Give Kids a Boost III
FY14 Texas Department of Transportation (TxDOT)
Final Report

BACKGROUND

Nationally, motor vehicle crashes continue to be the leading cause of injury death for children 5-9 years of age (CDC, 2011). Booster seats reduce the risk of injury by 59% compared to seat belts alone for children 4-7 years of age (Arbogast, 2009). However, a national study showed that only 46% of children 4-7 years of age were using a booster seat (NHTSA, 2013).

Texas law requires all children younger than 8 years of age, unless they are taller than 4 feet 9 inches, to ride in an appropriate child safety seat used according to the manufacturer's instructions.

With a third year of funding from the Texas Department of Transportation (TXDOT), the Injury Prevention Center of Greater Dallas (IPC) developed, implemented, and evaluated *Give Kids a Boost*, a school-based project that focused on educating stakeholders and enforcing correct child occupant safety practices.

Give Kids a Boost Goal

The goal of the project was to increase proper booster seat use among children 4-5 years of age in two early childhood schools in Irving (Clifton Early Childhood School and Kinkeade Early Childhood School) by 10% by September 30, 2014.

DEVELOPMENT

Objective 1: To conduct focus groups with parents, teachers, safety advocates and community stakeholders

Focus groups were conducted before the implementation period of the project to identify:

1) School and community safety concerns
2) Pre-existing knowledge about child passenger safety and about the Texas law regarding child occupant safety
3) Perception of law enforcement
4) Effective communication methods

A total of six focus groups were conducted. At each of the two project schools, two focus groups were conducted with parents and one was conducted with teachers and staff. Between

the two schools, responses were very similar even though the two schools have a slightly different ethnic distribution and different traffic pattern issues.

Focus group results revealed that the main safety concerns for parents, teachers, and staff included unsafe driving and unsafe child passenger safety practices (especially young children traveling completely unrestrained and/or in the front seat of motor vehicles). Both parents and teachers stated that school parking lot issues at drop-off and dismissal were a problem as well as unsafe pedestrian habits.

Most parents were aware that a law regarding child passenger safety existed, but they did not know the specifics of the law. In regards to increasing law enforcement presence at the schools, some parents were in agreement. They did emphasize that they believe that police enforcement should focus on child passenger safety laws and that warnings should precede tickets. Other parents, however, did not like the idea of having police present at the schools due to perceived discrimination toward the Hispanic community by Irving police officers.

In addition, the preferred method of disseminating information combined traditional methods (phone calls, informational flyers, etc.) with technology-based methods (emails and texts).

Focus group results reaffirmed that parents trust the teachers at their children's schools and that they believe the advice they hear from teachers is true and important. Therefore, during the intervention phase, teachers were trained on booster seat safety and on the dissemination of tailored information to parents during the intervention.

Focus group results were used to help develop the intervention strategy for the project schools.

INTERVENTION

Objective 2: To implement a strategy to increase booster seat use among children 4-5 years of age in the project schools

The *Give Kids a Boost* project was developed and implemented using results from the focus groups at the project schools, recommendations from the National Highway Traffic Safety Administration (NHTSA) regarding effective strategies to increase child occupant restraint use, and experience gained through the previous two years of implementing the *Give Kids a Boost* project (FY12 and FY13).

To ensure the project was culturally-competent, community-integrated, and sustainable, the intervention strategy included training teachers and parent volunteers using the train-the-trainer model.

The intervention phase of the project included:

1) Train-the-trainer sessions with teachers and parent leaders
2) Parent presentations
3) Tailored communication to parents
4) Distribution of child passenger safety fact sheets
5) Car seat inspection stations
6) Walk-Around Education in collaboration with the Irving Police Department

Train-the-Trainer Sessions
The train-the-trainer model states that people who train others remember 90% of the material they teach, thereby creating a more sustainable initiative and ultimately helping to increase booster seat use in the two project schools over time. Parent volunteers and teachers from both project schools were trained on child occupant safety, with a specific focus on children 4-5 years of age (early booster seat age group). Trained parent volunteers became "safety leaders" for their school. The trainings covered the basics of child occupant safety, best practices regarding child passenger safety, crash dynamics, car seat and booster seat demonstrations, parental responsibility (role modeling), and myths about child occupant safety.

Parent Presentations
Project staff and parent leaders shared information and educated parents during monthly parent meetings (which included student performances) as well as at parent classes and special events at each project school.

Tailored Communication
All teachers were trained on booster seat safety and on the tailored communication component of the project. Some booster seat safety messages were individually tailored to each child. Tailored messages and activities included:

1) Letters signed by the school principal which notified parents about the school's participation in the *Give Kids a Boost* initiative.

2) A note signed by the school's principal with each student's height, weight, and age. The note provided appropriate booster seat recommendations and car seat inspection resources, taking into consideration the child's age and size.

All tailored communication was sent home to parents through each student's class folder.

Distribution of Fact Sheets
Several fact sheets were developed and distributed as part of the *Give Kids a Boost* project. The fact sheets were sent home at least once a month in each student's class folder. The fact sheets covered topics such as the Texas law regarding child passenger safety, proper booster seat recommendations, the differences between the two types of booster seats, NHTSA's car seat recommendations for children, and the 5-step test to help determine when it is

appropriate to graduate a child from a booster seat to a seat belt alone after he or she has reached the correct age or height according to law.

Car Seat Inspection Stations
See objective #3 below.

Walk-Around Education
High-visibility enforcement of child restraint laws is one of the effective strategies identified by NHTSA to improve compliance with existing child passenger safety laws. Due to time and staff constraints, officers from the Irving Police Department were unable to conduct "high-visibility enforcement," but they did increase police presence at the schools through several rounds of "Walk-around Education" that were conducted during student dismissal times at the project schools. While parents waited in the parking lot to pick up their children, police officers, project staff, and parent leaders handed out information about the law, best practices regarding child occupant safety, car seat recommendations, and car seat inspection resources available to parents.

Objective 3: To distribute booster seats through car seat inspection stations at each of the project schools

Car seat inspections are a recommended best practice and are an opportunity to educate parents/caregivers on the proper use of their car seat or booster seat with their child present.

During the *Give Kids a Boost* project, project staff and child passenger safety technicians from the Irving Police Department conducted a total of 8 car seat inspection stations for parents at the project schools, in the community, or at the Irving Police Station. A total of 204 booster seats were provided to parents whose children did not have booster seats or to parents when their child's car seat or booster seat was expired, recalled, damaged, and/or inappropriate for the child.

EVALUATION

Objective 4: To conduct a total of 3000 child restraint observations of children 4-5 years of age during the pre- and post-intervention and maintenance time periods at both project schools and at the comparison schools

The IPC conducted observational surveys of child occupant restraint use in the pre-intervention and post-intervention time periods to determine whether there was a change in booster seat use among children 4-5 years of age following the implementation of the *Give Kids a Boost* project. The number of observations was selected based on a formula necessary to have adequate power to detect a change of 10 percentage points between the pre- and post-intervention and maintenance time periods in the project and comparison schools. Data was

analyzed using Epi Info 2000 to calculate changes in restraint use and test the results for statistical significance.

The trained observer conducted a total of 4,832 vehicle occupant restraint observations of booster seat use among children at the project and comparison schools, which exceeded the goal by 1,832 observations (61% greater than the goal). Observations were conducted at the two project schools (Clifton and Kinkeade Early Childhood Schools) and four comparison schools in the Dallas Independent School District and the Irving Independent School District with similar demographics to the project schools. No booster seat intervention activities took place at the comparison schools. Observations were conducted at project and comparison schools during the same time periods during the school year. Students were observed in vehicles as they arrived at school during the morning hours at school drop-off areas. Pre-intervention observations were conducted in October and November of 2013, post-intervention observations were conducted from April to June of 2014, and maintenance observations were conducted from August to September of 2014 (Table 1).

Table 1: Number of Observations Conducted

	Pre-Intervention (Oct-Nov 2013)	Post-Intervention (Apr-June 2014)	Maintenance (Aug-Sept 2014)	Total
4-5 year olds	1533	1645	1645	4823

In the following analyses, we only included observation data collected for 4-5 year olds since the schools only serve children in the pre-kindergarten age group. This resulted in a total of 4,823 observations of 4-5 years olds.

Figure 1 shows that booster seat use in the comparison schools decreased slightly (from 7.2% to 6.3%) from the pre-intervention time period to the post-intervention time period. In contrast, booster seat use at the project schools increased from 6.6% during the pre-intervention period to 21.0% in the post-intervention period. This was a 14.4 percentage point increase in booster seat use following the intervention. The change in the project schools was statistically significant ($P<0.001$), whereas the change in the comparison schools was not significant ($P=0.21$). The 14.4% increase exceeded the project goal which sought a 10% increase.

Figure 1: Booster Seat Use Among
Children 4-5 Years of Age, by Project vs. Comparison Schools
Pre vs. Post Intervention Observations

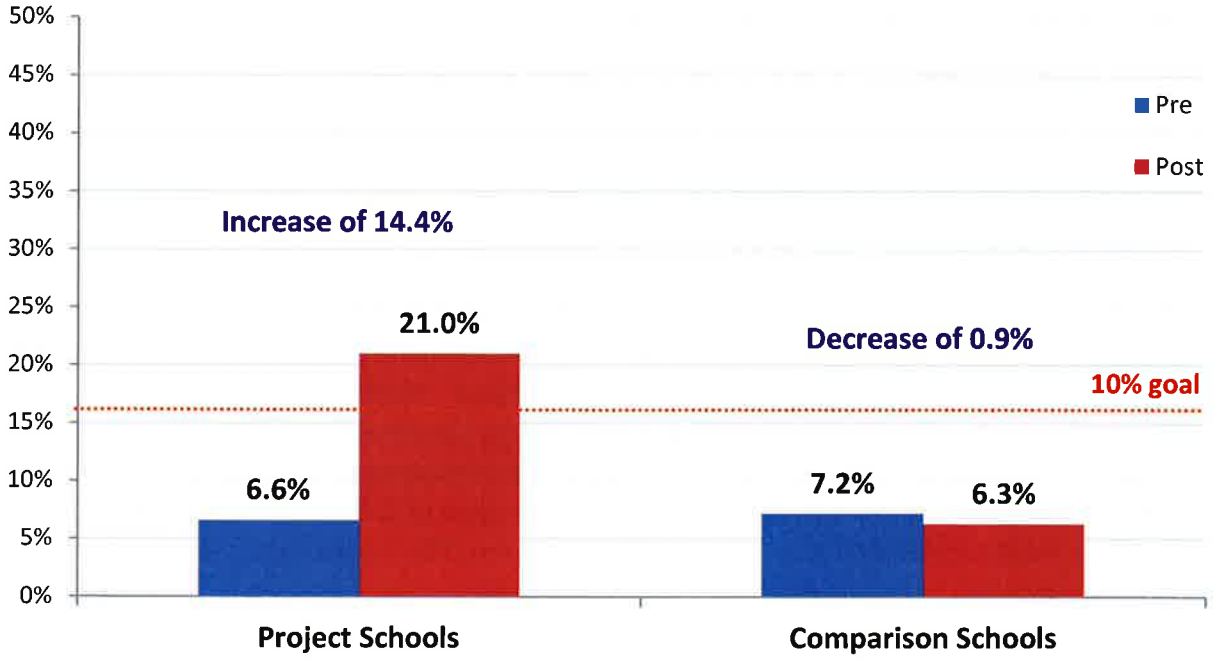


Table 2 shows the number of child occupant restraint observations conducted at both project and comparison schools by pre- and post-intervention time periods. Results indicate that child occupants at the project schools were 3.7 times more likely to use booster seats after the intervention (P<0.001), whereas child occupants at comparison schools were slightly less likely to use booster seats (P=0.21).

Table 2: Comparison of Booster Seat Use at Project and Comparison Schools

	Pre-Intervention (Oct-Nov 2013)		Post-Intervention (Apr-June 2014)			
	Total	Number of kids in boosters (%)	Total	Number of kids in boosters (%)	Odds Ratio (95% confidence limits)	P-value
Project Schools*	527	35/527 (6.6%)	543	114/543 (21.0%)	3.74 (2.50, 5.57)	<.001
Comparison Schools	1006	72/1006 (7.2%)	1102	69/1102 (6.3%)	0.87 (0.62, 1.22)	0.21
Total	1533		1645			

*Significantly greater than in comparison schools.

Figure 2 depicts the change in booster seat use for each of the two project schools. Booster seat use at Clifton increased from 7.0% in the pre-intervention period to 22.4% in the post-intervention period. Kinkeade saw booster seat use increase from 6.3% in the pre-intervention

period to 19.2% in the post-intervention period. The increase in booster seat use was statistically significant for each school (P<0.001).

Figure 2: Booster Seat Use Among Children 4-5 Years of Age, by Project School Pre vs. Post Intervention Observations

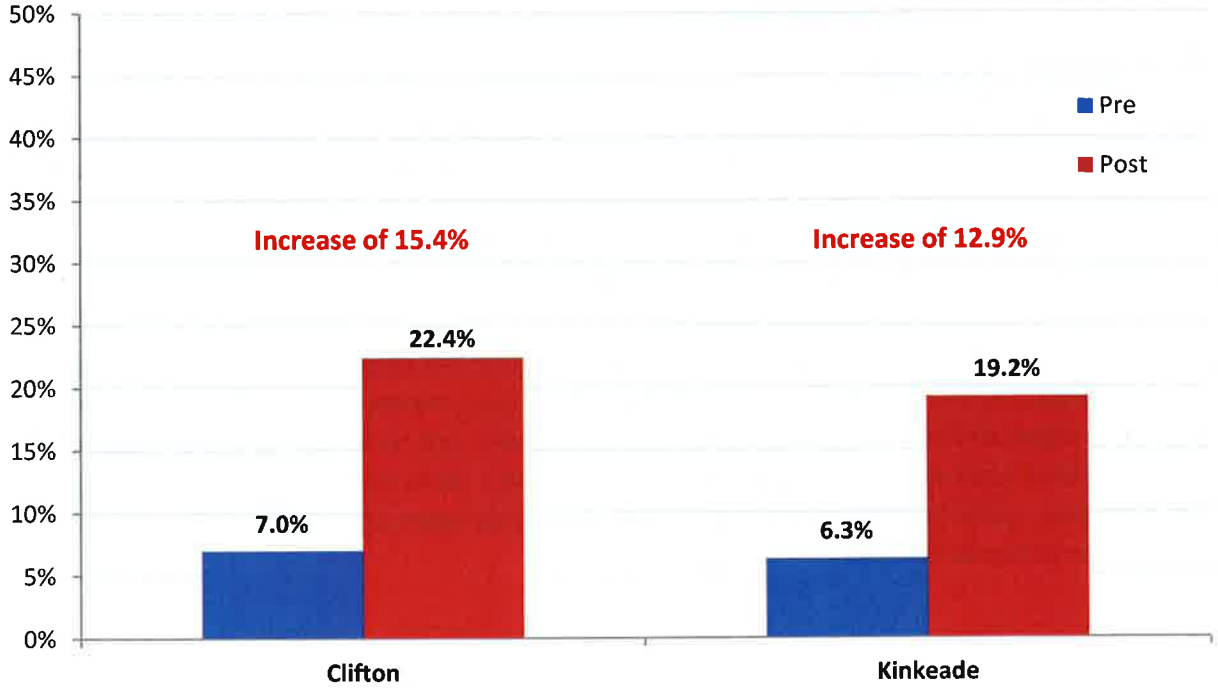


Table 3 shows the number of observations of children in booster seats conducted at each project school by pre- and post-intervention. At each project school, the students were about 3.5 to 4 times more likely to be restrained in booster seats after the intervention than before it was implemented (P<0.001). Also, the two schools were not significantly different from each other, showing that the intervention was about equally effective in each school.

Table 3: Comparison of Booster Seat Use at Project Schools

	Pre-Intervention (Nov 2012)		Post-Intervention (Apr-May 2013)			
	Total	Number of kids in boosters (%)	Total	Number of kids in boosters (%)	Odds Ratio (95% confidence limits)	P-value
Clifton	271	19/271 (7.0%)	304	68/304 (22.4%)	3.82 (2.23, 6.55)	< 0.001
Kinkeade	256	16/256 (6.3%)	239	46/239 (19.2%)	3.58 (1.96, 6.51)	< 0.001
Total	527		543			

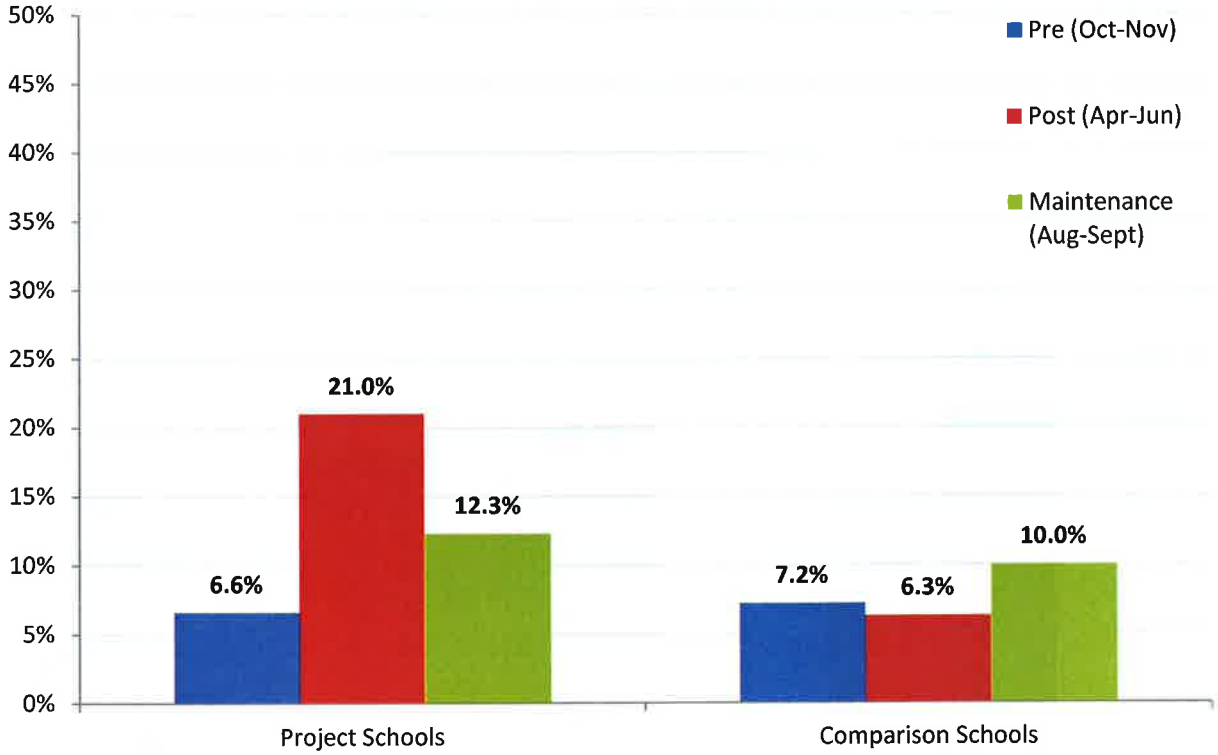
Maintenance Post-Intervention Observations

Project staff conducted a second round of post-intervention observations at all project and comparison schools after summer break (at the start of the 2014-2015 school year) in August and September of 2014. The maintenance post-intervention observations were conducted in the same manner as the previous observations.

Figure 3 includes the observations done during the new school year. The results demonstrated that booster seat use did decrease significantly from the post-intervention time period to the maintenance time period after summer break. Child occupants at the project schools were about half as likely to be using a booster seat in the maintenance time period as compared to the post-intervention time period. However, child occupants were still almost 2 times more likely to be using a booster seat in the maintenance time period as compared to the pre-intervention time period. Although the beneficial effect of the intervention decreased over the summer months, some of the benefit was still maintained.

The reason for this decrease can likely be attributed to the fact that the two project schools receive an entirely new group of students every school year, meaning that all of the parents that were trained and educated in the previous school year are no longer at the project schools. However, school leadership at the project schools remains dedicated to sustaining *Give Kids a Boost* activities, and it is likely that booster seat use will increase again once staff is able to work with the new group of parents.

Figure 3: Booster Seat Use Among Children 4-5 Years of Age, by Project vs. Comparison Schools, Pre vs. Post Intervention, Including Maintenance Observations



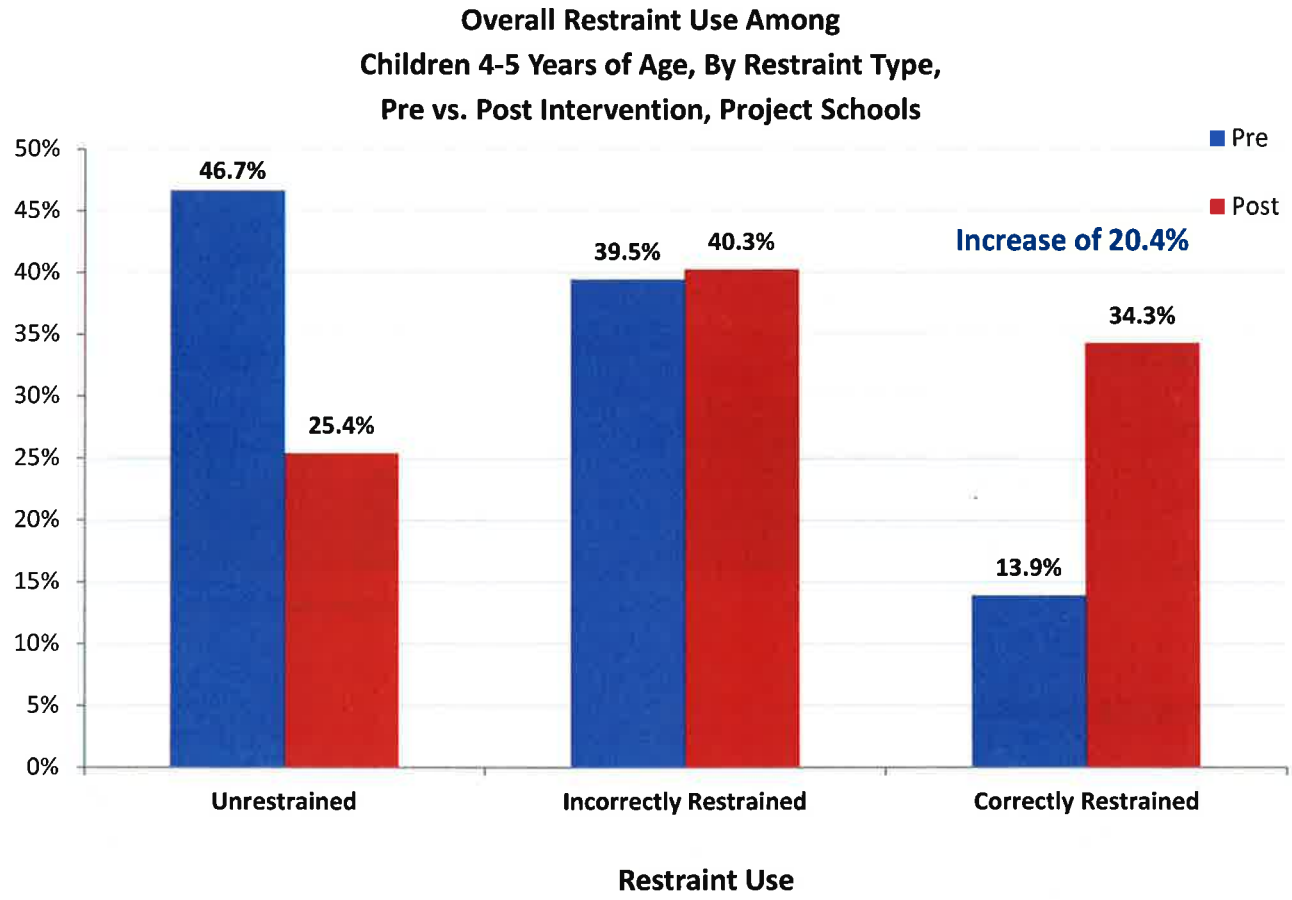
PROJECT BARRIERS

This year, Irving police officers were important stakeholders that helped to implement the project intervention strategies. However, due to police time constraints and the inability to pay the officers overtime for increased enforcement, they were unable to conduct the enforcement strategy as originally planned.

As mentioned previously, these two project schools were unique compared to schools in previous years in that they receive an entirely new student body every year. This means that the trained parent leaders all moved on to different schools. Because of this challenge, the project focused very strongly on training staff members to sustain the project in the future.

These two project schools were also unique compared to schools in previous years in that they only had 4-5 year old students. Although NHTSA permits the use of booster seats with children as young as 4 years of age, the American Academy of Pediatrics recommends to keep children in a forward-facing car seat with harness straps (combination seat) as long as possible and until they reach the weight and height limits of their car seat. Although all students met the

minimum age requirement for booster seats, many of them were small and therefore used a combination seat. Although booster seat use alone increased significantly, there was an **even greater increase in proper restraint use**, which can be classified as the correct use of a combination seat or of a booster seat depending on the size of the child (Figure 4).



Legend

Unrestrained = not using any type of restraint or seat belt
Incorrectly Restrained = Using only the seat belt or using a car seat or booster seat that is 1) not appropriate for the child based on his height, weight, and age **or** 2) is not being used according to the manufacturer's instructions
Correctly Restrained = Using either a booster seat or a car seat that is 1) appropriate for the child based on his height, weight, and age **and** 2) is being used according to the manufacturer's instructions

Although both booster seat use and proper restraint use overall increased significantly after less than a year, there continues to be a strong need to further increase booster seat use and proper child restraint use overall at the project schools. Booster seat use was still only 21% among children at these schools directly after the intervention. Likewise, directly after the

intervention, proper restraint use overall was still only 34.3% among children at the project schools.

CONCLUSION

The *Give Kids a Boost* project resulted in a 14.4 percentage point increase in the number of children 4-5 years of age riding in a booster seat directly following the intervention at Clifton and Kinkeade Early Childhood Schools. Each of the project schools experienced a 3.5- to 4-fold increase in the percent of child occupants correctly restrained in booster seats, and the increase was statistically significant in each project school. Following summer break, booster seat use did decrease as compared to the post-intervention time period but was still 5.7% higher than before the intervention took place. There was no significant change in booster seat use in the comparison schools between the pre-intervention and post-intervention time period, which supports the conclusion that the intervention caused the increase in the project schools.

Key intervention strategies that contributed to the increase in booster seat use included the engagement of community partners, the training of school-related stakeholders using the train-the-trainer model, and collaboration with the Irving Police Department to educate and to enforce existing laws. Although the *Give Kids a Boost* project was small in scope, the project was able to demonstrate a significant increase in booster seat use and overall child restraint use in less than one year.

REFERENCES

1. National Vital Statistics System, National Center for Health Statistics, Centers for Disease Control (CDC) 2011.

2. Arbogast, Effectiveness of Belt Positioning Booster Seats: An Updated Assessment. *Pediatrics*. 2009 Nov; 124(5):1281-6.

3. Department of Transportation (US), National Highway Traffic Safety Administration (NHTSA), The 2013 National Survey of the Use of Booster Seats. DOT HS 812 037.