\pm$ 4.6 (23.0, 43.5)	30.0 $\pm$ 5.1 (23.0, 39.0)	29.7 $\pm$ 4.8 (25.5, 43.5)	29.3 $\pm$ 3.5 (27.0, 34.5)
Width of base portion or arm rests at widest point (cm)	46.0 $\pm$ 4.9 (36.0, 57.0)	41.6 $\pm$ 4.3 (36.0, 49.0)	48.2 $\pm$ 3.6 (42.0, 57.0)	48.9 $\pm$ 2.7 (45.0, 51.0)
Base length, along right edge (cm)	41.9 $\pm$ 6.4 (28.5, 52.0)	47.9 $\pm$ 2.6 (43.5, 52.0)	37.8 $\pm$ 5.2 (28.5, 50.0)	41.5 $\pm$ 5.0 (34.0, 44.5)
Base length, through centerline (cm)	42.3 $\pm$ 6.8 (28.5, 57.0)	48.6 $\pm$ 3.9 (41.0, 57.0)	38.0 $\pm$ 5.4 (28.5, 50.0)	41.9 $\pm$ 5.4 (34.0, 46.0)
Base length, along left edge (cm)	41.9 $\pm$ 6.4 (28.5, 52.0)	47.9 $\pm$ 2.6 (43.5, 52.0)	37.8 $\pm$ 5.2 (28.5, 50.0)	41.5 $\pm$ 5.0 (34.0, 44.5)
Height of back, along vertical plane (cm)	46.6 $\pm$ 7.6 (31.2, 62.0)	39.5 $\pm$ 4.4 (31.2, 47.5)	50.4 $\pm$ 6.3 (36.0, 62.0)	51.0 $\pm$ 4.6 (46.5, 57.0)
Height of back along reclined plane, right edge (cm)	52.6 $\pm$ 9.3 (37.0, 69.0)	42.1 $\pm$ 3.1 (37.0, 49.0)	58.8 $\pm$ 6.1 (49.0, 69.0)	56.1 $\pm$ 3.5 (51.5, 60.0)
Height of back along reclined plane, along centerline (cm)	53.9 $\pm$ 9.5 (37.0, 69.0)	43.4 $\pm$ 4.0 (37.0, 51.0)	59.6 $\pm$ 6.4 (49.0, 69.0)	59.5 $\pm$ 4.9 (54.0, 65.0)
Height of back along reclined plane, left edge (cm)	52.6 $\pm$ 9.3 (37.0, 69.0)	42.1 $\pm$ 3.1 (37.0, 49.0)	58.8 $\pm$ 6.1 (49.0, 69.0)	56.1 $\pm$ 3.5 (51.5, 60.0)
Back width, along bight edge (cm)	29.4 $\pm$ 6.1 (9.5, 43.0)	32.0 $\pm$ 5.9 (22.5, 42.0)	29.3 $\pm$ 4.5 (26.0, 43.0)	22.9 $\pm$ 8.9 (9.5, 27.5)
Back width, through middle (cm)	28.6 $\pm$ 5.0 (19.2, 44.0)	29.4 $\pm$ 6.7 (19.2, 40.5)	27.5 $\pm$ 1.8 (26.0, 32.0)	31.3 $\pm$ 8.5 (26.8, 44.0)
Back width, along top edge (cm)	31.1 $\pm$ 5.5 (21.0, 44.0)	32.1 $\pm$ 4.2 (21.0, 36.0)	28.9 $\pm$ 5.0 (25.0, 44.0)	37.0 $\pm$ 6.5 (27.5, 41.5)
Width of back portion or side wings at widest point (cm)	44.8 $\pm$ 5.1 (32.0, 51.0)	40.3 $\pm$ 5.5 (32.0, 47.0)	46.8 $\pm$ 2.6 (43.5, 51.0)	49.1 $\pm$ 1.8 (46.5, 50.5)
Overall length, along horizontal plane (cm)	72.0 $\pm$ 3.7 (62.0, 78.2)	70.1 $\pm$ 2.9 (65.0, 74.0)	72.5 $\pm$ 3.7 (62.0, 78.2)	75.4 $\pm$ 3.5 (70.5, 78.0)
Overall length, along diagonal line from bottom edge near bight to opposite top edge (cm)	82.5 $\pm$ 5.3 (75.0, 96.0)	77.9 $\pm$ 2.8 (75.0, 83.0)	84.8 $\pm$ 4.1 (79.0, 93.5)	86.3 $\pm$ 6.8 (81.0, 96.0)
Type of base angle indicator	All RF CRS: 38.7% level-to-ground line without tolerance, 25.8% window wheel, 9.7% level-to-ground line with tolerance, 9.7% bubble, 6.5% marble, 9.7% N/A or other			
Base angle, minimum allowed (degrees)	0.6 $\pm$ 7.8 (-15.2, 12.5)	4.2 $\pm$ 5.0 (0.0, 12.5)	-0.6 $\pm$ 8.3 (-15.2, 12.4)	-4.9 $\pm$ 8.7 (-14.6, 5.2)
Base angle, maximum allowed (degrees)	16.5 $\pm$ 11.3 (-4.6, 39.6)	26.6 $\pm$ 7.1 (14.9, 39.6)	11.6 $\pm$ 9.2 (-3.2, 26.7)	8.2 $\pm$ 9.2 (-4.6, 17.3)
LATCH/Seatbelt Considerations				
Belt path entry, vertical height of opening (cm)	9.9 $\pm$ 1.7 (7.0, 14.0)	10.3 $\pm$ 2.0 (7.0, 14.0)	9.4 $\pm$ 0.9 (8.0, 11.0)	11.0 $\pm$ 2.9 (8.4, 13.5)
Belt path entry, horizontal width of opening (cm)	5.9 $\pm$ 1.9 (2.7, 11.0)	5.7 $\pm$ 2.1 (2.7, 11.0)	6.0 $\pm$ 2.0 (3.5, 10.0)	6.3 $\pm$ 1.2 (5.4, 8.0)
Belt path entry distance from corner of base near bight (cm)	20.1 $\pm$ 4.6 (6.0, 28.0)	17.1 $\pm$ 2.2 (13.0, 20.0)	22.2 $\pm$ 2.9 (18.0, 28.0)	19.7 $\pm$ 9.7 (6.0, 27.8)
Belt path entry height from seat pan (cm)	14.9 $\pm$ 3.8 (5.0, 22.0)	13.0 $\pm$ 2.1 (9.0, 16.0)	16.3 $\pm$ 3.4 (10.0, 22.0)	14.8 $\pm$ 7.0 (5.0, 20.5)
Belt path entry distance from seat back (cm)	14.2 $\pm$ 4.4 (6.0, 24.0)	10.9 $\pm$ 1.4 (8.0, 13.0)	16.7 $\pm$ 3.9 (12.0, 24.0)	13.3 $\pm$ 6.0 (6.0, 20.5)
Maximum LATCH strap length, excluding connectors (cm)	76.8 $\pm$ 13.3 (50.5, 107.0)	73.3 $\pm$ 19.6 (56.5, 107.0)	79.8 $\pm$ 6.1 (65.5, 90.5)	73.9 $\pm$ 16.7 (50.5, 90.0)
LATCH connector length, smaller one (cm)	10.4 $\pm$ 4.1 (7.5, 20.5)	10.2 $\pm$ 3.9 (7.5, 20.5)	11.0 $\pm$ 4.6 (7.5, 20.0)	8.7 $\pm$ 1.5 (7.8, 11.0)
LATCH connector length, larger one (cm)	16.4 $\pm$ 2.8 (8.0, 20.5)	16.1 $\pm$ 3.2 (9.0, 20.5)	17.0 $\pm$ 1.7 (12.3, 20.0)	15.1 $\pm$ 4.8 (8.0, 18.5)
LATCH connector type	All RF CRS: 51.6% hook, 41.9% push-button, 3.2% reinforced hook, 3.2% FlexLoc			
Occupant Considerations				
Child weight, minimum (lbs)	4.5 $\pm$ 1.0 (0.0, 5.0)	3.9 $\pm$ 1.4 (0.0, 5.0)	4.8 $\pm$ 0.4 (4.0, 5.0)	5.0 $\pm$ 0.0 (5.0, 5.0)
Child weight, maximum (lbs)	36.3 $\pm$ 5.5 (22.0, 45.0)	30.8 $\pm$ 5.4 (22.0, 40.0)	39.4 $\pm$ 2.5 (35.0, 45.0)	38.8 $\pm$ 2.5 (35.0, 40.0)
Child height, minimum (cm)	48.1 $\pm$ 0.1 (48.0, 48.3)	NA	48.1 $\pm$ 0.1 (48.0, 48.3)	48.0 $\pm$ 0.0 (48.0, 48.0)
Child height, maximum (cm)	90.1 $\pm$ 15.8 (73.0, 124.0)	77.8 $\pm$ 3.6 (73.0, 83.8)	107.0 $\pm$ 12.0 (94.0, 124.0)	92.5 $\pm$ 2.1 (91.0, 94.0)

Table A6: All data collected from FF CRS, summarized by CRS type

All entries: Mean ± σ (min, max)	All FF CRS	RF/FF Convertible, as FF	3-in-1, as FF	FF/Booster Combo, as FF
	n=28	n=16	n=4	n=8
<b>Overall Size Dimensions</b>				
Base width, along bight edge (cm)	29.6 ± 3.9 (25.5, 43.5)	29.9 ± 4.8 (25.5, 43.5)	29.2 ± 3.5 (27.0, 34.5)	29.1 ± 2.3 (27.0, 32.5)
Base width, through middle (cm)	32.5 ± 6.6 (24.5, 48.0)	30.4 ± 5.0 (24.5, 38.5)	37.4 ± 8.4 (28.0, 48.0)	34.2 ± 7.7 (27.0, 47.0)
Base width, along front edge (cm)	34.3 ± 6.2 (19.0, 44.0)	31.3 ± 6.2 (19.0, 42.0)	38.6 ± 2.5 (35.0, 40.5)	38.1 ± 4.2 (31.5, 44.0)
Width of base portion or arm rests at widest point (cm)	48.1 ± 3.1 (42.0, 57.0)	48.2 ± 3.6 (42.0, 57.0)	48.9 ± 2.7 (45.0, 51.0)	47.4 ± 2.4 (44.0, 50.0)
Base length, along right edge (cm)	37.5 ± 4.5 (28.5, 44.5)	36.5 ± 4.5 (28.5, 42.5)	39.1 ± 5.4 (34.0, 44.5)	38.8 ± 4.1 (33.0, 44.0)
Base length, through centerline (cm)	38.7 ± 4.5 (28.5, 46.0)	37.5 ± 4.6 (28.5, 43.0)	39.1 ± 5.4 (34.0, 44.5)	40.8 ± 3.6 (36.5, 46.0)
Base length, along left edge (cm)	37.5 ± 4.5 (28.5, 44.5)	36.5 ± 4.5 (28.5, 42.5)	39.1 ± 5.4 (34.0, 44.5)	38.8 ± 4.1 (33.0, 44.0)
Height of back, along vertical plane (cm)	66.1 ± 3.7 (56.5, 74.0)	65.0 ± 3.9 (56.5, 71.6)	66.6 ± 3.8 (62.8, 70.5)	67.9 ± 2.8 (65.0, 74.0)
Height of back along reclined plane, right edge (cm)	66.0 ± 3.5 (59.0, 73.5)	65.9 ± 4.3 (59.0, 73.5)	64.7 ± 3.4 (61.0, 68.5)	66.7 ± 1.4 (64.0, 68.0)
Height of back along reclined plane, along centerline (cm)	67.3 ± 4.3 (57.5, 76.5)	67.2 ± 4.2 (59.0, 73.5)	64.3 ± 6.0 (57.5, 72.0)	69.0 ± 3.3 (65.5, 76.5)
Height of back along reclined plane, left edge (cm)	66.0 ± 3.5 (59.0, 73.5)	65.9 ± 4.3 (59.0, 73.5)	64.7 ± 3.4 (61.0, 68.5)	66.7 ± 1.4 (64.0, 68.0)
Back width, along bight edge (cm)	28.5 ± 5.1 (9.5, 43.0)	29.7 ± 4.3 (26.0, 43.0)	22.8 ± 8.9 (9.5, 27.5)	29.1 ± 2.4 (27.0, 32.0)
Back width, through middle (cm)	28.4 ± 3.9 (24.5, 44.0)	27.5 ± 1.8 (26.0, 32.0)	31.1 ± 8.6 (26.5, 44.0)	28.7 ± 3.7 (24.5, 35.0)
Back width, along top edge (cm)	30.1 ± 6.1 (18.0, 44.0)	28.7 ± 5.0 (25.0, 44.0)	36.9 ± 6.7 (27.1, 41.5)	29.5 ± 6.4 (18.0, 39.0)
Width of back portion or side wings at widest point (cm)	47.1 ± 2.1 (44.0, 51.0)	46.9 ± 2.5 (44.0, 51.0)	48.4 ± 1.6 (46.5, 50.2)	46.8 ± 1.4 (45.0, 49.0)
<b>LATCH/Seatbelt Considerations</b>				
Belt path entry, vertical height of opening (cm)	13.3 ± 4.4 (8.0, 25.0)	14.1 ± 5.5 (8.0, 25.0)	11.3 ± 1.6 (9.8, 13.5)	12.6 ± 2.1 (9.0, 15.0)
Belt path entry, horizontal width of opening (cm)	6.5 ± 1.8 (2.2, 10.0)	6.2 ± 2.0 (2.2, 10.0)	7.4 ± 0.9 (6.2, 8.0)	6.5 ± 1.8 (4.0, 9.0)
Belt path entry distance from corner of base near bight (cm)	21.3 ± 4.3 (6.0, 29.5)	21.3 ± 3.0 (16.5, 27.0)	18.0 ± 8.4 (6.0, 25.5)	23.1 ± 3.6 (19.5, 29.5)
Belt path entry height from seat pan (cm)	22.4 ± 11.4 (5.0, 76.0)	23.7 ± 14.3 (15.0, 76.0)	17.2 ± 8.2 (5.0, 23.3)	22.4 ± 3.4 (19.0, 30.0)
Belt path entry distance from seat back (cm)	7.4 ± 3.6 (3.0, 20.0)	8.1 ± 4.2 (4.0, 20.0)	8.0 ± 3.3 (5.0, 12.5)	5.9 ± 2.3 (3.0, 9.0)
Maximum LATCH strap length, excluding connectors (cm)	79.0 ± 8.2 (50.5, 90.5)	79.9 ± 5.9 (65.5, 90.5)	73.9 ± 16.7 (50.5, 90.0)	79.7 ± 6.5 (70.0, 87.5)
LATCH connector length, smaller one (cm)	10.3 ± 3.9 (7.5, 20.0)	11.0 ± 4.6 (7.5, 20.0)	8.7 ± 1.5 (7.8, 11.0)	9.8 ± 3.2 (8.0, 17.0)
LATCH connector length, larger one (cm)	16.4 ± 2.5 (8.0, 20.0)	17.0 ± 1.7 (12.3, 20.0)	15.1 ± 4.8 (8.0, 18.5)	15.9 ± 2.4 (11.0, 19.5)
LATCH connector type	For all FF CRS: 53.6% hook, 28.6% push-button, 7.1% SafeGuard, 3.6% reinforced hook, 3.6% REMS, 3.6% SureLatch			
Minimum top tether length, from base of CRS to tip of connector (cm)	75.8 ± 5.4 (65.5, 85.0)	75.9 ± 6.0 (65.5, 85.0)	75.4 ± 5.4 (70.0, 80.0)	75.7 ± 4.6 (67.0, 83.0)
Maximum top tether length, from base of CRS to tip of connector (cm)	174.3 ± 21.7 (132.0, 216.0)	177.0 ± 21.1 (152.0, 211.0)	166.7 ± 5.2 (162.0, 174.0)	172.6 ± 28.2 (132.0, 216.0)
<b>Occupant Considerations</b>				
Child weight, minimum (lbs)	21.4 ± 1.2 (20.0, 25.0)	21.3 ± 1.1 (20.0, 23.0)	21.5 ± 1.0 (20.0, 22.0)	21.6 ± 1.7 (20.0, 25.0)
Child weight, maximum (lbs)	61.4 ± 11.9 (40.0, 85.0)	62.5 ± 10.0 (40.0, 70.0)	58.8 ± 12.5 (40.0, 65.0)	60.6 ± 15.9 (40.0, 85.0)
Child height, minimum (cm)	79.4 ± 7.8 (68.6, 86.4)	83.3 ± 6.0 (71.0, 86.4)	78.1 ± 10.0 (71.0, 85.1)	76.0 ± 8.3 (68.6, 86.4)
Child height, maximum (cm)	123.9 ± 9.2 (101.0, 132.1)	123.9 ± 8.9 (101.0, 132.1)	121.3 ± 9.8 (110.0, 127.0)	124.8 ± 10.9 (109.0, 132.1)

Table A7: All data collected from vehicles, summarized by vehicle type

All entries: Mean ± σ (min, max)	All vehicles	Subcompact cars	Compact cars	Mid-size cars	Full-size cars
Vehicle seat dimensions	n=61	n=5	n=7	n=13	n=9
Seat pan width, excluding bolsters, along bight line (cm)	31.3 ± 4.8 (19.0, 45.5)	31.9 ± 3.8 (27.0, 37.0)	33.6 ± 4.6 (28.6, 42.0)	30.4 ± 4.4 (19.0, 38.0)	32.7 ± 4.3 (28.0, 38.0)
Seat pan width, excluding bolsters, through midline (cm)	32.7 ± 4.7 (25.5, 50.0)	33.8 ± 5.1 (30.0, 42.5)	35.2 ± 4.8 (29.0, 43.5)	32.5 ± 2.9 (27.0, 38.5)	33.2 ± 4.7 (28.0, 39.0)
Seat pan width, excluding bolsters, along front edge (cm)	36.5 ± 5.8 (26.6, 56.0)	39.4 ± 10.3 (31.5, 56.0)	37.1 ± 5.9 (29.6, 46.0)	36.5 ± 2.7 (33.0, 43.0)	36.6 ± 4.7 (29.5, 43.0)
Seat pan width, including bolsters, along bight line (cm)	43.0 ± 6.9 (19.0, 55.0)	44.1 ± 4.9 (39.5, 52.0)	43.9 ± 8.8 (19.0, 38.0)	45.9 ± 4.7 (38.0, 55.0)	46.5 ± 5.2 (38.0, 52.0)
Seat pan width, including bolsters, through midline (cm)	53.3 ± 4.0 (42.0, 64.0)	50.9 ± 3.0 (47.0, 54.5)	54.0 ± 3.4 (50.0, 58.0)	55.5 ± 1.8 (52.0, 58.0)	56.8 ± 4.7 (50.0, 64.0)
Seat pan width, including bolsters, along front edge (cm)	46.8 ± 5.2 (35.0, 60.0)	49.8 ± 6.3 (43.0, 57.0)	45.9 ± 4.3 (40.0, 54.0)	44.1 ± 4.6 (35.0, 52.0)	53.1 ± 5.4 (44.0, 60.0)
Seat pan bolster depth, at bight line (cm)	2.4 ± 2.3 (0.0, 9.0)	4.9 ± 2.3 (3.5, 9.0)	2.7 ± 2.0 (0.0, 6.5)	3.4 ± 2.5 (0.0, 9.0)	2.9 ± 1.8 (0.5, 5.5)
Seat pan bolster depth, at midline (cm)	2.6 ± 1.4 (0.0, 6.0)	3.7 ± 1.6 (2.0, 6.0)	2.7 ± 1.8 (1.0, 6.0)	3.4 ± 1.2 (1.0, 5.5)	3.1 ± 1.0 (1.5, 5.0)
Seat pan bolster depth, at front edge (cm)	0.4 ± 1.0 (0.0, 4.0)	0.8 ± 1.8 (0.0, 4.0)	0.6 ± 1.1 (0.0, 3.0)	0.2 ± 0.4 (0.0, 1.0)	0.4 ± 1.0 (0.0, 3.0)
Seat pan length, along inboard bolster (cm)	46.4 ± 3.3 (38.0, 54.0)	44.5 ± 2.7 (42.0, 49.0)	44.8 ± 2.5 (40.0, 48.0)	46.7 ± 3.6 (38.0, 51.0)	47.0 ± 2.8 (44.5, 53.0)
Seat pan length, along centerline (cm)	47.4 ± 3.0 (41.0, 54.0)	45.4 ± 2.9 (43.0, 50.0)	46.3 ± 1.7 (44.0, 49.5)	48.0 ± 2.9 (43.0, 53.0)	47.7 ± 2.5 (45.0, 53.0)
Seat pan length, along outboard bolster (cm)	45.4 ± 3.3 (38.0, 53.0)	43.4 ± 2.1 (42.0, 47.0)	44.9 ± 2.0 (42.0, 48.0)	45.2 ± 2.9 (38.0, 51.0)	45.3 ± 3.4 (40.0, 53.0)
Percentage of vehicles with bight line waterfalls (%)	49.2%	20.0%	71.4%	53.8%	77.8%
Waterfall height (cm)	5.5 ± 2.5 (2.0, 11.0)	3.0 (n=1)	5.6 ± 1.9 (3.5, 8.0)	7.7 ± 3.3 (2.0, 11.0)	4.7 ± 2.0 (2.5, 8.0)
Waterfall depth (cm)	3.7 ± 1.8 (0.0, 9.0)	5.0 (n=1)	2.9 ± 1.8 (0.0, 5.0)	4.3 ± 2.8 (1.0, 9.0)	3.7 ± 1.5 (1.5, 6.0)
Angle of seat pan (degrees)	13.5 ± 3.2 (7.1, 22.0)	13.2 ± 4.0 (7.1, 17.5)	14.8 ± 2.3 (12.1, 17.7)	13.9 ± 4.3 (8.7, 22.0)	15.8 ± 2.6 (11.5, 19.1)
Angle of seat back (degrees) (if adjustable, set to 115 degrees)	113.4 ± 3.7 (94.5, 119.7)	112.8 ± 4.6 (107.2, 118.7)	113.0 ± 3.9 (108.5, 119.2)	115.0 ± 2.1 (113.0, 119.7)	114.5 ± 2.2 (111.7, 118.2)
Seat back width, excluding bolsters, along bight line (cm)	30.9 ± 4.1 (23.5, 43.5)	31.8 ± 3.5 (28.0, 37.5)	33.9 ± 5.3 (28.5, 43.5)	31.5 ± 2.6 (27.0, 36.0)	32.2 ± 4.9 (26.0, 38.0)
Seat back width, excluding bolsters, at mid-height (cm)	31.3 ± 4.8 (23.5, 48.0)	31.7 ± 4.1 (28.0, 38.0)	34.3 ± 6.8 (28.5, 48.0)	31.6 ± 3.0 (27.0, 36.0)	32.5 ± 4.5 (26.5, 39.0)
Seat back width, excluding bolsters, along top edge (cm)	33.0 ± 6.1 (23.5, 47.5)	34.1 ± 4.9 (28.0, 40.0)	34.0 ± 6.9 (28.5, 47.5)	31.4 ± 3.7 (24.0, 37.0)	35.2 ± 6.0 (27.0, 46.0)
Seat back width including bolsters, along bight line (cm)	47.4 ± 8.4 (30.0, 61.0)	40.0 ± 6.2 (30.0, 46.0)	47.9 ± 5.1 (42.0, 54.0)	55.2 ± 4.9 (46.5, 61.0)	55.7 ± 4.6 (47.0, 61.0)
Seat back width including bolsters, at mid-height (cm)	51.3 ± 5.1 (37.5, 61.0)	49.3 ± 2.7 (45.5, 52.5)	49.5 ± 3.8 (43.0, 53.5)	54.6 ± 4.4 (46.0, 59.0)	56.1 ± 4.0 (47.0, 61.0)
Seat back width including bolsters, along top edge (cm)	47.9 ± 6.4 (33.0, 59.0)	48.9 ± 2.1 (45.5, 51.0)	45.1 ± 3.5 (42.0, 50.0)	52.2 ± 6.4 (37.0, 59.0)	52.8 ± 2.7 (47.0, 56.0)
Seat back bolster depth, at bight line (cm)	2.5 ± 2.2 (0.0, 9.0)	1.9 ± 2.4 (0.0, 5.0)	3.3 ± 2.5 (0.0, 6.5)	3.7 ± 1.4 (1.5, 6.6)	4.1 ± 2.6 (1.0, 9.0)
Seat back bolster depth, at mid-height (cm)	3.6 ± 1.8 (0.0, 7.6)	3.9 ± 1.4 (2.5, 6.0)	3.9 ± 2.1 (0.0, 7.0)	4.4 ± 1.7 (1.2, 7.6)	4.6 ± 2.0 (2.0, 7.5)
Seat back bolster depth, at top edge (cm)	1.3 ± 1.5 (0.0, 5.5)	2.1 ± 1.0 (1.0, 3.5)	0.8 ± 1.1 (0.0, 3.0)	2.1 ± 1.3 (0.0, 4.0)	1.7 ± 2.0 (0.0, 5.5)
<b>Head restraint considerations</b>					
Percentage of head restraints which protrude into plane of seat back (%)	86.9%	100.0%	85.7%	100.0%	88.9%
Percentage with removable head restraints (%)	57.4%	60.0%	85.7%	46.2%	33.3%
Seat pan to bottom of head restraint, lowest position, removable and non-removable (cm)	60.8 ± 4.7 (44.0, 68.5)	58.6 ± 3.8 (54.5, 62.0)	62.1 ± 5.4 (53.0, 67.0)	60.5 ± 5.8 (50.0, 68.0)	60.9 ± 2.9 (57.0, 65.0)
Seat pan to roof clearance (only include if head restraint is removable) (cm)	96.0 ± 7.1 (73.0, 111.0)	94.8 ± 8.1 (88.5, 104.0)	90.8 ± 6.6 (85.0, 98.0)	92.6 ± 1.4 (91.0, 95.0)	94.2 ± 3.5 (91.0, 100.0)
<b>Clearance space behind front row seats</b>					
Front row fully forward, low level horizontal clearance (cm)	90.3 ± 7.5 (69.0, 110.0)	85.6 ± 9.2 (74.0, 99.0)	82.9 ± 7.4 (69.0, 91.5)	89.6 ± 5.1 (78.0, 96.0)	90.3 ± 6.7 (75.5, 100.5)
Front row fully forward, high level horizontal clearance (cm)	91.4 ± 7.9 (69.0, 115.0)	84.8 ± 8.9 (74.0, 96.0)	85.8 ± 6.0 (74.0, 92.0)	91.2 ± 3.4 (85.5, 98.0)	92.8 ± 8.6 (75.5, 104.0)
Front seat fully back, low level horizontal clearance (cm)	66.3 ± 6.8 (48.0, 84.0)	61.5 ± 8.5 (50.0, 73.5)	60.5 ± 6.5 (48.0, 67.0)	64.8 ± 5.4 (54.0, 72.5)	66.1 ± 3.9 (60.5, 74.0)
Front seat fully back, high level horizontal clearance (cm)	67.0 ± 7.3 (47.0, 88.0)	61.1 ± 8.1 (50.0, 70.5)	60.2 ± 5.6 (50.5, 67.5)	66.5 ± 3.2 (59.0, 72.0)	68.4 ± 5.6 (60.5, 78.0)
<b>Vehicle LATCH System</b>					
LATCH anchors, depth from seat bight (Positive=recessed; Negative=protruding) (cm)	3.0 ± 1.8 (-1.0, 9.0)	4.7 ± 1.5 (3.0, 6.5)	3.8 ± 1.5 (2.0, 6.3)	3.6 ± 1.3 (1.5, 6.0)	2.9 ± 1.2 (1.5, 5.5)
LATCH anchors, height from seat pan (Positive=above; Negative=below) (cm)	2.8 ± 3.1 (-3.0, 10.5)	2.4 ± 3.7 (-3.0, 6.0)	2.4 ± 2.3 (0.0, 6.5)	4.3 ± 4.4 (0.0, 10.5)	4.7 ± 2.0 (1.0, 8.0)
Number of seatbelt + top tether locations in 2nd row of seats	2.7 ± 0.5 (2.0, 3.0)	2.4 ± 0.5 (2.0, 3.0)	2.7 ± 0.5 (2.0, 3.0)	2.8 ± 0.4 (2.0, 3.0)	3.0 ± 0.0 (3.0, 3.0)
Top tether anchor location (ex: shelf, back of seat, etc.)	For all vehicles: 45.9% back shelf, 41.0% back of seat, 6.6% roof, 3.3% floor, 1.6% top of seat, 1.6% no anchor				
Top tether route length (cm)	104.4 ± 20.3 (63.0, 150.0)	114.9 ± 13.8 (94.0, 127.5)	85.3 ± 8.1 (78.0, 97.0)	92.3 ± 12.0 (77.0, 114.0)	98.2 ± 10.0 (84.0, 114.5)
<b>Vehicle seat belts</b>					
Seatbelt anchor points, width between (cm)	42.9 ± 5.2 (26.0, 55.0)	43.4 ± 3.8 (37.5, 48.0)	42.0 ± 2.2 (39.5, 46.0)	39.7 ± 4.7 (34.0, 48.0)	43.5 ± 4.1 (37.0, 49.0)
Seat belt length, fully extended (cm)	245.1 ± 19.2 (184.0, 303.0)	244.0 ± 11.3 (225.0, 253.0)	241.7 ± 15.2 (224.0, 262.0)	247.8 ± 8.5 (233.0, 265.0)	232.1 ± 17.1 (210.0, 255.0)
Seat belt latchplate, height (cm)	7.9 ± 0.6 (7.0, 9.5)	7.7 ± 0.3 (7.3, 8.0)	7.6 ± 0.6 (7.0, 8.5)	7.8 ± 0.4 (7.0, 8.5)	8.4 ± 0.8 (7.0, 9.5)
Seat belt latchplate, width (cm)	7.5 ± 0.4 (7.0, 9.0)	7.5 ± 0.1 (7.3, 7.5)	7.5 ± 0.7 (7.0, 9.0)	7.5 ± 0.2 (7.0, 8.0)	7.5 ± 0.3 (7.0, 8.0)
Seat belt latchplate, thickness (cm)	0.9 ± 0.2 (0.3, 1.5)	1.0 ± 0.0 (1.0, 1.0)	0.9 ± 0.1 (0.7, 1.1)	0.8 ± 0.3 (0.3, 1.0)	0.9 ± 0.2 (0.5, 1.0)
Seat belt buckle, height (cm)	6.9 ± 1.4 (0.0, 9.0)	6.8 ± 1.3 (4.5, 7.5)	6.7 ± 2.0 (3.0, 8.7)	7.3 ± 0.8 (5.0, 8.5)	6.5 ± 1.4 (3.5, 7.5)
Seat belt buckle, width (cm)	4.7 ± 0.6 (3.0, 7.5)	4.7 ± 0.3 (4.5, 5.0)	4.7 ± 0.8 (3.0, 5.7)	4.6 ± 0.6 (3.0, 5.5)	4.5 ± 0.7 (3.0, 5.5)
Seat belt buckle, thickness (cm)	2.9 ± 0.8 (1.0, 7.5)	2.8 ± 0.2 (2.5, 3.0)	2.9 ± 1.1 (1.0, 4.7)	2.7 ± 0.6 (1.0, 3.2)	3.3 ± 1.6 (2.5, 7.5)
Height from seat pan to top of seat belt buckle, with stalk fully extended (cm)	8.4 ± 4.0 (0.0, 17.0)	8.0 ± 3.8 (4.0, 12.0)	5.6 ± 3.2 (1.0, 9.3)	8.8 ± 3.0 (1.0, 12.5)	10.3 ± 4.4 (3.5, 17.0)
Percentage of vehicles with flexible seat belt buckle stalk (%)	60.7%	60.0%	42.9%	76.9%	77.8%

Table A7 continued: All data collected from vehicles, summarized by vehicle type

All entries: Mean ± σ (min, max)	Compact CUV/SUVs	Mid-size CUV/SUVs	Full-size CUV/minivans	Small/Standard Pickup Trucks
Vehicle seat dimensions	n=7	n=7	n=9	n=4
Seat pan width, excluding bolsters, along bight line (cm)	30.0 ± 6.1 (20.5, 39.5)	29.7 ± 4.0 (25.0, 37.5)	29.3 ± 4.0 (26.0, 37.5)	35.3 ± 7.8 (28.0, 45.5)
Seat pan width, excluding bolsters, through midline (cm)	32.6 ± 4.1 (27.5, 39.5)	30.1 ± 2.9 (25.5, 34.0)	30.8 ± 5.1 (26.0, 42.7)	34.8 ± 10.2 (28.5, 50.0)
Seat pan width, excluding bolsters, along front edge (cm)	39.1 ± 4.4 (33.0, 44.5)	34.6 ± 7.2 (30.0, 50.0)	34.5 ± 7.1 (26.6, 47.0)	35.3 ± 6.0 (30.5, 44.0)
Seat pan width, including bolsters, along bight line (cm)	43.2 ± 7.5 (32.0, 53.0)	38.0 ± 5.3 (33.0, 48.0)	38.8 ± 6.3 (29.0, 51.0)	44.5 ± 5.8 (40.0, 53.0)
Seat pan width, including bolsters, through midline (cm)	52.8 ± 1.7 (51.0, 55.0)	52.4 ± 5.5 (42.0, 57.5)	50.0 ± 2.1 (47.2, 54.5)	50.4 ± 3.9 (47.5, 56.0)
Seat pan width, including bolsters, along front edge (cm)	44.6 ± 3.0 (40.5, 49.0)	45.9 ± 3.5 (41.0, 51.0)	47.5 ± 3.5 (40.9, 52.0)	42.9 ± 2.4 (39.5, 45.0)
Seat pan bolster depth, at bight line (cm)	1.7 ± 1.5 (0.0, 3.5)	0.7 ± 1.7 (0.0, 4.5)	1.1 ± 2.0 (0.0, 6.0)	0.0 ± 0.0 (0.0, 0.0)
Seat pan bolster depth, at midline (cm)	1.9 ± 0.4 (1.0, 2.5)	1.9 ± 1.3 (0.0, 3.5)	2.1 ± 1.1 (0.5, 3.5)	0.7 ± 1.2 (0.0, 2.0)
Seat pan bolster depth, at front edge (cm)	0.0 ± 0.0 (0.0, 0.0)	0.0 ± 0.0 (0.0, 0.0)	1.2 ± 1.4 (0.0, 4.0)	0.0 ± 0.0 (0.0, 0.0)
Seat pan length, along inboard bolster (cm)	44.8 ± 2.8 (40.5, 48.0)	47.1 ± 3.3 (43.0, 51.0)	47.8 ± 3.4 (43.5, 54.0)	47.5 ± 4.8 (42.0, 52.0)
Seat pan length, along centerline (cm)	45.2 ± 2.7 (41.0, 49.0)	48.3 ± 3.4 (44.0, 52.6)	48.9 ± 3.1 (45.5, 54.0)	47.9 ± 4.3 (43.5, 52.0)
Seat pan length, along outboard bolster (cm)	42.8 ± 2.7 (39.0, 46.5)	46.6 ± 3.5 (42.0, 51.5)	47.7 ± 2.9 (43.5, 52.0)	47.5 ± 4.8 (42.0, 52.0)
Percentage of vehicles with bight line waterfalls (%)	57.1%	42.9%	11.1%	50.0%
Waterfall height (cm)	4.3 ± 2.2 (3.0, 7.5)	5.2 ± 0.8 (4.5, 6.0)	4.5 (n=1)	5.5 ± 3.5 (3.0, 8.0)
Waterfall depth (cm)	3.9 ± 1.7 (2.0, 6.0)	3.0 ± 0.0 (3.0, 3.0)	3.0 (n=1)	4.0 ± 1.4 (3.0, 5.0)
Angle of seat pan (degrees)	12.0 ± 2.4 (9.4, 15.5)	13.6 ± 2.1 (11.2, 17.3)	12.5 ± 2.2 (9.8, 16.6)	10.0 ± 2.0 (8.0, 12.1)
Angle of seat back (degrees) (if adjustable, set to 115 degrees)	114.0 ± 2.1 (110.2, 116.8)	113.3 ± 1.3 (111.9, 115.0)	113.8 ± 1.9 (110.5, 115.0)	105.3 ± 7.6 (94.5, 111.2)
Seat back width, excluding bolsters, along bight line (cm)	30.6 ± 4.7 (26.0, 39.0)	29.0 ± 2.2 (26.5, 32.0)	28.4 ± 4.1 (23.5, 37.5)	29.3 ± 4.8 (25.0, 36.0)
Seat back width, excluding bolsters, at mid-height (cm)	31.6 ± 4.9 (25.5, 40.0)	28.7 ± 1.6 (26.5, 31.0)	28.9 ± 3.7 (23.5, 35.5)	31.9 ± 10.5 (25.0, 47.5)
Seat back width, excluding bolsters, along top edge (cm)	37.6 ± 8.7 (25.5, 47.0)	30.1 ± 4.1 (24.0, 35.0)	30.7 ± 5.1 (23.5, 37.5)	32.4 ± 9.4 (25.0, 46.0)
Seat back width including bolsters, along bight line (cm)	43.9 ± 4.8 (35.5, 50.0)	40.0 ± 7.4 (33.0, 55.0)	41.6 ± 6.1 (35.0, 51.5)	43.5 ± 6.6 (36.0, 52.0)
Seat back width including bolsters, at mid-height (cm)	49.2 ± 3.5 (43.0, 53.0)	51.9 ± 4.5 (43.5, 55.5)	47.0 ± 2.4 (42.5, 50.5)	47.0 ± 6.9 (37.5, 54.0)
Seat back width including bolsters, along top edge (cm)	46.8 ± 3.1 (43.0, 52.0)	46.5 ± 9.2 (33.0, 54.5)	40.2 ± 3.9 (34.0, 47.0)	47.0 ± 2.2 (45.0, 50.0)
Seat back bolster depth, at bight line (cm)	0.6 ± 0.7 (0.0, 1.5)	1.0 ± 1.2 (0.0, 3.0)	1.6 ± 1.8 (0.0, 5.0)	1.5 ± 1.3 (0.0, 2.5)
Seat back bolster depth, at mid-height (cm)	2.4 ± 1.0 (1.0, 4.0)	2.6 ± 1.4 (0.0, 4.0)	3.7 ± 1.7 (1.0, 7.0)	1.3 ± 1.2 (0.0, 2.0)
Seat back bolster depth, at top edge (cm)	0.1 ± 0.4 (0.0, 1.0)	1.3 ± 1.9 (0.0, 5.0)	0.5 ± 0.7 (0.0, 2.0)	0.7 ± 1.2 (0.0, 2.0)
<b>Head restraint considerations</b>				
Percentage of head restraints which protrude into plane of seat back (%)	85.7%	71.4%	88.9%	50.0%
Percentage with removable head restraints (%)	71.4%	57.1%	77.8%	25.0%
Seat pan to bottom of head restraint, lowest position, removable and non-removable (cm)	61.8 ± 1.9 (60.0, 65.0)	61.9 ± 2.9 (57.0, 66.5)	60.5 ± 7.3 (44.0, 68.5)	60.2 ± 5.2 (56.0, 66.0)
Seat pan to roof clearance (only include if head restraint is removable) (cm)	95.6 ± 13.2 (73.0, 104.0)	102.4 ± 7.0 (94.0, 111.0)	101.2 ± 4.3 (96.0, 110.0)	94.3 ± 6.7 (89.5, 99.0)
<b>Clearance space behind front row seats</b>				
Front row fully forward, low level horizontal clearance (cm)	94.3 ± 8.0 (86.5, 110.0)	91.6 ± 6.5 (82.6, 101.0)	94.8 ± 3.3 (88.9, 99.8)	91.8 ± 12.8 (78.0, 109.0)
Front row fully forward, high level horizontal clearance (cm)	95.3 ± 9.4 (87.6, 115.0)	93.4 ± 5.1 (86.0, 103.0)	95.9 ± 6.1 (87.6, 109.2)	85.9 ± 14.0 (69.0, 103.0)
Front seat fully back, low level horizontal clearance (cm)	69.4 ± 7.0 (62.2, 83.0)	66.6 ± 5.6 (59.7, 76.0)	72.0 ± 3.6 (68.0, 76.8)	69.3 ± 11.3 (57.0, 84.0)
Front seat fully back, high level horizontal clearance (cm)	70.4 ± 8.5 (61.0, 88.0)	68.7 ± 5.6 (63.0, 80.0)	72.5 ± 5.3 (64.9, 83.8)	62.8 ± 14.1 (47.0, 81.0)
<b>Vehicle LATCH System</b>				
LATCH anchors, depth from seat bight (Positive=recessed; Negative=protruding) (cm)	2.6 ± 1.8 (-1.0, 5.0)	2.9 ± 2.8 (1.0, 9.0)	1.8 ± 1.6 (-0.5, 5.0)	0.9 ± 0.5 (0.5, 1.5)
LATCH anchors, height from seat pan (Positive=above; Negative=below) (cm)	3.1 ± 2.2 (0.0, 7.0)	2.1 ± 2.7 (0.0, 7.0)	0.1 ± 0.6 (-1.0, 0.7)	1.5 ± 1.4 (0.5, 3.5)
Number of seatbelt + top tether locations in 2nd row of seats	2.9 ± 0.4 (2.0, 3.0)	2.6 ± 0.5 (2.0, 3.0)	2.2 ± 0.4 (2.0, 3.0)	3.0 ± 0.0 (3.0, 3.0)
Top tether anchor location (ex: shelf, back of seat, etc.)	For all vehicles: 45.9% back shelf, 41.0% back of seat, 6.6% roof, 3.3% floor, 1.6% top of seat, 1.6% no anchor			
Top tether route length (cm)	115.5 ± 17.2 (92.5, 150.0)	116.4 ± 13.5 (100.0, 135.0)	130.6 ± 7.6 (115.4, 139.0)	73.5 ± 12.1 (63.0, 90.0)
<b>Vehicle seat belts</b>				
Seatbelt anchor points, width between (cm)	43.1 ± 2.0 (39.0, 45.0)	42.5 ± 5.2 (35.5, 48.7)	48.0 ± 5.3 (40.0, 55.0)	41.8 ± 11.1 (26.0, 51.0)
Seat belt length, fully extended (cm)	249.9 ± 20.1 (209.0, 266.0)	245.3 ± 23.7 (217.0, 280.0)	253.2 ± 32.2 (184.0, 303.0)	246.5 ± 13.4 (233.0, 264.0)
Seat belt latchplate, height (cm)	8.0 ± 0.6 (7.5, 9.0)	7.9 ± 0.3 (7.5, 8.5)	7.9 ± 0.8 (7.0, 9.5)	7.7 ± 0.6 (7.0, 8.0)
Seat belt latchplate, width (cm)	7.4 ± 0.1 (7.2, 7.5)	7.6 ± 0.5 (7.0, 8.7)	7.6 ± 0.4 (7.0, 8.5)	7.5 ± 0.4 (7.0, 8.0)
Seat belt latchplate, thickness (cm)	1.0 ± 0.1 (0.7, 1.0)	0.9 ± 0.3 (0.5, 1.4)	0.9 ± 0.3 (0.4, 1.5)	0.8 ± 0.3 (0.5, 1.0)
Seat belt buckle, height (cm)	7.5 ± 0.4 (7.0, 8.0)	6.6 ± 3.0 (0.0, 9.0)	7.1 ± 0.8 (5.5, 8.0)	6.7 ± 0.8 (5.5, 7.3)
Seat belt buckle, width (cm)	4.7 ± 0.4 (4.5, 5.5)	5.2 ± 1.1 (4.5, 7.5)	4.7 ± 0.4 (4.0, 5.5)	4.6 ± 0.3 (4.5, 5.0)
Seat belt buckle, thickness (cm)	2.9 ± 0.2 (2.5, 3.2)	2.6 ± 0.3 (2.0, 3.0)	2.9 ± 0.4 (2.5, 3.7)	2.6 ± 0.6 (2.0, 3.5)
Height from seat pan to top of seat belt buckle, with stalk fully extended (cm)	9.4 ± 4.0 (2.0, 13.2)	7.2 ± 5.8 (0.0, 15.0)	7.0 ± 2.7 (1.0, 10.5)	11.3 ± 4.6 (5.5, 15.5)
Percentage of vehicles with flexible seat belt buckle stalk (%)	71.4%	42.9%	22.2%	100.0%

Table A8: RF CRS success rates for all fit criteria, sorted by RF CRS type.

	<b>All RF CRS (n=31)</b>	<b>RF Infant (n=11)</b>	<b>RF Convertible (n=16)</b>	<b>RF Three-in- One (n=4)</b>
Base width vs. bight width	<b>63.3</b>	94.5	48.2	38.1
Base width vs. bolster width	<b>94.9</b>	98.3	91.5	87.9
Base length vs. seat pan length (at least 80% of base supported)	<b>97.9</b>	97.0	100	100
Base length vs. seat pan length (entire base supported)	<b>71.2</b>	33.7	94.1	83.2
Height of belt path opening vs. belt buckle height	<b>90.5</b>	84.8	98.1	76.2
Horizontal length vs. front row clearance, fully back	<b>29.5</b>	40.2	25.4	16.4
Horizontal length vs. front row clearance, mid-track	<b>90.0</b>	93.1	89.4	83.2
Horizontal length vs. front row clearance, fully forward	<b>98.9</b>	99.9	98.8	96.7
Base angle range vs. seat pan angle	<b>57.4</b>	89.0	43.1	27.9

Table A9: RF CRS success rates for all fit criteria, sorted by vehicle type.

	<b>All vehicles (n=61)</b>	Sub-compact car (n=5)	Compact car (n=7)	Mid-size Car (n=13)	Full-size car (n=9)	Compact CUV/SUV (n=7)	Mid-size CUV/SUV (n=7)	Full-size SUV or minivan (n=9)	Standard pickup (n=4)
Base width vs. bight width	<b>63.3</b>	68.4	74.7	61.5	68.5	56.2	56.2	55.6	73.4
Base width vs. bolster width	<b>94.9</b>	98.1	98.4	91.3	98.2	93.5	88.5	87.8	97.6
Base length vs. seat pan length (at least 80% of base supported)	<b>97.9</b>	98.1	98.6	99.3	99.3	98.2	99.1	99.6	98.4
Base length vs. seat pan length (entire base supported)	<b>71.2</b>	61.9	65.4	73.4	71.3	60.8	76.5	78.9	77.4
Height of belt path opening vs. belt buckle height	<b>90.5</b>	92.9	96.3	93.3	81.7	88.5	90.8	96.4	78.2
Horizontal length vs. front row clearance, fully back	<b>29.5</b>	14.2	6.5	19.9	31.2	39.2	28.1	61.6	29.8
Horizontal length vs. front row clearance, mid-track	<b>90.0</b>	62.6	71.0	95.5	97.5	98.2	97.2	100	72.6
Horizontal length vs. front row clearance, fully forward	<b>98.9</b>	98.1	94.9	100	100	100	100	100	94.4
Base angle range vs. seat pan angle	<b>57.4</b>	56.1	55.8	55.3	54.5	58.5	60.4	60.6	61.3

Table A10: FF CRS success rates for all fit criteria, sorted by FF CRS type.

	<b>All FF CRS (n=28)</b>	FF Convertible (n=16)	FF Three-in-One (n=4)	FF Combination (n=8)
Base width vs. bight width	<b>62.2</b>	60.7	66.0	63.3
Base width vs. bolster width	<b>94.5</b>	92.8	96.3	97.1
Base length vs. seat pan length (at least 80% of base supported)	<b>100</b>	100	100	100
Base length vs. seat pan length (entire base supported)	<b>95.8</b>	98.7	90.8	94.3
Height of belt path opening vs. belt buckle height	<b>94.3</b>	96.8	75.8	98.6
Horizontal length vs. front row clearance, fully back	<b>90.1</b>	92.7	89.8	85.9
Horizontal length vs. front row clearance, mid-track	<b>99.3</b>	99.5	99.2	99.0
Horizontal length vs. front row clearance, fully forward	<b>100</b>	100	100	100
Maximum tether length vs. tether route length	<b>99.5</b>	100	100	98.3
Back height vs. seat back height	<b>66.4</b>	66.4	75.4	61.9

Table A11: FF CRS success rates for all fit criteria, sorted by vehicle type.

	<b>All vehicles (n=61)</b>	Sub-compact car (n=5)	Compact car (n=7)	Mid-size car (n=13)	Full-size car (n=9)	Compact CUV/SUV (n=7)	Mid-size CUV/SUV (n=7)	Full-size SUV or minivan (n=9)	Standard pickup (n=4)
Base width vs. bight width	<b>62.2</b>	68.6	78.6	61.5	74.2	54.1	53.1	40.9	78.6
Base width vs. bolster width	<b>94.5</b>	97.9	99.0	91.5	98.8	94.4	92.9	89.7	97.3
Base length vs. seat pan length (at least 80% of base supported)	<b>100</b>	100	100	100	100	100	100	100	100
Base length vs. seat pan length (entire base supported)	<b>95.8</b>	89.3	96.4	97.3	98.0	88.8	96.9	99.2	95.5
Height of belt path opening vs. belt buckle height	<b>94.3</b>	96.4	96.9	96.4	86.5	94.4	95.4	96.8	90.2
Horizontal length vs. front row clearance, fully back	<b>90.1</b>	67.9	73.0	89.8	97.6	98.0	94.9	100	85.7
Horizontal length vs. front row clearance, mid-track	<b>99.3</b>	99.3	94.4	100.0	100.0	100	100	100	100
Horizontal length vs. front row clearance, fully forward	<b>100</b>	100	100	100	100	100	100	100	100
Maximum tether length vs. tether route length	<b>99.5</b>	100	100	100	100	99.0	99.0	98.4	100
Back height vs. seat back height	<b>66.4</b>	62.1	86.7	56.6	53.2	78.1	62.8	82.1	48.2