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The 2011 National Survey of the Use of Booster Seats

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Abstract

This technical report presents results from the 2011 National Survey of the Use of Booster Seats (NSUBS). NSUBS is the only probability-based nationwide child restraint use survey in the United States that observes restraint use and interviews adult occupants to collect race, ethnicity and other data. NHTSA's National Center for Statistics and Analysis conducts the NSUBS. The 2011 NSUBS found that 47 percent of 4- to 7-year-old children were restrained in booster seats in 2011 as compared to 41 percent in 2009. Restraint use for all children under 13 increased to 91 percent in 2011. Although there were some indications of premature graduation to restraint types that are not appropriate for children's age, height, and weight, we see significant improvements in use of appropriate restraint types among children of various categories in 2011 as compared to 2009.

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Executive Summary

This report presents results from the 2011 National Survey of the Use of Booster Seats (NSUBS). NSUBS is the only probability-based nationwide child restraint use survey in the United States that observes restraint use and interviews adult occupants to collect data such as the race and ethnicity of all occupants in the vehicles. NHTSA's National Center for Statistics and Analysis conducts the NSUBS.

In 2000, Congress passed the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act that directed the Department of Transportation to reduce by 25 percent the fatalities and injuries among 4- to 7-year-olds caused by the failure to use booster seats. In response, NHTSA began the NSUBS survey in 2006 to provide a national estimate of booster seat use in order to target its outreach programs. The year 2011 is the fifth year for the NSUBS.

The primary purpose of NSUBS is to estimate booster seat use among 4- to 7-year-old children. In addition, the survey provides restraint use estimates for all children under 13, race and ethnicity breakouts of restraint use among all occupants in vehicles, and estimates of the extent to which children are "prematurely graduated" to restraint types that are inappropriate for their age as well as height and weight.

The following are some major findings from the 2011 NSUBS:

- Booster seat use among 4- to 7-year-old children increased to 47 percent in 2011 from 41 percent in 2009. This change is not statistically significant.
- The appropriate restraint system for 4- to 7-year-old children is either a forward-facing car seat or a booster seat, depending on the child's height and weight. However, the NSUBS found that 35 percent of children 4 to 7 years old in the United States were not being properly protected – 25 percent were restrained by seat belts and 10 percent were unrestrained.
- There continue to be indications of premature graduation to restraint types that are not appropriate for children's age, height, and weight. However, there was significant improvement in the use of appropriate restraint types among children of various categories in 2011 as compared to 2009. Overall, more children were restrained in car seats and fewer in seat belts.
    - About 7 percent of children 1 to 3 years old were restrained in rear-facing car seats in 2011, a significant increase from 3 percent in 2009.
    - Only 2 percent of children 1 to 3 years old were prematurely graduated to seat belts in 2011, a significant decrease from 4 percent in 2009.
    - About 18 percent of children 4 to 7 years old were restrained in forward-facing car seats in 2011, a significant increase from 14 percent in 2009.
    - About 25 percent of children 4 to 7 years old were prematurely graduated to seat belts in 2011, a significant decrease from 32 percent in 2009.
    - Booster seat use among children from birth to 12 years old who were 37 to 53 inches tall increased significantly from 32 percent in 2009 to 38 percent in 2011; meanwhile, seat belt use decreased significantly from 39 percent in 2009 to 33 percent in 2011.
    - Booster seat use among children from birth to 12 years old who were 54 to 56 inches tall increased significantly from 6 percent in 2009 to 13 percent in 2011; meanwhile, seat belt use decreased significantly from 78 percent in 2009 to 72 percent in 2011.

- Restraint use for all children under 13 years of age increased to 91 percent in 2011; the restraint use rates for children from birth to 12 months old, 1 to 3 years old, 4 to 7 years old, and 8 to 12 years old in 2011 were 98 percent, 96 percent, 90 percent, and 88 percent respectively.
- Restraint use among Non-Hispanic Asian children 8 to 12 years old increased significantly to 96 percent in 2011 from 80 percent in 2009.
- Restraint use by Hispanics was significantly lower than Non-Hispanics among children from birth to 12 years old.
- A statistically significant lower seat belt use was continued for Hispanics, and for non-Hispanic Black or African Americans, than other race and ethnicity groups among passenger vehicle occupants 25 to 69 years old traveling with children.
- A statistically significant higher seat belt use was continued for non-Hispanic Asians, and for non-Hispanic Whites, than other race and ethnicity groups among passenger vehicle occupants 25 to 69 years old traveling with children.

Table of Contents

1. Introduction 7

2. The National Estimates of Booster Seat Use 8

   Who Should Be in Booster Seats? 8

   The National Estimates 8

3. Premature Graduation 13

   Premature Graduation Among Children Younger Than 1 Year Old 13

   Premature Graduation Among Children 1 to 3 Years Old 14

   Premature Graduation Among Children 4 to 7 Years Old 14

   Premature Graduation Among Children 8 to 12 Years Old 15

   Premature Graduation Based on Weight and Height 16

4. Demographic Results 23

   Age 23

   Race and Ethnicity 23

   Gender 25

5. Occupants Traveling With Children 30

6. NSUBS Methodology 34

   Sample Design 34

   Sample Size 34

   Data Collection 35

   Estimation 36

7. References 37

Appendix: Definitions and Categories in NSUBS 39

List of Figures

Figure 1: Booster Seat Use, National Estimates 8

Figure 2: Restraint Use for Children 4 to 7 Years Old 9

Figure 3: Restraint Use for Children 4 and 5 Years Old 9

Figure 4: Restraint Use for Children 6 and 7 Years Old 9

Figure 5: Restraint Use for Children Younger Than 1 Year Old 13

Figure 6: Restraint Use for Children 1 to 3 Years Old 14

Figure 7: Restraint Use for Children 4 to 7 Years Old 15

Figure 8: Restraint Use for Children 8 to 12 Years Old 15

Figure 9: Restraint Use for Children Under 20 Pounds 16

Figure 10: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 20-40 Lbs 17

Figure 11: Distribution of Restraint Types in 2011 for Children From Birth to 12 Years Old Who Were 37-56 Inches Tall 18

Figure 12: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 37-53 Inches Tall 18

Figure 13: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 54-56 Inches Tall 19

Figure 14: Child Restraint Use by Age and Year 23

Figure 15: Child Restraint Use by Age and Race/Ethnicity in 2011 24

Figure 16: Child Restraint Use by Age and Hispanic Origin in 2011 24

Figure 17: Child Restraint Use by Age and Gender in 2011 25

Figure 18: Restraint Use by Age and Race/Ethnicity for Occupants Traveling With Children in 2011 31

Figure 19: Restraint Use by Age and Hispanic Origin for Occupants Traveling With Children in 2011 31

List of Tables

Table 1: Booster Seat Use, by Age, Weight, or Height 10

Table 2: Distribution of Restraint Types Among Children 4 to 7 Years Old By Sub-age Groups 12

Table 3: The Types of Restraints Used by Children From Birth to 12 Years Old, by Age 20

Table 4: The Types of Restraints Used by Children From Birth to 12 Years Old, by Weight 21

Table 5: The Types of Restraints Used by Children From Birth to 12 Years Old, by Height 22

Table 6: Restraint Use Among Children From Birth to 12 Months Old 26

Table 7: Restraint Use Among Children 1 to 3 Years Old 27

Table 8: Restraint Use Among Children 4 to 7 Years Old 28

Table 9: Restraint Use Among Children 8 to 12 Years Old 29

Table 10: Restraint Use of Occupants Traveling With Children by Age and Race/Ethnicity 32

Table 11: Sites, Vehicles, Occupants, and Children From Birth to 12 Years Old in NSUBS 35

1. Introduction

In 2000, Congress passed the Transportation Recall Enhancement, Accountability, and Documentation Act (Pub. L. 106-414; November 1, 2000), which directed the Department of Transportation to develop a five-year strategic plan to reduce by 25 percent fatalities and injuries among 4- to 7-year-olds caused by failure to use booster seats. Therefore, there was a need for reliable data on who is not using booster seats in order to direct outreach programs where they are most needed.

Prior to the NSUBS, research sponsored by NHTSA and several other organizations have estimated booster seat use in the United States; however, these estimates are not sufficiently reliable because they use data either from a non-probability sample that may not result in nationally representative estimates or from telephone interviews that may not result in reliable estimates.

In 2006, NHTSA conducted the first-ever nationwide probability-based survey of booster seat use in the United States and collected data based on the observation of children in vehicles. The NSUBS yields demonstrably representative results on a certain population of children. The population of children captured by the NSUBS comprises children who are conveyed by passenger vehicles to gas stations, fast food restaurants, day care centers, or recreation centers.

NTHSA has used the NSUBS data in its outreach programs and campaigns on child passenger safety in recent years. In 2010, the total number of traffic crash fatalities among children 4 to 7 years old has reduced to 293 as compared to 570 in 2000 (NHTSA, 2012).

The 2011 NSUBS was conducted from July 14 to August 1, 2011. The survey estimates were computed based on the results of 9,849 children observed in 6,350 vehicles at 405 observation sites across the country.

The purpose of this report is to present results from the 2011 NSUBS. During the years 2006-2008, NHTSA presented the results from the survey through three or four Research Notes, each of which covered one specific topic. Like the NHTSA technical report, "The 2009 National Survey of the Use of Booster Seats" (Pickrell & Ye, 2010), this report combines the results contained in the separate research notes into a single technical report. In order to be consistent with the publications in previous years, sections in this report are arranged to cover similar topics to those in the Research Notes published from 2006 to 2008.

It should be noted that this report has classified child restraint systems into four general categories: car seats (with harness strap, including rear-facing and forward-facing), booster seats (without harness strap, including high-backed and backless), seat belts, and unrestrained. Please refer to the Appendix for detailed definitions. Unless otherwise indicated, "significant" always means "statistically significant" in this report. Percentages may not add up to 100 percent due to rounding in figures and tables of this report.

2. The National Estimates of Booster Seat Use

Who Should Be in Booster Seats?
NHTSA's current car seat recommendation (March 2011) for children 4 to 7 years old is: Keep your child in a forward-facing car seat with a harness until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the forward-facing car seat with a harness, it's time to travel in a booster seat, but still in the back seat.

The National Estimates

The 2011 NSUBS found that booster seat use among 4- to 7-year-old children increased from 41 percent in 2009 to 47 percent in 2011(Figure 1). This increase is not statistically significant.

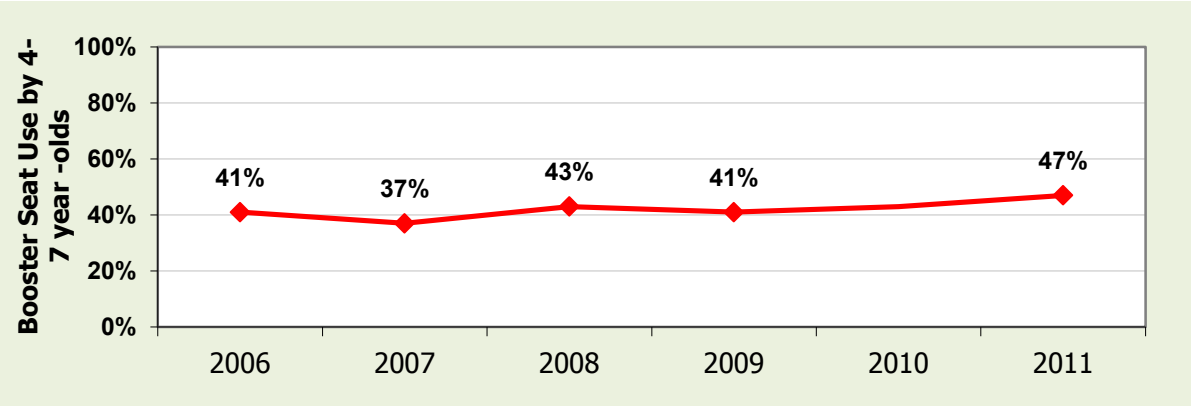

Figure 1: Booster Seat Use, National Estimates

The appropriate restraint system for children age 4 to 7 years is either a forward-facing car seat or a booster seat, depending on the child's height and weight. However, the NSUBS found that in 2011, 47 percent of children in this age group were using booster seats (either high-backed or backless), 18 percent were restrained in child car seats, 25 percent were in seat belts, and 10 percent were unrestrained (Figure 2). These results indicate that as many as 35 percent (25 percent in seat belts and 10 percent unrestrained) of children 4 to 7 in the United States were not being properly restrained. However, the percent of children 4 to 7 were restrained in seat belts decreased from 25 percent in 2009 to 32 percent in 2011, and this 7-percentage-point decrease is statistically significant.

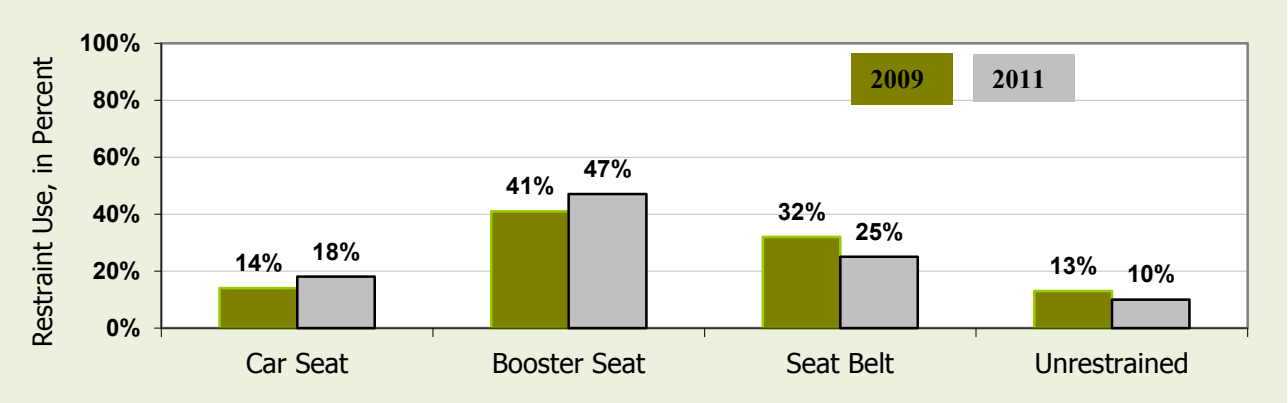

Figure 2: Restraint Use for Children 4 to 7 Years Old

As in 2009, the 2011 NSUBS survey found that among the 4- to 7-year-olds, the younger children (4- to 5- year olds) had higher booster seat use than the older (6- to 7- year olds) children. In 2011, 49 percent of children age 4 and 5, as compared to 43 percent of children age 6 and 7, were restrained in booster seats. However, booster seats use among children age 6 and 7 increased significantly from 36 percent in 2009 to 43 percent in 2011. Figure 3 and Figure 4 show the distributions of restraint use for these two sub-age groups, as well as the changes between 2009 and 2011.

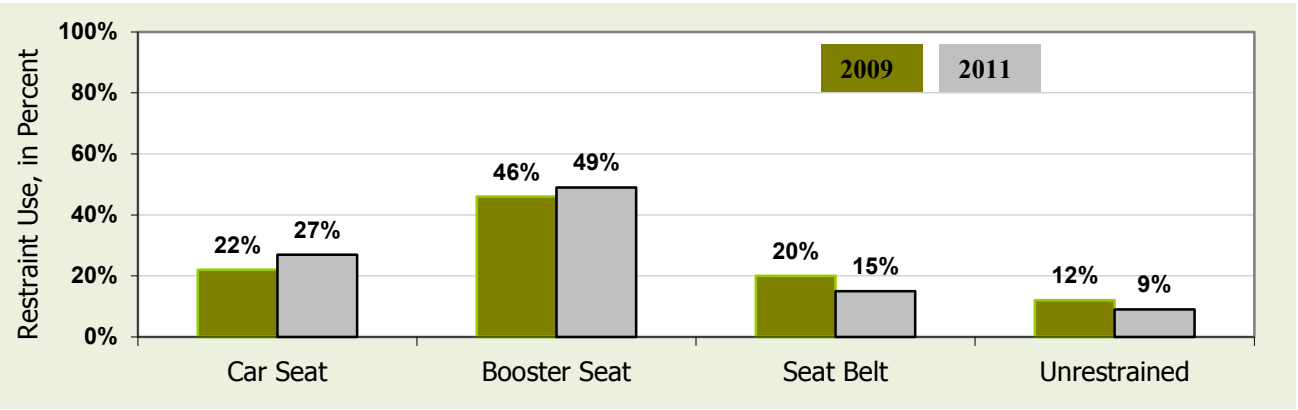

Figure 3: Restraint Use for Children 4 and 5 Years Old

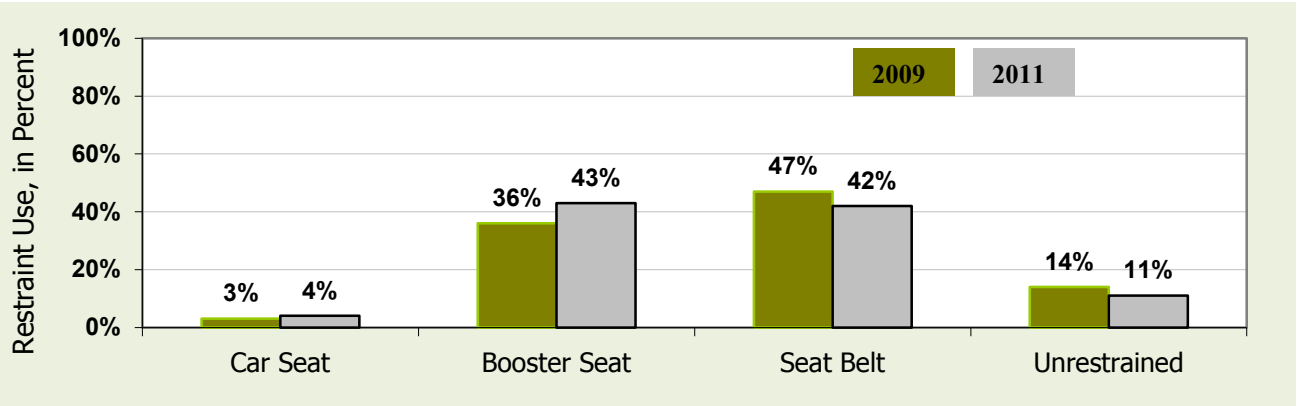

Figure 4: Restraint Use for Children 6 and 7 Years Old

Table 1: Booster Seat Use, by Age, Weight, or Height

Booster Seat Type[1]	2009		2011		2009-2011 Change	
	Percentage[2] of Children[3] Using the Booster Type	Standard Error	Percentage[2] of Children[3] Using the Booster Type	Standard Error	Change in Percentage Points	Confidence in a Change in Percentage[4]
Children 1 to 3 Years Old						
Booster Seat (Overall)	13%	2%	12%	1%	-1	56%
High-Backed Booster Seat	11%	2%	9%	1%	-2	66%
Backless Booster Seat	3%	0%	3%	0%	0	55%
Children 4 to 7 Years Old						
Booster Seat (Overall)	41%	3%	47%	2%	6	84%
High-Backed Booster Seat	24%	3%	25%	1%	1	31%
Backless Booster Seat	17%	2%	21%	1%	4	86%
Children 8 to 12 Years Old						
Booster Seat (Overall)	5%	1%	8%	1%	3	**99%**
High-Backed Booster Seat	2%	1%	3%	0%	1	80%
Backless Booster Seat	3%	0%	5%	0%	2	**100%**
Children From Birth to 12 Years Old Who Weigh Between 20 and 40 Pounds						
Booster Seat (Overall)	22%	4%	20%	1%	-2	38%
High-Backed Booster Seat	16%	4%	14%	1%	-2	39%
Backless Booster Seat	6%	1%	6%	1%	0	6%
Children From Birth to 12 Years Old Who Weigh Between 41 and 60 Pounds						
Booster Seat (Overall)	36%	3%	45%	2%	9	**100%**
High-Backed Booster Seat	18%	2%	22%	1%	4	90%
Backless Booster Seat	17%	2%	23%	1%	6	**99%**
Children From Birth to 12 Years Old Who Weigh More than 60 Pounds						
Booster Seat (Overall)	7%	1%	10%	1%	3	**95%**
High-Backed Booster Seat	3%	1%	4%	0%	1	45%
Backless Booster Seat	4%	0%	6%	1%	2	**100%**
Children From Birth to 12 Years Old Who Are At Most 36 Inches Tall						
Booster Seat (Overall)	13%	2%	12%	1%	-1	40%
High-Backed Booster Seat	9%	2%	8%	1%	-1	49%
Backless Booster Seat	4%	1%	4%	0%	0	15%
Children From Birth to 12 Years Old Who Are Between 37 and 53 Inches Tall						
Booster Seat (Overall)	32%	3%	38%	1%	5	**94%**
High-Backed Booster Seat	19%	3%	20%	1%	1	33%
Backless Booster Seat	13%	1%	17%	1%	4	**99%**
Children From Birth to 12 Years Old Who Are Between 54 and 56 Inches Tall						
Booster Seat (Overall)	6%	1%	13%	2%	7	**100%**
High-Backed Booster Seat	2%	0%	5%	1%	3	**100%**
Backless Booster Seat	4%	1%	8%	1%	4	**98%**
Children From Birth to 12 Years Old Who Are Taller than 56 Inches						
Booster Seat (Overall)	2%	1%	3%	0%	1	80%
High-Backed Booster Seat	1%	0%	1%	0%	1	88%
Backless Booster Seat	1%	1%	1%	0%	0	40%

[1] Booster seats are classified into two types: those with seat backs ("high-backed") and those without ("backless").
[2] Estimates might not sum to totals due to rounding.
[3] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains. Restraint use is observed by trained data

collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.

[4] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.

Note: Booster seat use rates for children from birth to 12 months old and who weigh less than 20 pounds are not provided due to the insufficient data to produce reliable estimates.

Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 2: Distribution of Restraint Types Among Children 4 to 7 Years Old By Sub-age Groups

Restraint Type[1]	2009		2011		2009-2011 Change	
	Percentage[2] of Children[3] Observed in the Restraint Type	Standard Error	Percentage[2] of Children[3] Observed in the Restraint Type	Standard Error	Change in Percentage Points	Confidence in a Change in Percentage[4]
Children 4 and 5 Years Old						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	22%	3%	27%	2%	5	86%
Booster Seat (Overall)	46%	4%	49%	3%	3	47%
High-Backed Booster Seat	31%	4%	30%	1%	-1	19%
Backless Booster Seat	15%	2%	19%	2%	4	78%
Seat Belt	20%	1%	15%	2%	-5	**100%**
No Restraint Observed	12%	4%	9%	2%	-3	44%
Children 6 and 7 Years Old						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	3%	1%	4%	1%	0	20%
Booster Seat (Overall)	36%	4%	43%	2%	8	**95%**
High-Backed Booster Seat	16%	2%	18%	1%	2	68%
Backless Booster Seat	20%	3%	25%	2%	5	**90%**
Seat Belt	47%	2%	42%	2%	-5	87%
No Restraint Observed	14%	3%	11%	1%	-3	72%
Children 4 to 7 Years Old						
Rear-Facing Car Seat	NA	NA	0%	0%	NA	NA
Forward-Facing Car Seat	14%	2%	18%	1%	4	**92%**
Booster Seat (Overall)	41%	3%	47%	2%	6	84%
High-Backed Booster Seat	24%	3%	25%	1%	1	31%
Backless Booster Seat	17%	2%	21%	1%	4	86%
Seat Belt	32%	2%	25%	1%	-7	**99%**
No Restraint Observed	13%	3%	10%	1%	-3	57%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
[2] Estimates might not sum to totals due to rounding.
[3] Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window
[4] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

3. Premature Graduation

The NSUBS, although its primary purpose is to estimate booster seat use, also provides estimates of the extent to which children are "prematurely graduated" to restraint types that are inappropriate for their age and size. In this section, we discuss the phenomenon of premature graduation by age groups since NHTSA's current car seat recommendation (March 2011) is primarily based on age.

With regard to size, NHTSA recommends that parents refer to the specific car seat manufacturer's instructions on weight and height limits. Car seats on the market exhibit a wide variation in height and weight limits. Many height limits range between 36 and 54 inches, and many weight limits range from 40 to 60 pounds. These limits were considered in discussing the extent of premature graduation in previous NSUBS publications. For comparison purpose, we will discuss briefly similar results from the 2011 NSUBS survey.

It should be noted that if a column corresponding to a data series or a data category is missing from a figure in this section, it means that there are not sufficient data to produce a reliable estimate for the data category. Also note that sometimes estimates might not sum to totals due to rounding.

Premature Graduation Among Children Younger Than 1 Year Old

NHTSA recommends: "Your child under age 1 should always ride in a rear-facing car seat. There are different types of rear-facing car seats: Infant-only seats can only be used rear-facing. Convertible and 3-in-1 car seats typically have higher height and weight limits for the rear-facing position, allowing you to keep your child rear-facing for a longer period of time." (Source: www.safercar.gov)

However, as shown in Figure 5, about 14 percent of children under age 1 were not in rear-facing car seats in 2011. Most of them prematurely graduated to forward-facing car seats.

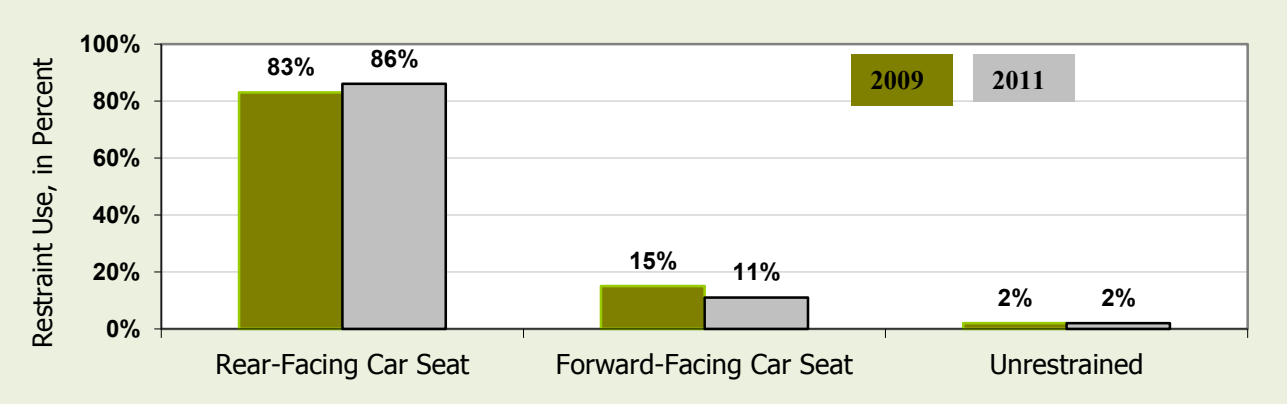

Figure 5: Restraint Use for Children Younger Than 1 Year Old

Premature Graduation Among Children 1 to 3 Years Old

NHTSA recommends: "Keep your 1 to 3 year old children in rear-facing car seats for as long as possible. It's the best way to keep them safe. They should remain in a rear-facing car seat until they reach the top height or weight limit allowed by your car seat's manufacturer. Once outgrown the rear-facing car seat, they are ready to travel in a forward-facing car seat with a harness." (Source: www.nhtsa.gov)

Therefore, the appropriate restraint types for children 1 to 3 years old should be either rear-facing car seats or forward-facing car seats. However, the 2011 NSUBS found that only 82 percent of children 1 to 3 years old were restrained either in rear-facing car seats (7 percent) or in forward-facing car seats (75 percent) in 2011. About 12 percent of children 1 to 3 years old were prematurely graduated to booster seats and 2 percent to seat belts. Figure 6 shows the distribution of restraint types for children 1 to 3 years old in 2009 and 2011.

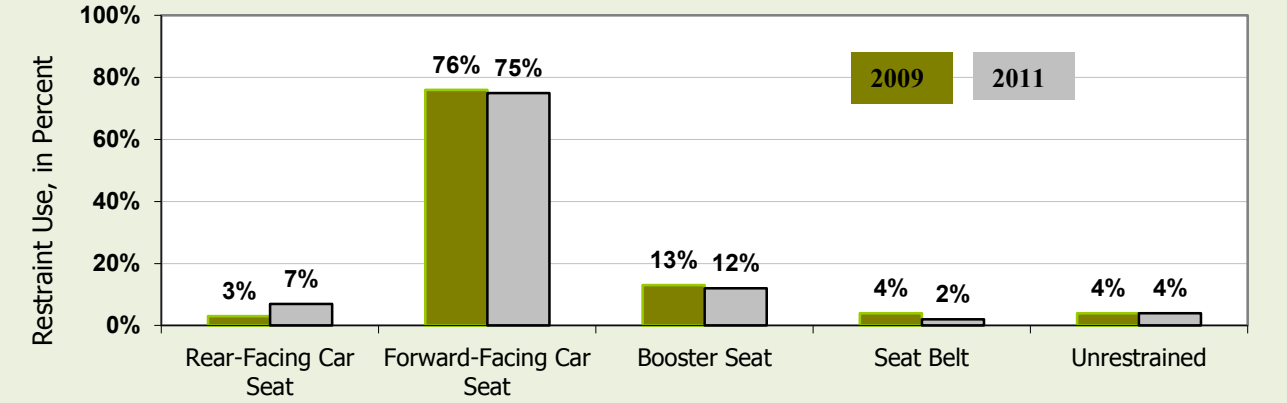

Figure 6: Restraint Use for Children 1 to 3 Years Old

As compared to 2009, there were two improvements for children of this age group as shown in Figure 6:

1) About 7 percent of children were restrained in rear-facing car seats in 2011, a significant increase from 3 percent in 2009.
2) Only 2 percent of children were prematurely graduated to seat belts in 2011, a significant decrease from 4 percent in 2009.

Premature Graduation Among Children 4 to 7 Years Old

NHTSA recommends: "Keep your 4 to 7 year old children in forward-facing car seats with a harness until they reach the top height or weight limit allowed by your car seat's manufacturer. Once they outgrow their forward-facing car seat with a harness, it's time to travel in a booster seat ... and still in the back seat". (Source: www.nhtsa.gov)

Therefore, the appropriate restraint types for children 4 to 7 years old should be either forward-facing car seats or booster seats. However, the 2011 NSUBS found that only 65 percent of children 4 to 7 years old was restrained either in forward-facing car seats (18 percent) or in

booster seats (47 percent) in 2011. About 25 percent of children 4 to 7 years old were prematurely graduated to seat belts and 10 percent were unrestrained. Figure 7 shows the distribution of restraint types for children 4 to 7 years old in 2009 and 2011.

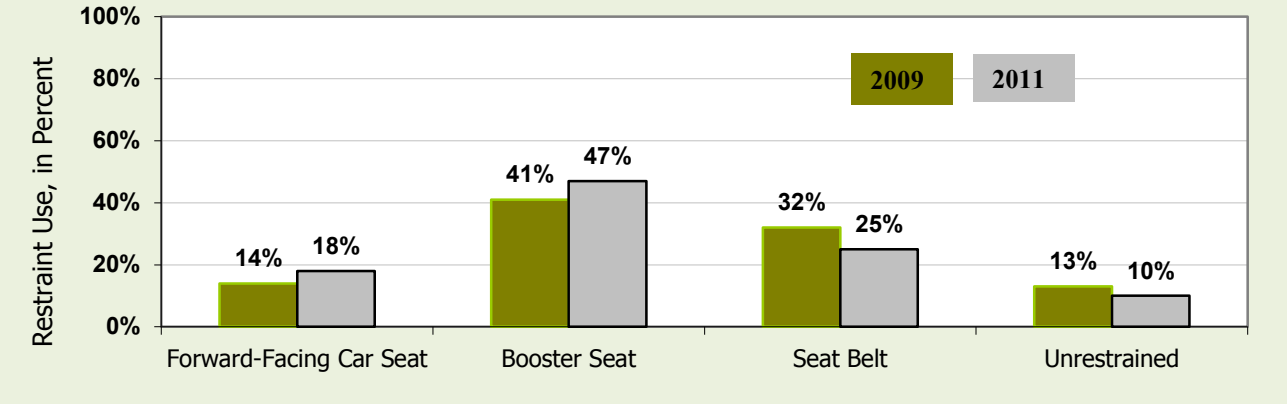

Figure 7: Restraint Use for Children 4 to 7 Years Old

As compared to 2009, there were also two improvements for children of this age group in 2011 as shown in Figure 7:

1) About 18 percent of children were restrained in forward-facing car seat in 2011, a significant increase from 14 percent in 2009.
2) About 25 percent of children were prematurely graduated to seat belt in 2011, a significant decrease from 32 percent in 2009.

Premature Graduation Among Children 8 to 12 Years Old

NHTSA recommends: "Keep your 8 to 12 year old children in booster seats until they are big enough to fit in a seat belt properly". (Source: www.nhtsa.gov)

However, the 2011 NSUBS found that 12 percent of children ages 8 to 12 years old were unrestrained in 2011. Figure 8 shows the distribution of restraint types for children ages 8 to 12 years old in 2009 and 2011.

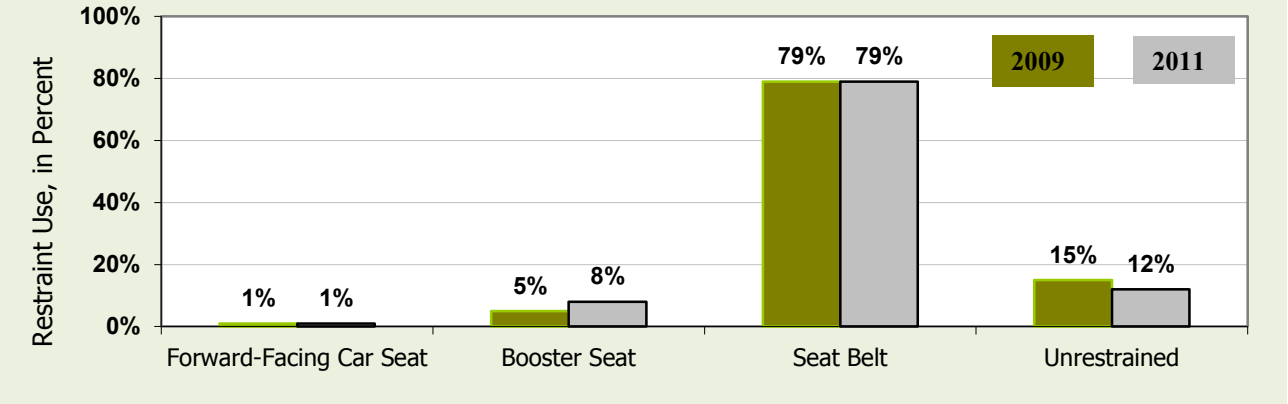

Figure 8: Restraint Use for Children 8 to 12 Years Old

As compared to 2009, 8 percent of children age 8 to 12 years old were restrained in a booster seat in 2011, a significant increase from 5 percent in 2009 (Figure 8).

Premature Graduation Based on Weight and Height

NHTSA's current car seat recommendation (March 2011) for children of all ages are of the following:

- Select a car seat based on your child's age, height, and weight.
- Keep your child in the car seat for as long as possible, as long as your child fits the seat's height and weight requirements.
- All children under 13 should ride in the back seat.

Although NHTSA does not specify the weight and height recommendations for each age group as in its old guidelines, it still recommends consulting the manufacturer's manual for car seat weight and height limits.

Child car seats on the market exhibit a wide variation in height and weight limits. Height limits range between 36 and 54 inches, and weight limits range from 40 to 60 pounds. These limits have been considered in applying NHTSA's old guidelines to assess the survey results in the NSUBS publications in previous years. This report will examine of the weight and height benchmarks specified in NHTSA's old guidelines for any premature graduation changes in 2011.

Children Weighing Less Than 20 Pounds

According to NHTSA's current car seat recommendation (March 2011), children under age 1 should be in rear-facing car seats. Since most children under age 1 weigh less than 20 pounds, NHTSA recommends that these children be restrained in rear-facing car seats.

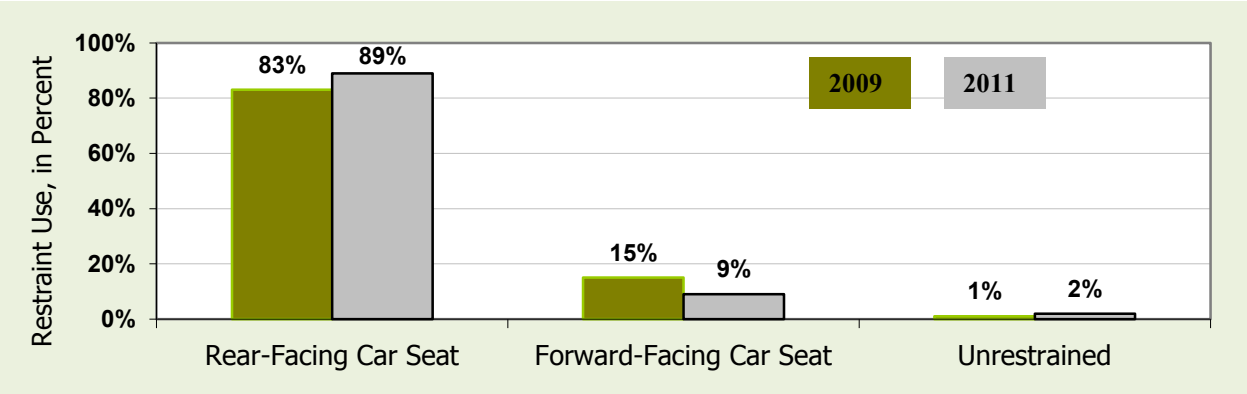

Figure 9: Restraint Use for Children Under 20 Pounds

As shown in Figure 9, the 2011 NSUBS found that 11 percent of children less than 20 pounds were not restrained in rear-facing car seats in 2011 (9 percent prematurely graduated to forward-facing car seats and 2 percent unrestrained).

However, as compared to 2009, more children under 20 pounds were in rear-facing seats in 2011: the 6-percentage-point increase in use of rear-facing car seats and the 6-percentage-point

decrease in use of forward-facing car seats from 2009 to 2011 are both statistically significant (Figure 9).

Children Weighing 20-40 Pounds

NHTSA recommended that when children outgrow their rear-facing car seats (at a minimum age 1 and at least 20 pounds) they should ride in forward-facing car seats, in the back seat, until they reach the upper weight or height limit of the particular seat (usually at around age 4 and 40 pounds).

The 2011 NSUBS found that 39 percent of children weighing 20-40 pounds were not in forward-facing car seats in 2011 (41 percent in 2009) (Figure 10). Note, however, that some 20-40 pound children could be infants who should be in rear-facing car seats, and note that some booster seats have weight limits as low as 30 pounds.

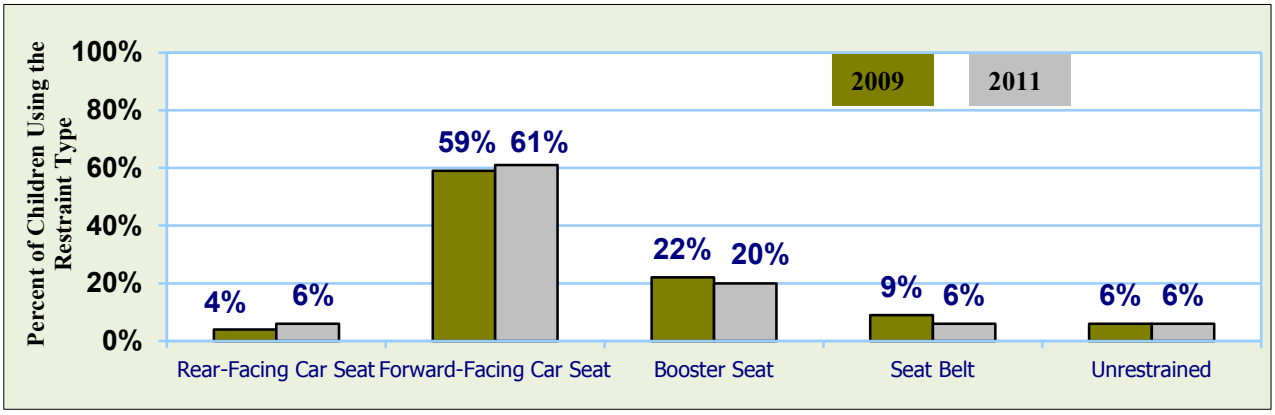

Figure 10: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 20-40 Lbs

Children Less Than 57 Inches Tall

NHTSA's old guideline recommended that once children outgrow their forward-facing car seats (usually at around age 4 and 40 pounds), they should ride in booster seats, in the back seat, until the vehicle seat belts fit properly. Seat belts fit properly when the lap belt lays across the upper thighs and the shoulder belt fits across the chest (usually at age 8 or when they are 57 inches tall).

However, the 2011 NSUBS found that:

- Forty-three percent of children from birth to 12 years old who were 37 to 53 inches tall were either unrestrained or prematurely graduated to seat belts in 2011 (51 percent in 2009).
- Eighty-five percent of children from birth to 12 years old who were 54 to 56 inches tall were either unrestrained or prematurely graduated to seat belts in 2011 (93 percent in 2009). However, since 54-56 inches is marginally below NHTSA's previously-set 57 inch benchmark, it might not be significant as a public safety result.

Figure 11 shows many of those children less than 57 inches prematurely graduated to seat belts in 2011.

We do see some improvements in 2011 as compared to 2009:

- Booster seat use among children from birth to 12 years old who were 37 to 53 inches tall increased significantly from 32 percent in 2009 to 38 percent in 2011; meanwhile, seat belt use decreased significantly from 39 percent in 2009 to 33 percent in 2011. (Figure 12)
- Booster seat use among children from birth to 12 years old who were 54 to 56 inches tall increased significantly from 6 percent in 2009 to 13 percent in 2011; meanwhile, seat belt use decreased significantly from 78 percent in 2009 to 72 percent in 2011. (Figure 13)

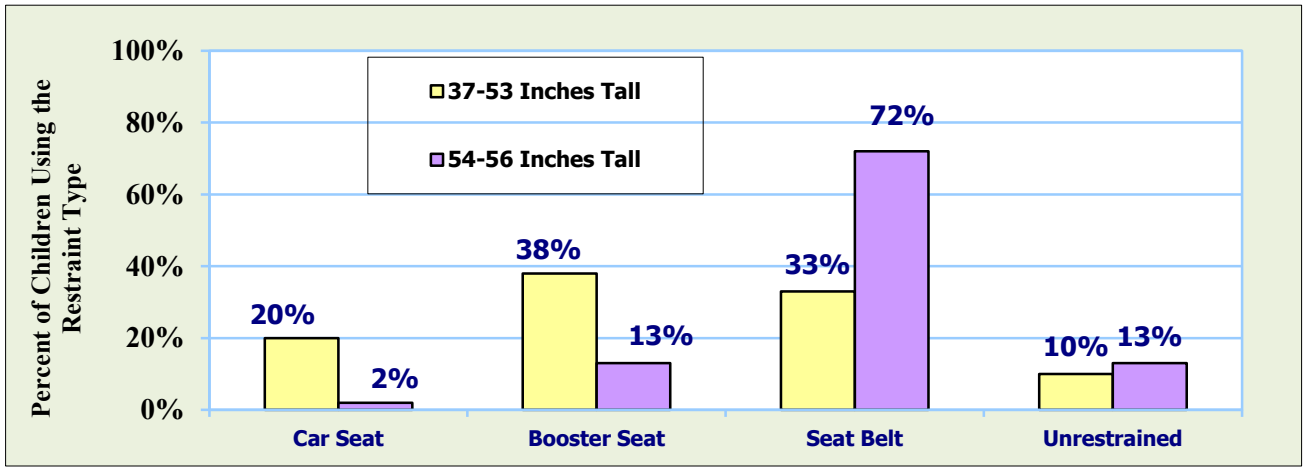

Figure 11: Distribution of Restraint Types in 2011 for Children From Birth to 12 Years Old Who Were 37-56 Inches Tall

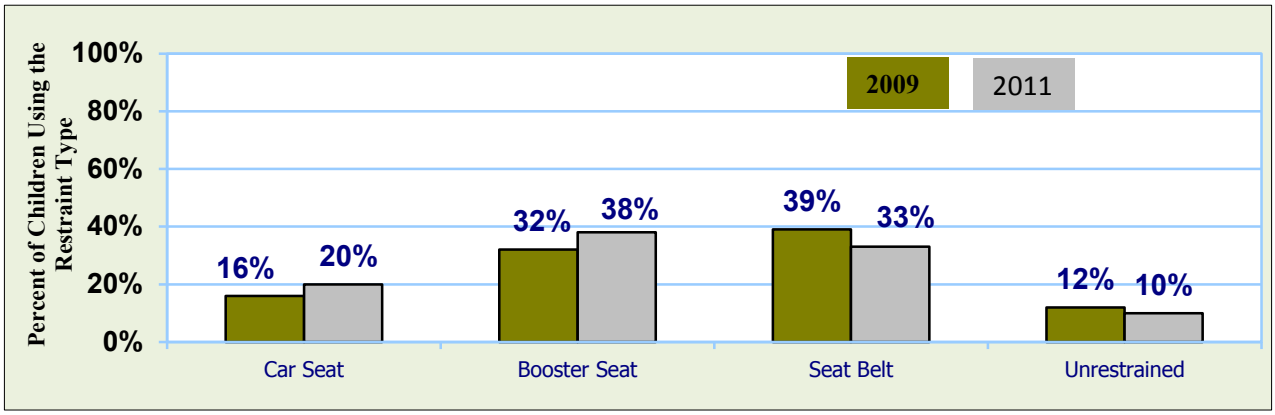

Figure 12: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 37-53 Inches Tall

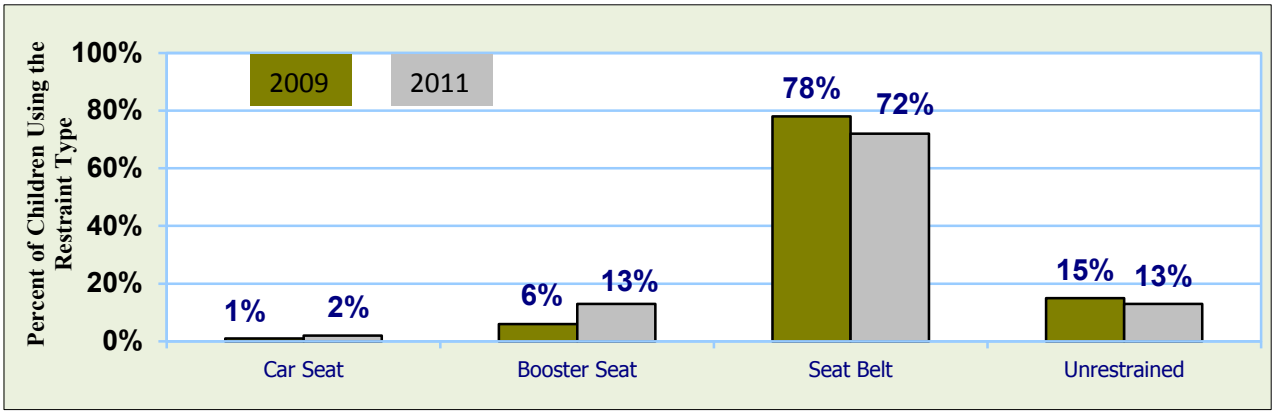

Figure 13: Distribution of Restraint Types for Children From Birth to 12 Years Old Who Were 54-56 Inches Tall

Table 3: The Types of Restraints Used by Children From Birth to 12 Years Old, by Age

Restraint Type[1]	2009		2011		2009–2011 Change	
	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Change in Percentage Points	Confidence in a Change in Percentage[4]
Children Less Than 1 Year Old						
Rear-Facing Car Seat	83%	4%	86%	2%	3	60%
Forward-Facing Car Seat	15%	3%	11%	2%	-4	73%
High-Backed Booster Seat	NA	NA	NA	NA	NA	NA
Backless Booster Seat	NA	NA	NA	NA	NA	NA
Seat Belt	NA	NA	NA	NA	NA	NA
No Restraint Observed	2%	1%	2%	1%	0	34%
Children 1 to 3 Years Old						
Rear-Facing Car Seat	3%	0%	7%	1%	4	**100%**
Forward-Facing Car Seat	76%	2%	75%	1%	-1	22%
High-Backed Booster Seat	11%	2%	9%	1%	-2	66%
Backless Booster Seat	3%	0%	3%	0%	0	55%
Seat Belt	4%	1%	2%	0%	-2	**97%**
No Restraint Observed	4%	1%	4%	1%	0	0%
Children 4 to 7 Years Old						
Rear-Facing Car Seat	NA	NA	0%	0%	NA	NA
Forward-Facing Car Seat	14%	2%	18%	1%	4	**92%**
High-Backed Booster Seat	24%	3%	25%	1%	1	31%
Backless Booster Seat	17%	2%	21%	1%	4	86%
Seat Belt	32%	2%	25%	1%	-7	**99%**
No Restraint Observed	13%	3%	10%	1%	-3	57%
Children 8 to 12 Years Old						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	1%	1%	1%	0%	0	51%
High-Backed Booster Seat	2%	1%	3%	0%	1	80%
Backless Booster Seat	3%	0%	5%	0%	2	**100%**
Seat Belt	79%	1%	79%	1%	0	2%
No Restraint Observed	15%	2%	12%	1%	-2	74%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast-food chains.
[2] Estimates might not sum to totals due to rounding.
[3] Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast-food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window
[4] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 4: The Types of Restraints Used by Children From Birth to 12 Years Old, by Weight

Restraint Type[1]	2009		2011		2009–2011 Change	
	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Change in Percentage Points	Confidence in a Change in Percentage[4]
Children Who Weigh Less Than 20 Pounds						
Rear-Facing Car Seat	83%	3%	89%	2%	6	**95%**
Forward-Facing Car Seat	15%	2%	9%	2%	-6	**96%**
High-Backed Booster Seat	NA	NA	NA	NA	NA	NA
Backless Booster Seat	NA	NA	NA	NA	NA	NA
Seat Belt	NA	NA	NA	NA	NA	NA
No Restraint Observed	1%	1%	2%	1%	1	48%
Children Who Weigh Between 20 and 40 Pounds						
Rear-Facing Car Seat	4%	1%	7%	1%	3	**98%**
Forward-Facing Car Seat	59%	4%	61%	2%	2	29%
High-Backed Booster Seat	16%	4%	14%	1%	-2	39%
Backless Booster Seat	6%	1%	6%	1%	0	6%
Seat Belt	9%	1%	6%	1%	-3	72%
No Restraint Observed	6%	1%	6%	1%	0	1%
Children Who Weigh Between 41 and 60 Pounds						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	8%	1%	11%	1%	3	**93%**
High-Backed Booster Seat	18%	2%	22%	1%	4	**90%**
Backless Booster Seat	17%	2%	23%	1%	6	**99%**
Seat Belt	42%	2%	34%	1%	-8	**100%**
No Restraint Observed	15%	4%	10%	1%	-5	77%
Children Who Weigh More Than 60 Pounds						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	0%	0%	1%	0%	1	**98%**
High-Backed Booster Seat	3%	1%	4%	0%	1	45%
Backless Booster Seat	4%	0%	6%	1%	2	**100%**
Seat Belt	79%	1%	77%	1%	-2	71%
No Restraint Observed	14%	1%	13%	1%	-1	64%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast-food chains.
[2] Estimates might not sum to totals due to rounding.
[3] Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast-food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window
[4] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 5: The Types of Restraints Used by Children From Birth to 12 Years Old, by Height

Restraint Type[1]	2009		2011		2009–2011 Change	
	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Percentage[2] of Children[3] Observed Using the Restraint Type	Standard Error	Change in Percentage Points	Confidence in a Change in Percentage[4]
Children Who Are at Most 36 Inches Tall						
Rear-Facing Car Seat	15%	2%	17%	2%	2	76%
Forward-Facing Car Seat	58%	2%	60%	2%	1	79%
High-Backed Booster Seat	9%	2%	8%	1%	-1	49%
Backless Booster Seat	4%	1%	4%	0%	0	15%
Seat Belt	8%	1%	5%	1%	-3	**98%**
No Restraint Observed	6%	1%	5%	1%	-1	42%
Children Who Are Between 37 and 53 Inches Tall						
Rear-Facing Car Seat	NA	NA	0%	0%	NA	NA
Forward-Facing Car Seat	16%	2%	20%	1%	4	76%
High-Backed Booster Seat	19%	3%	20%	1%	1	33%
Backless Booster Seat	13%	1%	17%	1%	4	**99%**
Seat Belt	39%	2%	33%	1%	-6	**100%**
No Restraint Observed	12%	3%	10%	1%	-2	55%
Children Who Are Between 54 and 56 Inches Tall						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	1%	1%	2%	1%	1	43%
High-Backed Booster Seat	2%	0%	5%	1%	3	**100%**
Backless Booster Seat	4%	1%	8%	1%	4	**98%**
Seat Belt	78%	3%	72%	2%	-6	**95%**
No Restraint Observed	15%	2%	13%	2%	-2	56%
Children Who Are Taller Than 56 Inches						
Rear-Facing Car Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Car Seat	NA	NA	NA	NA	NA	NA
High-Backed Booster Seat	1%	0%	1%	0%	0	88%
Backless Booster Seat	1%	1%	1%	0%	0	40%
Seat Belt	85%	2%	86%	2%	1	54%
No Restraint Observed	13%	2%	10%	1%	-3	86%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast-food chains.
[2] Estimates might not sum to totals due to rounding.
[3] Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast-food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window
[4] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

4. Demographic Results

Although its primary purpose is to estimate booster seat use among 4- to 7-year-olds, the NSUBS has information on the restraint use of all children under age 13 as well as information on race/ethnicity for occupants of all ages. This section reports some major demographic results of child restraint use from the 2011 NSUBS.

It should be noted that if a column corresponding to a data series or a data category is missing from a figure in this section, it means that there are not sufficient data to produce a reliable estimate for the data category. Also note that sometimes estimates might not sum to totals due to rounding.

Overall, restraint use for all children from birth to 12 years old increased from 89 percent in 2009 to 91 percent in 2011.

Age

The restraint use rates for children from birth to 12 months old, 1 to 3 years old, 4 to 7 years old and 8 to 12 years old in 2011 were 98 percent, 96 percent, 90 percent, and 88 percent respectively. Figure 14 compares the restraint use of children 0-12 years by age in 2009 and 2011. It should be noted that the restraint use in Figure 14 includes any type of restraint, even those that may be inappropriate for a child's age, weight and height.

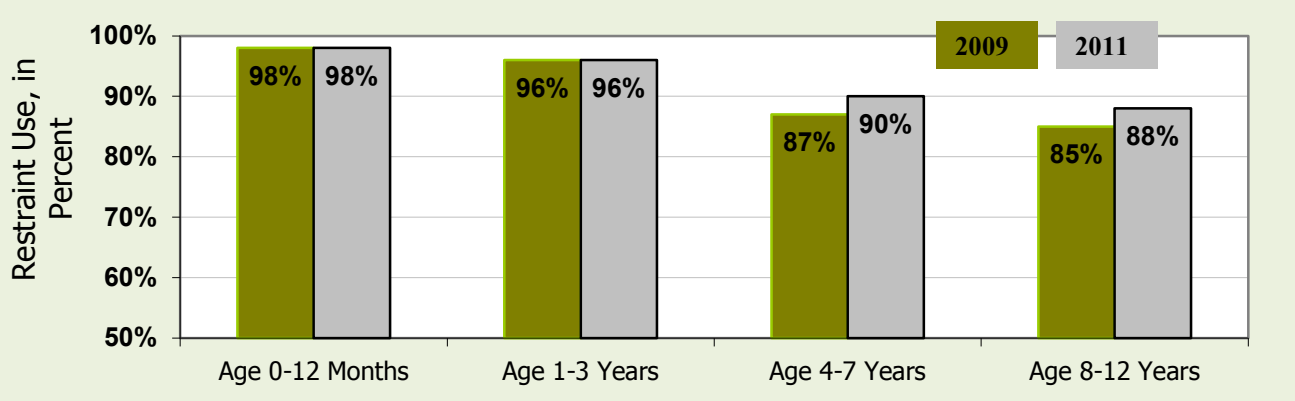

Figure 14: Child Restraint Use by Age and Year

Race and Ethnicity

Unlike the National Occupant Protection Use Survey (NOPUS) in which racial information of vehicle occupants is obtained by visual assessment, NSUBS data collectors conduct interviews to obtain race and ethnicity of passenger vehicle occupants including all child occupants under age 13.

Figure 15 shows the overall picture of child restraint use by race and ethnicity across all age groups.

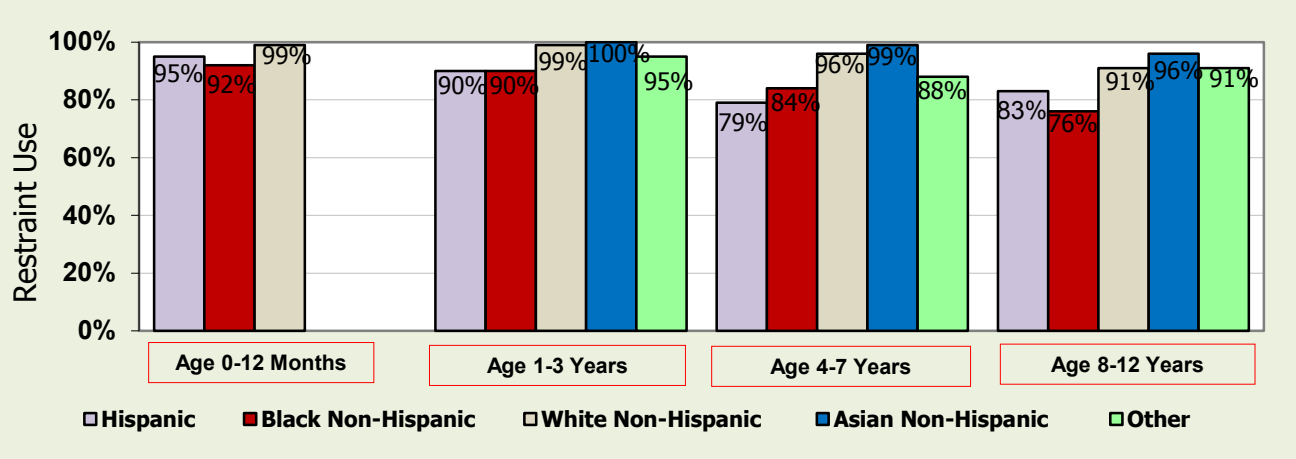

Figure 15: Child Restraint Use by Age and Race/Ethnicity in 2011

As shown in Figures 16, Hispanics had significantly lower restraint use rates than Non-Hispanics among children from birth to 12 years old.

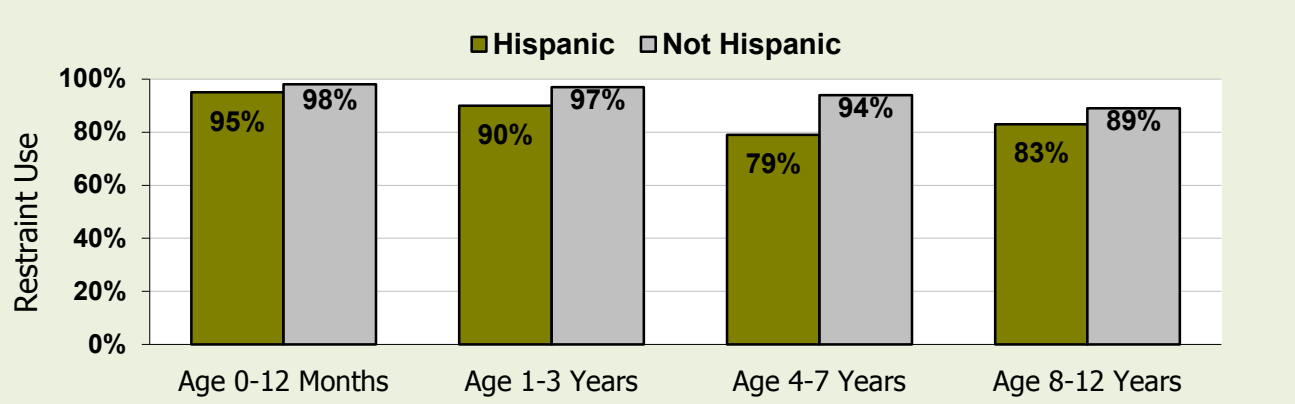

Figure 16: Child Restraint Use by Age and Hispanic Origin in 2011

The 2011 NSUBS also shows that restraint use among children 4 to 7 years old 4 to 7 years old who are Non-Hispanic White increased significantly to 96 percent in 2011 from 93 percent in 2009 (Table 8). Restraint use among Non-Hispanic Asian children age 8 to 12 years old increased significantly to 96 percent in 2011 from 80 percent in 2009 (Table 9).

Race and ethnicity data in the NSUBS is collected in accordance with Federal standards set forth by the Office of the Management and Budget (OMB). Specifically, the following 10 race/ethnicity categories are employed in the survey data collection:

Not Hispanic nor Latino and

- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or Pacific Islander
- White

Hispanic or Latino and

- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or Pacific Islander
- White

The NSUBS data collectors ask an adult occupant of a vehicle (usually the driver) to report the race and ethnicity of all occupants. Respondents reporting themselves (or others) to be multiracial are recorded by the data collector as such.

Because of insufficient numbers of children observed in certain race/ethnic groups, we report the NSUBS data using the following five collapsed race/ethnicity groups:

- Hispanic or Latino
- White Non-Hispanic
- Black or African-American Non-Hispanic
- Asian Non-Hispanic
- Other Non-Hispanic (which comprises people not of Hispanic origin who are American Indian, Alaska Native, Native Hawaiian or Pacific Islander)

For information on the OMB standards for the collection of race and ethnicity data in government surveys, please see "Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, Federal Register Notice, Volume 62, Number 210, pages 58781-58790, October 30, 1997," available at www.omb.gov.

Gender

Figure 17 shows that the restraint use rates among boys and girls across the age groups in 2011.

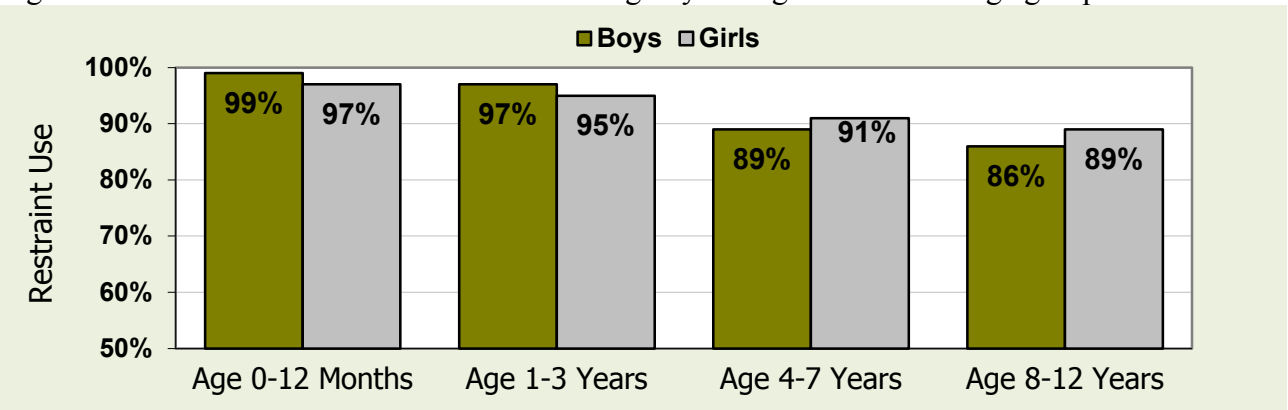

Figure 17: Child Restraint Use by Age and Gender in 2011

Table 6: Restraint Use Among Children From Birth to 12 Months Old

Subgroup of Children Age 0-12 Months[1,4]	2009		2011		2009–2011 Change	
	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[5]
All Children Age 0-12 Months	98%		98%		0	34%
Children Who Are						
Boys	97%	**91%**	99%	**90%**	2	72%
Girls	99%	**91%**	97%	**90%**	-2	87%
Children Who Are Reported to Be[4]						
White Non-Hispanic	99%	**96%**	99%	**97%**	0	39%
Black or African-American Non-Hispanic	98%	56%	92%	86%	-6	76%
Asian Non-Hispanic	NA	NA	NA	NA	NA	NA
Other Non-Hispanic	NA	NA	NA	NA	NA	NA
Hispanic or Latino	94%	**95%**	95%	87%	1	19%
Children Reported to Be[4]						
Hispanic or Latino	94%	**95%**	95%	87%	1	19%
Neither Hispanic nor Latino	99%	**95%**	98%	87%	-1	72%
Children Whose Height[4] Is Between						
0 and 36 Inches	98%	0%	98%	**95%**	0	34%
37 and 53 Inches	NA	NA	NA	NA	NA	NA
54 and 56 Inches	NA	NA	NA	NA	NA	NA
57 Inches or More	NA	NA	NA	NA	NA	NA
Children Who Weigh[4] Between						
0 and 19 Pounds	99%	83%	99%	**94%**	0	35%
20 and 40 Pounds	97%	83%	95%	**94%**	-2	61%
41 and 60 Pounds	NA	NA	NA	NA	NA	NA
61 Pounds or More	NA	NA	NA	NA	NA	NA
Children Surveyed at a						
Gas Station	97%	88%	94%	**92%**	-3	48%
Fast Food Restaurant	96%	**90%**	95%	80%	-1	3%
Day Care Center	100%	**98%**	99%	**98%**	-1	38%
Recreation Center	NA	NA	NA	NA	NA	NA

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
[2] Use of car seats (forward- or rear-facing), booster seats, and seat belts. Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.
[3] The statistical confidence that use in the occupant group (e.g., child occupants who are boys) is higher or lower than use in the corresponding complementary occupant group (e.g., child occupants who are girls). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100 percent.

[4] Race, ethnicity, height, weight, and age of children are obtained by asking an adult occupant.
[5] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 7: Restraint Use Among Children 1 to 3 Years Old

Subgroup of Children 1 to 3 Years Old[1,4]	2009		2011		2009–2011 Change	
	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[5]
All Children 1 to 3 Years Old	96%		96%		0	3%
Children Who Are						
Boys	96%	79%	97%	**98%**	2	35%
Girls	95%	79%	95%	**98%**	0	29%
Children Who Are Reported to Be[4]						
White Non-Hispanic	99%	**100%**	99%	**100%**	0	64%
Black or African-American Non-Hispanic	92%	**98%**	90%	**98%**	-2	48%
Asian Non-Hispanic	100%	**100%**	100%	**100%**	0	65%
Other Non-Hispanic	99%	**100%**	95%	56%	-4	86%
Hispanic or Latino	88%	**100%**	90%	**100%**	2	57%
Children Reported to Be[4]						
Hispanic or Latino	88%	**100%**	90%	**100%**	2	57%
Neither Hispanic nor Latino	98%	**100%**	97%	**100%**	-1	68%
Children Whose Height[4] Is Between						
0 and 36 Inches	96%	69%	97%	**99%**	1	59%
37 and 53 Inches	96%	69%	93%	**99%**	-3	**90%**
54 and 56 Inches	NA	NA	NA	NA	NA	NA
57 Inches or More	NA	NA	NA	NA	NA	NA
Children Who Weigh[4] Between						
0 and 19 Pounds	100%	**100%**	92%	**93%**	-8	**100%**
20 and 40 Pounds	96%	**98%**	96%	**97%**	0	21%
41 and 60 Pounds	86%	**99%**	94%	**91%**	7	**93%**
61 Pounds or More	NA	NA	NA	NA	NA	NA
Children Surveyed at a						
Gas Station	89%	**100%**	93%	**97%**	4	**98%**
Fast Food Restaurant	93%	**93%**	92%	**98%**	-1	67%
Day Care Center	97%	**100%**	97%	**100%**	0	5%
Recreation Center	99%	**100%**	98%	**98%**	0	27%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
[2] Use of car seats (forward- or rear-facing), booster seats, and seat belts. Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.
[3] The statistical confidence that use in the occupant group (e.g., child occupants who are boys) is higher or lower than use in the corresponding complementary occupant group (e.g., child occupants who are girls). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100 percent.
[4] Race, ethnicity, height, weight, and age of children are obtained by asking an adult occupant.
[5] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 8: Restraint Use Among Children 4 to 7 Years Old

Subgroup of Children 4 to 7 Years Old[1,4]	2009		2011		2009–2011 Change	
	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[5]
All Children 4 to 7 Years Old	87%		90%		3	57%
Children Who Are						
Boys	87%	53%	89%	**90%**	2	55%
Girls	87%	53%	91%	**90%**	4	57%
Children Who Are Reported to Be[4]						
White Non-Hispanic	93%	**99%**	96%	**100%**	3	**100%**
Black or African-American Non-Hispanic	83%	88%	84%	**99%**	1	19%
Asian Non-Hispanic	97%	**100%**	99%	**100%**	2	59%
Other Non-Hispanic	94%	**98%**	88%	72%	-6	83%
Hispanic or Latino	74%	**96%**	79%	**100%**	5	33%
Children Reported to Be[4]						
Hispanic or Latino	74%	**96%**	79%	**100%**	5	33%
Neither Hispanic nor Latino	91%	**96%**	94%	**100%**	3	**100%**
Children Whose Height[4] Is Between						
0 and 36 Inches	85%	**90%**	87%	**98%**	2	29%
37 and 53 Inches	88%	80%	91%	**98%**	3	62%
54 and 56 Inches	94%	**96%**	89%	68%	-5	85%
57 Inches or More	79%	80%	91%	58%	12	74%
Children Who Weigh[4] Between						
0 and 19 Pounds	NA	NA	NA	NA	NA	NA
20 and 40 Pounds	90%	**98%**	91%	67%	1	9%
41 and 60 Pounds	84%	**98%**	91%	78%	7	82%
61 Pounds or More	91%	85%	87%	**93%**	-4	**91%**
Children Surveyed at a						
Gas Station	78%	**100%**	86%	**97%**	8	**98%**
Fast Food Restaurant	84%	86%	83%	**95%**	-1	1%
Day Care Center	89%	89%	94%	**99%**	5	49%
Recreation Center	90%	79%	94%	**95%**	4	**93%**

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
[2] Use of car seats (forward- or rear-facing), booster seats, and seat belts. Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.
[3] The statistical confidence that use in the occupant group (e.g., child occupants who are boys) is higher or lower than use in the corresponding complementary occupant group (e.g., child occupants who are girls). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100 percent.
[4] Race, ethnicity, height, weight, and age of children are obtained by asking an adult occupant.
[5] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

Table 9: Restraint Use Among Children 8 to 12 Years Old

Subgroup of Children 8 to 12 Years Old[1,4]	2009		2011		2009–2011 Change	
	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Estimated Restraint Use[2]	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[5]
All Children Age 8-12	85%		88%		3	74%
Children Who Are						
Boys	86%	70%	86%	**92%**	0	4%
Girls	85%	70%	89%	**92%**	4	**98%**
Children Who Are Reported to Be[4]						
White Non-Hispanic	91%	**100%**	91%	**100%**	0	29%
Black or African-American Non-Hispanic	75%	**100%**	76%	**100%**	1	7%
Asian Non-Hispanic	80%	79%	96%	**100%**	16	**98%**
Other Non-Hispanic	90%	85%	91%	85%	1	19%
Hispanic or Latino	79%	**100%**	83%	**96%**	4	62%
Children Reported to Be[4]						
Hispanic or Latino	79%	**100%**	83%	**96%**	4	62%
Neither Hispanic nor Latino	88%	**100%**	89%	**96%**	1	61%
Children Whose Height[4] Is Between						
0 and 36 Inches	NA	NA	NA	NA	NA	NA
37 and 53 Inches	85%	60%	87%	85%	2	38%
54 and 56 Inches	83%	81%	87%	81%	4	78%
57 Inches or More	87%	88%	90%	**98%**	3	80%
Children Who Weigh[4] Between						
0 and 19 Pounds	NA	NA	NA	NA	NA	NA
20 and 40 Pounds	NA	NA	NA	NA	NA	NA
41 and 60 Pounds	87%	76%	88%	63%	1	15%
61 Pounds or More	85%	78%	87%	69%	2	84%
Children Surveyed at a						
Gas Station	77%	**99%**	85%	**92%**	8	**99%**
Fast Food Restaurant	86%	59%	84%	**96%**	-2	32%
Day Care Center	87%	79%	93%	**99%**	6	85%
Recreation Center	89%	84%	91%	88%	2	58%

[1] Survey data are obtained on children from birth to 12 years old in passenger vehicles at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
[2] Use of car seats (forward- or rear-facing), booster seats, and seat belts. Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.
[3] The statistical confidence that use in the occupant group (e.g., child occupants who are boys) is higher or lower than use in the corresponding complementary occupant group (e.g., child occupants who are girls). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100 percent.
[4] Race, ethnicity, height, weight, and age of children are obtained by asking an adult occupant.
[5] The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

5. Occupants Traveling With Children

Although its primary purpose is to estimate booster seat use among 4- to 7-year-olds, the NSUBS also collects information on the race and ethnicity of other occupants traveling with children. This section reports the restraint use, by major race and ethnicity results, of occupants traveling with children from the 2011 NSUBS.

The NSUBS data collectors approach passenger vehicles appearing to have child occupants under age 13, observe the restraint use of up to nine occupants in the first three rows of seats, and conduct interviews to obtain the race and ethnicity of all occupants. The approximate ages of non-child occupants (expressed as an age range, such as 16-24 years) and the genders of all occupants are subjectively assessed by the data collectors. Since race and ethnicity of all occupants are obtained through interviews instead of subjective assessment of data collectors as in NOPUS and most other observational surveys, NSUBS provides more accurate estimates on race and ethnicity of passenger vehicles occupants. However, it should be noted that by design and necessity, the NSUBS survey only collects restraint use of vehicle occupants who are transporting or riding with children under age 13 to a restricted set of sites such as gas stations, day care centers, recreation centers, and restaurants in five fast food chains, not of all vehicle occupants on the road.

The major findings from the 2011 survey on the demographic characteristics of occupants traveling with children include the following:

- Seat belt use continued to be statistically significantly lower for Hispanics, and for non-Hispanic Black or African Americans, than other race and ethnicity groups among passenger vehicle occupants age 25-69 years traveling with children (Figure 18 and Figure 19).
- Seat belt use continued to be statistically significantly higher for non-Hispanic Asians, and for non-Hispanic Whites, than other race and ethnicity groups among passenger vehicle occupants age 25-69 years traveling with children (Figure 18).
- Among occupants age 25-69 years, restraint use for non-Hispanic occupants increased significantly from 88 percent in 2009 to 91 percent in 2011; restraint use for Asian non-Hispanic occupants increased significantly from 92 percent in 2009 to 97 percent in 2011 (Table 10).
- Among occupants age 13-15 years, restraint use for non-Hispanic occupants increased significantly from 70 percent in 2009 to 79 percent in 2011; restraint use for White non-Hispanic occupants increased significantly from 73 percent in 2009 to 86 percent in 2011 (Table 10).

It should be noted that if a column corresponding to a data series or a data category is missing from a figure in this section, it means that there are not sufficient data to produce a reliable estimate for the data category. Also note that sometimes estimates might not sum to totals due to rounding.

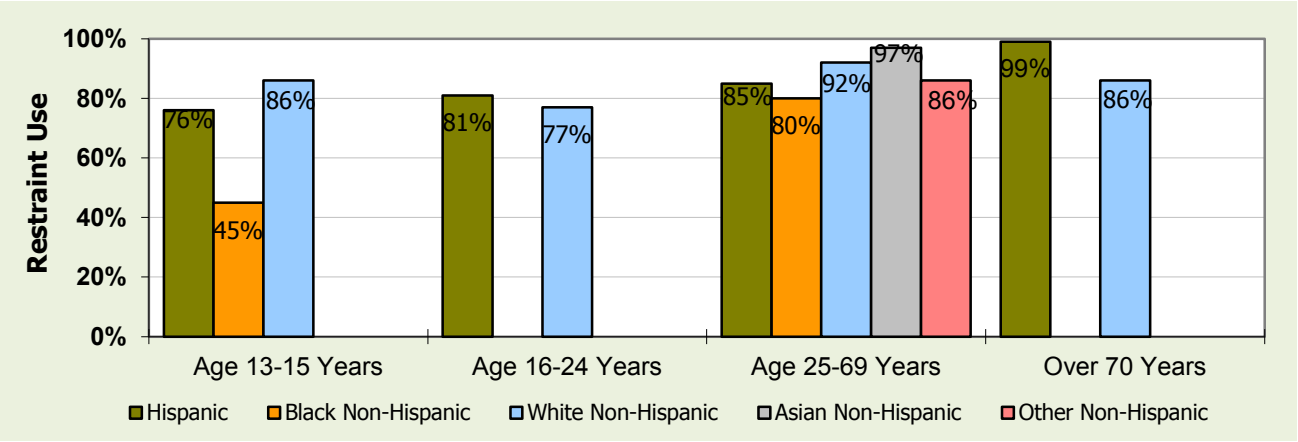

Figure 18: Restraint Use by Age and Race/Ethnicity for Occupants Traveling With Children in 2011

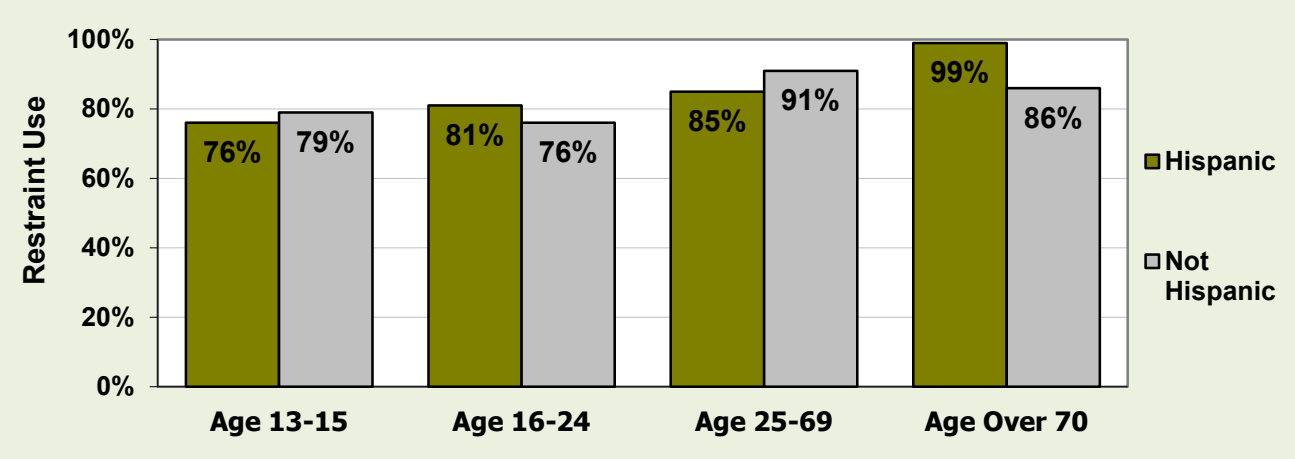

Figure 19: Restraint Use by Age and Hispanic Origin for Occupants Traveling With Children in 2011

Table 10: Restraint Use of Occupants Traveling With Children by Age and Race/Ethnicity

Subgroup of Occupants[1]	2009			2011			2009–2011 Change	
	Estimated Restraint Use[2]	Standard Error	Confidence That Use Is High or Low in Group[3]	Estimated Restraint Use[2]	Standard Error	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[4]
Occupants Age 13-15 Years								
Occupants Reported to Be[5]								
White Non-Hispanic	73%	6%	**90%**	86%	4%	**100%**	13	**99%**
Black or African-American Non-Hispanic	61%	12%	77%	45%	14%	**100%**	-16	79%
Asian Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Other Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic or Latino	66%	4%	80%	76%	12%	68%	10	63%
Occupants Reported to Be[5]								
Hispanic or Latino	66%	4%	80%	76%	12%	68%	10	63%
Neither Hispanic nor Latino	70%	4%	80%	79%	5%	68%	9	**98%**
Occupants Age 16-24 Years								
Occupants Reported to Be[5]								
White Non-Hispanic	80%	6%	84%	77%	7%	58%	-3	35%
Black or African-American Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Asian Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Other Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic or Latino	92%	5%	**96%**	81%	7%	79%	-11	89%
Occupants Reported to Be[5]								
Hispanic or Latino	92%	5%	**96%**	81%	7%	79%	-11	89%
Neither Hispanic nor Latino	80%	5%	**96%**	76%	6%	79%	-4	48%
Occupants Age 25-69 Years								
Occupants Reported to Be[5]								
White Non-Hispanic	90%	1%	**100%**	92%	1%	**100%**	2	88%
Black or African-American Non-Hispanic	77%	3%	**100%**	80%	5%	**100%**	3	55%
Asian Non-Hispanic	92%	2%	**100%**	97%	2%	**100%**	5	**100%**
Other Non-Hispanic	76%	6%	**98%**	86%	5%	85%	10	86%
Hispanic or Latino	84%	2%	**99%**	85%	4%	**99%**	1	20%
Occupants Reported to Be[5]								
Hispanic or Latino	84%	2%	**99%**	85%	4%	**99%**	1	20%
Neither Hispanic nor Latino	88%	1%	**99%**	91%	1%	**99%**	3	**99%**
Occupants Over 70 Years								
Occupants Reported to Be[5]								
White Non-Hispanic	89%	5%	62%	86%	9%	**98%**	-3	32%
Black or African-American Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Asian Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Other Non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic or Latino	NA	NA	NA	99%	2%	**99%**	NA	NA
Occupants Reported to Be[5]								
Hispanic or Latino	NA	NA	NA	99%	2%	**99%**	NA	NA
Neither Hispanic nor Latino	90%	4%	68%	86%	9%	**99%**	-4	35%

1 Survey data are obtained on drivers and passengers of passenger vehicles appearing to contain a child under 13 years old at a nationwide probability sample of gas stations, day care centers, recreation centers, and restaurants in five fast food chains.
2 Restraint use is observed by trained data collectors prior to or just as the vehicle comes to a stop, except in the case of observation at fast food drive-through lanes, where restraint use is observed prior to the vehicle reaching the drive-through window.
3 The statistical confidence that use in the occupant group (e.g., occupants who are Hispanic or Latino) is higher or lower than use in the corresponding complementary occupant group (e.g., occupants who are neither Hispanic nor Latino). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100.0 percent.
4 The degree of statistical confidence that the 2011 use rate is different from the 2009 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
5 Race and ethnicity of all occupants are obtained by interviewing an adult occupant in the vehicle (usually the driver).
Note: some estimates have large standard errors, e.g., standard error for belt use among Non-Hispanic Blacks or Africans age 13-15 years was 14 percent in 2011, which means that the margin of error for this estimate was +/- 28 percentage points, and thus the estimate could be as low as 17 percent.
NA: Data not sufficient to produce a reliable estimate.
Source: The National Survey of the Use of Booster Seats, NHTSA's National Center for Statistics and Analysis, 2009, 2011

6. NSUBS Methodology

This section discusses briefly the sample design, sample size, data collection, and estimation used in the 2011 NSUBS. For more details on the methodology of the survey, refer to "The 2006 National Survey of the Use of Booster Seats – Methodology Report" (Glassbrenner, 2009) that is available at www-nrd.nhtsa.dot.gov/Pubs/811111.PDF.

Sample Design

The NSUBS uses a complex multi-stage probability sample. The primary sampling unit (PSU) sampling frame consists of the 50 sampled PSUs from the National Occupant Protection Use Survey (NOPUS) of 2005, the year when the NSUBS was designed. For more information on the NOPUS PSUs, refer to "The Safety Belt and Helmet Use in 2002 – Overall Results" (Glassbrenner, 2002). As a first step to select the NSUBS PSUs, 16 NOPUS PSUs were selected from the above sampling frame: two with certainty (i.e., probability one) and 14 using equal probability systematic sampling. Then, each of the selected 16 NOPUS PSUs was partitioned into county groups (i.e., a county or two neighboring counties) resulting in a total of 43 county groups. A single county group was selected from each of the 16 partitioned NOPUS PSUs using probability proportional to size (PPS) sampling with the population of children under 5 based on the 2000 Census as a measure of size. The selected 16 county groups form the sampled PSUs of the NSUBS.

The site sampling frame consists of gas stations, recreation centers, day care centers, and restaurants in five fast food chains in the 16 sampled NSUBS PSUs. These four site types make four strata. The 2011 NSUBS selected 700 sites using stratified systematic sampling from the above sampling frame.

Sample Size

Due to the nature of the survey, the NSUBS data collectors have to obtain cooperation from the sample sites. Cooperation with recreation centers and day care centers is obtained in advance by visiting these sites via sending letters requesting cooperation followed by phone calls to secure cooperation. For fast food restaurants and gas stations, trained data collectors approach each establishment in person to secure cooperation.

For the 2011 NSUBS, a total of 405 sites of the 700 sampled sites gave permission for the survey to be conducted on their premises. The cooperation rate was 58 percent. Of these 405 data collection sites, 158 were gas stations, 123 fast food restaurants, 93 day care centers, and 31 recreation centers.

Table 11 shows the observed sample size of the 2011 NSUBS. A total of 18,284 occupants were observed in the 6,350 vehicles at the 405 data collection sites. Of these observed occupants, 9,849 were children age 0-12 years. The data on 8,050 children from birth to 12 years old were obtained by interviews with adult occupants who were traveling together with those children.

Table 11: Sites, Vehicles, Occupants, and Children From Birth to 12 Years Old in NSUBS

Numbers of	2009	2011	Percentage Change
Data Collection Sites	433	405	-6%
Vehicles Observed	6,033	6,350	5%
Occupants Observed	17,793	18,284	3%
Children From Birth to 12 Years Old Observed	9,471	9,849	4%
Children From Birth to 12 Years Old Interviewed*	7,284	8,050	11%

* Data obtained by interview with an adult occupant.

Data Collection

The 2011 NSUBS data collection was conducted between 7 a.m. and 6 p.m. during the period from July 14, 2011, to August 1, 2011.

Trained data collectors approach passenger vehicles appearing to have child occupants under age of 13; observe the restraint use of up to nine occupants in the first three rows of seats; and conduct interviews to obtain the race and ethnicity of all occupants and the heights, weights, and ages of child occupants appearing to be under age 13. The approximate ages of other occupants (expressed as an age range, such as 16-24 years) and the genders of all occupants are subjectively assessed by the data collectors.

Note that the data on race/ethnicity in the NSUBS are collected in compliance with Office Management Budget (OMB) standards. NHTSA obtained approval to collect race/ethnicity data for the 2006-2009 surveys under OMB clearance number 2127-0644. The notice of OMB review can be found in the Federal Register, Volume 71, Number 30, page 7824, February 14, 2006.

In order to capture restraint use before children unfasten the restraints, data collectors observe restraint use prior to or just as the vehicle comes to a stop except fast food drive-through lanes. In that case, restraint use is observed prior to the vehicle reaching the drive-through window.

In order to reach as wide an audience as possible, the NSUBS uses some Spanish-speaking data collectors.

Estimation

Let C denote the characteristic of occupants and R denote restraint type. The NSUBS estimates the rate of occupants restrained in restraint type R among the occupants having characteristic C by the following formula,

$$\text{Restraint Use}_{\text{CR}} = \frac{\sum_{i,j,k} w_{ijk} F_{ijk} CR_{ijk}}{\sum_{i,j,k} w_{ijk} F_{ijk} C_{ijk}},$$

where w_{ijk} and F_{ijk}, respectively, denote the base weight and the product of various weight adjustment factors at the site k in the stratum j of the PSU i. CR_{ijk} stands for the number of observed occupants having characteristic C and restrained in restraint type R and C_{ijk} denotes the number of observed occupants having characteristic C at the site k in the stratum j of the PSU i. For example, the booster seat use among 4- to 7- year- old children is estimated using the above formula, where CR_{ijk} is the number of observed children age 4 to 7 years in booster seat and C_{ijk} is the number of observed children age 4 to 7 years at the site k in the stratum j of the PSU i.

Note that the NSUBS site sampling frame is restricted to the four site types: gas stations, day care centers, recreation centers, and restaurants in five fast food chains as described in the sample design sub-section. Since the NSUBS uses a probability sample of these site types, the NSUBS estimates are national representative of children who frequently visit these types of sites. For instance, 47 percent booster seat use among 4- to 7-year-old children as shown in Figure 1 means that among children in this age range who were taken by passenger vehicles to gas stations, day care centers, recreation centers, or fast food restaurants in 2011, 47 percent were in booster seats.

Please note that NHTSA employs the following suppression rule for the NSUBS publications:

Use estimates whose numerator is based on fewer than five persons observed, whose denominator is based on fewer than 30 persons observed, or that are not statistically different from 0% use (i.e. the standard error is at least half the point estimate) are to be suppressed. These should be reported as "NA" in publications, and any related estimates (i.e., change in use and confidence estimates) should also be suppressed.

This same rule was used for the NOPUS survey.

Please also note that suppressed estimates do not appear in the figures throughout this report (displayed as missing columns in the figures).

7. References

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Anton's Law, 114 STAT. 1800 Public Law 107-318, 107th Cong. (2002).

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Appendix: Definitions and Categories in NSUBS

In the survey, an occupant is considered to be "restrained" if the occupant meets any of the following five definitions:

Rear-Facing Car Seat - The child occupant is in a seat that sits on top of the vehicle seat in such a way that the child faces the rear of the vehicle, and the harness straps are across the child's front. The harness straps might be secured or not.

Forward-Facing Car Seat – The child occupant is in a seat that sits on top of the vehicle seat in such a way that the occupant faces the front of the vehicle, and with harness straps that are across the child's front.

High-Backed Booster Seat - The child occupant is in a seat with a seat back that sits on top of the vehicle seat, and has a seat belt across the front of the child's body, whether lap or lap/shoulder. No harness is in use.

Backless Booster Seat - The child occupant is sitting on a platform with no seat back that sits on top of the vehicle seat, and has a seat belt across the front of the child's body, whether lap or lap/shoulder. No harness is in use.

Seat Belt – The occupant is sitting on the vehicle seat and the seat belt is across front of the body (includes lap belts).

Unrestrained – All other cases.

Although the NSUBS collects children's individual ages, heights, and weights, we combine these results into categories in order to produce reliable estimates.

Age categories

The NSUBS uses the following age categories: birth to 12 months, 1 to 3 years old, 4 to 7, 8 to 12, 13 to 15, 16 to 24, 25 to 69, and 70 and older. The choice of these age groups is motivated by consistency with the NOPUS survey, which uses the age groups birth to 12 months, 1 to 3 years old, 4 to 7, 8 to 12, 13 to 15, 16 to 24, 25 to 69, and 70 and older, combined with taking into account that the NSUBS collects interview data on children from birth to12 years old.

Height and weight categories

The NSUBS uses the following height categories: under 36 inches tall, 37 to 53 inches, 54 to 56 inches, and 57 inches or taller. The survey uses the weight categories 0 to 19 pounds, 20 to 40 pounds, 41 to 60 pounds, and 61 pounds or heavier. These categories were chosen because they are used in NHTSA's old recommendations for the choice of restraint use for children.

Regional categories

The 16 PSUs selected in the NSUBS constitute a probability sample of PSUs (counties and groups thereof) in the United States. The data is not sufficient to produce State-by-State results. However NSUBS can and does produce regional estimates using the following categories.

Northeast: ME, VT, NH, MA, RI, CT, NY, PA, NJ
Midwest: MI, OH, IN, IL, WI, MN, IA, MO, KS, NE, SD, ND
South: WV, MD, DE, VA, KY, TN, NC, SC, GA, FL, AL, MS, AR, LA, OK, TX, DC
West: AK, WA, OR, CA, NV, ID, UT, AZ, NM, CO, WY, MT, HI

These definitions of the four NSUBS regions are the same regional definitions used in the NOPUS survey. The NSUBS regional categories were chosen to be the same as the NOPUS categories for the purpose of consistency.

Race and ethnicity categories

Please consult Section 4 “Demographic Results” for the classifications of race and ethnicity in NSUB.

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