

Identifying Strategies to Reduce the Percentage of Unrestrained Young Children



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16. Abstract <p>The purpose of this study was to explore the factors that contribute to nonuse of occupant restraints by children 5 through 7 years of age riding in motor vehicles, and to identify strategies to increase restraint use in this age group. The appropriate restraint for most of these children, based on their size, would be booster seats. Research activities conducted for this study were a literature review, discussions with key informants, a brainstorming session with experts, and focus groups with parents and other caregivers.</p> <p>The prevalence of unrestrained children in this age group varied across observation studies identified in the literature review. Key informants, experts in the field, and parents and other caregivers provided many reasons why drivers do not restrain these children. Reasons included low perceived risk (low crash and injury threat), lack of understanding that booster seats prevent injury, ignorance of the booster seat law, the perception that violations of the child restraint law are not enforced, inconvenience, parental permissiveness, and situational factors.</p> <p>Recommendations to increase proper restraint use among 5- through 7-year-olds centered on enforcement, education, and publicity. Enforcement strategies should focus on increasing the perception that the child restraint law is strongly enforced, increasing the penalties for violating the law, and gaining more support from top-management of law enforcement agencies for enforcing the law. Educating law enforcement officers, judges, and prosecutors about the child passenger safety law and the risks involved for unrestrained and inappropriately restrained children are key components of an enforcement strategy. Generating publicity about the enforcement efforts is also important. Education strategies directed at the public should focus on messages that identify the best practices for properly restraining these children, raise parents' and other caregivers' perception of risk by demonstrating the potential for injury and death using visuals and testimonials, and clarify the child restraint law in the State. Educational messages may be delivered by health care personnel, teachers, law enforcement officers, and child passenger safety technicians. Messages can also be delivered through radio public service announcements and billboards.</p>					
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EXECUTIVE SUMMARY

The purpose of this study was to explore the factors that contribute to nonuse of occupant restraints by children 5 through 7 years of age riding in motor vehicles, and to identify strategies to increase restraint use in this age group. The appropriate restraint for most of these children, based on their size, would be booster seats. Research activities conducted for this study were a literature review; discussions with key informants; a brainstorming session with experts; and focus groups with parents and other caregivers who were observed transporting unrestrained 5- through 7-year-old children.

The literature review identified populations, socioeconomic characteristics, ecological factors, behaviors, and attitudes related to nonuse of restraints by children in this age range, and identified possible strategies to increase use. Discussions were held with key informants, who were asked to identify barriers to children's restraint use and to recommend strategies that could overcome the barriers.

A brainstorming session was held in Washington, DC, with experts in child development, child passenger safety, and health education, to identify the reasons for nonuse of restraints by children and suggest potential strategies to increase use. Recommendations were obtained for discussion topics to be used in subsequent focus group sessions with parents and other caregivers of unrestrained booster-seat-age children.

Focus groups were held in four cities to discuss participants' knowledge of the child restraint law and best practices¹, sources of information about child restraints, attitudes toward booster seat use and reasons for nonuse, perceptions of child restraint law enforcement, and potential strategies and messages to increase the consistent use of booster seats.

Observational studies identified in the literature review showed varying percentages of children in this age group riding unrestrained. Opinions from informants and national experts about the reasons for nonuse included parent/caregiver underestimation of crash risk, lack of awareness of crash dynamics and the consequences for unrestrained occupants, child resistance, and permissive parenting. Children's nonuse of restraints was more likely among minority populations and those with fewer formal years of education and lower household incomes. Language and cultural barriers also were associated with higher nonuse.

Cost, inconvenience, child discomfort, lack of understanding of the child restraint law, lack of understanding of how booster seats work, and low perceived risk of being ticketed for a booster seat law violation were also identified as reasons why children 5 through 7 are not restrained in booster seats.

¹ The best practice recommendation for safely transporting most children 4 through 7 is the use of belt-positioning booster seats (either high-back or backless). These seats are for children who have outgrown child safety seats (generally at 40 pounds), and who are not large enough for the vehicle seat belt system alone. Children should use belt-positioning booster seats until they are at least 8 years old, unless they are 4 feet 9 inches tall. Belt-positioning booster seats are always to be used with a vehicle lap/shoulder belt combination. Booster seats are never to be used with a lap-only belt. In addition, these children are safest when properly restrained in the rear seat (NHTSA, 2004).

There are many reasons why parents and other caregivers allow their children to ride unrestrained or inappropriately restrained. Therefore, there is no “one-size-fits-all” strategy that will encourage such a heterogeneous group to consistently restrain their children. Accordingly, a palette of strategies and messages is recommended to influence compliance that includes enforcement, education, and publicity.

It is recommended that child restraint laws be more vigorously enforced and greater penalties attached to violations. Key components for effective enforcement of these laws include: support and cooperation from top management of law enforcement agencies for enforcing child passenger safety laws; training and education of law enforcement officers on child restraint laws and best practices for children by age, weight, and height; educating judges and prosecutors regarding details of child restraint laws and risks involved for noncompliance of laws; and frequent publicity surrounding the enforcement efforts.

Education should focus on best practices for properly securing 5- through 7-year-old children. Parents and other caregivers need to know when their children should be secured in booster seats, how to properly use the seats, and when to graduate to an adult seat belt. They need to know the child restraint law in their State; and the differences between the law and best practices for the child’s age, weight, and height. Another educational goal is to increase the perception of risk, especially among parents/caregivers who are not consistent users of restraints. Health care providers, child passenger safety (CPS) instructors and technicians, law enforcement officers, and elementary school teachers can provide this education. Educational material can also be distributed at State licensing agencies. The media is another important channel to inform and educate this group. Radio public service announcements and billboards are suggested.

Access to information is critical for many minority groups. Education and messages should be culturally sensitive, bilingual, and within the reading level of the target audience. Educational programs may have more impact when delivered in community-oriented or faith-based centers. Access to booster seats is also critical; and the use of giveaways, low-cost seats, and store coupons is recommended.

1.0 INTRODUCTION

1.1 BACKGROUND

Motor vehicle crashes are the leading cause of death and disability for pediatric and adolescent children (Nance, Lutz, Arbogast, Cornejo, Kallan, Winston, & Durbin, 2004; NHTSA, 2002). In 2005, of the 304 fatalities among booster-seat-age children (4 to 7 years old)² for which restraint use was known, 136 (45%) were unrestrained (NHTSA, 2006). NHTSA conducted an analysis of single- and multivehicle crashes involving a fatality between 1998 and 2002. Of the 3,300 unrestrained booster-seat-age children involved in those crashes, 27.7% were killed (NHTSA, 2005).

NHTSA's "Misuse of Child Restraints" study (DOT HS 809 671) identified high rates of unrestrained children of booster seat age and weight (Decina & Lococo, 2004; Decina, Lococo, & Block, 2005; Decina & Lococo, 2005). This project was undertaken in response to those findings, selecting 5- through 7-year-olds to target because of the higher rate of nonuse in that age range. This study's overarching purpose was to suggest solutions to the problem of unrestrained children riding in motor vehicles.

1.2 PROJECT OBJECTIVES AND SCOPE OF WORK

The goals of this project were to determine the reasons underlying nonuse of occupant restraints by 5- through 7-year-old children, and to identify promising approaches to address this problem. A literature review, discussions with key informants, a brainstorming session with national child passenger safety experts, and focus groups with parents and other caregivers were conducted to meet the objectives of the study.

² In most of the child restraint research literature, the term booster seat age refers to children from their fourth birthday until their eighth birthday, and therefore includes children ages 4, 5, 6, and 7.

2.0 RESEARCH METHODOLOGY

The research methodology entailed: (1) a literature review to identify documented factors associated with children's nonuse of occupant restraints and interventions to reduce the problem; (2) discussions with key informants to identify barriers to restraint use in this child population, and to recommend strategies to reduce nonuse; (3) a brainstorming session with experts to propose and prioritize strategies to reduce nonuse among identified high-risk populations; and (4) focus groups in four cities with parents and other caregivers observed transporting unrestrained 5- through 7-year-old children, to discuss potential strategies recommended in earlier tasks that would increase restraint use.

2.1 LITERATURE REVIEW

A comprehensive review of the research literature was performed covering the following topics:

- Demographic characteristics, attitudes and behaviors related to nonuse of restraints by children 4 through 7, and barriers to their restraint use;
- Strategies that have been implemented to increase children's use of occupant restraints; and
- Effectiveness of various approaches in reducing risk-taking behaviors.

Four literature and information search methods were used to identify research studies, survey data, and other information relevant to the topics under study.

First, a computerized search in the Transportation Research Information Services (TRIS) database was performed. This database covers national transportation science and highway safety research and information produced by the U.S. Department of Transportation and its agencies, including NHTSA. The SCOPUS database (Elsevier Publishing Company) was also searched. This database covers medical and health science journals.

Second, the reference librarians from Northwestern University Transportation Library (NWUTL) conducted a search in their electronic card catalog. NWUTL is a world-leading depository for transportation research information. NWUTL also conducted a search in the TRANSPORT database, which is the premier international transportation science database. In addition, project staff accessed Temple University's Library Network, which contains a strong liberal arts collection of material. The PsychInfo and Sociological Abstract databases were searched through their system as well.

Third, an online information brokerage service (Access Information Services, Inc.) was used to gain perspective in identifying relevant information in the transportation engineering (e.g., COMPENDEX) and government science areas (e.g., NTIS), and to take advantage of its subscriptions to these subject database services.

Fourth, communications with peer group sources and professional associations (e.g., Transportation Research Board's Occupant Protection Committee – ANB45) were initiated to identify current research, nonpublished documents, and research in progress.

Bibliographic citations and their abstracts were reviewed and a list was generated of reference documents to obtain. Document acquisition vendors, in-house and electronic database full-text sources, local area academic libraries, and in-house collections were used to obtain journal articles, research reports, and other documents.

2.2 DISCUSSIONS WITH KEY INFORMANTS

The purpose of this task was to gather information about the barriers to restraint use that professionals working in the child passenger safety (CPS) field have discerned in their day-to-day interactions with parents, other caregivers, and children in the higher-risk groups for restraint nonuse. The professionals contacted were also asked to recommend strategies to overcome these barriers. Discussions with people outside the Philadelphia area were conducted by telephone from February 6 to February 23, 2006. A discussion with those CPS professionals located locally was conducted in-person at a meeting held at the principal investigator's office in Kulpsville, Pennsylvania, on February 23, 2006.

Participants in the telephone sessions were all CPS-certified instructors and technicians. Most were nationally recognized CPS experts. In addition, many had assisted in previous NHTSA child safety seat use and misuse observation studies. The participants and their affiliations are listed below:

- Beth Ebel, M.D., assistant professor, pediatrician (Harborview Injury Prevention and Research Center, University of Washington, Seattle, WA);
- Karen Hanawalt, Florida CPS State Coordinator, FL DOT/Tallahassee Community College, Tallahassee, FL;
- Cathy Hogan, coordinator, Safe Kids St. Louis, SSM Cardinal Glennon Children's Medical Center, St. Louis, MO;
- Kathy Kruger, executive director, Safety Restraint Coalition, Kirkland, WA;
- Sherri Penchishen, director, Bethlehem Health Bureau and Northampton County Highway Safety Program, Bethlehem, PA;
- Janelle Rose, executive director, Program Professionals, Inc., Wyandotte, MI; and
- Stephanie Tombrello, executive director, SafetyBeltSafe U.S.A., Altadena, CA.

Discussion topics were developed and e-mailed to the above people prior to their scheduled telephone appointments. The following questions were posed during each individual telephone discussion.

- How serious is the problem of unrestrained 5- through 7-year-old children?
- Who are the unrestrained young children (demographic and socioeconomic characteristics)?

- What parent and caregiver issues contribute to this problem (attitudes, perceptions, beliefs, lack of knowledge)?
- What situational factors contribute to the problem?
- What current programs are employed to address this issue?
- What strategies would you recommend to NHTSA?
- What groups should be targeted?
- Other issues?

The in-person meeting was composed of CPS experts in the Philadelphia area having extensive experience conducting child safety seat inspection station events, educating parents about CPS issues, and conducting child safety seat use/misuse field observations. They were all CPS-certified at the instructor level. Their names and affiliations are listed below:

- Diane Batcher, project manager of the Chester County, PA, Highway Safety Program;
- Cindy Cianciulli, coordinator of the Montgomery County, PA, Highway Safety Program;
- Gina Duchossois, coordinator, Safe Kids Coalition of Southeastern Pennsylvania, Philadelphia, PA;
- Yvette Gayle, volunteer for Safe Kids Chester County, PA;
- Terri Lorentson, coordinator of the Delaware County, PA, Comprehensive Highway Safety Program; and
- Sally Williams, Pennsylvania Traffic Injury Prevention Program, underserved population and Southeastern PA regional coordinator.

The same topic area questions posed to the out-of-town experts were mailed to the local experts prior to the in-person meeting. A cover letter accompanying the topic list asked participants to think about the topics and prepare notes for the meeting. They were also asked to provide anecdotal evidence about barriers that inhibit restraint use by children 5 through 7 derived from their observations and conversations with parents and other caregivers encountered during their daily activities. The experts were asked to provide their personal opinions about strategies that would improve this age group's restraint use.

2.3 BRAINSTORMING SESSION

The purpose of this task was to conduct a brainstorming session with experts from the fields of child development, child passenger safety, and health education to gather information about the reasons for nonuse of restraints among children 5 through 7 and to recommend strategies to increase restraint use among high-risk populations. Information obtained during this session was used to develop topics for discussion in later focus groups with parents and other caregivers.

The brainstorming session was held in Washington, DC, on June 14 and 15, 2006, and was attended by contractor representatives from TransAnalytics, LLC, expert panelists, and NHTSA staff. A subcontracted facilitator from Warren Ashburn and Associates led the discussions. The session was audio recorded. The expert panelists were:

- Gilma Arguello, CPS program coordinator, Centro San Bonifacio, Chicago, IL;
- Nancy Bill, injury prevention manager, Indian Health Service, Bureau of Indian Affairs, Rockville, MD;
- Beth Ebel, M.D., assistant professor and pediatrician, Harborview Injury Prevention and Research Center, University of Washington, Seattle, WA;
- William Hall, CPS manager, Highway Safety Research Center, University of North Carolina, Charlotte, NC;
- Suzanne Hill, director of outreach and advocacy, Center for Injury Research and Prevention, Children's Hospital of Philadelphia, Philadelphia, PA;
- Anne Jerzewski, program manager, Program Professionals, Inc., Wyandotte, MI;
- William King, epidemiologist, University of Alabama at Birmingham, Birmingham, AL;
- Michele Mount, CPS Working Group, AAA New Jersey Auto Club, Florham Park, NJ;
- Janelle Rose, executive director, Program Professionals, Inc., Wyandotte, MI;
- Lorrie Walker, training manager/tech advisor, Safe Kids Worldwide, Washington, DC; and
- Bob Wall, master police officer (ret.), traffic safety program manager, Virginia Association of Chiefs of Police, Richmond, VA.

The brainstorming session agenda consisted of:

- Opening remarks and introductions
- Background information
- Session topics (Day 1):
 - Topic 1 – Seriousness of Problem
 - Topic 2 – Specific Target Groups
 - Topic 3 – Parental Issues and Other Situational Factors
 - Topic 4 – Most Critical Reasons (Prioritized From Topic 3)
 - Topic 5 – Identify Strategies (General Discussion)
 - Topic 6 – Evidence of Success With Identified Strategies, by Target Group and by Program Organization Type
 - Topic 7 – Summary of Topic 6 Discussions

- Session topics (Day 2):
 - Topic 8 - Prioritize Strategies
 - Topic 9 - Identify Four Potential Strategies for Next Project Task (Focus Groups)
- Closing Remarks

2.4 FOCUS GROUP SESSIONS

The purpose of this task was to learn why parents and other caregivers do not consistently have their children 5 through 7 years of age use occupant restraints when riding in motor vehicles, and to explore what potential strategies and messages would convince them to consistently and appropriately restrain their children. Parents/caregivers were recruited to participate in the focus groups about 4 to 6 weeks prior to when the focus groups were to be conducted. Recruiters were stationed in shopping centers, where traffic flow was high but relatively slow moving, to permit seeing inside the vehicles. Target drivers were those transporting unrestrained children 5 through 7. Recruiters approached target drivers and asked if they would participate in a focus group concerning personal safety on the highway. An honorarium was offered for participation. If the driver was interested, the recruiter obtained the driver's name and telephone number, and ages of the unrestrained children in the vehicle. Drivers were advised that they would receive a call from a researcher in the near future providing information about the date, time, and location of the focus group.

Recruiters spent two full days in each of four selected cities: Detroit, Pittsburgh, Sacramento, and Tampa. They provided a candidate list of approximately 25 females and 12 males from each city to the principal investigator. Two weeks prior to each scheduled focus group, the candidates were called and invited to participate. The selection criteria were primarily the parents'/caregivers' reaffirmation of their willingness to attend the focus group and the verification of the ages of the children observed in the vehicles during recruitment day.

Focus groups were held in November 2006 in the four cities. Two focus groups (one all-male group and one all-female group) were conducted in each location, for a total of 8. Approximately 9 participants were included in each group. Focus groups lasted 90 to 160 minutes. A discussion guide was prepared by the moderator before the sessions began, using information gleaned from the literature review, discussions with key informants, and the brainstorming session. The guide is shown in Appendix A. Topics included: knowledge of the child restraint law and best practices; sources of information about child restraints; attitudes toward booster seat use and reasons for nonuse; perceptions of child restraint law enforcement; and potential strategies and messages to increase restraint use by children 5 through 7.

During the focus groups, participants were asked to rank six strategies for increasing child restraint use according to their perceived likelihood of influencing the public. The six specified strategies were: education; communication; demonstrations of proper child restraint use; assistance to low-income households; enforcement of the child restraint law; and a stronger child restraint law (penalties). Appendix B presents an outline of the strategies and possible methods for implementing them. Following the ranking activity, participants were asked to suggest how each strategy could be executed successfully to increase child restraint use.

Participants were also asked to rank four message strategies in terms of their perceived ability to elicit compliance with the child restraint law and foster appropriate restraint use. They then were asked to explain the reasons for their rankings. The message strategies were developed by the contractor using information learned in the earlier task activities. The four message strategies are summarized below. Appendix C presents the text of each strategy that was distributed to participants for consideration in this exercise.

- RISK of injury or death associated with failure to restrain the child.
- ENFORCEMENT/CONSEQUENCES (fines and points) for failure to restrain the child.
- EASE of installing and using booster seats.
- DUTY of the parent/caregiver to properly protect the child.

In the social psychology literature, the Risk and Duty messages may encourage compliance through cognitive dissonance (i.e., highlighting behavior that is in opposition to a person's core beliefs and values), while the Enforcement message may encourage compliance using the behavioral model (e.g., getting a ticket punishes the behavior of not having the child use an age-appropriate restraint). The Ease message focuses on the minimal effort required to adopt a recommended precaution.

Facility staff recorded the sessions. Upon completion of the focus groups, the moderator reviewed the session tapes and his notes, and prepared a summary report.

It is important to note that focus groups are not statistically representative of the demographic groups from which participants are drawn. In addition, the observed nonuse of restraints by 5- through 7-year-olds during recruitment did not necessarily mean that the participants failed to restrain their children all of the time. It was only certain that they did not restrain these children on the observed occasions. Participants were never made aware of the observed behavior. Nor were they asked to account for it. In the course of discussion, however, they were given (and took) the opportunity to describe their restraint practices without being directly questioned about them.

3.0 RESULTS AND ANALYSIS

3.1 LITERATURE REVIEW

Numerous research studies have provided data on the prevalence of restraint use among booster-seat-age children, as well as the characteristics of nonusers and their parents and caregivers.

3.1.1 Percentage of Unrestrained Children: Observational Studies

Observational studies have shown varying percentages of children ages 4 through 7 riding unrestrained. Table 1 summarizes the large-scale observational studies. This table has been updated since the literature review was first conducted to include more recent studies.

3.1.2 Percentage of Unrestrained Children: Crash Data Analyses

Analysis of National Automotive Sampling System (NASS) data for 1995-1999 found that 12.5% of children 4 to 7 involved in police-reported tow-away collisions were unrestrained (Valent, McGwin, Hardin, Johnston, & Rue, 2002).

The percentage of unrestrained children among child crash fatalities 4 to 7 is higher than the percentages of unrestrained children reported in observational studies. Fatality Analysis Reporting System (FARS) data from 1998-2002 showed that 54.0% of children in this age range killed in motor vehicle crashes were unrestrained (Starnes, 2005). Earlier FARS data (mid 1990s) found 50% of children 4 to 7 killed in motor vehicle crashes were unrestrained. Another FARS study (2001 data) found that when the driver was unrestrained, 84% of the fatally injured children were also traveling unrestrained (Starnes, 2003).

3.1.3 Socioeconomic Characteristics of Drivers Who Do Not Restrain Their Child Passengers

Many studies have examined the relationship between driver socioeconomic characteristics and restraint use of booster-seat-age children. Several relationships stand out in these studies:

- **Income**—Studies have revealed a positive relationship between socioeconomic level and child safety seat and booster seat use (Decina, Lococo, & Block, 2005; Apsler, Formica, Rosenthal, & Robinson, 2003; Axelrad, 2002). However, focus group studies have shown cost as an issue in purchasing booster seats, regardless of socioeconomic status (Winston, Moll, Durbin, & Kassam-Adams, 2001; Agran, Anderson, & Winn, 1998).

Table 1. Observation Studies Identifying Percentage of Unrestrained Children.

Time Period of Data Collection	Percent of Sample Unrestrained	Number of Children	Type of Sample ³ P=Probability-Based C=Convenience	Total Vehicles Observed	Field Locations	Reference
Summer 2007	15%	2,471 (ages 4-7)	P	4,800	430 sites (child care centers, fast food, gas stations, recreation centers)	Glassbrenner & Ye (2008)
Spring 2007	25%	11,607 (1 st and 2 nd graders)	C	8,903	25 elementary schools Wilmington, DE; San Diego, CA; Chicago, IL; Charleston, SC	Think First National Prevention Foundation (2007)
Summer 2006	9%	1,685 (ages 4-7)	P	3,500	383 sites (child care centers, fast food, gas stations, recreation centers)	Glassbrenner & Ye (2007b)
Summer 2006	22%	1,350 (ages 4-7)	P	43,000	1,200 intersection sites throughout the U.S.	Glassbrenner & Ye (2007a)
Summer 2004	27%	1,400 (ages 4-7)	P	38,000	2000 intersection sites throughout the U.S.	Glassbrenner (2005)
Summer 2004	37.5%	3,420 (ages 4-7)	P	2,942	176 sites (shopping centers, fast food, child care centers) in 31 counties in Michigan.	Eby, Bingham, Vivoda, & Ragunathan (2005)
Fall 2002	17.3%	2,600 (ages 4-7)	C	4,019	75 sites (mostly shopping centers) in 33 counties in 6 States (PA, MO, FL, AZ, WA, MS)	Decina & Lococo (2004)

- Rural/Urban**—Study results have varied on this relationship. A Colorado Department of Public Health and Environment (CDPHE) telephone survey found no statistically significant difference between child occupant restraint use in rural versus urban areas (CDPHE, 2003). The 2006 National Occupant Protection Use Survey (NOPUS) found a 12-percentage-point difference between urban (68%) and suburban (80%) restraint use by children 4 to 7 and a 13-percentage-point difference between urban (68%) and rural

³ A probability-based survey is based on observations across a random sample of roadway design and operational conditions within a particular geographic cluster or census tract. This approach allows results to be generalized to areas not included in the sample, to yield a national estimate of restraint use. A contrasting approach, termed "convenience-based," conducts observations under circumstances that maximize the likelihood that a particular sample characteristic will be present during data collection, without regard for the extent to which the geographic site or operational conditions under which data are collected are representative of broader (e.g., statewide or nationwide) environments and populations. For this reason, the results of a convenience-based sample may not be generalizable to areas not included in the survey.

(81%) restraint use (Glassbrenner & Ye, 2007a). Earlier studies found that restraint use among children in rural areas was lower than in urban areas (Agran, Anderson, & Winn, 1998).

- Driver race/ethnicity—Child occupants of African-American and Latino drivers were found to be less likely to use child safety seats and booster seats and more likely to be unrestrained than child occupants of White drivers (Stehr & Lovrich, 2003; Decina, Lococo, Scheeler, Jacks, & Smith-Lighty, 2003; Mueller, Veneziano, & Hallmark, 2004; Decina, Lococo, & Block, 2005; Eby et al., 2005; Think First National Prevention Foundation, 2007). One focus group study with Latino families found that there were significant barriers contributing to the low rates of booster seat use among that population that included the cost of seats, use of older vehicles without shoulder belts in the rear seats, lack of space in the vehicle to accommodate all the necessary seats for large families, and resistance by Latino fathers to enforce booster seat use due to lack of restraint use themselves and less exposure to educational messages about child restraint use than Latina mothers (Lee, Fitzgerald, & Ebel, 2003). Among other research findings, restraint use is low among booster-seat-age children and children riding with unrestrained adults in American Indian communities (Lapidus, Smith, Ebel, & Romero, 2005).
- Driver age—A 2004 observation study by the University of Michigan found restraint use by children of booster seat age varied widely by the age of the driver. Children in this age group were most likely to ride unrestrained (50%) if the driver was 16 to 29 years old. The percentage of unrestrained children decreased to 34% with drivers 30 to 59, and to 21% with drivers 60 and older. Very few children 4 to 7 were restrained in booster seats regardless of the driver's age, ranging from 9% (drivers 30 to 59) to 1% (drivers 60 and older). (Note: at the time of the study, Michigan did not have an enhanced child restraint law that covered booster seat ages.) (Eby et al., 2005.)
- Driver sex—The National Occupant Protection Use Survey (NOPUS) found a higher percentage of restrained children less than 8 years old when the driver was male than when the driver was female (86% versus 82%) in 2006 (Glassbrenner & Ye, 2007a). This was a reversal from the 2005 data that showed a higher percentage of restrained children associated with female drivers compared to male drivers (84% versus 79%).
- Relationship of driver to child—A recent study found that child occupants traveling with grandparents were much less likely to use child safety seats and booster seats and were more likely to be unrestrained (Decina, Lococo, & Block, 2005). Other studies have not shown this relationship (Agran, Anderson, & Winn, 1998; Decina & Knoebel, 1996, 1997).
- Age and weight of child occupant—Observation and focus group studies have reported that the older and heavier the booster-seat-age child, the lower the likelihood that he or she will be riding in a child safety seat or booster seat (Decina, Lococo, & Block, 2005; Decina & Lococo, 2004; Stehr & Lovrich, 2003; Winston et. al., 2001).

3.1.4 Perception, Knowledge, Awareness, and Beliefs of Drivers With Unrestrained or Improperly Restrained Child Passengers

Focus group studies have uncovered many perceptual issues about transporting children safely. One study found that a parent's perception of the risk of his or her child being injured in a crash plays an important role in whether the parent uses a booster seat or a seat belt for the child. Parents with a high perception of risk are more likely to use booster seats than seat belts for their children (Winston, et al., 2001).

Parent/caregiver perception of the child's size as it relates to the appropriateness of a particular restraint type is also an issue. In a study conducted at a health fair, researchers measured children's heights and weights and asked parents and other caregivers questions about restraint use, type, and fit. Forty-five percent of parents/caregivers believed that their children fit in lap belts, yet their children were actually less than 40 pounds (and thus a child safety seat would have been the appropriate restraint). Only 13% of children 4 to 7 were placed in booster seats by their parents or caregivers, but the sitting height criteria suggested that booster seats were appropriate for 72% of the children (Kunkel, Nelson, & Schunk, 2001).

Another study looked at parental/caregiver motivation to purchase a booster seat based on an incentive (store coupon) and increased risk perception (from reading a pamphlet that contained a warning label, a true story of a child who was killed because he was restrained in a seat belt instead of a booster seat, and statistics on consequences of nonuse of booster seats). The study found a larger proportion of participants in the combined intervention group (coupon and education) purchased booster seats than those participants who did not receive any interventions (Stevens, 2000; Stevens & Dingus, 2001).

Focus group studies have found that parents/caregivers often believed that their child restraint law meets optimum protection criteria for their children. Parents/caregivers often relied on the law as guidance for safe practices. Many parents/caregivers mistakenly believed that their children 5 and 6 years old were too large for booster seats. Many thought that 40 pounds was the upper limit for using booster seats, while others cited guidelines of 40 to 60 pounds as the reason why their children had graduated to seat belts. Many incorrectly identified the age at which it is safe to use a lap-shoulder belt, basing their beliefs on their child restraint law at the time the study was conducted, suggesting that a seat belt is acceptable for children over age 4 (in Pennsylvania) and over age 1½ (in New Jersey). They said they had never received clear or consistent information about when a child should be in a booster seat (Winston, et al., 2001; Simpson, Moll, Kassam-Adams, Miller, & Winston, 2002).

3.1.5 Attitudes and Behaviors of Drivers With Unrestrained or Improperly Restrained Child Passengers

Attitudinal differences between parents/caregivers who use appropriate restraints for their children and those who do not were also revealed in studies. Parents/caregivers who transported their children in booster seats were generally more concerned about the potential of injury for their children, and were less confident about their ability to sufficiently protect their children from injury, than parents who used seat belts to restrain their children. Also, parents who

restrained their children using only seat belts complained about the hassles of moving booster seats from vehicle to vehicle, stated that their children complained about being uncomfortable in booster seats, and indicated that it was a bother to purchase a seat (Winston et al., 2001; Ramsey, Simpson, & Rivara, 2000; Ferraro, 2004).

Driver restraint use is positively related to restraint use by children in this age group (Decina & Knoebel, 1996; Agran, Anderson, & Winn, 1998; Decina & Lococo, 2004). A Michigan study found that children riding with belted drivers were traveling in booster seats about 10% of the time, while those riding with unbelted drivers were in booster seats only 1 to 2% of the time (Eby et al., 2005). NOPUS found higher percentages of children 4 to 7 restrained (by a seat belt or high back booster seat) when the driver was restrained (83%) than when the driver was not restrained (43%) (Glassbrenner & Ye, 2007a).

3.1.6 Situational Factors That Relate to Nonuse of Restraints for Booster-Seat-Age Children

Situational factors have been shown to affect restraint use in booster-age children. Focus group studies with parents and other caregivers who usually used booster seats or seat belts uncovered many situations in which it was more challenging or nearly impossible to use the booster seat. Examples included extra passengers in the vehicle, lack of availability of the booster seat, and vehicle design that was incompatible with booster seat design (Winston et al., 2001). Crash studies have shown a higher percentage of unrestrained children when the driver was driving an older vehicle (Agran, Anderson, & Winn, 1998). NOPUS data showed there were more 4- to 7-year-olds restrained (seat belt or high back booster seats) in vans and SUVs (87%) than in pickup trucks (81%) or passenger cars (71%) (Glassbrenner & Ye, 2007a). Even factors such as transporting one or more adult passengers resulted in increased percentages of unrestrained children in this age category (Agran et al., 1998).

In terms of premature graduation of children to seat belts, parents/caregivers in focus groups have mentioned a need to make room for other children in the vehicle, as well as the problem of the booster seat not fitting in the vehicle back seat (Rivara, Bennett, Crispin, Kruger, Ebel, & Sarewitz, 2001; Winston et al., 2001). Incompatibility of a child safety seat or booster seat with the vehicle restraint system can also be a key factor in nonuse of booster seats (IIHS, 2005).

The presence of booster seat laws in States can influence restraint use by booster-seat-age children as well. Observational studies in a State without a booster seat law showed booster seat use at 8.6% for children of booster-seat age (Eby et al., 2005). However, observational surveys in States with very progressive booster seat laws (e.g., coverage up to age 8; classes for violators) have shown much higher percentages of booster seat use, ranging from 21.3% (Ebel, Koepsell, Bennett, & Rivara, 2003) to 44.7% (Stehr & Lovrich, 2003) in two separate observational studies. Further encouragement for States adopting booster seat laws was provided by a NHTSA observational survey which found a statistically significant increase in child safety seat and booster seat use following enactment of a booster seat law (with coverage up to age 8) in Wisconsin (NHTSA, 2007).

Focus group research has found child resistance a barrier to using booster seats. Child-related factors identified by parents and caregivers that foster nonuse include attitudinal factors (e.g., the child doesn't like the seat); comfort level (e.g., the child is uncomfortable in the seat); behavioral factors (e.g., the child keeps getting in and out of the seat, or refuses to use the seat); and maturity level (e.g., the child is not able to stay in a booster seat for the duration of a trip) (Winston et al., 2001). Parents have also mentioned child resistance due to peer pressure from older children as reasons for nonuse of booster seats (Rivara et al., 2001).

Cultural barriers affect restraint use. Latino children are more likely to be unrestrained than non-Latino children. Focus groups with Latino parents/caregivers uncovered the following cultural barriers to the use of booster seats: lack of available information in their language and lack of perceived risk as child restraints are not used in their native countries; limited space in the vehicle because of large family size; lack of lap/shoulder belts because of the ages of the vehicles they drive; cost of booster seats; and resistance to their use by fathers because of a lack of knowledge and their own resistance to using seat belts. Latino focus group participants mentioned the importance of culturally appropriate messages about booster seats. They suggested delivering messages in Spanish; clearly stating age and weight guidelines for booster seat use; emphasizing the legal and child injury consequences of booster seat nonuse; using respected sources of information; and targeting messages to mothers, fathers, and children (Lee, Fitzgerald, & Ebel, 2003).

3.1.7 Interventions and Message Delivery

Studies have shown that community-wide information and enhanced enforcement campaigns are effective in increasing child safety seat use and reducing motor vehicle occupant injury (Zaza, Sleet, Thompson, Sosin, & Bolen, 2001; Turner, McClure, Nixon, & Spinks, 2005). Community-wide information on booster seat issues is often delivered by mass media sources (television, radio, and newspaper), highway safety officials, public health administrators, educators, health care providers, and law enforcement officers. It also includes displays of child safety seats in public locations and direct mailings of information about the importance of child safety seats and instructions on their correct use. Enhanced enforcement in these studies involved enforcement checkpoints, assignment of law enforcement officers dedicated to enforcing the child restraint law, and alternative penalties instead of citations (e.g., informational warnings or vouchers to waive fines if the driver purchases a child safety seat).

Stronger Occupant Protection Laws and Enforcement of Child Restraint Laws. Studies have shown that the public supports strong child occupant safety laws. National telephone surveys have shown that a vast majority of Americans favor enforcement of laws requiring that children be restrained (Boyle & Vanderwolf, 2005). Introduction of booster seat laws results in an immediate surge in child safety seat and booster seat use (NHTSA, 2007). In addition, crash investigation studies (1998-2004 data) with insurance policy holders showed that States with a booster seat law were more likely to have children 4 to 7 in appropriate restraints than States without a law (Winston, Kallan, Elliott, Xie, & Durbin, 2007). A systematic review of studies evaluating enforcement of child restraint laws has shown such activity to be an effective injury prevention method in the community at large (Zaza et al., 2001).

Outreach/Education Programs. The challenge of educational programs for the booster-seat-age group is to overcome the reasons parents and other caregivers provide for not restraining

their children when they ride in motor vehicles. Educational programs about booster seats and the child restraint law combined with booster seat giveaways have been successful in increasing booster seat use at pre-school programs in lower-socioeconomic communities (Apsler et al., 2003; Pierce, Mundt, Peterson, & Katcher, 2005). One study that evaluated the success of a child restraint use program in three predominantly Latino communities in the west section of Dallas, Texas, recommended that programs in Latino communities address cultural and religious beliefs such as by using local priests to bless child safety seats in a ceremony before they are distributed in local churches and community centers; using mothers as authority figures to help communicate the message; using bilingual certified child passenger safety technicians to educate parents in small classes in health centers, daycare centers, local schools, and churches; and presenting information about child passenger safety on local Spanish-language radio and television shows (Istre, McCoy, Womack, Fanning, Dekat, & Stowe, 2002).

Most educational programs aimed at increasing restraint use by young children have focused on parents/caregivers, using a multitude of strategies including rewards (positive reinforcement), one-to-one instruction, and distribution of educational material. Studies have shown that these programs on their own—without booster seat laws, enforcement, or loaner programs—have had little to mild success (Zaza et al., 2001). Will (2005) states that most caregivers possess an immunity fallacy, which is a reduced perception of risk for motor vehicle injury to their children. Because of the false perception that driving is not risky, they tune out educational messages. According to Will, for maximum behavioral success, injury prevention messages must shock and surprise parents/caregivers into paying attention to something they would normally dismiss as unimportant. Effective messaging for child passenger safety must simultaneously inform, persuade, arouse alarm, evoke high emotion, create feelings of vulnerability, and instill in parents and other caregivers a high sense of efficacy for protecting their children (Will, 2005).

There is evidence that message delivery by health care providers (e.g., nurses, nurse practitioners, pediatricians) may increase the likelihood that parents/caregivers will restrain their children. Messages from these sources describing the risks associated with nonuse may be even more effective in improving restraint use. Focus groups have revealed that parents/caregivers view health care providers as credible spokespersons to reinforce messages about booster seat use (Rivara et al., 2001).

Health care professionals, especially registered nurses and advanced practice nurses, can play an integral role in injury prevention pertaining to motor vehicle safety. However, a recent article noted that this group faces challenges in conducting outreach because of the limited amount of time available for providing education, the need for bilingual staff; and the need to provide education that is culturally sensitive and culturally competent. In focus group studies, many African-American and Latino parents/caregivers revealed that their primary care provider never provided any information about safely transporting their children (Angulo-Vazquez & De Santis, 2005).

Physicians, especially pediatricians, can also play a key role in counseling parents and other caregivers by providing information on appropriate occupant protection for their children because they can engage in one-on-one contact with parents/caregivers throughout childhood and

are a trusted source for guidance on safety issues. However, studies have shown that they do not routinely communicate child passenger safety to their patients (Bagioli, 2005; Zaza et al., 2001; Williams, Ferguson, & De Leonadis, 2001; IIHS, 1999).

3.2 DISCUSSIONS WITH KEY INFORMANTS

The CPS professionals who participated in the discussions expressed concerns over the large numbers of unrestrained 5- through 7-year-old children. They estimated that approximately 20% of the booster-seat-age children they observe—generally during car seat checkup events—are unrestrained. Although they reported encountering unrestrained children in all kinds of communities, their greatest concern was the number of unrestrained children among minorities, recent immigrants, and poor people. They also mentioned commonly observing unrestrained children in pickup trucks, in older vehicles, and in vehicles transporting numerous passengers. Some also said that drivers without auto insurance coverage, properly registered vehicles, or a valid driver's license tended to transport children without restraining them.

The CPS professionals noted that many parents/caregivers are unaware of child restraint laws, have limited education on proper restraint use, perceive minimal risk, report they cannot afford a booster seat or do not know where to buy one, or tend to be permissive when children complain about being restrained.

They also mentioned situational factors associated with high numbers of booster-seat-age children riding unrestrained. Parents and other caregivers have told them that it's inconvenient to use booster seats, they are in a hurry, the booster seat does not fit in the back seat of the vehicle (because of other passengers or other child safety seats), there are no shoulder belts in the back middle seat to use with booster seats, and children often disconnect the vehicle seat belts from their position over the booster seats.

The CPS professionals were asked to identify the types of programs they use to encourage booster seat use. They mentioned that their programs emphasize injury and fatality as a consequence of failure to use proper restraints, and in many minority communities programs also include booster seat giveaways. They also convey the message that children 4 through 7 need to be properly secured in a booster seat until the child is at least 8 years old or 4' 9" tall. They emphasized that the State child restraint law, American Academy of Pediatrics recommendations, and liability concerns prevent them from providing the message that adult seat belts are good enough and that seat belts are better than nothing.

During the discussions, participants were asked to recommend strategies and directions NHTSA should take to reduce the numbers of unrestrained children in vehicles. They mentioned the following: use television and radio; promote education programs in elementary schools; encourage States to create stronger child restraint laws to cover 5- through 7-year-olds; encourage manufacturers to make built-in seats to accommodate children up to 8 years old; identify car seat inspection stations and their schedules; target programs in culturally diverse communities; and use brief, direct (and bilingual) messages emphasizing risks, parental responsibility, enforcement, and where to get information (e.g., NHTSA Web site). Several

participants suggested that insurance companies should penalize policy holders involved in crashes while transporting inappropriately restrained children.

3.3 BRAINSTORMING SESSION

Although the topic of interest to this project was nonuse of vehicle occupant restraints among 5- through 7-year-olds, it was difficult for most participants to suppress comments about use of seat belts alone in lieu of booster seats, as it is best practice for most of these children to use booster seats, and also the law in many States. As such, the summary of results for the brainstorming session includes participants' thoughts and recommendations regarding both nonuse and inappropriate use.

The reasons for nonuse of restraints among children in this age range are many. A major theme from this session was that in many families, the children are "calling the shots," and parents/caregivers need to be taught to reclaim authority in the area of safety — child restraint use needs to be moved into the realm of non-negotiable behavior. Parents/caregivers also face a developmental barrier at this age as children want to be independent. They do not want to sit in booster seats because of peer pressure. Parents/caregivers often have power struggles with their children, resulting in non-enforcement of restraint use. They also put the children in charge of buckling themselves, and don't discipline them when they unbuckle themselves. The experts attending the session stated that parents and other caregivers need to take an active role to ensure that their children are properly restrained. In addition, there is a perception by some parents/caregivers that back seat occupants don't need to be restrained. Thus, messages that ask parents to place children in the back seat need to reinforce the point that even in the back seat, children must be restrained. The experts mentioned that people who don't use restraints themselves and who don't restrain their children don't consider the possibility of being involved in a crash. They also mentioned that low perceived risk is why many part-time users only restrain themselves and their children on longer trips, even though it is short trips close to home where most crashes occur. The experts stated that messages need to emphasize the necessity of buckling up on every trip.

The brainstorming session participants noted that cost is an issue. For many poor families, safety is not a priority because their entire paycheck is used for food and housing. They do not understand that they need booster seats, and they do not have the money to pay for safety. They also drive older vehicles without lap/shoulder belts. Often, there is no room in the vehicle for booster seats because they have large families. They restrain their infants in child safety seats, and transport larger children on their laps. Sometimes, it is the perception of the cost rather than the actual cost that is the barrier. The experts believed that if parents/caregivers knew that a booster seat costs \$20 and not \$60, then possibly cost would not be an issue.

It was noted that lack of enforcement is another barrier to booster seat use. A law enforcement officer will write a ticket for an unrestrained child, but will not write a ticket for an inappropriately restrained child (i.e., one in a seat belt who should be in a booster seat). Lack of a booster seat law is a barrier to the use of an appropriate restraint. It was felt that parents/caregivers would be more inclined to use booster seats if a law was in place.

The brainstorming session participants who worked in law enforcement said that lack of judicial follow through is a barrier for officers in writing tickets for booster seat violations. Judges and prosecutors, particularly elected officials, dismiss these violations because they want to maintain good will among the public. Also, they don't understand CPS issues in general and feel these citations are frivolous. The experts agreed that in addition to educating parents and other caregivers about the importance of restraint use and proper restraint use, law enforcement and the judiciary should also be educated so they can understand the importance of booster seat use and the need to enforce it. They also recommended educating State legislatures to help them understand why they need to close the gap between the law and best practices.

Through their observations and listening to parents' and other caregivers' comments, the following barriers to restraint use were provided by the experts attending the brainstorming session:

- Attitude of parents/caregivers that child restraint is not an important issue
- Child discomfort
- Cultural barriers (e.g., mistrust of uniformed people; norms against mothers interacting with law enforcement officers during a traffic stop when both parents are present)
- High perceived cost of booster seats
- Lack of awareness of the importance of booster seats
- Lack of booster seat laws
- Lack of knowledge about how to use booster seats
- Lack of restraint use by parents/caregivers
- Language barriers that prohibit messages from reaching non-English speaking communities
- Limited seating capacity (cannot fit booster seat in back seat with other passengers)
- Low educational attainment (high school degree or less)
- Low perception of crash risk
- Low perception of injury risk
- Perception that the child restraint law is not enforced
- Permissive or indulgent parenting style (parents/caregivers do not insist on booster seat or seat belt use)
- Safety concerns (booster seats wobble, and therefore cannot possibly be safe)
- Seat belt and booster seat messages are too complex

While unrestrained children are observed in all communities, the experts identified several groups associated with low restraint use. The following groups need special attention:

- Low education (high school degree or less)
- Low income
- Minority groups (e.g., African-Americans, Latinos, American Indians).
- Part-time seat belt users
- Rural families
- Transporters of multiple children (e.g., parents carpooling children to sporting events; child care providers)
- Uninsured motorists

The following messengers and venues were recommended:

- After-school program staff
- Cable programs
- Car dealerships
- Certified CPS technicians/instructors
- Child care providers
- Community centers/events/programs (e.g., health fairs)
- Congressional Black Caucus
- Driver license manual and other material available at licensing centers
- Educators (elementary school teachers)
- Employers
- EMS and fire department staff
- Entertainment industry (e.g., integrated marketing; Hollywood showing everyone buckled in a scene and getting the buckle-up message into the plot line)
- Faith-based organizations
- Fast-food establishments
- Head Start programs
- Health care centers
- Health care providers (e.g., pediatricians, family physicians)
- Insurance companies
- Internet (e.g., pop-ups)
- Judges and prosecutors
- Juvenile Products Manufacturers Association
- Law enforcement (as educators)
- Libraries
- Magazines (target subscribers, mothers, families, and children)
- Media (radio, television, paid public service announcements)
- Movie theaters (trailers)
- Pediatricians/general family physicians
- Postal service (e.g. message on stamp)
- Retail stores (e.g., brochures and posters, message on the bill)
- Service clubs (e.g., Rotary, Scouts)
- Utility companies (e.g., message on the bill)
- Women, Infants, and Children (WIC) Food Service Program

A consensus opinion was that individual differences in the target audience were larger than group differences, resulting in a need for a palette (or menu) of messages to resonate with most individuals within these groups. Such a palette of strategies to inform and educate parents and other caregivers on the benefits of properly restraining children 5 through 7 should include message content that focuses on safety, risk, and enforcement. The experts stated that messages must acknowledge that parents/caregivers love their children. They also stated that parents do not want to be told how to be better parents, and therefore, messages that come across as

commands are likely to be met with resistance in many communities. What parents will be responsive to is messaging that explains why they should buckle their children — to keep them safe. Therefore, education should focus on increasing the awareness of risk, and this can be done best by showing crash dynamics. Also, education should focus on increasing awareness of the safety benefits of booster seats. Some of the session participants stated that getting a ticket is a big motivator in encouraging people to restrain their children. However, one participant offered that in focus groups with parents and other caregivers, the message that children should be restrained in a booster to avoid getting a ticket was considered offensive. The preferred message in those focus groups was that parents/caregivers should put their children in booster seats for safety.

Because law enforcement officers and public buildings are feared by some groups, the experts suggested that community leaders are the best messengers. They also recommended using CPS technicians who speak the parents'/caregivers' language to engender feelings of trust. Such technicians could work in the schools and churches to deliver the message. Some cautioned against going into a minority community with an announced mission. Instead, program deliverers should understand the priorities of the target audience and work to make program priorities consistent with community values. To do this requires acceptance from community leaders and institutions.

Recommended messages and strategies were to:

- Promote awareness of the safety risks for unrestrained children;
- Promote consistent use of restraints for everyone on every trip;
- Provide clear instructions about how booster seats work;
- Identify the price of booster seats and where to purchase them, especially attractive ones for children of this age group;
- Identify locations where child restraint system installation can be checked by certified CPS technicians;
- Promote benefits of booster seat use (i.e., better child behavior, fewer driver distractions, safety for occupants, less medical costs if crash involved);
- Identify the booster seat law in the State and promote the fact that the majority of States have a booster seat law;
- Promote enforcement activities associated with the child restraint law; and
- Educate judges and prosecutors about the importance of booster seats and the child restraint law.

3.4 FOCUS GROUP SESSIONS

The focus groups explored participants' knowledge of the child restraint law and best practices, sources of information about child restraints, attitudes toward booster seat use and reasons for nonuse, perceptions of child restraint law enforcement, and preferred strategies and messages to increase the consistent use of booster seats. Quotations are provided as examples of responses to the moderator's questions. A two-letter code system is used after each quote. The first code letter indicates the city (T=Tampa, P=Pittsburgh, D=Detroit, and S=Sacramento). The

second code letter indicates the sex of the participant (F for female and M for male). Approximately 90% of participants were parents; the rest included grandparents and siblings.

3.4.1 Knowledge of Child Restraint Law and Best Practices

Despite the fact that every participant was observed transporting an unrestrained child, nearly all participants insisted that they were strict and consistent observers of the law and of best practices for child restraint. However, there was some confusion about what proper child restraint actually means. The proper progression from child safety seat to booster seat to seat belt was not always clear to them. Many participants reported that they were frequent or occasional users of child restraints. In self-reporting, they tended to gloss over and justify any inconsistencies.

I got her out of the car seat and into the seat belt about age four. My wife doesn't like that, but that's what I do. PM

Participants appeared to understand the necessity of child safety seats for children under age 4. Seat belts also received strong parental endorsement. Even though they admitted to their own inconsistent use of seat belts, they were adamant in demanding that their children use them. However, quite a few participants stated that they never gave booster seats a thought. To many participants, it was perfectly fine to move from child safety seats directly to seat belts at about age 4.

Participants were generally aware that their State law made them responsible for using proper restraint systems when transporting minors in their vehicles. They also understood that they might be liable for a fine for failure to do so. Beyond that, participants appeared confused as to what constituted a proper restraint system. They knew that age, weight, and height played some role in determining what is appropriate for their children, but few could state the exact conditions with confidence or accuracy. Many participants thought that they were following the child restraint law by putting their children (5 through 7 years of age) in adult seat belts only. Participants were uncertain as to what fines or other conditions (such as points) might apply to violations.

It's an age and weight thing. TF

I think it's 80 pounds. It might be 50 or 60 pounds. PF

I know it's age 8 the child has to be in some kind of restraint. I don't know much more than that. PM

Sixty pounds or until they're 5 years old. I think I read it somewhere. DF

Kids 8 or 9 have to be in a booster chair unless they're 65 pounds. DM

*I was wondering what age or weight do you switch from a regular car seat to a booster?
SF*

I thought the law was age 6 and 60 pounds. SF

It's 60 pounds and a certain height. You have to keep them in a booster seat. If you don't, you get a ticket. SM

Once you turn 6, you can just use the belt. TM

3.4.2 Sources of Information About Child Restraints

Participants were aware of places (e.g., car dealerships, fire stations) where instruction on how to use child restraint systems is provided. They knew that hospitals require newborns to be secured in a child safety seat in the vehicle that transports them home, and that hospital staff provide instruction and sometimes free child safety seats. They were aware that physicians encourage the use of child safety seats. Many participants knew local law enforcement agencies provide assistance, and they also mentioned that information could be obtained from retailers (e.g., Babies R Us).

I learned about them in a shopping center parking lot. One day, they had an officer stationed out there showing people. TF

I took a car seat course at a local hospital. SF

The police are always having some sort of demonstration. PF

They had clinics at the car dealership. DF

3.4.3 Attitudes Toward Booster Seat Use and Reasons for Nonuse

Many participants were unfamiliar with booster seats and how they worked. Many saw no need for booster seats. Participants indicated that booster seats did not add any safety value, and that they may even be less safe than prolonging use of child safety seats or moving on to adult seat belts. Participants reported that they did not regularly use booster seats, after which they were asked the reasons why they did not consistently use them.

Participants complained about structural shortcomings that make the seats difficult to install and position, particularly in some rear vehicle seats that have a hump in the center position. They noted that some booster seats are large and bulky, making it difficult to fit them in some vehicles, particularly when there are multiple booster seats or child safety seats in the same vehicle. Some felt that booster seats were actually dangerous, since they were prone to rock from side to side and shift position.

Some participants relayed their children's resistance to the use of booster seats, stating that their children could not sleep well in booster seats, and that they weren't comfortable. Also, their children complained about peers not being in booster seats, and that booster seats were childish.

I don't like those booster seats. My son tells me he can't sit still in it. It rocks. So, I don't make him wear it. PF

When the kids fall asleep, there is nothing to support them. SF

I try to keep my daughter in her booster seat. But, she has a lot of friends her own age or younger who are not made to be in them. I don't know at what age to go ahead and let her out of the seat. SF

In some cases, the persistent complaining of the child about discomfort, or arguments that the seat was for babies and that the child's friends weren't required to use them, caused the parent to excuse the child from a booster seat. In these instances, the child was either put in a seat belt or left unrestrained. Participants reported that children take advantage of their inattention or their inability to intervene while driving, and end up unbuckling themselves from the child safety seat or booster seat. Other explanations related to parents'/caregivers' feelings of being powerless, at least temporarily, to enforce the use of booster seats or seat belts. There were too many child passengers to deal with at one time, or the traffic situation or time pressure did not allow the parent or caregiver to fix the problem. A few participants stated that they did not want to be mean or force the child to be unhappy.

When you're driving, they let themselves out of the seat belts, start jumping up and down. SF

They get frustrated when they're buckled in. They start crying and you have to stop so you can calm them down. SF

If you're one person with five or six kids in the back seat, what are you supposed to do?

Other reasons offered for not using booster seats included not traveling far, running late, and that they weren't necessary because they were the safety equivalent of seat belts.

It's very time consuming to buckle up a lot of kids. SF

People don't want to take the time, especially in bad weather. They just want to get in and go. SM

They're just going around the corner, a quick 5-minute run. SM

However, some participants liked booster seats because they found them comparatively easy to install and move from one vehicle to another; and their children seemed happy because they could get a better view of their surroundings, and would tend to be better behaved.

I like the booster seats because she can see out. So, she's still. TF

3.4.4 Perceptions of Child Restraint Law Enforcement

Participants did not perceive that the child restraint law was being enforced. There were only two cases among the participants in the four cities where anyone had received a citation or warning relating to a child restraint offense. They believed that violations would be difficult to spot, given tinted windows, moving traffic, etc. They believed that law enforcement officers have more important matters to attend to, and that officers were not interested in punishing hapless moms trying to deal with unruly children and the demands of daily living. They believed that on short trips, it would be highly unlikely that they would be caught. They also believed that they were complying with the law by having their children in seat belts.

Mostly, they don't enforce those laws. Some officers, maybe, but most not. TM

One out of four cars, they don't have any seat belt on. The police should stop them, but they don't. TM

They have speed traps and they have checkpoints for seat belts, but they don't have checkpoints for booster seats. So, people take advantage of that. PF

If people don't believe in it, they won't do it. They have to understand the importance of booster seats or they won't use them, regardless of the law. PM

When asked whether fear of punishment (points, fines) motivated compliance with the child restraint law, panelists responded “yes, to an extent.” Even though their understanding of the law’s requirements appeared vague, participants sensed that it was not permissible for them to allow a child to ride unrestrained in a vehicle. When their children ride unrestrained, participants stated that they watch carefully for law enforcement officers. However, most participants did not really believe they would be caught; and if caught they believed they would be let off with a warning. This was the case in all States with the exception of California. California participants perceived that officers there were determined to enforce the child restraint law and that the fines were extremely high.

Participants thought that enforcement of the child restraint law would be more effective if the following conditions were met: greater public knowledge of the law's provisions; a perceived increase in efforts to enforce the law (e.g., greater use of checkpoints and more publicity about their existence); and a substantial increase in fine amounts and applied points. Several participants commented that a \$300 fine and application of points to the driver’s license would have a huge impact on increasing appropriate child restraint use.

3.4.5 Strategies to Increase Consistent Use of Booster Seats

Considerable time was spent discussing potential strategies to increase child restraint use for 5- through 7-year-olds. Participants were given the opportunity to suggest strategies they believed would most likely accomplish the objective. Then, participants were asked to rank order the following six potential strategies in terms of their perceived ability to motivate consistent and appropriate restraint use by children in this age range: education; communication; demonstrations of how to use child safety seats and booster seats; assistance for low-income

households (providing free or reduced-cost seats); greater enforcement of existing law; and a stronger child restraint law (greater penalties for noncompliance with the law).

Education was the highest ranked strategy, followed by communication. Greater enforcement of the child restraint law ranked third, followed closely by demonstration of proper child safety seat and booster seat use, and a stronger child restraint law. Assistance for low-income households ranked sixth in perceived effectiveness. Participants were asked to offer suggestions for executing the strategies to maximize their effects. A summary of the discussions that ensued for each of the six strategies follows, in the order of perceived effectiveness.

3.4.5.1 Education

Based on their perceptions that inconsistent use or nonuse of child restraints was the result of innocent ignorance among people who would otherwise be dedicated to their children's safety, the participants considered education to be the most effective strategy. They suggested using schools to reach elementary school children and their parents. They recommended that teachers be provided simple, clear material for teaching basic safety procedures when traveling by motor vehicle. These could include material ranging from videos to printed material which stresses the importance of restraints for all family members and which encourages children to play a proactive role in family safety. They suggested using local law enforcement officers as guest speakers to deliver vehicle safety messages to students. Participants also suggested that public safety events could be used as a venue for teaching about child restraint use, especially where goods and services relating to children are provided (e.g., Kids R Us, Toys R Us, Wal-Mart).

Everybody knows when you have a child under age 5, they have to be in a car seat. Older than 8, they have to be in a seat belt. But, people are fuzzy about what to do with those kids age 5 to 8. When kids are first signing up for school and getting their shots, that's the time to make everybody aware. TF

If you educate the child, that will get through to the parent. TF

He (the child) learned about seat belts in school. Now, he won't let any of us forget to use them, including himself. PF

Children can get excited about things when a police officer comes to school. As early as kindergarten or pre-school. I know my son would start telling me to put my seat belt on. PF

I think when a child learns something independent of the family, it sticks with him more. PF

The best way to get it through to kids is through the school. It would make it a lot easier on the parent too. SF

If they (children) don't listen to Mom, they'll listen to the officer, the teacher, an authority figure. TF

3.4.5.2 Communication.

The focus group participants believed that most people would be inclined to use child restraints if they fully understood the risks they were taking by not doing so. The participants stated that communication should focus on the following areas:

- Raise the sense of risk. Demonstrate the risks parents take with their children by not properly restraining them. Show what can happen in a crash to children and show it graphically.
- Eliminate the confusion that appears to exist regarding what types of restraint to use for children of various ages.
- Educate the public on the law governing child restraint and the penalties for noncompliance.
- Raise the level of concern about getting caught by law enforcement.
- Increase adult social pressure by making proper child restraint a sign of a proper and loving parent.
- Encourage adults to lead by example, to always buckle themselves in as a model for their children to do the same.

Educate by example. If he (the child) sees you doing it (buckling up), he'll do it. DM

People don't understand the risk. If you've never been in an accident, you don't know how important those seat belts are. DM

It has to start with the parents. Every time I get in the car, I put on my belt. They see me and learn from that. If we can get to the parents, we will get to the kids. SM

People don't understand that you don't have to be in an accident to hurt your child. You can hurt him by just trying to avoid an accident, by making a sudden stop. People don't think of that. DM

Put a child-size crash dummy in the car and show that in a crash. They won't forget that. TF

The communication discussion included brainstorming about whom to use as messengers. Many participants felt that the most effective communication with children used authority figures (e.g., law enforcement officers), a sympathetic figure (e.g., Barney) or a celebrity figure (e.g., from sports or pop culture). Several participants remarked that publicity campaigns using local sports figures would be impressive.

Get celebrities involved, like the Tigers or Pistons. They might get in the kids' heads more. DM

Most participants thought of communication in terms of mainstream media, such as television, radio, and print. Some raised the possibility of greater use of non-media forms of communication. For example, it was noted that physicians, especially pediatricians, already play a significant role in providing information to parents/caregivers about the safety and welfare of their children. According to participants, communication from physicians tends to carry a great deal of weight. They stated that their role could be expanded to provide information to parents/caregivers on child passenger safety, by equipping medical personnel with information and material specifically about child restraint.

The pediatrician. They all have to go in and get their shots to go to school. So, a flyer from the pediatrician's office... TF

Little pamphlets at the doctor's office that explain things. PF

Participants noted that other sources with interest in family welfare could be used to promote booster seat use, such as churches and childcare centers. They were considered willing and credible channels for this information.

Participants also suggested using State Departments of Transportation and State Motor Vehicle Administrations. Pamphlets and posters in license renewal locations, information on the DMV web site, and reminders in license renewal mailings could identify the child restraint law and encourage compliance.

In the driver's license place when you're getting your license. TF

A hotline where you can call in and they can explain what your child needs at what age. TF

They also send out papers (pamphlets) to tell you what the law is and what the consequence is to disobeying it. SM

3.4.5.3 Greater Enforcement of Existing Law

Participants felt that greater enforcement of the child restraint law would increase child restraint use. They believed the child restraint law is not currently enforced. However, participants commented that increasing the perception of enforcement may increase restraint use. For example, media emphasizing enforcement followed by random checkpoints may give the impression of more enforcement than what is actually taking place.

I'm so afraid of getting a ticket. If you start enforcing that law, putting points on the license, people will pay more attention. TF

They should do the checkpoint thing like they do with DUI. I mean, what are the chances of being caught otherwise? Not very big. PF

If we were stopped (by the police) even one time for my child not being in a belt, I would never have to tell him again. PF

If they do frequent checkpoints here and there, that will stop a lot of it. SM

3.4.5.4 Demonstrations of How to Use Child Safety Seats and Booster Seats

This strategy could be considered a sub-category to education and communication. Participants were very vocal about the need to have someone demonstrate proper installation and use of child safety seats and booster seats. They wanted this activity demonstrated at schools by law enforcement officers. Retailers who sell the seats, health care professionals, and mass media were also suggested as potential demonstrators of proper restraint use.

Toys R Us used to come out to the car to see that the seat was in properly. PF

You find out from the hospital. TF

They should have an in-school class for kids, show them how to do it, put it in their head. PM

3.4.5.5 Stronger Child Restraint Law (Penalties)

While participants felt that education and communication were more important than enforcement, they thought a sufficiently high penalty (fines, points) would ultimately spur much greater compliance with the child restraint law. In these discussions, a stronger law was interpreted as stronger consequences for noncompliance with the law. Participants never mentioned greater coverage of children (higher ages and weights) in discussions of a stronger child restraint law.

3.4.5.6 Assistance for Low-Income Households

Participants seemed aware of programs in their areas that made it simple to get free or low-cost booster seats. Most participants did not regard the retail price of booster seats to be prohibitive, and therefore rated this strategy the lowest in effectiveness of the six strategies discussed. They were sympathetic to the people who could not afford the seats, but they felt this problem was being adequately addressed.

I was only 17 when I had my daughter. Single mom, minimum wage. I explained my situation to the county and they just gave me one. TF

If you have a real old (seat), you can go to the police station and they'll give you a new one. PF

There is no excuse for not having an infant seat. The hospitals, the pediatricians haunt you about it. If you don't have one, they'll give you one. PF

The hospital gave me free booster seats. They were nicer than the ones I had. SF

To say that you're too poor to afford a car seat? Nah! Not in this day and age. If you need one, you can get one. DM

3.4.6 Message Strategies to Encourage Compliance With the Child Restraint Law and Best Practices for Appropriate Restraint Use

Participants were presented with four message strategies, each focusing on an argument to convince child caregivers to consistently use appropriate restraints for children 5 through 7. The four strategies focused on:

- RISK of injury or death associated with failure to restrain the child;
- ENFORCEMENT/CONSEQUENCES (fines and points) for failure to restrain the child;
- EASE of installing and using booster seats; and
- DUTY of the parent/caregiver to properly protect the child.

Participants were asked to read the statements (see Appendix A), and to rank order them in terms of their likely effectiveness in encouraging booster seat use among 5- through 7-year-old children. Participants ranked the statements in the following order of importance in encouraging compliance: Risk first, Duty second, Enforcement third, and Ease fourth. After the rankings were completed the moderator encouraged comments from the participants.

Participants responded most to message strategies that directly addressed ignorance of the fatality and injury consequences of failure to restrain (Risk) and to the sense of loss and guilt that injury to the child would produce (Duty). These concepts made participants think about the unnecessary and serious risks they had been taking up to that time in not consistently securing their children in the most appropriate restraint.

This is not to say that the law enforcement concept was not considered important. The assumption was that the threat of enforcement was not working very well. The participants believed that the possibility of getting an expensive ticket would increase restraint use provided that the threat of being ticketed could be made more credible. They believed that law enforcement should be a major part of the solution, but not the entire solution.

3.4.6.1 The “Risk” Strategy

This strategy appeared to be a revelation to many participants. The women, in particular, did not appear to have internalized the potential consequences of failing to properly secure their young passengers at all times. Again, this failure appeared to have two root causes based on the focus groups: (1) a low level of risk sensitivity; and (2) a false sense of compliance. Many of the parents/caregivers, especially younger ones, considered harm unlikely to befall them. Their sense was that they are excellent drivers, they watch out for dangerous drivers, and they are safe. In addition, many believed that they had a lower chance of crashing because they were only traveling a short distance, and because the roads were clear and dry. Regarding their false sense of compliance, many drivers improperly restrained their young children yet felt secure that they

had met the requirements of the law. The most common example of this was using seat belts with toddlers, preschoolers, and children 5 through 7, instead of the prescribed child safety seats or booster seats.

A heightened sense of risk, many said, was more compelling to them than the fear of getting a citation. Participants suggested two ways to translate the “Risk” strategy into actual communications.

1. Show the results of risk-taking. Suggestions ranged from using simulated crashes with unrestrained test dummies to showing actual crash footage or photographs.
2. Employ testimonials. Use interviews with parents whose children had been nearly or actually killed or injured in crashes due to lack of proper restraint.

A whole lot of people don't know if it (no restraint) is risky or not, especially new parents. PM

If I saw a picture of a crash scene, that would get to me. PM

Give me the facts of what can happen. DF

The worst thing for me is if I hurt one of my children. And, you have to live with that. DM

3.4.6.2 The “Duty” Strategy

Overall, participants found this strategy compelling. Coupled with a greater sense of *risk*, the duty concept touched a nerve. Participants felt challenged to step up to their duties for the good of their children. They resolved to be less indulgent with their children when they resist using seat belts and booster seats, and more assertive in requiring their children to buckle up on every trip.

You are the parent. You're the one who is supposed to know better. And, if you don't know better, you better get educated. TF

This would do it for me. I'm not worried about getting a ticket. PM

I can see this having a good impact. PM

"It's not your child's decision." Now, that struck me because a lot of parents aren't being parents. You have to decide you want to fight (your kid) on this issue. DF

3.4.6.3 The “Enforcement” Strategy

The threat of a fine and points was a motivator for many of these participants, though less so than the appeals of “Risk” and “Duty.” The presumed effectiveness of this strategy would have been greater, according to the participants, if:

1. The perceived risk of being ticketed was greater; and
2. The penalties for violations were more severe.

If a parent got a ticket because the kid didn't have his belt on, believe me that would be the last time. PF

You can accomplish more, faster through enforcement. PM

Put points on the license! Man, I don't want my insurance company to see that I'm getting points for this offense.

If the laws were stricter, people would think twice. SF

3.4.6.4 The “Ease” Strategy

Comments from the focus group participants suggested that:

1. Booster seats are regarded as simple to set up and use properly; and
2. Child safety seats can be annoying to install.

The “Ease” strategy was largely regarded as not compelling enough by the participants for use in designing messages to encourage parents and other caregivers to properly restrain their children.

Infant seats are hard. Booster seats are not hard. TF

4.0 RECOMMENDATIONS

The information collection activities conducted by this project identified a number of barriers that deter parents and caregivers from having their booster-seat-age children appropriately restrained when riding in motor vehicles. Those barriers are summarized in Table 2.

Table 2. Barriers to Proper Restraint of 5- through 7-Year-Old Children Identified In Project Task Activities

<i>Barrier</i>	<i>Literature Review</i>	<i>Interviews with Experts/Key Informants</i>	<i>Brainstorming Session</i>	<i>Focus Groups</i>
Ignorance/lack of knowledge of best child passenger safety practices	✓	✓	✓	✓
Low perceived risk	✓	✓	✓	✓
Resistance to using booster seats	✓	✓	✓	✓
Ignorance of the child restraint law	---	✓	✓	✓
Threat of enforcement is not entirely credible	---	✓	✓	✓
Socioeconomic factors (limited education, cultural issues)	✓	✓	✓	---
Nonuse of seat belts by parents	✓	✓	✓	✓

As shown by the table, there are many reasons why parents/caregivers allow their children to ride unrestrained or inappropriately restrained. Therefore, there is no “one-size-fits-all” strategy that will encourage such a heterogeneous group to consistently restrain their children. Accordingly, a palette of strategies and messages is recommended to influence compliance. Based on the results of this study, that palette should include stronger enforcement of existing child restraint laws; more severe penalties for failing to comply with child restraint laws; publicized enforcement activities; education; and messages that increase risk perception, emphasize parents’ duty to transport their children safely, and define the penalties for breaking the law.

It is recommended that child restraint laws be more vigorously enforced. Increased threat of ticketing for child restraint violations in addition to greater penalties (higher fines and points on the driving record) are expected to increase compliance with the law. Key components to the effective enforcement of an occupant restraint law include: support and cooperation from the chief of police (buy-in from top management); training and educating law enforcement officers, line supervisors, and chiefs in the child passenger safety law and in appropriate restraint by children’s ages and sizes; educating judges and prosecutors regarding details of the restraint law and risks involved for unrestrained and inappropriately restrained children; and frequent publicity surrounding enforcement efforts to make the public aware that the law is in place and violators will suffer large penalties.

Education should focus on best practices⁴ for properly securing 5- through 7-year-old children. Parents and other caregivers need to know when their children should be secured in booster seats (i.e., age, weight, height) and how to properly use booster seats. Education should also be provided about when it is safe to transport their children in adult seat belts. Although education about the child occupant protection law should be provided, along with the penalties for failing to comply with the law, parents/caregivers must be made aware of best practices for the ages and sizes of their children because State law and best practices do not always coincide.

Parents and other caregivers who do not comply with the child passenger law or best practices tend to be unaware of the injury and fatality risks to their children associated with riding unrestrained or improperly restrained. Therefore, an educational goal is to increase the perception of risk. Increasing risk perception may be accomplished through the use of visuals (e.g., crash tests with appropriately restrained, inappropriately restrained, and unrestrained child crash dummies) and through the use of testimonials (e.g., a story told by a parent whose unrestrained or inappropriately restrained child was killed or seriously injured in a crash).

Education may be provided by many sources, including: health care providers, child passenger safety technicians, law enforcement officers, and elementary school teachers. State licensing agencies can disseminate information about their occupant protection law through license renewal letters to drivers, distribution of publications such as driving manuals, and displays on counters at licensing centers. Booster seat use messages may also be delivered through the media, using radio and billboards.

Accessibility to education is critical for many minority groups such as African-Americans, Latinos, and American Indians because they are less likely to restrain their children due to cultural and socioeconomic factors. It is recommended that health care providers and child safety advocates fill the educational roles within these communities. Messages should be culturally sensitive, bilingual, and within the reading level of the target audience. Educational programs may have a big impact when delivered in community-oriented and faith-based centers. Health care settings and schools are also recommended venues. Accessibility to booster seats is also critical. Giveaways, low-cost seats, and store coupons are recommended, and retail stores should be encouraged to offer and advertise their child restraint products in these communities.

⁴ The best practice recommendation for safely transporting most children ages 4 through 7 is the use of belt-positioning booster seats (either high back or backless). These seats are for children who have outgrown child safety seats (generally at 40 pounds), and who are not large enough for the vehicle seat belt system alone. Children should use belt-positioning booster seats until they are at least 8 years old, unless they are 4 feet 9 inches tall. Belt-positioning booster seats are always to be used with a vehicle lap/shoulder belt combination. Booster seats are never to be used with a lap-only belt. In addition, these children are safest when properly restrained in the rear seat (NHTSA, 2004).

5.0 REFERENCES

- Angulo-Vazquez, V., & De Santis, J.P. (2005). "Booster Seat or Seat Belt? Motor vehicle injuries and child restraint laws in preschool and early school-age children." *Journal of Special Pediatric Nursing*, 10(4), 183-190.
- Apsler, R., Formica, S., Rosenthal, A., & Robinson, K. (2003). "Increases in Booster Seat Use Among Children of Low Income Families and Variation With Age." *Injury Prevention*, 9, 322-325.
- Agran, P.F., Anderson, C.L., & Winn, D.G. (1998). "Factors Associated With Restraint Use of Children in Fatal Crashes." *Pediatrics*, 102, 39-44.
- Arneson, S.W., & Triplett, J.L. (1990). "Riding with Buckle Bear: An Automobile Safety Program for Preschoolers." *Journal of Pediatric Nursing*, 5(2), 115-122.
- Axelrad, M.E. (2002). *Injury Prevention in Children: Increasing Booster Seat Compliance Through The Use of Appeal*. Dissertation. Binghamton, NY: State University of New York at Binghamton.
- Bagioli, F. (2005). "Child Safety Seat Counseling: Three Keys to Safety." *American Family Physicians*, 72(3), 473-478.
- Boyle, J. M., & Vanderwolf, P. (2005). *2003 Motor Vehicle Occupant Safety Survey*. DOT HS 809 858. Washington, DC: National Highway Traffic Safety Administration.
- Colorado Department of Public Health and Environment. (2003). "Injury Epidemiology Brief." *Traffic Safety Facts, Colorado Children ages 4 to 8*. January 2003.
- Decina, L. E., & Knoebel, K.Y. (1996). *Patterns of Misuse of Child Safety Seats*. DOT HS 808 440. Washington, DC: National Highway Traffic Safety Administration.
- Decina, L. E., & Knoebel, K.Y. (1997). "Child Safety Seat Misuse Patterns in Four States." *Accident Analysis and Prevention*, 29, 125-132.
- Decina, L. E., Lococo, K., Scheeler, A., Jacks, & Smith-Lighty, V. (2003). *Effects of a Child Restraint System (CRS) Correct Use Intervention Program in a Latino Community*. Media, PA: PA Traffic Injury Prevention Project. Unpublished report.
- Decina, L. E., & Lococo, K. (2004). *Misuse of Child Restraints*. DOT HS 809 671. Washington, DC: National Highway Traffic Safety Administration.
- Decina, L. E., & Lococo, K. H. (2005). "Child Restraint System Use and Misuse in Six States." *Accident Analysis and Prevention*, 37, 583-590.

- Decina, L. E., Lococo, K., & Block, A. (2005). *Misuse of Child Restraints: Results of a Workshop to Review Field Data Results*. Traffic Safety Facts – Research Note. DOT HS 809 851. Washington, DC: National Highway Traffic Safety Administration.
- Durbin, D. R., Elliott, M., & Winston, F. K. (2003). “Belt-Positioning Booster Seats and Reduction in Risk Injury among Children in Vehicle Crashes.” *Journal of the American Medical Association*, 280(23), 2835-2840.
- Ebel, B. E., Koepsell, T. D., Bennett, E. E., & Rivara, F. P. (2003). “Too Small for a Seatbelt: Predictors of Booster Seat Use by Child Passengers.” *Pediatrics*, 111(94), e323-e327.
- Eby, D. A., Bingham, C. R., Vivoda, J. M., & Rangunathan, T. (2005). “Use of booster seats by Michigan children 4-8 years of age.” *Accident Analysis and Prevention*, 37, 1153-1161.
- Ferraro, K. (2004). *The Influence of Parental Perceptions on the Use of Booster Seats: An Application of the Theory of Planned Behavior*. Doctoral Dissertation. New York, NY: Fordham University.
- Glassbrenner, D. (2005). “Child Restraint Use in 2004—Overall Results.” *Traffic Safety Facts Research Note*. DOT HS 809 845. Washington, DC: National Highway Traffic Safety Administration.
- Glassbrenner, D., & Ye, J. (2007a). “Child Restraint Use in 2006—Overall Results.” *Traffic Safety Facts Research Note*. DOT HS 810 737. Washington, DC: National Highway Traffic Safety Administration.
- Glassbrenner, D., & Ye, J. (2007b). “Booster Seat Use in 2006.” *Traffic Safety Facts Research Note*. DOT HS 810 796. Washington, DC: National Highway Traffic Safety Administration.
- Glassbrenner, D., & Ye, J. (2008). “Booster Seat Use in 2007.” *Traffic Safety Facts Research Note*. DOT HS 810 894. Washington, DC: National Highway Traffic Safety Administration.
- Insurance Institute for Highway Safety. (1999). *Special Issue: Child Safety*, 34(80).
- Insurance Institute for Highway Safety. (2005). *Children Not Covered by Safety Belt or Child Restraint Laws as of July 2005*. Arlington, VA: Insurance Institute for Highway Safety. Accessed February 1, 2005 at www.highwaysafety.org/laws/state_laws/restrain4.html.
- Istre, G. R., McCoy, M. A., Womack, K. N., Fanning, L., Dekat, L., & Stowe, M. (2002). “Increasing the Use of Child Restraints in Motor Vehicles in a Hispanic Neighborhood.” *American Journal of Public Health*, 92(7), 1096-1099.
- Kunkel, N. C., Nelson, D. S., & Schunk, J. E. (2001). “Do Parents Choose Appropriate Automotive Restraint Devices for their Children?” *Clinical Pediatrics*, 40, 35-40.

Lee, J. W., Fitzgerald, K., & Ebel, B. E. (2003). "Lessons for Increasing Awareness and Use of Booster Seats in a Latino Community." *Injury Prevention*, 9, 268-269.

Lapidus, J. A., Smith, N. H., Ebel, B. E., & Romero, F. C. (2005). "Restraint Use Among Northwest American Indian Children Traveling in Motor Vehicles." *American Journal of Public Health*, 95(11), 1982-1988.

Mueller, K., Veneziano, D. & Hallmark, S. (2004). *Evaluation of Racial Differences in Seat Belt and Child Restraint Use: A Review of Current Literature*. CTRE project 03-15. Ames, IA: Iowa Department of Transportation.

Nance, M. L., Lutz, N., Arbogast, K. B., Cornejo, R. A., Kallan, M. J., Winston, F. K., & Durbin, D. R. (2004). "Optimal Restraint Reduces the Risk of Abdominal Injury in Children Involved in Motor Vehicle Crashes. *Annals of Surgery*, 239(1), 127-131.

NHTSA. (2002). *Improving the Safety of Child Restraints: Booster Seat Study*. Report to Congress. Washington, DC: National Highway Traffic Safety Administration. Accessed at www-nrd.nhtsa.dot.gov/departments/nrd-11/childsafety/index.htm.

NHTSA. (2004). *Are You Using It Right?* DOT HS 809 245. Washington, DC: National Highway Traffic Safety Administration.

NHTSA. (2004). "Reduction of Fatalities and Injuries Among Passenger Vehicle Occupants Age 4-7." *Traffic Safety Facts*. DOT HS 809 786. Washington, DC: National Highway Traffic Safety Administration.

NHTSA. (2005). *Child Passenger Fatalities and Injuries, Based on Restraint Use, Vehicle Type, Seat Position, and Number of Vehicles*. Publication No. DOT HS 809 784. Washington, DC: National Highway Traffic Safety Administration.

NHTSA. (2006). "Occupant Protection." *Traffic Safety Facts – 2005 Data*. DOT HS 810 621. Washington, DC: National Highway Traffic Safety Administration.

NHTSA. (August 2007). "Preliminary Data Indicate That Booster Seat Laws Increase Child Safety Use." *Traffic Tech* Number 331. Washington, DC: National Highway Traffic Safety Administration. Available on the Web at <http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Communication%20&%20Consumer%20Information/Traffic%20Tech%20Publications/Associated%20Files/tt331.pdf>

Pierce, S. E., Mundt, M. P., Peterson, N. M., & Katcher, M. L. (2005). "Improving Awareness and Use of Booster Seats in Head Start Families." *Wisconsin Medical Journal*, 104(91), 46-51.

Rivara, F. P., Bennett, E., Crispin, B., Kruger, K., Ebel, B., Sarewitz, A. (2001). "Booster Seats for Child Passengers: Lessons for Increasing their Use." *Injury Prevention*, 7, 210-213.

- Simpson, E. M., Moll, E. K., Kassam-Adams, N., Miller, G. J., & Winston, F. K. (2002). "Barriers to Booster Seat Use and Strategies to Increase Their Use." *Pediatrics*, 110(4), 729-736.
- Starnes, M. (2003). *The Relationship Between Driver and Child Passenger Restraint Use among Fatally Injured Child Passengers Age 0-15*. DOT HS 809 558. Washington, DC: National Highway Traffic Safety Administration.
- Starnes, M. (2005). *Child Passenger Fatalities and Injuries, Based on Restraint Use, Vehicle Type, Seat Position, and Number of Vehicles*. DOT HS 809 784. Washington, DC: National Highway Traffic Safety Administration.
- Stehr, S., & Lovrich, N. (2003). *An Assessment of Child Car Booster Seat Usage in The State of Washington*. Pullman, WA: Washington State University–Pullman.
- Stevens, S. L. (2000). *Effects of Intervention on Booster Seat Purchase: A Field Study*. Blacksburg, VA: Virginia Polytechnic Institute and State University.
- Stevens, S. L. & Dingus, T. A. (2001). "Effects of Information on Risk Perception Regarding the Use of Booster Seats." *Proceedings of the Human Factors and Ergonomics Society 45th Annual Meeting*, 2001, 880-884.
- Think First National Prevention Foundation. (2007). *Boost 'Em Up—A Community Demonstration Program to Increase Booster Seat Use Among Older Children*. Draft Report. NHTSA Contract No. DTNH22-03-H-05154. Washington, DC: National Highway Traffic Safety Administration.
- Turner, C., McClure, R., Nixon, J., & Spinks, A. (2005). "Community-Based Programs to Promote Car Seat Restraints in Children 0-16 Years—A Systematic Review." *Accident Analysis and Prevention*, 37(1), 77-83.
- Valent, F., McGwin, G., Hardin, W., Johnston, C., Rue, L. (2002). "Restraint Use and Injury Patterns among Children Involved in Motor Vehicle Collisions." *The Journal of Trauma Injury, Infection, and Critical Care*, 52(4), 745-751.
- Will, K. E. (2005). "Child Passenger Safety and the Immunity Fallacy: Why What We Are Doing Is Not Working." *Accident Analysis and Prevention*, 37, 947-955.
- Williams, A. F., Ferguson, S. A., & De Leonardis, D. M. (2001). "Physician Counseling About Safe Vehicle Travel for Children." *Journal of Safety Research*, 32, 149-156.
- Winston, F. K., Moll, E. K., Durbin, D. R., Kassam-Adams, N. (2001). *The Premature Graduation of Children from Child Restraints to Vehicle Safety Belts*. DOT HS 809 259. Washington, DC: National Highway Traffic Safety Administration.

Winston, F. K., Kallan, M. J., Elliott, M. R., Xie, D., & Durbin, D. R. (2007). "Effect of Booster Seat Laws on Appropriate Restraint Use by Children 4 to 7 Years Old Involved in Crashes." *Archives of Pediatric Adolescent Medicine*, *161*, 270-275.

Zaza, S., Sleet, D. A., Thompson, R. S., Sosin, D. M., & Bolen, J. C. (2001). "Review of Evidence Regarding Interventions to Increase Use of Child Safety Seats." *American Journal of Preventive Medicine*, *21*(4s). 31-47.

**APPENDIX A:
FOCUS GROUP DISCUSSION GUIDE**

Discussion Guide

I. Introduction (15 min)

- A. General purpose of the session, sponsorship, etc.
- B. Moderator objectivity... no threat... no judgment... no follow-up.
- C. Room environment (tape recorder, mirror)
- D. Focus group protocol (sticking to the topic, sharing the floor, etc.)
- E. Tonight's topic. Tonight, we will be discussing several aspects of transporting children safely in our vehicles.
- F. Respondent introductions and broad discussion of passenger safety restraint practices.

II. Best Practices (20 minutes)

- A. What do you feel are the best ways of keeping children of various ages safe while riding in a vehicle?
- B. What types of seats/devices are available to you now and what do you think of them? How do your attitudes compare with those of your spouse, your parents, your children?
- C. What is the law in this State governing the use of child safety restraints? Is the law too strict/too lenient? Is it enforced?

III. Interventions Brainstorm (30 minutes)

- A. Explain exercise: Purpose, how it works, what we need from them.
- B. Distribute sheets. Have them read carefully, considering the questions at the bottom as they look it over. Take notes if they wish. Verbally work through each major section.
 - 1. What is missing? Expand the list!
 - 2. Would this work?
 - 3. What are the shortcomings of it?
- C. Have them numerically rank the categories of intervention. Discuss reasons for ranking.

IV. Concept Evaluation (25 minutes)

- A. We have been discussing strategies for accomplishing the objective... ways of communicating or intervening. If we were to decide that EDUCATION or

COMMUNICATION is the best strategy, our next job would be to focus on a MESSAGE.

- B. If you were to try to convince the person next to you to fully comply with the child restraint law, what argument(s) would you use?
- C. I am going to distribute several sheets, each containing what I call a "concept statement." These statements may sound like ads, but they are not. Rather they are summaries of different strategies to convince or compel people to use child safety restraints where appropriate.

Your job is to carefully read and consider how each of these strategies might impact how you feel and act with respect to child safety restraints and how other people you know might respond to them. Again, they are not ads, so don't focus too much on how they are written but on the idea they communicate.

As you read each concept, feel free to write on the sheets your comments (good and bad) regarding the effectiveness of the ideas. When you have finished reading each one, give it a letter grade (A through D) and write it at the top of the sheet. This grade is to indicate how effective you feel each strategy would be.

Distribute the sheets and allow time for panelists to read and make notes.

- A. (When panelists have finished) Now take the sheets and select the one concept you feel would most likely increase the use of child safety restraints. Write a #1 at the top of that sheet. Now take the remaining sheets and number those in rank order, i.e. next most effective would be #2 and so on.
- B. Let's discuss them. (Take each concept, one at a time and do the following)
 - 1. How many ranked this concept as a #1? As a #2?
 - 2. Why do you feel that this concept would be effective in improving child safety restraint use?
 - 3. Why do you feel that this concept might not be effective?
 - 4. What might make this concept work better for you?
- C. What would be the best ways (other than massive spending on media) to get the word out about child safety restraint law and best practices? (Explore a variety of channels, including the health professions, churches, childcare organizations, community groups, etc.)

V. Close and Summary

**APPENDIX B:
STRATEGIES FOR INCREASING CHILD RESTRAINT USE**

1. EDUCATION

- ✓ Through schools
- ✓ In child care centers
- ✓ Pediatrician offices
- ✓ Family physicians
- ✓ In churches

2. COMMUNICATION

- ✓ Television
- ✓ Radio
- ✓ Web sites
- ✓ Print
- ✓ Billboards
- ✓ Direct mail

3. DEMONSTRATIONS OF PROPER CHILD RESTRAINT USE

- ✓ Child care centers
- ✓ Car seat checks (police/firemen)
- ✓ Health fairs

4. ASSISTANCE TO LOW-INCOME HOUSEHOLDS

- ✓ Distribute discount coupons
- ✓ Offer free seats to lower income groups

5. ENFORCEMENT OF CHILD RESTRAINT LAW

- ✓ Educate people about what the law says
- ✓ Issue warnings for those who break the law
- ✓ Issue tickets for those who break the law

6. STRONGER CHILD RESTRAINT LAW (PENALTIES)

- ✓ Increase the fines
- ✓ Issue points on operators' licenses

APPENDIX C:
**Message Strategies to Encourage Compliance With Child Restraint Law and Best Practices
For Appropriate Restraint Use**

Strategy "A": Risk

Failure to secure children properly in moving vehicles results in far too many injuries and fatalities every year. The risk to a child, when not protected by the age-appropriate infant car seat, booster seat or lap belt is very high indeed, regardless of where in the car he/she may be riding. Because of a child's light weight, he may easily be thrown by sudden stops and turns, even at very low speeds and on short-distance trips.

A child properly secured in the vehicle is not only better protected but also more comfortable and, with children over 4, able to enjoy the view. He is also less likely to engage in behaviors that are dangerous to him and distracting to adults.

Perhaps this failure to use child safety restraints is due to lack of awareness of the risks involved, to the perceived inconvenience of moving the devices from one vehicle to another or even to the opposition of the older child to remaining in them. Responsible adults will see that the risks are just too great and will make up their minds to use safety restraints every time, all the time for age-appropriate children.

Strategy "B": Enforcement/Consequences

All over the country today, States and municipalities are stepping up efforts to enforce the laws requiring adults to secure their child passengers in age-appropriate infant seats, booster seats or safety belts.

Whether these laws are violated out of ignorance or indifference, the fact remains that children are being needlessly, sometimes fatally, injured every year. These terrible incidents might well have been avoided by proper use of safety restraints.

Many State laws now mandate the issuance of tickets, fines and points against operators' licenses for failure to use safety restraints as and when appropriate. And, police forces are renewing their efforts to see that these safety laws are obeyed.

Child safety restraints help prevent injuries and fatalities and make the trip more comfortable for children and adults alike. If these are not reasons enough, there is another reason to use child safety restraints every time, all the time... it's against the law not to.

Strategy "C": Ease

In any vehicular crash, even "minor" ones, children are especially susceptible to injury. Infant seats and booster seats help protect children from injury and death in crashes.

Today, there is no reason not to provide your young passengers with proper protection. There are now several types of infant and booster seats available for purchase. Consumers can select the type that is appropriate for their seat belt system and for the age and size of their child.

Any of these safety seats is equally easy to install; though it is necessary to learn to do so properly. Installation requires no tools and the seats can be readily moved from one vehicle to another in no more than a minute or two. Many of today's models are light weight and easily carried. Perhaps best of all, placing and securing the child in the seats is likewise easy to do.

Child safety seats can be purchased from many types of retailers. The seats come in various materials and colors and offer a range of features. Prices vary accordingly but are generally inexpensive.

Child safety seats are easy to find, easy to install, easy on the child and easy on you.

Strategy "D": Duty

Young children are among the most vulnerable passengers in a vehicle due to their small size and weight. It is a well-documented fact that infant and booster seats are the best way to save these kids from injury and death in the event of a crash or even sudden turning or stopping.

Still, far too many adults are failing to protect their child passengers with safety seats, and for some very weak reasons. Some say that the seats are too difficult to install and to move from one vehicle to another. That is simply not true. Today's seats are quick to install and easy to carry.

Maybe the weakest excuse for not using booster seats is that the child "won't" get in them or stay in them. First of all, booster seats today are designed to be comfortable. Second, the child should not have the final say on this matter. If your child demanded to be allowed to play in busy traffic, you would certainly forbid it. The use of booster seats or safety belts should also be non-negotiable.

Being a Mom, a Dad or a Grandparent takes wisdom and willpower. It is your duty to do the right thing for your child. Keeping them from harm is the right thing, even when they are too immature to see it that way. Take charge. Show them the right way.

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