

CHILD SAFETY SEAT INSPECTION STATION REPORT

A summary of Indiana child safety seat inspection
station activity October 1, 2011 - September 30, 2012

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BACKGROUND

In an effort to improve child restraint use and decrease misuse of child restraints, the National Highway Traffic Safety Administration in 1998 created a standardized child passenger safety training that resulted in the certification of thousands of individuals as child passenger safety technicians (CPSTs). These CPSTs are armed with the knowledge and skills to assist families learn how to properly restrain their children.

Community initiatives such as car seat clinics are held across the country and state as venues where CPSTs deliver education and car seats to families in need. Although valuable, it can be difficult to predict public response to car seat clinics, which are often advertised as first-come, first-serve events.

Anticipating staffing patterns and necessary resources, such as child safety seats (CSS), can challenge even the most seasoned CPST. The best planned outdoor clinics are at the mercy of the weather or competing events. Attendance can range from a few families to long lines of families waiting with small children.

In 1998, the ASP recognized the need to provide child passenger safety education in a more controlled environment. An alternative to car seat clinics was developed. Dubbed "Permanent Fitting Stations" or "Child Safety Seat Inspection Stations," child passenger safety education occurred at a set or permanent location and were conducted on an appointment only basis.

This arrangement allowed CPST to better anticipate the needs of their clients and be better prepared to meet those needs by conducting phone interviews with families prior to their appointment. Pre-screening information collected allowed the CPST to determine appropriate staffing and gather family-specific resources.

Summary of Inspection Station Agreement Requirements

Staffed by at least one CPST

Available at least 10 hours/month

Document inspections on ASP forms

Provide replacement CSS if necessary to families on some type of public assistance

Spend funds on pre-approved items

Report monthly activity

Provide expense report annually

Attend annual refresher course or pre-approved equivalent

Since its inception, the inspection station (permanent fitting station: PFS) concept has evolved into a statewide network of 121 inspection stations overseen by a project coordinator dedicated to expanding and strengthening the Indiana stations. The fitting stations are located at a variety of organizations ranging from law enforcement agencies, fire departments and hospitals to businesses as shown in Figure 1.



Figure 1

Agencies and organizations committed to being part of the network are required to meet a number of requirements (Table 1). In return, the Automotive Safety program provides the stations with mini-grants from \$500 - \$3,000 (based on activity and compliance to the agreement), paperwork, technical support, and other resources

such a LATCH manual. Additional funding may be available upon request and demonstrated need.

Documenting the Inspection

Documenting the inspection on a standardized form minimizes liability while guiding the CPST through the inspection process. Ideally, a completed check-up form allows a reader to recreate what occurred during the inspection just by reviewing the form. The Automotive Safety Program developed a check-up form based on other forms in the field, including the Safe Kids Worldwide check-up form.

Working with the Department of Biostatistics, Indiana University School of Medicine, the Automotive Safety Program chose REDCap (Research Electronic Data Capture) for data entry and analysis of the check-up form. REDCap is a software tool developed by Vanderbilt University, with collaboration from a consortium of institutional partners, of which IU has joined. REDCap enables rapid development and deployment of electronic data capture, surveys, and reporting to support specific clinical and translational research projects.

During an inspection, only one CPST may be responsible for educating families, demonstrating proper use, and documenting the inspection process. Juggling multiple responsibilities may challenge the CPST's ability to fill out the check-up form completely. Proper documentation of an inspection is essential to data analysis. Unfortunately, due to the volume of check-up forms completed annually (approximately 9,000 – 10,000), cleaning all of the forms was not possible. Most of the information verified to be missing by the data entry specialist, such as how the parent was restrained and if financial eligibility was confirmed, was not used in this report.

The child's location in the vehicle on arrival and departure was not always recorded on the check-up form. Due to the exclusion of this information, it was difficult to determine if most children were riding in the back seat, which is recommended for children under the age of 13 years.

The inspection form does not capture method of installation upon departure so analysis cannot evaluate any increases of top tether or LATCH use. In addition, the data only covered a six month period. A year's worth of data may produce different results.

PERMANENT FITTING STATION DATA

For purposes of this report, data from inspections that occurred between October 1, 2011 and September 30, 2012 were analyzed. During this time period, 7,738 drivers visited a permanent fitting station and 9,046 children prenatal through 15 years old were evaluated by a certified child passenger safety technician to ensure the child was traveling as safely as possible.

Client Profile

Drivers visiting the inspection stations were asked to answer demographic questions on the inspection form. The majority of the drivers were female (75%), Caucasian (79%) and over half (51%) were on some type of public assistance. The average age of the drivers was 30 years old. Nine percent of drivers reported their ethnicity as Latino or Hispanic. In terms of income, 58% reported income levels of less than \$50,000 with 34% less than \$20,000 annually. Most had completed high school (25%), had attended some college (21%) or were college graduates (31%). Friends or family ranked first of the top ten referral sources (Table 1).

Number	Source	Count
1	Friend or family	3260
2	Hospital	1121
3	Web page	384
4	Nurse	141
5	WIC	117
6	Newspaper	84
7	Healthy Families	61
8	Doctor	55
9	TV	39
10	Work	36

Table 1

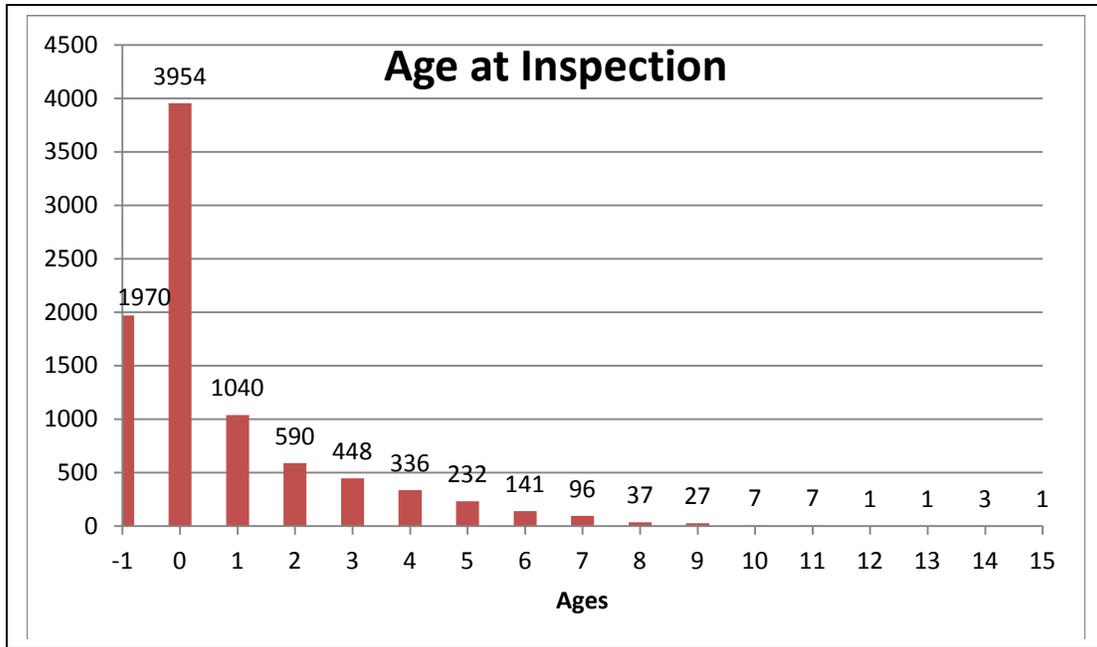


Figure 2

The majority of inspections served children who were younger than four years of age. Of all children, 1,970 (22%) were anticipated births and 3,954 (44%) were under 1 year of age (Figure 2).

Initial Assessment of Child Safety Seats

A total of 6,917 CSS were inspected on arrival at the permanent fitting stations. Prior to any intervention, certified technicians completed a general assessment of the CSS, recording information such as the type of CSS, manufacturer, model number, date of manufacture, if the driver is the original owner of the CSS, if the CSS has been in a crash, and expired. Of those CSS evaluated, 1% had been recalled, 20% were not originally owned by the driver, 10% had missing or damaged parts, 7% had expired and 2% had been in a crash. All of these are red flags to CPST as potential reasons for replacing a family's child safety seat.

Observed Misuse

Not using a CSS according to manufacturer's instructions can compromise the protection provided by the CSS. In general, harnesses should be positioned at or below a rear-facing child's shoulders and at or above a forward-facing child's shoulders. Harness straps should be adjusted to a snug fit so that your fingers slide off the harness when you pinch the webbing at the shoulder. Chest clips should be positioned mid-chest or armpit level. Of the CSS observed, 18% had harnesses positioned incorrectly, 51% had harnesses that were too loose and 47% had chest clips positioned incorrectly.

According to the national standardized curriculum, CSS should be installed tightly enough so that the CSS does not move more than one inch front to back and side to side at the seat belt path. Installation with a vehicle seat belt requires that the seat belt be "locked" according to vehicle specifications. Rear-facing CSS are installed so that the child is sitting semi-reclined and forward-facing CSS are typically installed so that the child is sitting upright.

Of those CSS installed upon arrival at the inspection stations, 59% could be moved more than one inch at the seat belt path; 36% of seat belts systems were not locked; and 22% CSS were not positioned appropriately, either semi-reclined rear-facing or upright forward-facing.

Research shows that use of top tethers with forward-facing CSS can decrease the CSS from moving forward 4-6 inches. Of those forward facing CSS in seating positions with top tether anchors, only 14% were installed using the top tether.

Best Practice

"Best practice is the gold standard of protection. It is the most acceptable way to transport a child safely on the basis of the child's age, weight, height, and body development."

National Child Passenger Safety Certification Training Program, 2007

Interventions

Education is the primary intervention emphasized at permanent fitting stations. At the appointments, CPST provided families with best practice recommendations and hands-on instruction on how to restrain their children in their vehicles.

During the appointments, families had the opportunity to demonstrate understanding by restraining their child passengers and/or installing their CSS.

Best practice recommends that all infants and toddlers should ride rear-facing until they are 2 years old or until they reach the highest weight or height allowed by the child safety seat manufacturer. During inspections, CPST promoted this best practice recommendation in situations in which children were turned forward facing too soon. Of those children who arrived with a CSS installed and who were under 1 year of age, 95% arrived rear-facing and 98% departed rear-facing. Of those children who arrived with a CSS installed and who were 1 year through 17 months old, 76% arrived rear-facing and 72% left the inspection station rear-facing. Of those children who were 18 through 23 months, 33% arrived and departed rear-facing (Figure 3).

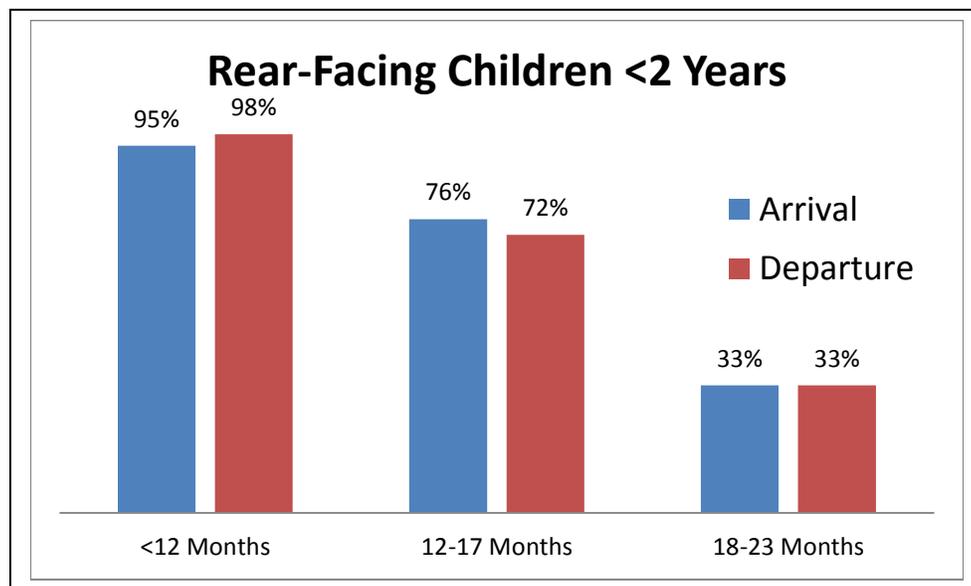


Figure 3

According to the Indiana Child Passenger Law, children 4 years of age up until 8 years of age must ride in a child restraint system, which can include boosters. Best practice recommends children ride in belt-positioning booster seats after they have outgrown their forward facing seats with harnesses (at around 4 years old) until the adult seat belt fits properly. Upon arrival at the inspection station, too many children ages 4 up to 8 years were riding either unrestrained (16%) or using a lap/shoulder belt (17%). Not only were these children riding bereft of optimal protection but also they were riding in violation of the law. Upon arrival, 42% of children in this age group, were riding in belt-positioning boosters and 19% were in forward facing seats with harnesses. Upon departure, the children in this age group left their appointment in a restraint system that provided appropriate protection (Figure 4).

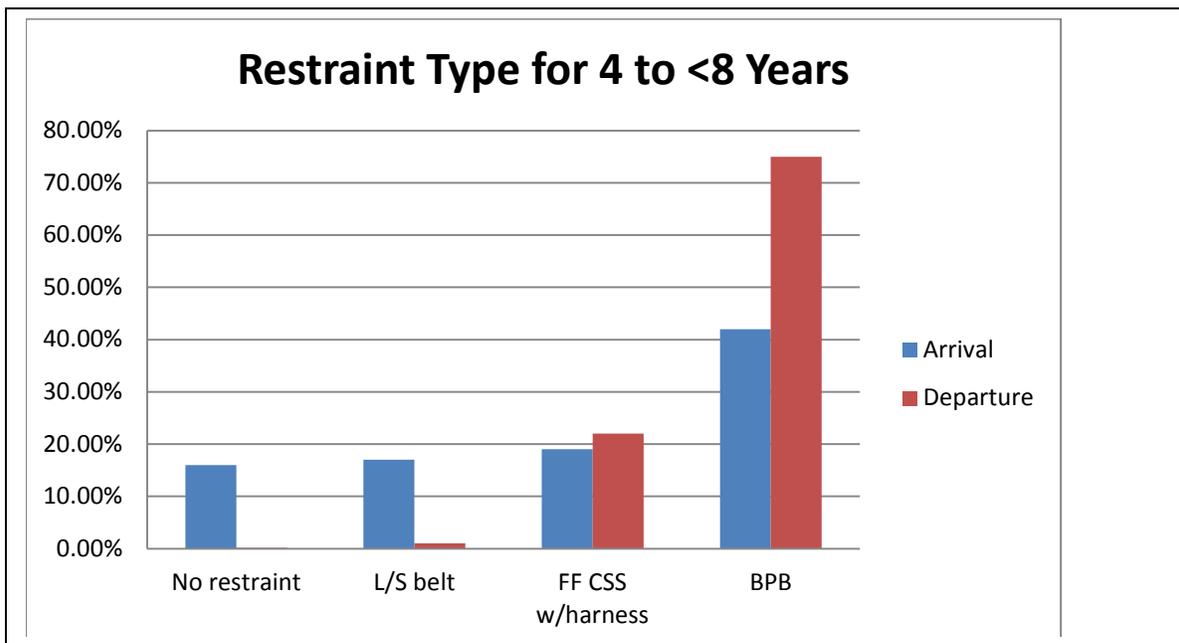


Figure 4

Although the majority of children served at the inspection stations were less than one year old, some older children accompanied parents and caregivers to appointments and had their restraint type assessed by CPSTs. Upon arrival, 15% of the children in this age group were unrestrained; 52% were riding in lap/shoulder belts; and 22% were in belt-positioning boosters. Upon departure, no child left unrestrained; 31% were in lap/shoulder belts; and 57% in boosters (Figure 5).

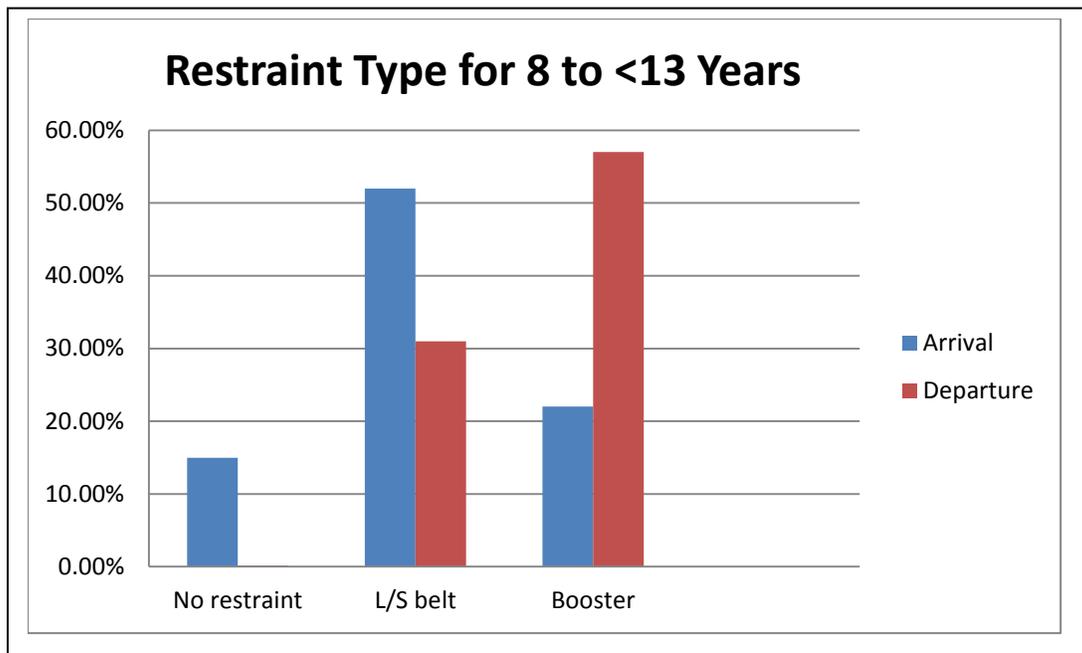


Figure 5

At the permanent fitting station appointments, 39% of inspections resulted in a different car seat. The majority of the CSS were provided by the CPST (85%) at no cost to the family.

CPST also observed and addressed the vehicle environment, noting projectiles that could be potential dangers to vehicle occupants. Of all inspections, 32% had items in the vehicle that the CPSTs considered projectiles, such as unrestrained boosters, loose toys, tools, and groceries. Families were encouraged to put such items in a storage area of the vehicle or to make sure unused restraints were secured.

CONCLUSION

Inspection stations provide a valuable service to community members wanting to enhance the transportation safety of their children. Analysis of data collected on check-up forms utilized by Indiana inspection stations showed a significant improvement in best practice usage and increased CSS use by children who were previously unrestrained, in a CSS deemed unsafe by a CPST, or were in an inappropriate type of CSS.

In addition, information gleaned from the check-up forms can contribute to improving services provided by the inspection stations. For example, since friends or family dominated how drivers learned about permanent fitting stations, awareness of the inspection station services by professional services is necessary to increase referrals through those means. Expectant parents or those with children under the age of one and Caucasian drivers frequented the inspection stations the most. Increased utilization by older children and more diverse populations should be promoted.

When reviewing information verified as missing from the check-up forms, further analysis of the information collected and the process by which it is collected should be considered. Careful review could produce a more streamlined check-up form with a revised format and a process that is conducive to detailed documentation.

Alternate methods of data entry should also be explored considering the volume of check-up forms involved in analysis and the length of time required for input of one form (approximately 8 minutes). Electronic documentation via a notebook may well be a solution for improving accuracy as well as speed of input, if financially feasible.

Overall, the inspection station network has ensured safer transportation options for many children in Indiana. An additional benefit is potential influence provided by families or friends and relatives with the ultimate goal of societal change.

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