



A Look Inside American Family Vehicles:
National Study of 79,000 Car Seats, 2009-2010



September 2011

Executive Summary

Safe Kids USA is pleased to report data analyzed from 79,000 car seat checklist forms that were completed by Safe Kids coalitions at community car seat checkup events across the nation during a one year period of time. We believe this to be the largest study relative to actual car seat and booster seat use among American families. The primary data collected paints a picture of which type car seats are selected for children of different ages and weights, where they are situated in vehicles, what direction they face, if the harness is used correctly and whether seat belts, tethers or lower anchors are used according to manufacturer's instructions.

Caregivers attend car seat checkup events for several reasons: they are expectant parents or grandparents seeking help with the first installation of a car seat; they may have recently purchased a car seat and seek help with a new installation technique; or, they fear they have made a mistake with a seat and want to have it checked to be sure it is safely installed. They come voluntarily and exhibit a high interest in the safety of their children. Therefore, the people who attend a Safe Kids USA checkup event may well be those who have unique characteristics and a special interest in safety. That said, there are still many mistakes found and frequent opportunities to improve the safety of young occupants. Attendees learn to adjust and install the car seat or booster seat and then place the child into the car seat harness or booster seat. They do this with guidance from a nationally certified child passenger safety technician one on one in the family vehicle. It sounds easy to do, but many people still need the help of a technician to get everything right. Inspections take anywhere from 20 to 30 minutes.

Some news is promising: nearly all children less than 13 years of age (98.8 percent) arrived in a back seat. Less than 1 percent (0.8 percent) of children were unrestrained. Less than 13 percent (12.6 percent) of attendees had returned for more assistance after attending a previous event. Over 90 percent of people knew the history of their seats so we saw far fewer products from yard sales and consignment stores. Only slightly more than 2 percent of seats had been in crashes.

Where we saw room for much more community and caregiver education was with top tether use. Tether use was abysmally low with only slightly more than 28 percent of forward facing car seats making use of this added safety protection. Of those who did use the tether, 59 percent used it correctly.

These three areas show us we are moving in the right direction but still need to expend serious energy on educating the public:

1. Safe Kids has recommended for several years that parents and caregivers keep children less than two years of age in a rear-facing car seat until the weight or height of the rear-facing car seat is fully outgrown. New recommendations from the American Academy of Pediatrics which were unavailable at the time of the study now fully support that. The old message (which is not wrong even today but does not reflect best practice) recommended that children ride rear-facing to age one and 20 pounds. Our data showed that children under age one and 20 pounds were facing the right direction 95 percent of the time. But what was encouraging was that for children ages 1-4, 31.5 percent were still riding rear-facing. Additionally, children who weighed between 20-39 pounds, 41 percent were still riding in the rear-facing orientation. It appears that caregivers are beginning to understand and accept the message to keep children rear-facing longer.

2. In the last few years, car seat manufacturers have steadily increased the capacity of internal harnesses to hold bigger, heavier children. This is in response to requests to provide best practice solutions to families with very large, heavy children who are too young to ride safely in booster seats. Car seat harnesses now (and at the time of the study) serve children beyond 40 pounds. Many seats have harnesses to serve children who are 50, 65, 70 or even 80 or more pounds. Unfortunately, not every harness is used to the uppermost height or weight of the child. Parents are eager to move the child too quickly into the easier to use booster seat. This is not a new problem. Our data showed though that we are making some headway with this. For children between ages 4-8, 31.2 percent of children were still using an internal harness. Children between 40-79 pounds were in harnessed car seats 27.8 percent of the time. The majority of children were in booster seats (over 50 percent by age and weight) with only 8.9 percent in this age group and 11 percent of children in the weight group using seat belts. That represents progress from earlier national reports.
3. Finally, for children beyond age 8, 38.1 percent of them were still using booster seats. No doubt booster seat laws have had a big impact on booster seat use for older children up to age 8 but this looks at children beyond that age. Best practice tells us that children will not fit the adult safety belt until they are over 4'9", are between 8 and 12 years of age. They may weigh between 80-100 pounds before they can safely wear an adult seat belt. It has been a long struggle to increase booster seat use for older children who have outgrown car seats with harnesses but who do not yet fit the adult safety belt.

One last point that bears mentioning, in over 99 percent of cases, certified technicians were able to obtain a good fit of the car seat or booster seat within the vehicle. Certified technicians taught families to maximize various safety practices throughout the vehicle for children and adult occupants. While families still need assistance to achieve an appropriate fit of the car seat or booster seat into the car, there appears to be less incompatibility between the car seat and the vehicle seat than in the past.

Safe Kids USA will make the information from this study available to child restraint and vehicle manufacturers, the federal government as they explore child restraint "fitment" and the National Child Passenger Safety Board as they begin work to update the national curriculum for certified technicians. The Safe Kids USA checklist form has already been updated and tested based on suggestions from the research team for ways to improve future data collection. New forms were distributed to all Safe Kids Buckle Up programs in August 2011.

Introduction

Motor vehicle crashes are the leading cause of death for children ages 3 – 14, according to the National Highway Transportation Safety Administration (NHTSA), 2009. Research shows that as children age, they are less likely to be in the appropriate child safety seat for their age and weight. But, correctly used child safety and booster seats are extremely effective and reduce the risk of injury and death in crashes.

Since 1997, Safe Kids USA, has enjoyed a successful partnership with General Motors and the General Motors Foundation in providing the Safe Kids Buckle Up program, the largest, most comprehensive child passenger safety (CPS) program in the country. Through Safe Kids USA's network of 600 coalitions and chapters, Safe Kids Buckle Up offers parents and caregivers hands-on instruction about child safety in and around cars with an emphasis on correct child safety and booster seat use.

To provide the broadest exposure possible, Safe Kids Buckle Up checkups are held at convenient community venues such as General Motors dealerships, hospitals, retail outlets and child care facilities – as well as at permanent inspection or mobile fitting stations. A checkup event allows a parent or caregiver to work one-on-one with a nationally certified CPS technician in their own vehicle, ideally, with their child present. The message conveyed to all parents at each Safe Kids Buckle Up checkup is to keep children appropriately restrained for their age, weight and height in child safety and booster seats for as long as possible until the adult safety belt fits the child. Only at that time should they rely solely on the adult-sized safety belts for appropriate crash protection.

The message conveyed to all parents at each Safe Kids Buckle Up checkup is to keep children appropriately restrained for their age, weight and height in child safety and booster seats for as long as possible until the adult safety belt fits the child.

Parents and caregivers voluntarily attend a Safe Kids Buckle Up child safety and booster seat checkup in the majority of cases. They typically come as expectant parents or grandparents for help with a new seat, seeking reassurance that they have installed their child safety seat properly, or because they fear they have made a mistake in the installation of a child safety or booster seat for their older children. A goal of the checkup process is to ensure that families feel confident and competent in using their child safety and booster seats, and they are capable of properly reinstalling them should they be removed from the vehicle.

Nationally certified CPS technicians use standardized procedures to evaluate each seat inspected and guide discussions with parents and caregivers. A checklist documents findings for each inspection, which can take about 20 – 30 minutes to complete.

Safe Kids USA developed the checklist in the late 1990s for all Safe Kids registered activities. Checklist data have been used to assist manufacturers, the government and CPS technicians to address areas of misuse, product design and guide messages for parents and caregivers.

Safe Kids USA thanks the General Motors Foundation for their support of the Safe Kids Buckle Up program and the National Highway Traffic Safety Administration for their assistance and support for the data analysis and report writing.

Child Passenger Safety Background

The adult safety belt system alone becomes suitable for children when they are approximately 4'9" tall and weigh 80 to 100 pounds, milestones the average child reaches between the ages of 8 and 12. For infants and children who are too small to safely use the adult safety belt system, child restraints such as child safety seats and booster seats offer the best crash protection. Properly used child safety seats decrease the risk of death by 71 percent for infants and 54 percent for toddlers. Injury risks for children using belt-positioning booster seats as opposed to seat belts alone are reduced by 59 percent [National Highway Traffic Safety Administration (NHTSA), 2009; Durbin, Elliott, and Winston, 2003]. This report uses the term "CR" to describe all child safety seats, booster seats, vests, and integrated car seats.

Properly used child safety seats decrease the risk of death by 71 percent for infants and 54 percent for toddlers. Injury risks for children using belt-positioning booster seats as opposed to seat belts alone are reduced by 59 percent.

Study Methodology

This report presents a summary of the arrival data collected on Safe Kids USA checklists at CR checkup events and appointments between October 1, 2009 and September 30, 2010. More than 367 coalitions and several thousand CPS certified technicians and volunteers throughout the United States were involved with these checkups. The standardized checklist form was used for every seat checked, which represented about 82,000 cases recorded. It is the largest study of its type ever conducted of actual child safety and booster seat use. Safe Kids USA scanned and entered the data into an Access database. Summary results were generated from computational analyses by TransAnalytics, LLC.

Results

Most of the scanned checklists contained information; however, not every field was completed on every checklist form. Missing data resulted from: omissions and/or recording errors; data scanning omissions; and fields deemed not applicable and intentional, instructed "skips" (e.g., #3: if vehicle arrives without child or child seat, skip to #18). Missing data and skips resulted in a different sample size for each analysis; the sample size (N, or number of cases) is presented along with the findings of each analysis. Approximately 3,000 forms were incomplete and not used in this analysis.

Child Present/Child Seat Previously Checked

Data are available from seat checks conducted on 79,077 children and/or their seats. Over half of the children (51.7 percent) were present at these events. The remaining observations were made for CRs only, for children who were not present at the event (24.2 percent); and for unborn children (24.1 percent). A subset of the CRs present at the event had been checked at a prior checkup event (12.6 percent of 70, 513).

For the nearly half (48 percent) of the parents and caregivers who did not bring their child with them or whose child was not yet born, only one of three key elements of successful child safety use was able to be assessed: the proper attachment of the seat to the vehicle. It was not possible to fully determine that the seat was the proper seat for the child and if the harness was appropriately positioned. Safe Kids prefers that children are present at the inspection to assure a complete assessment.

Findings – Correct Use of Child Seats Upon Arrival

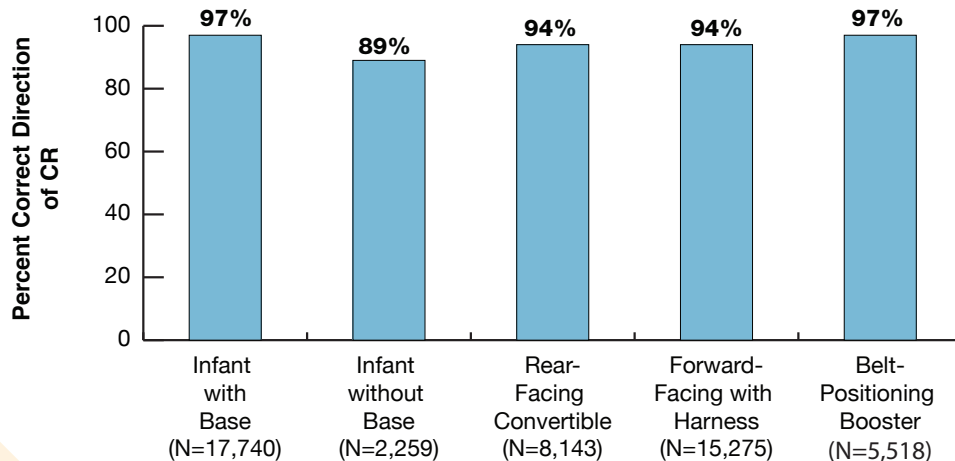
Less than one percent of children arrived at Safe Kids checkups unrestrained with children ages 4-8 more likely than other age groups to fit that category.

Correct use of CRs was observed and recorded for CR direction, seat belt use, lower anchor use, tether use, and harness use. Correct direction was defined in the Checklist Form Pre-Inspection Quick Reference as “infants and toddlers less than 2 should ride semi-reclined in a rear-facing position to protect the spine and neck. Infants who have outgrown the infant seat should switch to a convertible seat and use it rear-facing to the highest height or weight (usually 30-35 pounds) permitted by the manufacturer.” It is not incorrect though for caregivers to follow manufacturer’s instructions and turn their children forward facing at age 1 and over 20 pounds. However, that is not considered “best practice.”

Less than one percent of children arrived at Safe Kids checkups unrestrained.

Figure 1 represents the percent of CRs by CR Type that were installed facing the correct direction upon their arrival to the checkup events.

Figure 1: Percent of CRs by Type Installed Facing Correct Direction Upon Arrival



Correct seat belt, lower anchor, and tether use were defined in the Checklist Form Pre-Inspection Quick Reference as, “Safety belts must pass through the car seat exactly where and how the manufacturer directs. Car seats must not move more than 1 inch side to side or front to back when grasped at the belt path. Use the tether as directed by the manufacturer and the vehicle owner’s manual. LATCH anchors are used only if both the vehicle and the car seat are equipped. Check vehicle manufacturer’s manual to identify designated LATCH and tether locations. Tethers are never attached to the lower anchor bars. Use tethers on rear-facing car seats only if the manufacturer so directs. Vehicles made after 1996 meet federal safety belt lockability requirements; no locking clip should be needed.” For booster seats, “use only with lap/shoulder safety belts... [most] do not allow for a pre-crash locked safety belt.”

Figures 2, 3, and 4 illustrate the percent of CRs by Type, with correct installations using seat belts, lower anchors, and tethers, respectively. These data are also presented in Table A-1 in Appendix A.

Figure 2: Percent Correct Seat Belt Use for CR Installation by Type

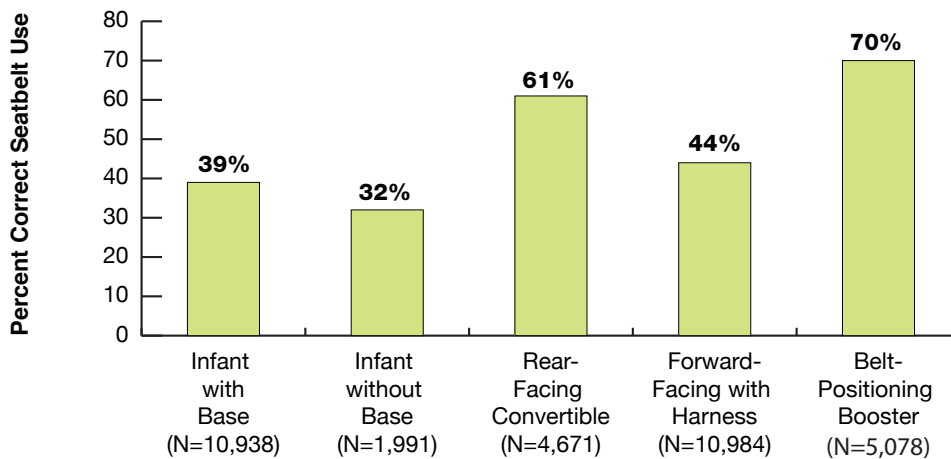


Figure 3: Percent Correct Lower Anchor Use for CR Installation by Type

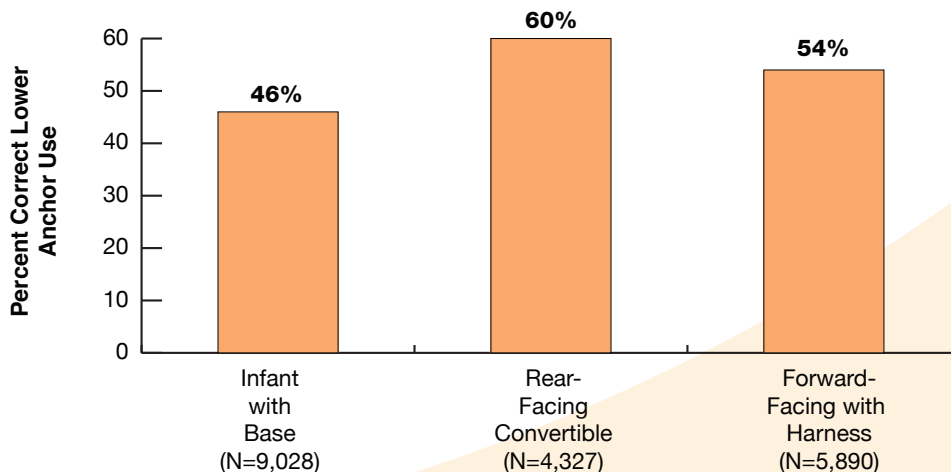
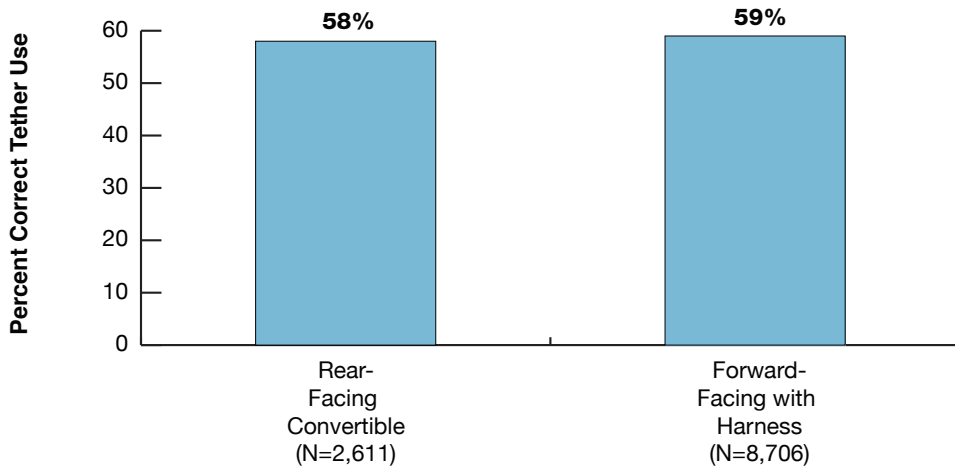
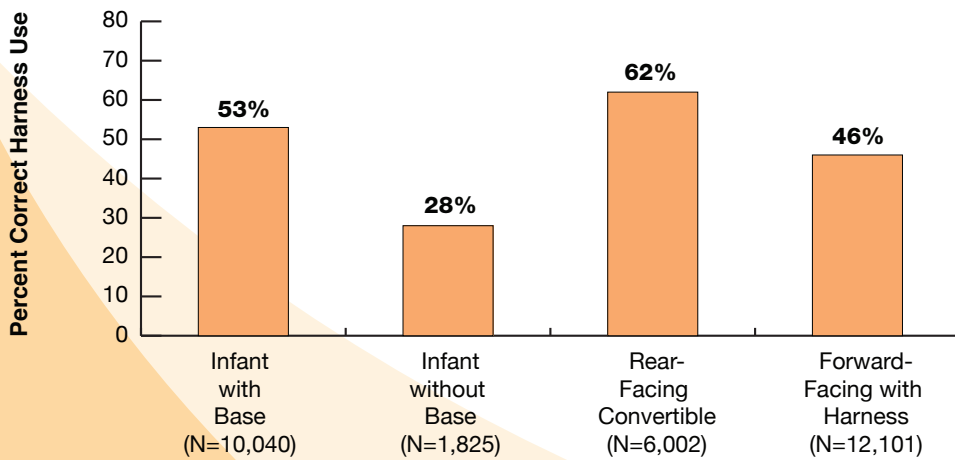


Figure 4: Percent Correct Tether Use for CR Installation by Type



Correct harness use was defined in the Checklist Form Pre-Inspection Quick Reference as “Infant seat harness straps should pass through the slots at or below the rear-facing baby’s shoulders. Toddler seat harness straps should pass through the slots at or above the forward-facing toddler’s shoulders. Read seat instructions. A toddler is too large for a harness when the shoulders are above the top harness slots, or child exceeds weight or height limits. Harness straps must lay flat on the chest and over the hips. Harness straps must pass the ‘pinch’ test; when the buckled straps are pinched at the shoulder, there should be no slack or extra webbing. The harness retainer clip must sit at the child’s armpit level, and the straps must be threaded properly through the clip.” Figure 5 illustrates the percent of CRs by Type with correct harness use to secure the child in the seat. These data are also presented in Table A-1 in Appendix A.

Figure 5: Percent Correct Harness Use for CR Installation by Type



Child Passenger Seat Observations – Arrival

Seat Position

Most of the child passengers, and/or their unoccupied CRs, arrived at the checkups in back seats (98.8 percent of 60,741 cases). Second row installations were 95.3 percent and 3.5 percent were in the third row.

Type of Child Seat (CR)

Table 1 presents the restraint types (and their percentage of the sample) observed as the 53,568 child passengers (and/or their unoccupied restraints) arrived at the events:

Table 1: Restraint Type Recorded for All Children Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	408	0.8
Base only	1,515	2.8
Vest	8	0.0
Car bed	34	0.1
BP Booster	5,722	10.7
FF w/Harness	15,635	29.2
RF Convertible	8,390	15.7
Infant w/o Base	2,345	4.4
Infant w/ Base	18,316	34.2
Lap/Shoulder Seat belt	1,059	2.0
Lap only Seat belt	136	0.3
TOTAL	53,568	

* Regardless of child's presence at checkup

Type of Child Seat (CR) by Age and Weight Categories

CR Type recorded on the checklist forms upon arrival (regardless of the child's presence) are presented in this section for the following four age categories: birth to less than 1 year; ages 1 to less than 4 years; ages 4 to less than 8 years; and 8 years and older. Results are also presented for CR Type by three weight categories: 0 to 19 pounds; 20 to 39 pounds; and 40 to 79 pounds.

Anomalies in the data presented in the following sections, such as older, larger children arriving in infant and convertible seats, may be attributed to recording errors on the checklist forms or to the fact that a more appropriate restraint may have been unavailable or undesired by the caregiver at the event. Children with special healthcare needs who use both typical and special restraints are also represented in the study. These children may not follow typical growth patterns for weight and height.

Infants (Less than 1 Year of Age)

Table 2: Restraint Type Recorded for Infants (Less than 1 Year of Age), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	20	0.2
**Base only	204	1.9
**Car bed	23	0.2
BP Booster	66	0.6
FF w/Harness	427	4.0
**RF Convertible	1,982	18.7
**Infant w/o Base	1,316	12.4
**Infant w/ Base	6,520	61.4
Lap/Shoulder Seat belt	46	0.4
Lap only Seat belt	17	0.2
TOTAL	10,621	

* Regardless of child's presence at checkup

** Acceptable options

Infants (Birth to Less than 20 Pounds)

Table 3: Restraint Type Recorded for Infants (Less than 20 Pounds), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	11	0.2
**Base only	139	2.0
**Car bed	18	0.3
BP Booster	12	0.2
FF w/Harness	86	1.3
**RF Convertible	865	12.7
**Infant w/o Base	747	10.9
**Infant w/ Base	4,194	61.4
Lap/Shoulder Seat belt	749	11.0
Lap only Seat belt	11	0.2
TOTAL	6,832	

* Regardless of child's presence at checkup

** Acceptable options



Toddlers (Ages 1 to Less than 4 Years)

Table 4: Restraint Type Recorded for Toddlers (Ages 1 to Less Than 4 Years), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	64	0.5
**Base only	23	0.2
**Vest	1	0.0
Car bed	1	0.0
**BP Booster	1,129	8.3
**FF w/Harness	7,896	58.0
**RF Convertible	2,672	19.6
**Infant w/o Base	509	3.7
**Infant w/ Base	1,112	8.2
Lap/Shoulder Seat belt	166	1.2
Lap only Seat belt	35	0.3
TOTAL	13,608	

* Regardless of child's presence at checkup

** Acceptable options

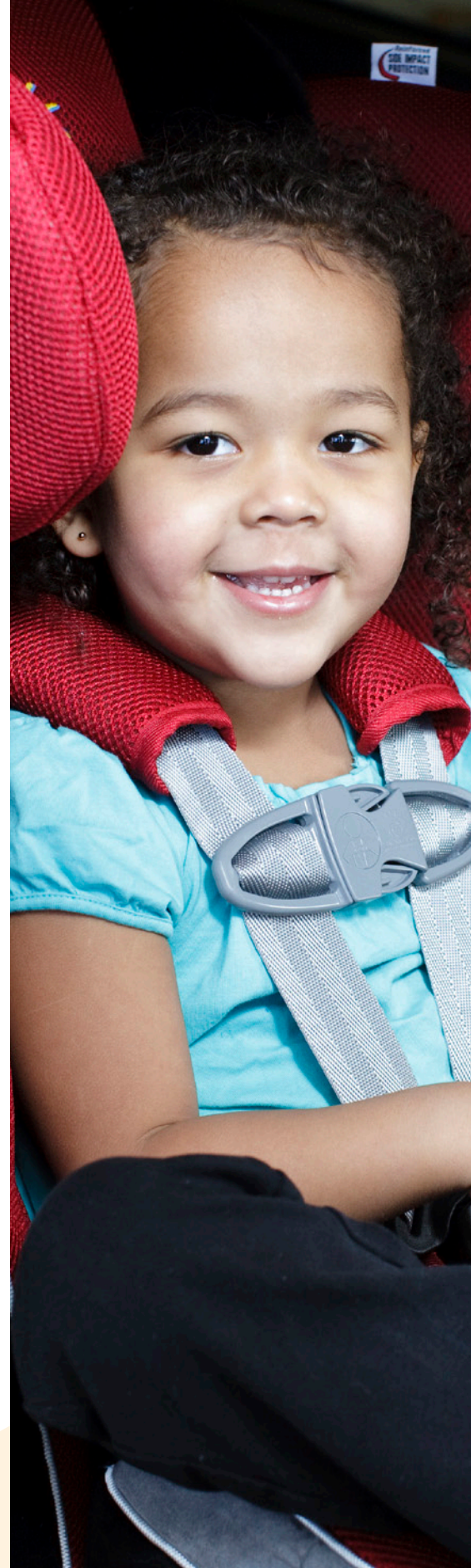
Toddlers (20 to 39 Pounds)

Table 5: Restraint Type Recorded for Toddlers (20 to 39 Pounds), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	75	0.4
**Base only	65	0.4
**Vest	2	0.0
Car bed	3	0.0
**BP Booster	1,403	8.2
**FF w/Harness	8,299	48.4
**RF Convertible	3,588	20.9
**Infant w/o Base	1,002	5.8
**Infant w/ Base	2,442	14.3
Lap/Shoulder Seat belt	207	1.2
Lap only Seat belt	45	0.3
TOTAL	17,131	

* Regardless of child's presence at checkup

** Acceptable options



Children (Ages 4 to Less than 8 Years)

Table 6: Restraint Type Recorded for Children (Ages 4 to Less than 8 Years), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	178	3.2
Base only	30	0.5
**Vest	3	0.1
Car bed	1	0.0
**BP Booster	2,869	51.7
**FF w/Harness	1,731	31.2
RF Convertible	150	2.7
Infant w/o Base	21	0.4
Infant w/ Base	72	1.3
**Lap/Shoulder Seat belt	447	8.1
Lap only Seat belt	47	0.8
TOTAL	5,549	

* Regardless of child's presence at checkup

** Acceptable options

Children (40 to 79 pounds)

Table 7: Restraint Type Recorded for Children (40 to 79 Pounds), Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	179	3.6
Base only	29	0.6
**Vest	0	0.0
Car bed	1	0.0
**BP Booster	2,658	52.9
**FF w/Harness	1,399	27.8
RF Convertible	100	2.0
Infant w/o Base	13	0.3
Infant w/ Base	87	1.7
**Lap/Shoulder Seat belt	507	10.1
Lap only Seat belt	51	1.0
TOTAL	5,024	

* Regardless of child's presence at checkup

** Acceptable options



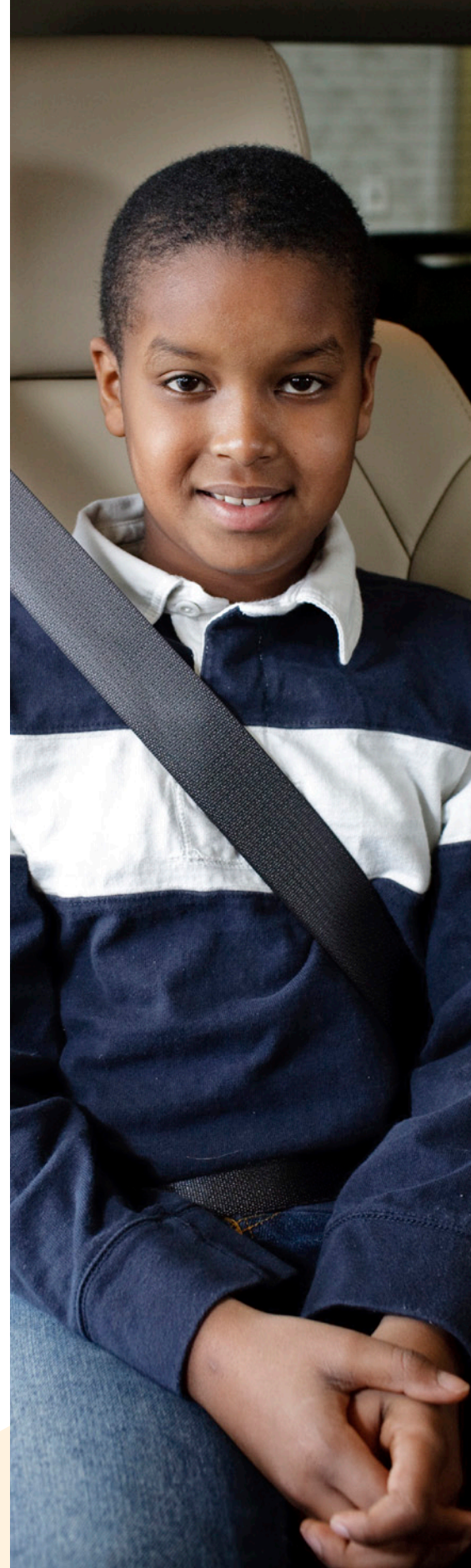
Children (Ages 8 Years and Older)

Table 8: Restraint Type Recorded for Children Age 8 Years or Older, Upon Arrival to Checkup *

Restraint Type	ARRIVING	
	Number	Percent
None	58	8.4
Base only	3	0.4
**Vest	0	0.0
**BP Booster	263	38.1
**FF w/Harness	67	9.7
RF Convertible	28	4.1
Infant w/o Base	17	2.5
Infant w/ Base	45	6.5
**Lap/Shoulder Seat belt	195	28.3
Lap only Seat belt	14	2.0
TOTAL	690	

* Regardless of child's presence at checkup

** Acceptable options



Findings (History, Crash Involvement, Labels Missing, Expired, Recalled)

For the majority of the CRs brought to the events, drivers reported that they knew the history — e.g. purchased, gift, hand-me-down (91.1 percent of 53,409). Only 2.1 percent of the 50,507 CRs were reported to have been in a crash. Technicians observed that 7.3 percent of the 53,312 CRs had labels missing and 5.7 percent of the 52,001 CRs were expired (based on the date of CR exceeding the manufacturer's recommendations). In addition, it was found that 2.7 percent of the 48,111 CRs had been recalled.

Airbag Discussed Technicians indicated to parents and caregivers the location of airbags relative to their children. The airbag issue was recorded as discussed for 88.1 percent of the 55,824 cases (regardless of whether or not the child was present).

Child Seat Installation (Seat Belt, Lower Anchor, Tether) In the case of tether installations, 28.3 percent of the 15,521 Forward-Facing Seats with Harness were tethered upon arrival to the events. Of those, 59 percent were properly tethered.

At arrival, almost two-thirds of the CRs were connected to the vehicle seat using the vehicle seat belt (61.9 percent of 53,848 cases). Almost one-third of the CRs (31.4 percent) were connected to the vehicle seat using the lower anchors. CRs were connected to the vehicle seat using both the seat belt and the lower anchors in 5.9 percent of the cases.

Provided CR at Event In many cases, the coalition or the parent/caregiver provided a new CR for the child prior to their departure from the events (43.8 percent of 69,549 cases). In more than half the cases (56.2 percent), the child departed the event in the CR in which he/she arrived.

Discussed Unused Seat belt Dangers The danger of unused seat belts was discussed in 87.2 percent of the 66,163 cases.

Discussed Projectiles The issue of hazards associated with loose objects in the vehicle and the risk they pose to occupants was discussed in 93.2 percent of the 65,702 cases.

Compatibility Issue between Vehicle and Child Seat In over 99 percent of the 60,110 cases, the technicians reported that they were able to obtain a satisfactory fit of the CR into the vehicle, regardless of whether a seat belt or the lower anchors were used.

Parent Sign Off In 95.1 percent of the 66,158 cases, the parents/caregivers participated in the installation of the CR in the vehicle at the event. In a slightly smaller percentage of the cases (85.6 percent of 45,598), the parents/caregivers put the harness over the child in the CR at the event. Technicians discussed the “next steps” in 98.3 percent of the 65,724 cases, and provided educational material to the parents/caregivers in 86.1 percent of the 64,058 cases. Technicians indicated that all corrections were made in 96.8 percent of the 61,312 cases.

Conclusions

Results from this analysis of the Safe Kids checklist data, lean towards evidence showing improvement in the proper use of CRs in the nation compared to earlier reported observation surveys for NHTSA (Decina and Lococo, 2007; Decina and Lococo, 2005).

To advance the field of child passenger safety, the results from this study are already in process to help: quantify the compatibility between child seats and vehicles for NHTSA; enhance the curriculum for CPS technician training; provide feedback to vehicle and child seat manufacturers; and improve data collection techniques.

A large percentage of CRs observed upon arrival were being used correctly in some capacity and somewhat improved over previous studies (Decina and Lococo, 2007; Decina and Lococo, 2005). Correct seat direction was very high as parents and caregivers have learned about rear-facing norms. Areas that show progress – but need further improvement – are seat belts (especially with booster seats and rear-facing convertibles); lower anchors (especially rear-facing convertible and forward-facing CRs with harnesses); and harnesses (especially rear-facing infant and convertible CRs). Parents struggled most with installation and use of infant seats without bases.

Safe Kids is concerned about improving the rate of top tether use. To illustrate, all forward-facing seats with harnesses have top tethers, yet 41 percent of seats in the study where the tether was used were not used properly on arrival. A top tether is a strap on the top of the car seat that hooks onto a vehicle anchor and reduces the forward movement of a child's head in a crash.

It is encouraging that most participants were aware of their CR's history (e.g., new, used, crash-involved), and very few CRs had missing labels or were still in use past their expiration dates. It was also encouraging that only 12.9 percent of attendees were returning for more help.

Vehicle to child seat compatibility using either seat belts or lower anchors is attainable, with over a 99 percent success rate at departure. Seat belt versus lower anchor use is generally determined by personal preferences as CPS technicians strive for parents and caregivers to be competent and confident in their capabilities when they depart. The preference by more than two-to-one for seat belts over lower anchors is not explained by this study. Safe Kids recommends further qualitative research into LATCH (tether and lower anchor) use regarding parental knowledge, attitudes and behaviors.

References

Durbin, D.R., Elliott, M.R., and Winston, F.K. (2003). 'Belt-Positioning Booster Seats and Reduction in Risk of Injury Among Children in Vehicle Crashes.' *JAMA*. Volume 289(21), pp. 2835-2840. Available at: <http://jama.ama-assn.org/content/289/21/2835.full>

National Highway Traffic Safety Administration (2009). *Traffic Safety Facts 2009: Children*. National Center for Statistics and Analysis. Washington, D.C. Available at: <http://www-nrd.nhtsa.dot.gov/pubs/811387.pdf>

Decina, L. E. and Lococo, K. (2005). Child Restraint System Use and Misuse in Six States. *Accident Analysis and Prevention*, 37, 583-590.

Decina, L. E. and Lococo, K. (2007). Observed LATCH Use and Misuse Characteristics of Child Restraint Systems in Seven States. *Journal of Safety Research*, 38, 273-281.

Suggested Citation: Decina L, Lococo K, Joyce J, Walker L. . A Look Inside American Family Vehicles: National Study of 79,000 Car Seats, 2009–2010. Washington (DC): Safe Kids Worldwide, September 2011.

Appendix A: Supporting Tables

Table A-1: Percent Correct Installation Recorded by CR Type and Installation Element, At Arrival. Note: Sample sizes vary for each element.

CR Type	Percent Correct Direction	Percent Correct Seat belt Use	Percent Correct Lower Anchor Use	Percent Correct Tether Use	Percent Correct Harness Use
Infant with Base	97 (N=17,740)	39 (N=10,938)	46 (N=9,028)	N/A	53 (N=10,040)
Infant without Base	89 (N=2,259)	32 (N=1,991)	N/A	N/A	28 (N=1,825)
Rear-Facing Convertible	94 (N=8,143)	61 (N=4,671)	60 (N=4,32)	58 (N=2,611)	62 (N=6,002)
Forward-Facing with Harness	94 (N=15,275)	44 (N=10,984)	54 (N=5,890)	59 (N=8,706)	46 (N=12,101)
Belt-Positioning Booster	97 (N=5,518)	70 (N=5,078)	45 (N=291)	N/A	54 (N=736)

Appendix B: Child Passenger Safety Checklist Form

Child Passenger Safety Checklist

Use blue, black, or #2 pencil only. Do not write in margins.
Please do not bend, fold, staple or otherwise damage this form.

Fill in boxes, one letter per box 123 ABC Fill in circles like this Not

Driver First Name

Street Address

City State Zip

Phone - - Email Address

Vehicle Make/Mfg. (Chevy, Buick) Vehicle Model (Malibu, Enclave) Vehicle Year

Driver Last Name

Days

Magna/Clek
 Mia Moda
 Learning Curve - First Years
 Peg Perego
 Recaro
 Safe Traffic Systems
 Sunshine Kids
Cosco, Eddie Bauer, Safety 1st, Maxi Cosi

Compatible
No N/A

Projectiles? Yes No

Month/Day/Year (M/DD/YYYY): / /

Today's Date / / 20

CHILD NUMBER ONE Child Present Yes No Unborn Seat Checked Before? Yes No

First Name Age Years Months Days

Height Inches Weight Lbs Child Birth Date / / DOB (MM/DD/YYYY)

AS CHILD ARRIVED

1. Driver Buckled Yes No Unobserved

2. Child location in vehicle
 front row
 back
 rear row

3. CSS installed using (select all that apply)
 Lower anchors Tether
 Seatbelt Uninstalled
 Integrated Seat (Skip to Findings)
 No CSS

4. Restraint type:
 None RF convertible
 Base only Infant w/o base
 Car bed Infant w/ base
 Vest Lap/Shoulder seatbelt
 BP Booster Lap only seatbelt
 FF w/ harness

5. CSS MFG:
 Magna/Clek
 Britax Mia Moda
 Chicco Learning Curve - First Years
 Combi Peg Perego
 Evenflo Recaro
 Graco Safe Traffic Systems
 Orbit Sunshine Kids
 Dorel (Cosco, Eddie Bauer, Safety 1st, Maxi Cosi)

6. Model Number

7. Mfg Date (MM/DD/YYYY) / /

Tech Last Name Tech Number

FINDINGS

8. CSS history known	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
9. CSS involved in a crash	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
10. CSS labels missing	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
11. CSS expired	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
12. CSS recalled	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
13. CSS correct direction	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
14. Seatbelt correct	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
15. Lower anchors correct	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
16. Tether correct	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
17. Harness correct	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A

AS CHILD DEPARTED EVENT

18. Child location in vehicle
 front row
 back
 rear row Airbag discussed Yes No

19. CSS installed using (select all that apply)
 Lower anchors Tether
 Seatbelt Uninstalled
 Integrated Seat

20. Provided CSS at event
 Yes No N/A

21. Replaced CSS provided by:
 Parent Coalition N/A

22. Discuss unused seatbelt dangers
 Yes No

23. Restraint type
 Base only RF convertible
 Car bed Infant w/o base
 Vest Infant w/ base
 BP Booster Lap/Shoulder seatbelt
 FF w/ harness Lap only seatbelt

24. CSS MFG:
 Britax Mia Moda
 Chicco Learning Curve - First Years
 Combi Peg Perego
 Evenflo Recaro
 Graco Safe Traffic Systems
 Orbit Sunshine Kids
 Dorel (Cosco, Eddie Bauer, Safety 1st, Maxi Cosi)

25. Model Number:

26. Mfg Date (MM/DD/YYYY): / /

27. Discussed Projectiles? Yes No

28. CSS/Vehicle Compatible
 Yes No N/A

Comments:

Parent sign off: Yes No N/A

29. I participated/installed CSS today Yes No N/A

30. I harnessed child in CSS Yes No N/A

31. Next steps discussed? Yes No N/A

32. Education materials given Yes No N/A

33. ALL CORRECTIONS MADE? Yes No N/A

Caregiver initials Donation \$

No

Days

Magna/Clek
 Mia Moda
 Learning Curve - First Years
 Peg Perego
 Recaro
 Safe Traffic Systems
 Sunshine Kids
Cosco, Eddie Bauer, Safety 1st, Maxi Cosi

Compatible
No N/A

Projectiles? Yes No

Month/Day/Year (M/DD/YYYY): / /

Today's Date / / 20

Child location in vehicle
 front row
 back
 rear row

Lower anchors Tether
Seatbelt Uninstalled
Integrated Seat (Skip to Findings)
No CSS

Restraint type:
 None RF convertible
 Base only Infant w/o base
 Car bed Infant w/ base
 Vest Lap/Shoulder seatbelt
 BP Booster Lap only seatbelt
 FF w/ harness

CSS MFG:
 Magna/Clek
 Britax Mia Moda
 Chicco Learning Curve - First Years
 Combi Peg Perego
 Evenflo Recaro
 Graco Safe Traffic Systems
 Orbit Sunshine Kids
 Dorel (Cosco, Eddie Bauer, Safety 1st, Maxi Cosi)

Model Number

Mfg Date (MM/DD/YYYY) / /

Tech Last Name Tech Number

49809

49809

Proud Program Supporter



Safe Kids USA
1301 Pennsylvania Avenue, NW
Suite 1000
Washington, D.C. 20004
202.662.0600

www.safekids.org

© 2011 Safe Kids Worldwide