



# Safe Kids Checkup Events: **A National Study**

February 2007



## Introduction

Motor vehicle crashes are the leading cause of death to children ages 3-14<sup>1</sup> and the leading cause of injury death for children under age 3.<sup>2</sup> Since 1996, Safe Kids Worldwide has partnered with General Motors to provide child passenger safety education targeted to caregivers and parents at the community level. The program promotes correct child restraint use and increases awareness about the benefits of keeping children in child restraints for as long as possible.

Safe Kids events are held at GM and Chevrolet dealerships, hospitals, retail outlets and other community venues to provide as much local exposure as possible. A checkup event allows a parent/caregiver to work one on one with a certified child passenger safety technician in their own vehicle with a child present. The message given to all parents at all Safe Kids events is to keep children appropriately restrained for their age, weight and height. A standardized checklist is used for documentation.

Safe Kids Worldwide developed the checklist in the late 1990s to be used for all grant-funded activities. The checklists have been used to assist manufacturers in addressing areas of repeated misuse so the product can be re-engineered appropriately. The checklist provides a guided, standardized tool for car seat technicians to ensure that they have addressed key safety components with parents and caregivers.

The objective of this study was to measure parent confidence levels, skill development and safe behavior over a six-week interval using the checklists and a matching behavioral survey.

## 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, a milestone the average child reaches between the ages of 8 and 12. For infants and children too small to safely use the adult safety belt system, child restraints such as child safety seats and belt-positioning 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 are reduced by 59 percent.<sup>3</sup>

## Study Methodology

This report highlights the results of child passenger safety checkup events held in 29 states. Each coalition hosted two events held six weeks apart. The first event took place during Child Passenger Safety (CPS) Week, February 13–19, 2005, and the second checkup took place before April 20. The goal of the research was to assess whether the events' educational efforts increased participants' knowledge, skills and abilities with regard to child passenger safety.

Safe Kids Worldwide coalitions were asked to take part in the study through a weekly e-newsletter; 48 coalitions in 29 states were included in this study. Each coalition selected at least two certified CPS technicians to conduct the research. Parents and caregivers were asked at the first event to take part in the study and commit to returning for the second event with the same child.

The study had two components: a survey, completed by parents and caregivers, that measured their understanding of proper CPS practices, and a Child Passenger Checklist completed by the CPS technician that recorded child safety seat (CSS) use and misuse. The checklist evaluated the participant's CSS installation errors and the seating position of the child in the vehicle. The survey and a checklist were filled out at both events.

At the first event, parents were taught to properly install the child restraint after the technician completed the evaluation and checklist. They also learned how to choose the most appropriate CSS based on the child's age, height and weight and how to safely secure their child in the CSS. Technicians answered questions from parents at that time. They also gave parents literature about CPS practices and strongly encouraged them to register the CSS or booster seat with the manufacturer. Technicians checked the CSS for recalls, expiration dates and obvious damage. Finally, technicians made sure that the parent installed the seat and secured the child so the lesson was not simply a demonstration. To ensure that no child leaves a checkup event improperly restrained, Safe Kids coalitions generally have replacement seats available for families with damaged or old seats.

At the second event, parents were asked to remove the CSS, reinstall it on their own and secure the child in the seat before the technician evaluated the installation using the standardized checklist. Parents then took the knowledge survey again. The surveys and Child Passenger Checklists from both events were sent to an independent research firm for analysis.<sup>†</sup>

## Positive Study Results

Study results show that within the six-week time period, the CPS Week 2005 child passenger safety checkup events successfully and positively changed parents' behavior and increased their knowledge: Children arriving at event 2 were restrained more safely and more appropriately than they were at event 1.

n=335	Event 1	Event 2
Appropriate seat selection	78%	96%
Harness correct	52%	83%
Seat tight	45%	84%
Harness snug	43%	80%
Safety belt routed correctly	89%	98%
Average misuse rate	19%	5%
Children arrived unrestrained	4%	<1%

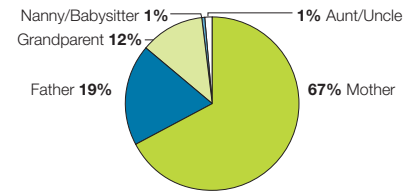
## Parents' Survey Results

Three hundred thirty-five sets of surveys from parents or caregivers who attended both checkup events hosted by the 48 coalitions were analyzed. Child Passenger Checklists were completed by CPS technicians for 321 children who were present at both events, a total of 642 checklists. The study looked at 279 children in rear-facing seats, 242 in forward-facing seats, 98 in booster seats, seven in safety belts, one in a shield/laptop booster, and 15 unrestrained children at the two events.

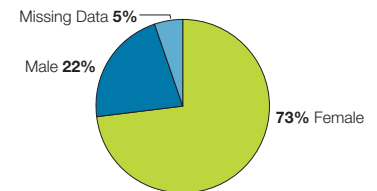
### DEMOGRAPHICS

Mothers made up the majority of the caregivers who came to the events, followed by fathers and grandparents. The number of women who brought children to the events was more than three times higher than the number of men. Men/fathers were therefore less likely to attend a checkup event and receive the vehicle safety event information.

**Who was the caregiver at the event?**  
(n=335)

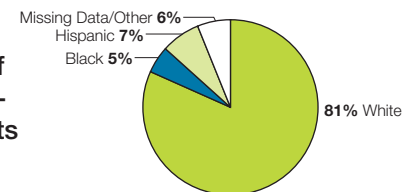


**What was the gender of the caregiver at the event?**  
(n=335)



The U.S. population has the following racial makeup: white (including Hispanic), 81.7 percent; black, 12.9 percent; Asian, 4.2 percent; American Indian and Alaska native, 1 percent; and native Hawaiian and other Pacific Islander, 0.2 percent (2003 estimate).<sup>5</sup> Hispanics make up 14.5 percent of the population.<sup>6</sup> Since 5 percent of event attendees were black and 7 percent were Hispanic, the events underrepresented the United States' racial/ethnic makeup.

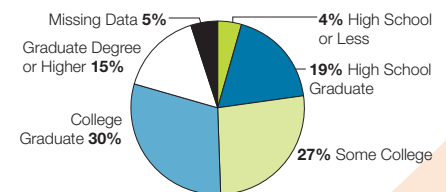
**Racial makeup of parents and caregivers at the events**  
(n=335)



### EDUCATIONAL ATTAINMENT

Seventy-two percent of those who attended the events had at least some college education. According to the 2005 American Community Survey, only 46.4 percent of American adults have attended college.<sup>7</sup>

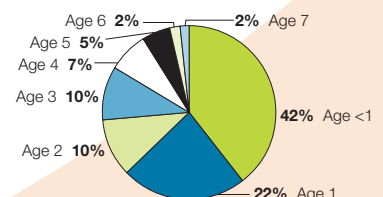
**Educational attainment of attendees**  
(n=335)



### CHILDREN

Ninety-one percent of children whose caregivers completed the survey were ages 0 to 4 — the group most likely to still be riding in a CSS with a harness. Eighty-three percent weighed less than 40 pounds.

**Total percent of child attendees for event 1** (n=335)

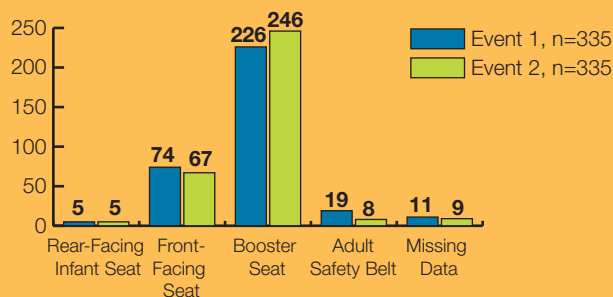


Most parents and caregivers said they attended the event to “be sure everything is OK” or because they “just got a new car seat.” Only a few said they wanted to change the direction of their child’s seat or had recently bought a new vehicle. They said they found out about the event (in descending order) via newspaper/radio/TV, friend/relative, other, drove by the dealership, flyer and Internet.

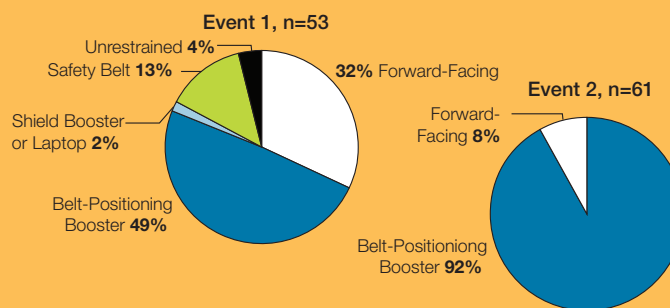


## BOOSTER KNOWLEDGE

When a child weighs 40 to 80 pounds, what type of restraint will protect him or her best?



CSS Choice for Children Who Were ≥ 1 Year and 40 to 79 Pounds



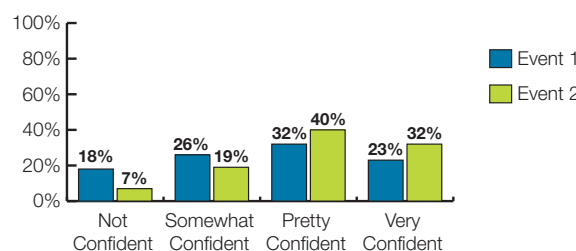
Many parents correctly knew that children who weighed 40 to 80 pounds should be in a booster seat at event 1; however, even more parents were able to answer this question correctly by event 2. According to the checklists, fewer than 50 percent of parents with a child in this age group arrived at the event using a booster seat. This number rose considerably by the second event, and although 8 percent still rode in a forward-facing harness seat, no booster-appropriate children arrived unrestrained or in an adult safety belt.

## CONFIDENCE LEVELS AND PARENT INVOLVEMENT IN SEAT INSTALLATION

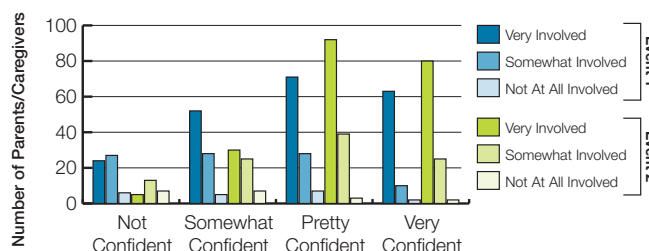
More parents self-reported as “pretty confident” or “very confident” about their ability to correctly install the safety seat in their vehicle and secure their child in the seat at the second event than they were at the first event.

At the second event, parents who said they were “very involved” or “somewhat involved” in the installation of the seat were more confident in their ability to install the seat. The rise in overall confidence levels shows that parents benefited from the education they received at the first event. In addition, the more involved parents were in installing the seat, the more confident they were in their ability to do so.

### Parents' and Caregivers' Confidence Levels (n=335)



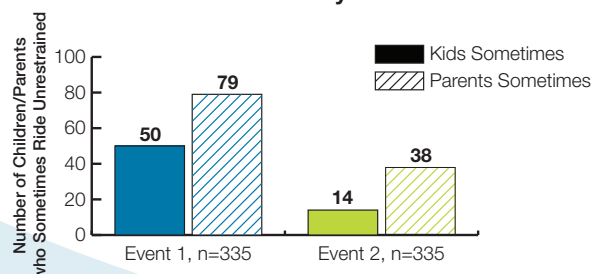
### Confidence Levels and Self-Reported Involvement in Seat Installation (n=335)



## RESTRAINT USE FREQUENCY

The number of parents who reported that they sometimes allow their children to ride unrestrained decreased by the second event. The number of parents who reported that they ride unrestrained also went down, although that number stayed higher for parents than for children at both events. While parents learned that they and their children should always buckle up, many don't always practice this behavior. The most frequent reason given at both events for not restraining children had to do with the distance traveled. Parents were less likely to buckle up their children for short trips or drives on local roads.

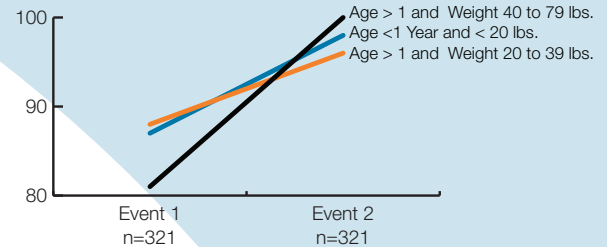
How often do you allow your children to ride unrestrained? How often do you ride unrestrained?



## CHILD SAFETY SEAT MISUSE (SEAT SELECTION)

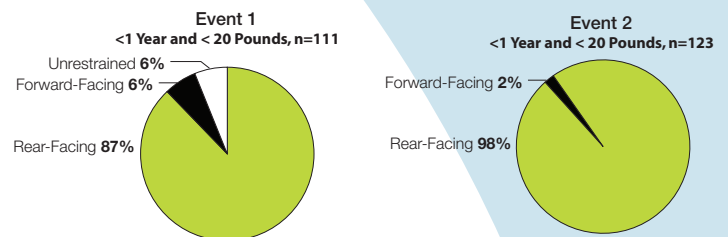
More than 80 percent of parents had their children in the correct CSS at the first event, and those numbers rose significantly to more than 95 percent at the second event. Also, 14 children arrived unrestrained at the first event while only one child arrived unrestrained at the second event.

Percentage of Children in the Correct CSS Choice by Age/Weight



Children younger than 1 and weighing less than 20 pounds arrived at the first event in the correct rear-facing safety seat 87 percent of the time. Because parents are often eager to prematurely switch their children to forward-facing seats, the drop from 6 percent to 2 percent of infants arriving in forward-facing seats from event 1 to event 2 shows that this small group of parents learned that a rear-facing seat is the safest way to travel with an infant. No infants arrived unrestrained at the second event.

CSS Choice for Children Who Were < 1 Year and < 20 Pounds

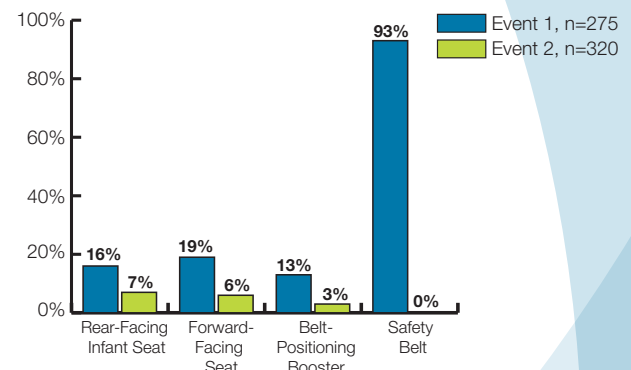


## CHILD SAFETY SEAT MISUSE (ERROR RATE)

The average error rate was reduced by approximately 10 percentage points for each type of child restraint from event 1 to event 2, showing that parents were able to retain the information they learned about installation over a six week period.

The error rate indicates the percentage of errors made out of the total errors possible for a particular seat type. For example, a rear-facing seat has 15 possible error types listed on the checklist. If a seat arrives with five errors, then the error rate is 5/15, or 33 percent. If a rear-facing seat does not have a carrying handle, for example, that element would be marked as not applicable and the error rate would be 5/14, or 36 percent. Similarly, if a child is not present during the fitting and five harness elements cannot be assessed, the error rate would be 5/10, or 50 percent.

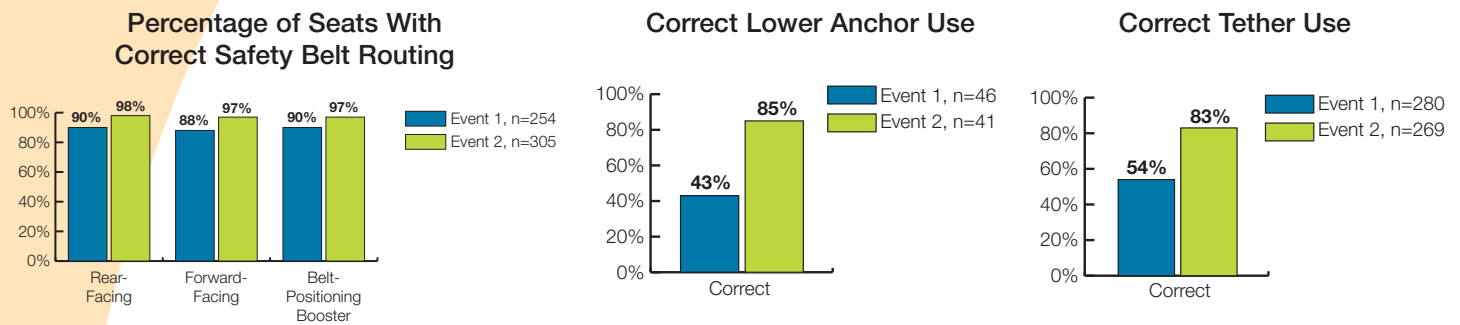
Misuse Rates by Restraint Type



### BEST-PRACTICE RECOMMENDATIONS FOR SEAT TYPES

- Children should be restrained in a rear-facing CSS until they are at least 1 year old and weigh 20 pounds, although current best practices suggest using the rear-facing convertible CSS for as long as possible following the weight and height limits set by the manufacturer.
- Children who are ages 1 or older and weigh 20 to 40 pounds should ride forward facing in a harnesssed CSS.
- Children should ride on a booster seat until they are at least 8 to 12 years old, weigh 80 to 100 pounds and are up to 4 feet 9 inches tall.
- Children taller than 4 feet 9 inches who weigh between 80 to 100 pounds may ride restrained in adult safety belts.
- Always refer to the CSS instruction manual for exact weight and height guidelines.

## CHILD SAFETY SEAT INSTALLATION



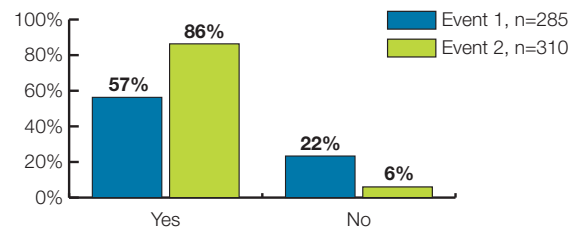
There are two ways to install a car seat in a vehicle: using the safety belt or using the lower anchors. Correct safety belt routing means that the safety belt is threaded through the seat correctly and buckled according to manufacturer's instructions. Correct lower anchor use is when both lower anchors are properly hooked into the designated anchors in the vehicle seat. A top tether, which attaches to the back of a vehicle seat, is recommended with both the lower anchors and the safety belt in a forward-facing seat; not all rear-facing seats allow for the use of tethers.

Although many parents were using the safety belts correctly at event 1, close to 100 percent of all safety belts were correctly routed at event 2. Less than 50 percent of all seats using lower anchors were installed correctly; correct use doubled by event 2. Twenty-nine percent more parents showed proper use of the top tether by event 2.

## CAR SEAT REGISTRATION, LABELS AND HISTORY

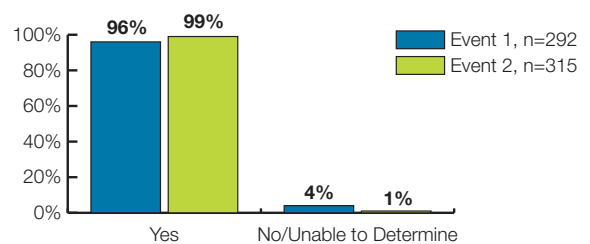
At the first event, 57 percent of parents and caregivers said they had completed and mailed the registration card, and 86 percent said they had done so at the second event. Returning registration cards is important so that car seat manufacturers know whom to contact in case of a recall. Technicians often mail the cards in for seats distributed at the events, contributing to the positive results at event 2.

**Percentage of Safety Seats for Which Caregivers Indicated the Registration Form Had Been Completed and Returned**



Ninety-six percent of the seats that arrived at the first event were labeled as meeting federal standards, while 99 percent of the seats at the second event were found to meet those standards. "Unable to determine" most likely meant that the stickers or expiration date on the seat were missing or badly faded.\* At the second event, less than 1 percent of seats either failed to meet federal standards or technicians were unable to determine their compliance. This may have been due to the distribution of replacement seats at the first event, another positive feature of the checkup events.

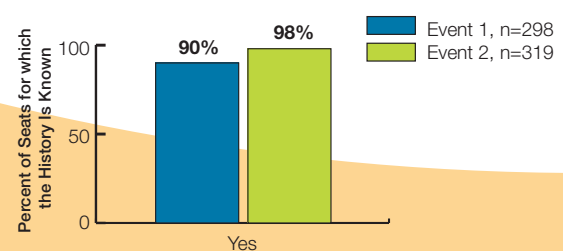
**Percentage of Safety Seats Labeled as Meeting Federal Standards**



\* The Juvenile Products Manufacturers Association recommends a shelf life of six years for child safety seats.

Safe Kids Worldwide recommends that parents use safety seats with known histories to ensure that they were never involved in a crash. At event 2, 44 more parents/caregivers were able to say they knew the history of their seat. This was in part due to the fact that technicians distributed car seats to parents who were using seats deemed unsafe at the first event.\*

**Is the CSS' original owner and history known?**

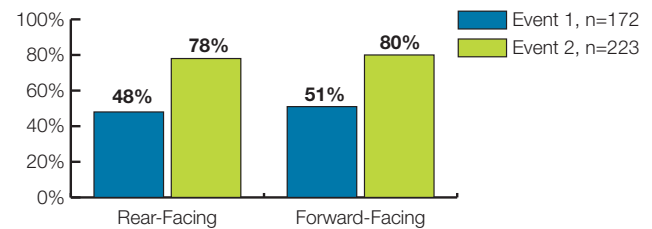


\* According to the National Highway Traffic Safety Administration, child safety seats should be replaced after a moderate or severe crash to ensure a continued high level of protection for child passengers.<sup>9</sup>

## THE INTERNAL HARNESS

Parents' and caregivers' knowledge about how to correctly use the internal harness of a child safety seat improved greatly from the first event to the second. They were often unaware of where to position the retainer clip or what slots to thread the harness through, and those factors most likely led to the high misuse numbers at the first event. Although knowledge increased by the second event, more than 15 percent of parents still did not use the internal harness correctly, which demonstrates that technicians must be even more diligent about teaching parents how to properly harness children in their seats.

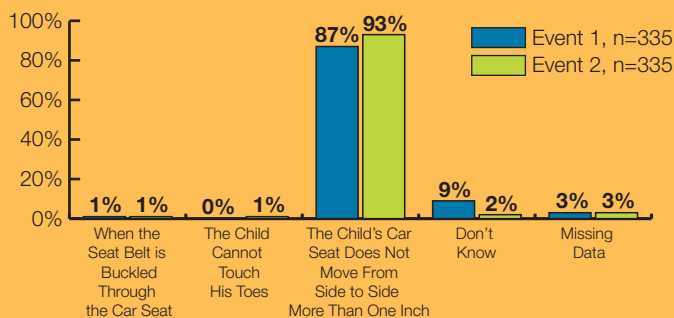
**Harness Recorded as Correct for Children Who Were Present at One or Both Events**



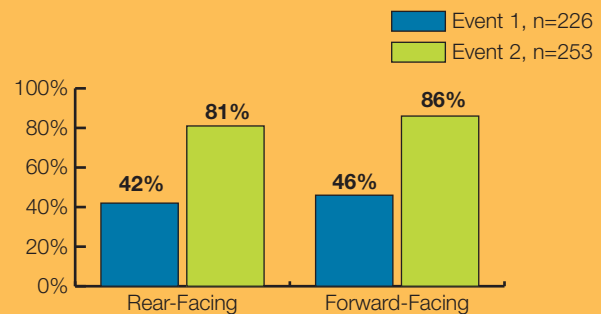
## KNOWLEDGE VS. PRACTICE: SEAT INSTALLATION

At the first event, 87 percent of parents assumed they knew how tightly to secure a safety seat in a vehicle, but less than half of both rear-facing and forward-facing seats were actually installed correctly. However, the number of tightly installed seats rose significantly by the second event, showing that parents increased their ability to correctly install a seat.

**How can you tell if a child's seat is installed tightly enough?**



**Percentage of Seats Installed Tightly**



## Conclusions

Traditionally, education and literacy levels rank as key determinants of health.<sup>10</sup> As shown in this study, these Safe Kids Worldwide events tended to follow this trend and reached a highly educated segment of the population. This suggests that child passenger safety programs should strategically target families with lower education levels because they are less likely to attend a safety event.

More than 80 percent of participants self-reported as being white. According to the National Center for Injury Prevention and Control, the percentage of African American children who are injured in traffic incidents is more than twice that of white children.<sup>11</sup> Therefore, because the events generally did not reach this group of children who tend to be high risk, this is another target group to take into consideration when developing new programs.

Also, children who attended the events tended to be young – ages 4 and under. CSS with internal harnesses are typically appropriate for such children. Older children who should be restrained in booster seats with adult lap-and-shoulder belts are underrepresented in this study. Events should target all children ages 0 to 12, particularly those who are typically underrepresented such as the older child.

As recorded by CPS technicians at the events, children were more often appropriately restrained at the second event. This shows that hands-on education was successful in teaching parents and caregivers how to safely transport their children.

The use of appropriate child restraints increased from the first to the second event, and the number of errors parents and caregivers made in installing safety seats and securing their children in them decreased. At the first event, parents and caregivers made errors in approximately 20 percent of the components used in attaching safety seats to their vehicles and securing their children in them. After having received personalized instruction during the first event, the error rate dropped to an average of 5 percent at the second event. There were also significant increases in the percentage of children with correct

harnesses, tight harnesses, correct safety belt routing, tight seat installation and correct lower anchor attachments. The percentage of safety seats with no errors increased by 45 percent.

Parents' and caregivers' knowledge and skill levels increased after the hands-on education, demonstrating that although teaching proper seat installation through demonstration and discussion is important, it is also vital to have the parent or caregiver take part in the installation process.

Research shows that when parents buckle up, they are much more likely to also restrain their children.<sup>8</sup> Technicians should therefore take advantage of the opportunity to teach parents and children that all passengers should be properly restrained on every ride.

The checkup events also taught parents to only use seats that meet federal safety standards, have not been involved in a crash and have not expired. That knowledge significantly reduced the percentage of inappropriate seats used at the second event. Another positive result was moving children to safer seating positions — out of the front seat, away from active air bags and into a back seat.

Based on the results, we are able to conclude that the CSS checkup events conducted by Safe Kids Worldwide coalitions effectively meet their goal of educating and informing parents and caregivers about child passenger safety practices. Parents and caregivers understood and remembered the education, and their attitudes, installation skills and ability to properly secure their children significantly increased from event 1 to event 2. The increase in the number of children riding in appropriate restraints shows that checkup events, and more specifically Safe Kids Worldwide events, are a positive force in preventing childhood injuries from motor vehicle crashes, the number 1 killer of children ages 14 and under.

This study was conducted with parents and caregivers who took the initiative to attend the checkup events. They were already concerned about their children's safety and took measures to ensure that they learned to transport their children properly. The events taught parents the necessary elements of child passenger safety. The next step is to identify and reach parents who do not currently attend such events. This effort will require CPS advocates to become more proactive in reaching underserved families.

## Endnotes

- 1 National Highway Traffic Safety Administration National Center for Statistics & Analysis, Traffic safety facts 2004: Children, (2004).
- 2 The National Center for Injury Prevention, WISQARS, <http://www.cdc.gov/ncipc/wisqars>.
- 3 National Highway Traffic Safety Administration National Center for Statistics & Analysis, "Traffic Safety Facts 2005: Children, (2005).
- 4 US Census Bureau, 2005 American Community Survey Subject Tables, S2301: Employment Status, <http://factfinder.census.gov/servlet/STSelectServlet> (accessed December 15, 2006).
- 5 CIA, "The World Factbook," <https://www.cia.gov/cia/publications/factbook/geos/us.html> (accessed December 15, 2006).
- 6 US Census Bureau, 2005 American Community Survey Subject Tables, B03001: Hispanic or Latino Origin by Specific Origin, <http://factfinder.census.gov/servlet/STSelectServlet> (accessed December 15, 2006).
- 7 US Census Bureau, 2005 American Community Survey Subject Tables, S1501: Educational Attainment, <http://factfinder.census.gov/servlet/STSelectServlet> (accessed December 15, 2006).
- 8 Automotive Coalition for Traffic Safety, "Tween Traffic Safety Research Yields New Safety Tips," [http://www.tweensafety.org/news\\_full.php?NewsItem=12](http://www.tweensafety.org/news_full.php?NewsItem=12) (accessed December 15, 2006).
- 9 National Highway Traffic Safety Administration, "Child Restraint Re-use After Minor Crashes," <http://www.nhtsa.dot.gov/people/injury/childps/ChildRestraints/ReUse/RestraintReUse.htm> (accessed December 15, 2006).
- 10 Ilona S. Kickbusch, "Health Literacy: Addressing the Health and Education Divide," *Health Promotion International* 16, no. 3 (September 2001): 289-297.
- 11 National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System, <http://www.cdc.gov/ncipc/wisqars> (accessed December 15, 2006).

*Suggested citation: Jacqueline G. Dukehart, Lorrie Walker, Kathy Lococo, Lawrence E. Decina, and Loren Staplin, "Safe Kids Checkup Events: A National Study" (Washington, DC: Safe Kids Worldwide: 2007).*

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