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The 2009 National Survey of the Use of Booster Seats

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Abstract

The report presents results from the 2009 National Survey of the Use of Booster Seats (NSUBS), the only probability-based nationwide child restraint survey in the United States that observes restraint use and interviews an adult occupant to collect race, ethnicity, and other data. The NSUBS is conducted by the National Center for Statistics and Analysis, National Highway Traffic Safety Administration. The 2009 NSUBS found that 41 percent of 4- to 7-year-old children were restrained in booster seats in 2009 as compared to 43 percent in 2008. The restraint use for children 1 to 3 increased from 92 percent to 96 percent while the restraint use rate for all children under 13 remained unchanged at 89 percent. There was some improvement in restraint use by non-Hispanic Black or African-American children. Restraint use by Hispanic children was significantly lower than non-Hispanic children across all age groups.

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Executive Summary

The report presents results from the 2009 National Survey of the Use of Booster Seats (NSUBS). NSUBS is the only probability-based nationwide child restraint survey in the United States that observes restraint use and interviews an adult occupant to collect data such as the race and ethnicity of all occupants in the vehicle. The NSUBS is conducted by the National Center for Statistics and Analysis, National Highway Traffic Safety Administration.

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 2009 is the fourth year for the NSUBS. The next NSUBS will be conducted in 2011.

The primary purpose of the NSUBS is to estimate booster seat use. In addition, the survey provides restraint use estimates for all children under 13, race and ethnicity breakouts of restraint use among all occupants in a vehicle, and estimates of the extent to which children are prematurely graduated to restraint types that are inappropriate for their heights or weights.

The following are some major findings from the 2009 NSUBS:

- Booster seat use among 4- to 7-year-old children stood at 41 percent in 2009, statistically unchanged from the prior year's rate of 43 percent.
- The appropriate restraint system for 4- to 7-year-old children is either a forward-facing safety seat or a booster seat, depending on the child's height and weight. However, the NSUBS found that 45 percent of children 4 to 7 in the United States were not being properly protected – 32 percent in seat belts and 13 percent unrestrained.
- The restraint use for children 1 to 3 increased from 92 percent in 2008 to 96 percent in 2009 while the restraint use rate for all children under 13 remained unchanged at 89 percent.
- There was some improvement in restraint use by non-Hispanic Black or African-American children. In particular, the restraint use for non-Hispanic Black or African-American children 1 to 3 increased from 74 percent in 2008 to 92 percent in 2009.
- The restraint use by Hispanic children was significantly lower than non-Hispanic children across all age groups.
- There were still some indications of premature graduation to restraint types that are not appropriate for children's heights and weights.
- 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 25 to 69 traveling with children.
- 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 25 to 69 traveling with children.

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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 survey of booster seat use in the United States that uses a probability sample and collects 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 the children who are conveyed by passenger vehicle 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 2008, the total number of traffic crash fatalities among children 4 to 7 has reduced to around 320 as compared to 570 in 2000 (NHTSA, 2009).

The 2009 NSUBS was conducted from July 17 to August 1, 2009. The survey estimates were computed based on the results of 9,471 children observed in 6,033 vehicles at 433 observation sites across the country.

The purpose of this report is to present results from the 2009 NSUBS. In previous years (2006 to 2008), NHTSA presented the results from the survey through three or four Research Notes, each of which covered one specific topic. This consolidated report is an attempt to pool together as many results as possible from the 2009 survey for the convenience of data users. 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: child safety 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.

2. The National Estimates of Booster Seat Use

Who Should Be in Booster Seats?

NHTSA's official guidance on booster seats is: Once children outgrow their forward-facing seats (usually 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 4'9" tall).[1]

The National Estimates

The 2009 NSUBS found that booster seat use among 4- to 7-year-old children stood at 41 percent in 2009, statistically unchanged from 43 percent in 2008 (Figure 1).

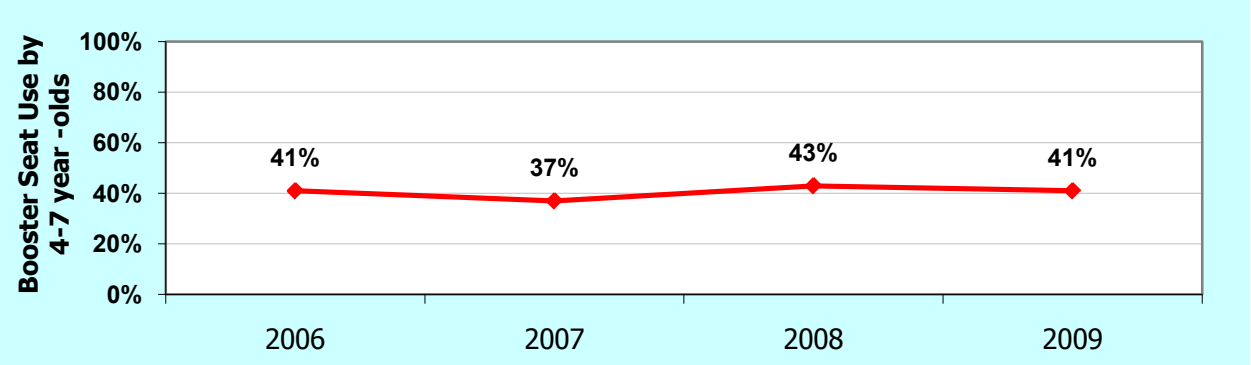

Figure 1: Booster Seat Use, National Estimates

The appropriate restraint system for children 4 to 7 is either a forward-facing safety seat or a booster seat, depending on the child's height and weight. However, the NSUBS found that in 2009, 41 percent of children in this age group were using booster seats (whether high-backed or backless), 14 percent were restrained in child safety seats, 32 percent were in seat belts, and 13 percent were unrestrained (Figure 2). These results indicate that as many as 45 percent (32% in seat belts and 13 percent unrestrained) of children 4 to 7 in the United States were not being properly protected.

[1] For more details, see NHTSA's "Child Passenger Safety: A Parent's Primer," DOT HS 809 953, at http://www.nhtsa.gov/people/injury/childps/boosterseatprogress/index.htm or at http://www.nhtsa.gov/people/injury/childps/boosterseatprogress/images/BSProgressReport.pdf

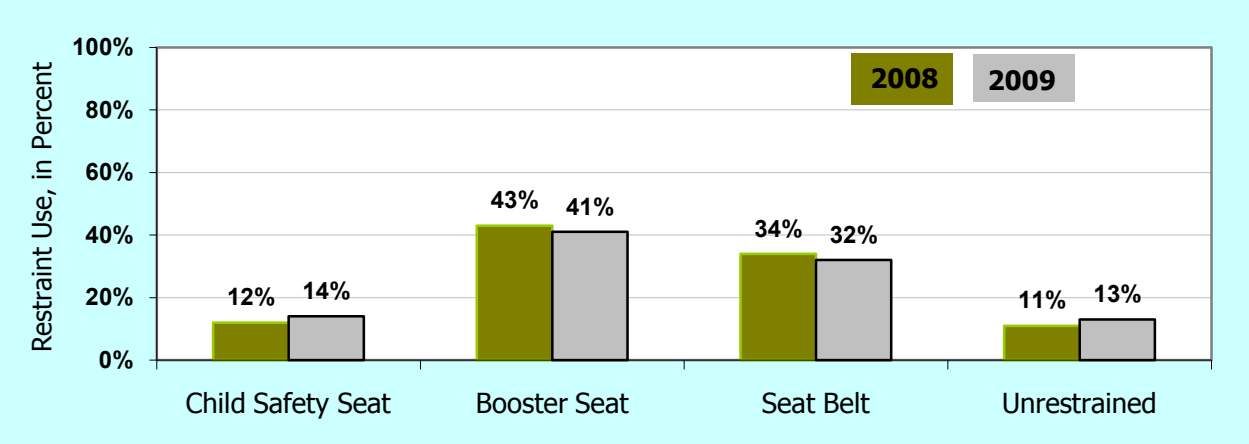

Figure 2: Restraint Use for Children 4 to 7 Years Old

The 2009 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 2009, 46 percent of children age 4 and 5 were restrained in booster seats while only 36 percent of children age 6 and 7 were in booster seats. Figure 3 and Figure 4 show the distributions of restraint use for these two sub-age groups.

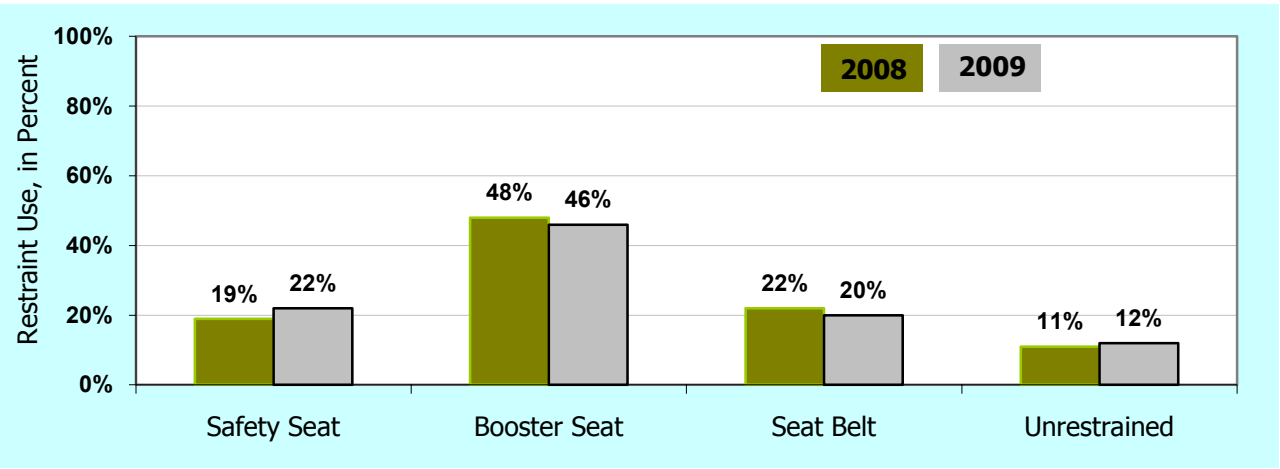

Figure 3: Restraint Use for Children 4 and 5 Years Old

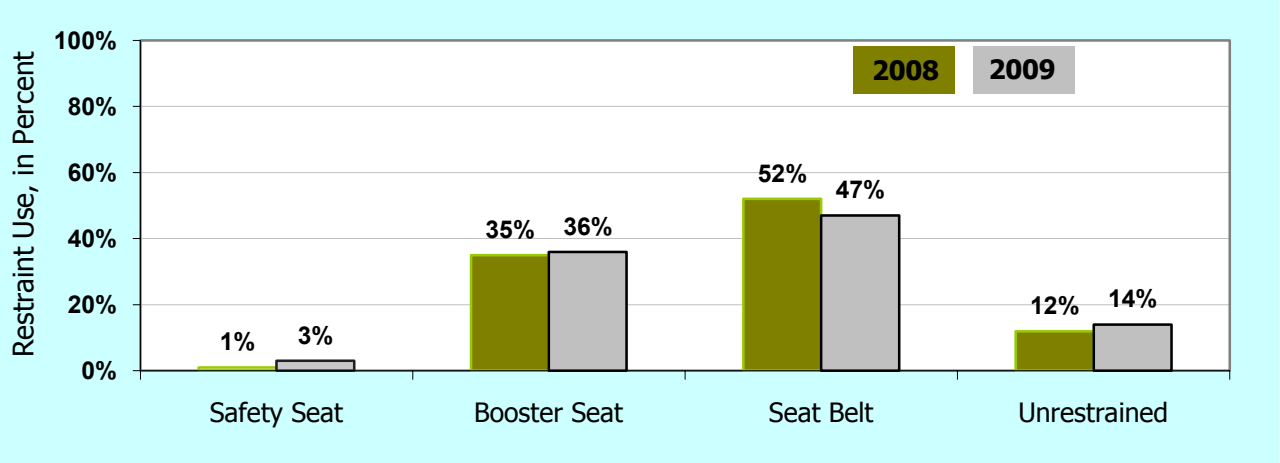

Figure 4: Restraint Use for Children 6 and 7 Years Old

Evidence of Premature Graduation to Booster Seats

A review of child safety seats on the market finds 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 will be considered in applying the NHTSA recommendation to assess the survey results in this report.

The booster seat use estimates presented in Table 1 and Table 2 show some evidence of premature graduation. For instance, 22 percent of children12 and under who weigh between 20 and 40 pounds were using booster seats in 2009. However, most forward-facing safety seats allow weights above 40 pounds. We note however that some booster seats have lower weight limits in the 20- to 40-pound range.

Likewise, 13 percent of children12 and under who were at most 36 inches tall were using booster seats in 2009. However, most forward-facing safety seats allow heights above 36 inches. Therefore, many (if not most) of these children should have been in forward-facing safety seats (unless they have outgrown the seat's weight limits).

The NSUBS provides a rich data source for information on the premature graduation of children12 and under to restraint types that are inappropriate for their heights or weights. Please see Section 4 "Premature Graduation" for detailed discussions on this topic.

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

Booster Seat Type[1]	2008		2009		2008-2009 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 Age 1 to 3 Years Old						
Booster Seat (Overall)	13%	4%	13%	2%	0	4%
High-Backed Booster Seat	11%	4%	11%	2%	0	1%
Backless Booster Seat	3%	1%	3%	0%	0	13%
Children 4 to 7 Years Old						
Booster Seat (Overall)	43%	4%	41%	3%	-2	36%
High-Backed Booster Seat	26%	3%	24%	3%	-2	47%
Backless Booster Seat	17%	2%	17%	2%	0	4%
Children Age 8 to 12 Years Old						
Booster Seat (Overall)	6%	1%	5%	1%	-1	43%
High-Backed Booster Seat	2%	1%	2%	1%	0	59%
Backless Booster Seat	3%	1%	3%	0%	0	3%
Children 12 and Under Years Who Weigh Between 20 and 40 Pounds						
Booster Seat (Overall)	21%	4%	22%	4%	1	7%
High-Backed Booster Seat	15%	3%	16%	4%	1	10%
Backless Booster Seat	6%	1%	6%	1%	0	9%
Children 12 and Under Years Who Weigh Between 41 and 60 Pounds						
Booster Seat (Overall)	40%	3%	36%	3%	-4	82%
High-Backed Booster Seat	23%	2%	18%	2%	-5	**94%**
Backless Booster Seat	17%	3%	17%	2%	0	4%
Children 12 and Under Years Who Weigh More than 60 Pounds						
Booster Seat (Overall)	7%	1%	7%	1%	0	37%
High-Backed Booster Seat	3%	1%	3%	1%	0	2%
Backless Booster Seat	4%	1%	4%	0%	0	58%
Children 12 and Under Years Who Are At Most 36 Inches Tall						
Booster Seat (Overall)	14%	2%	13%	2%	-1	25%
High-Backed Booster Seat	10%	2%	9%	2%	-1	38%
Backless Booster Seat	4%	1%	4%	1%	0	24%
Children 12 and Under Years Who Are Between 37 and 53 Inches Tall						
Booster Seat (Overall)	34%	4%	32%	3%	-2	33%
High-Backed Booster Seat	21%	2%	19%	3%	-2	34%
Backless Booster Seat	13%	2%	13%	1%	0	7%
Children 12 and Under Years Who Are Between 54 and 56 Inches Tall						
Booster Seat (Overall)	12%	4%	6%	1%	-6	**99%**
High-Backed Booster Seat	4%	2%	2%	0%	-2	**98%**
Backless Booster Seat	8%	3%	4%	1%	-4	**94%**
Children 12 and Under Years Who Are Taller than 56 Inches						
Booster Seat (Overall)	3%	1%	2%	1%	-1	75%
High-Backed Booster Seat	2%	1%	1%	0%	-1	89%
Backless Booster Seat	1%	1%	1%	1%	0	22%

[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 children12 and under 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 2009 use rate is different from the 2008 rate. Confidences that meet or exceed 90 percent are formatted in boldface type.
Note: Booster seat use rates for children under 12 months 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, 2008-2009

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

Restraint Type[1]	2008		2009		2008-2009 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 Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	19%	5%	22%	3%	3	58%
Booster Seat (Overall)	48%	5%	46%	4%	-2	43%
High-Backed Booster Seat	32%	3%	31%	4%	-1	9%
Backless Booster Seat	17%	2%	15%	2%	-2	63%
Seat Belt	22%	6%	20%	1%	-2	47%
No Restraint Observed	11%	2%	12%	4%	1	23%
Children 6 and 7 Years Old						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	1%	0%	3%	1%	2	**96%**
Booster Seat (Overall)	35%	5%	36%	4%	1	21%
High-Backed Booster Seat	17%	2%	16%	2%	-1	43%
Backless Booster Seat	18%	3%	20%	3%	2	53%
Seat Belt	52%	5%	47%	2%	-5	**97%**
No Restraint Observed	12%	2%	14%	3%	2	40%
Children 4 to 7 Years Old						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	12%	3%	14%	2%	2	55%
Booster Seat (Overall)	43%	4%	41%	3%	-2	36%
High-Backed Booster Seat	26%	3%	24%	3%	-2	47%
Backless Booster Seat	17%	2%	17%	2%	0	4%
Seat Belt	34%	5%	32%	2%	-2	57%
No Restraint Observed	11%	1%	13%	3%	2	33%

[1] Survey data are obtained on children 0-12 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 2009 use rate is different from the 2008 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, 2008-2009

3. Demographic Results

The NSUBS, although its primary purpose is to estimate booster seat use among 4- to 7-year-olds, has information on the restraint use of all children under 13 and on race/ethnicity results on restraint use among occupants of all ages. This section reports some major demographic results of child restraint use from the 2009 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.

Age

In 2009, although the restraint use for all children 12 and under remained unchanged at 89 percent, the restraint use for children 1 to 3 years old increased significantly to 96 percent from 92 percent in 2008. The restraint use rates for children under 12 months, 1 to 3, 4 to 7, and 8 to 12 in 2009 were 98 percent, 96 percent, 87 percent, and 85 percent respectively. Figure 5 compares the restraint use of children 12 and under by age in 2008 and 2009. It should be noted that the restraint use in Figure 5 includes any type of restraint, even those that are age-inappropriate.

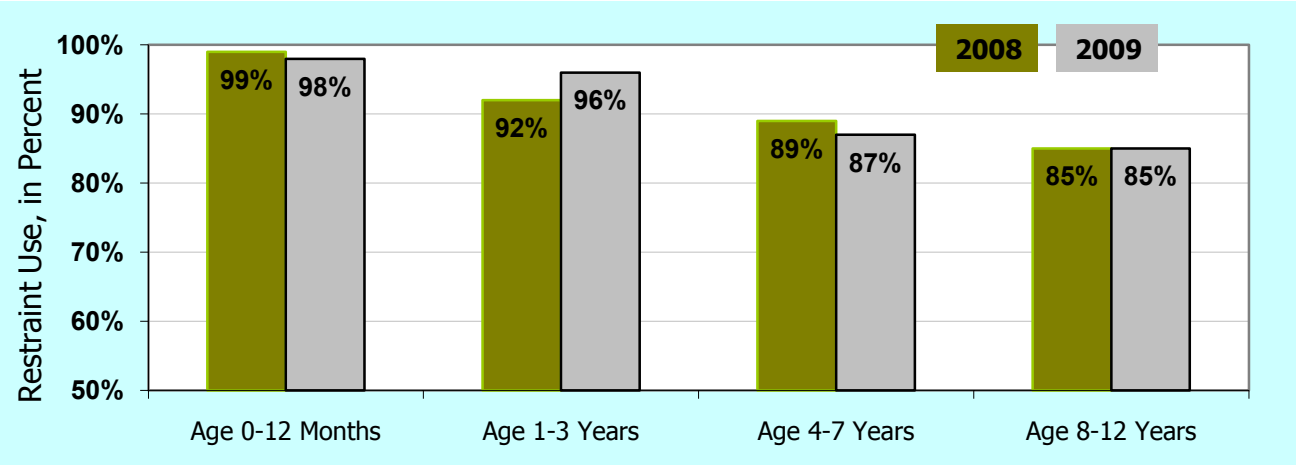

Figure 5: Child Restraint Use by Age and Year

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 13.

Figure 6 shows the overall picture of child restraint use by race and ethnicity across all age groups.

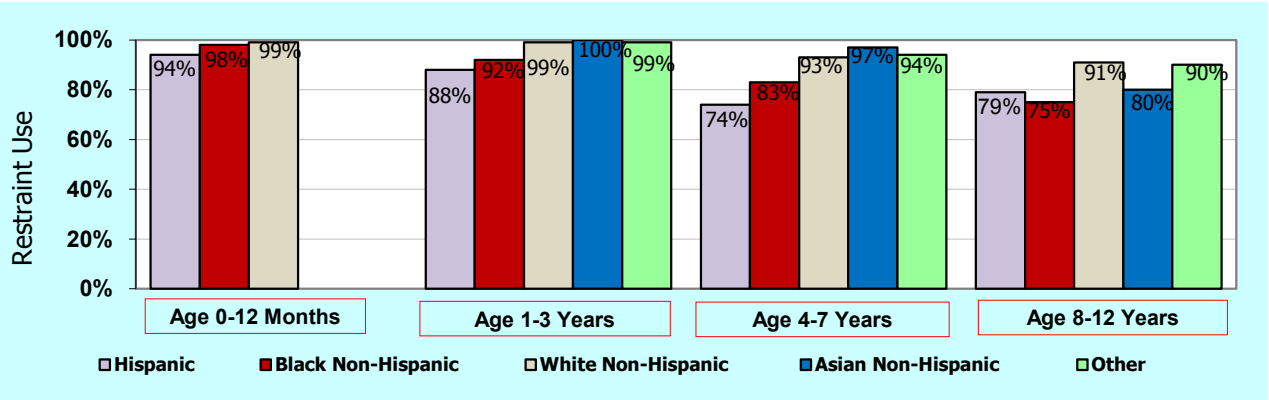

Figure 6: Child Restraint Use by Age and Race/Ethnicity in 2009

As it shows clearly in Figures 6 and 7, Hispanic children had significantly lower restraint use rates than Non-Hispanic children across all age groups.

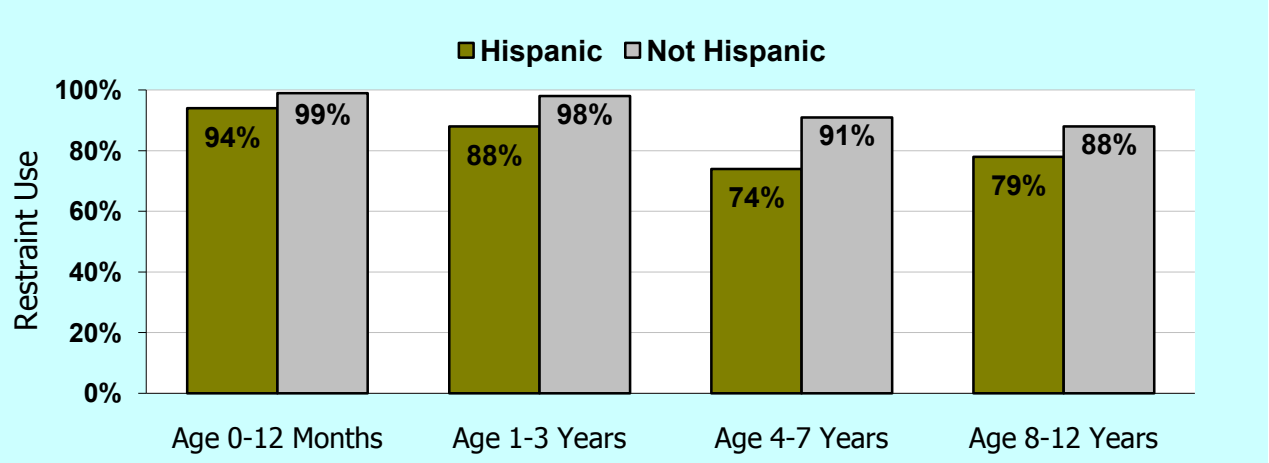

Figure 7: Child Restraint Use by Age and Hispanic Origin in 2009

The 2009 NSUBS also shows that restraint use has improved among non-Hispanic Black or African-American children. In particular, the restraint use among children 1 to 3 who are non-Hispanic Black or African-American increased significantly to 92 percent in 2009 from 74 percent in 2008 (Figure 8).

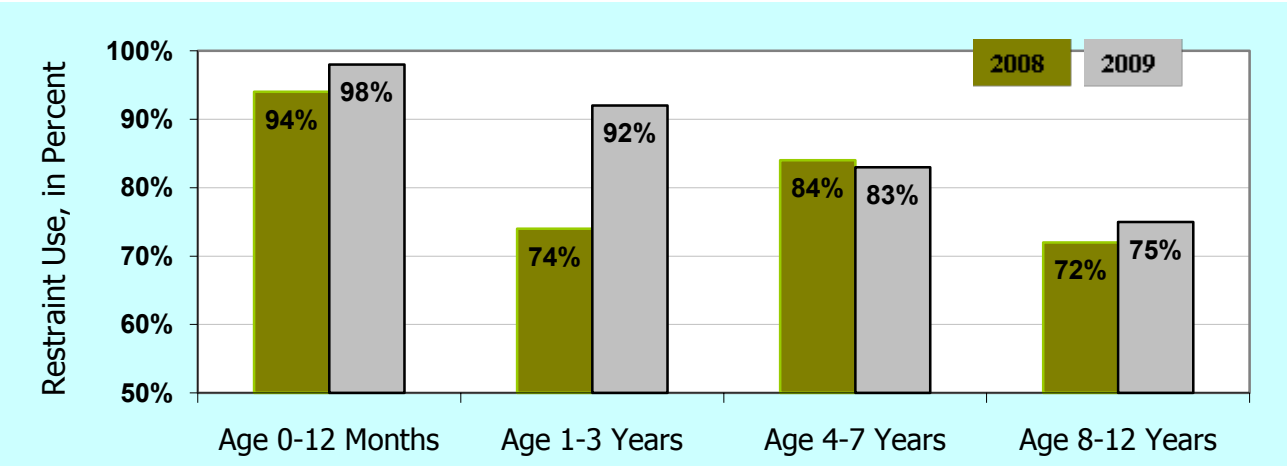

Figure 8: Restraint Use among Non-Hispanic Black or African-American Children

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

The 2009 NSUBS shows that the restraint use rates among boys and girls 1 to 12 years old were not statistically different (Figure 9). However, for children 12 months and under, girls had statistically significantly higher restraint use rate than boys.

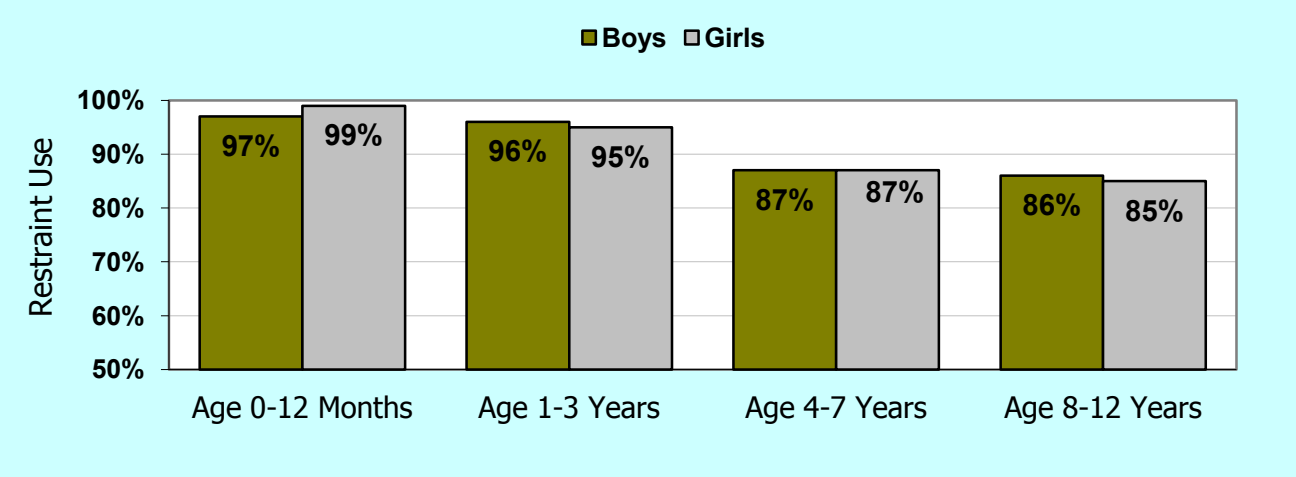

Figure 9: Child Restraint Use by Age and Gender in 2009

Table 3: Restraint Use Among Children 12 Months and Under

Subgroup of Children 12 Months and Under[1,4]	2008		2009		2008–2009 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 Under 12 Months	99 %		98%		-1	43%
Children Who Are						
Boys	98%	83%	97%	**91%**	-1	59%
Girls	99%	83%	99%	**91%**	0	19%
Children Who Are Reported to Be[4]						
White Non-Hispanic	100%	**99%**	99%	**96%**	-1	78%
Black or African-American Non-Hispanic	94%	**95%**	98%	56%	4	86%
Asian Non-Hispanic	NA	NA	NA	NA	NA	NA
Other Non-Hispanic	NA	NA	NA	NA	NA	NA
Hispanic or Latino	96%	88%	94%	**95%**	-2	68%
Children Reported to Be[4]						
Hispanic or Latino	96%	88%	94%	**95%**	-2	68%
Neither Hispanic nor Latino	99%	88%	99%	**95%**	0	32%
Children Whose Height[4] Is Between						
0 and 36 Inches	99%	**99%**	98%	0%	-1	42%
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%	78%	99%	83%	0	31%
20 and 40 Pounds	98%	78%	97%	83%	-1	6%
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	98%	64%	97%	88%	-1	52%
Fast Food Restaurant	94%	**98%**	96%	**90%**	2	81%
Day Care Center	100%	NA	100%	**98%**	0	80%
Recreation Center	100%	NA	NA	NA	NA	NA

[1] Survey data are obtained on children 12 and under 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 child safety 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 2009 use rate is different from the 2008 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, 2008-2009

Table 4: Restraint Use Among Children Age 1 – 3 Years

Subgroup of Children Age 1-3 Years[1,4]	2008		2009		2008–2009 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 1-3 Years	92%		96%		4	**100%**
Children Who Are						
Boys	92%	58%	96%	79%	4	**98%**
Girls	92%	58%	95%	79%	3	**93%**
Children Who Are Reported to Be[4]						
White Non-Hispanic	99%	**100%**	99%	**100%**	0	47%
Black or African-American Non-Hispanic	74%	**100%**	92%	**98%**	18	**99%**
Asian Non-Hispanic	99%	**100%**	100%	**100%**	1	59%
Other Non-Hispanic	86%	**92%**	99%	**100%**	13	**99%**
Hispanic or Latino	84%	**98%**	88%	**100%**	4	47%
Children Reported to Be[4]						
Hispanic or Latino	84%	**98%**	88%	**100%**	4	47%
Neither Hispanic nor Latino	94%	**98%**	98%	**100%**	4	**100%**
Children Whose Height[4] Is Between						
0 and 36 Inches	91%	**99%**	96%	69%	5	**100%**
37 and 53 Inches	96%	**99%**	96%	69%	0	8%
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	75%	82%	100%	**100%**	25	80%
20 and 40 Pounds	92%	86%	96%	**98%**	4	**100%**
41 and 60 Pounds	93%	61%	86%	**99%**	-7	89%
61 Pounds or More	NA	NA	NA	NA	NA	NA
Children Surveyed at a						
Gas Station	95%	**93%**	89%	**100%**	-6	**100%**
Fast Food Restaurant	94%	77%	93%	**93%**	-1	29%
Day Care Center	91%	**94%**	97%	**100%**	6	**100%**
Recreation Center	98%	**100%**	99%	**100%**	1	83%

[1] Survey data are obtained on children 12 and under 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 child safety 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 2009 use rate is different from the 2008 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, 2008-2009

Table 5: Restraint Use Among Children Age 4 – 7 Years

Subgroup of Children Age 4-7 Years[1,4]	2008		2009		2008–2009 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 4-7	89%		87%		-2	33%
Children Who Are						
Boys	88%	82%	87%	53%	-1	24%
Girls	89%	82%	87%	53%	-2	37%
Children Who Are Reported to Be[4]						
White Non-Hispanic	93%	**100%**	93%	**99%**	0	0%
Black or African-American Non-Hispanic	84%	**95%**	83%	88%	-1	36%
Asian Non-Hispanic	95%	**100%**	97%	**100%**	2	51%
Other Non-Hispanic	76%	**100%**	94%	**98%**	18	**100%**
Hispanic or Latino	82%	**100%**	74%	**96%**	-8	51%
Children Reported to Be[4]						
Hispanic or Latino	82%	**100%**	74%	**96%**	-8	51%
Neither Hispanic nor Latino	90%	**100%**	91%	**96%**	1	72%
Children Whose Height[4] Is Between						
0 and 36 Inches	89%	68%	85%	**90%**	-4	65%
37 and 53 Inches	88%	61%	88%	80%	0	21%
54 and 56 Inches	90%	61%	94%	**96%**	4	53%
57 Inches or More	79%	89%	79%	80%	0	3%
Children Who Weigh[4] Between						
0 and 19 Pounds	NA	NA	NA	NA	NA	NA
20 and 40 Pounds	87%	**93%**	90%	**98%**	3	69%
41 and 60 Pounds	91%	**100%**	84%	**98%**	-7	85%
61 Pounds or More	84%	**98%**	91%	85%	7	**97%**
Children Surveyed at a						
Gas Station	84%	**100%**	78%	**100%**	-6	**92%**
Fast Food Restaurant	82%	**100%**	84%	86%	2	40%
Day Care Center	91%	**100%**	89%	89%	-2	20%
Recreation Center	92%	**100%**	90%	79%	-2	74%

[1] Survey data are obtained on children 12 and under 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 child safety 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 2009 use rate is different from the 2008 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, 2008-2009

Table 6: Restraint Use Among Children Age 8 – 12 Years

Subgroup of Children Age 8-12 Years[1,4]	2008		2009		2008–2009 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%		85%		0	4%
Children Who Are						
Boys	86%	59%	86%	70%	0	10%
Girls	85%	59%	85%	70%	0	10%
Children Who Are Reported to Be[4]						
White Non-Hispanic	90%	**100%**	91%	**100%**	1	21%
Black or African-American Non-Hispanic	72%	**99%**	75%	**100%**	3	42%
Asian Non-Hispanic	91%	**91%**	80%	79%	-11	87%
Other Non-Hispanic	77%	78%	90%	85%	13	69%
Hispanic or Latino	79%	**97%**	79%	**100%**	0	0%
Children Reported to Be[4]						
Hispanic or Latino	79%	**97%**	79%	**100%**	0	0%
Neither Hispanic nor Latino	87%	**97%**	88%	**100%**	1	49%
Children Whose Height[4] Is Between						
0 and 36 Inches	NA	NA	NA	NA	NA	NA
37 and 53 Inches	87%	89%	85%	60%	-2	48%
54 and 56 Inches	83%	84%	83%	81%	0	1%
57 Inches or More	85%	67%	87%	88%	2	61%
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	88%	**94%**	87%	76%	-1	13%
61 Pounds or More	84%	**95%**	85%	78%	1	13%
Children Surveyed at a						
Gas Station	86%	61%	77%	**99%**	-9	**96%**
Fast Food Restaurant	85%	54%	86%	59%	1	22%
Day Care Center	83%	75%	87%	79%	4	54%
Recreation Center	92%	**100%**	89%	84%	-3	67%

[1] Survey data are obtained on children 12 and under 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 child safety 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 2009 use rate is different from the 2008 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, 2008-2009

4. 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 heights or weights. In the following sub-sections, we present the 2009 findings in three areas:

- Premature graduation out of rear-facing safety seats;
- Premature graduation out of forward-facing safety seats; and
- Premature graduation into seat belts.

A review of child safety seats on the market finds 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 will be considered in applying the NHTSA recommendation to assess the survey results in this report.

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 Out of Rear-Facing Safety Seats

NHTSA recommends that for the best possible protection, infants should be kept in the back seat, in rear-facing child safety seats, as long as possible up to the height or weight limit of the particular seat. At a minimum, infants should be kept rear-facing until a minimum of age 1 and at least 20 pounds (NHTSA, 2005).

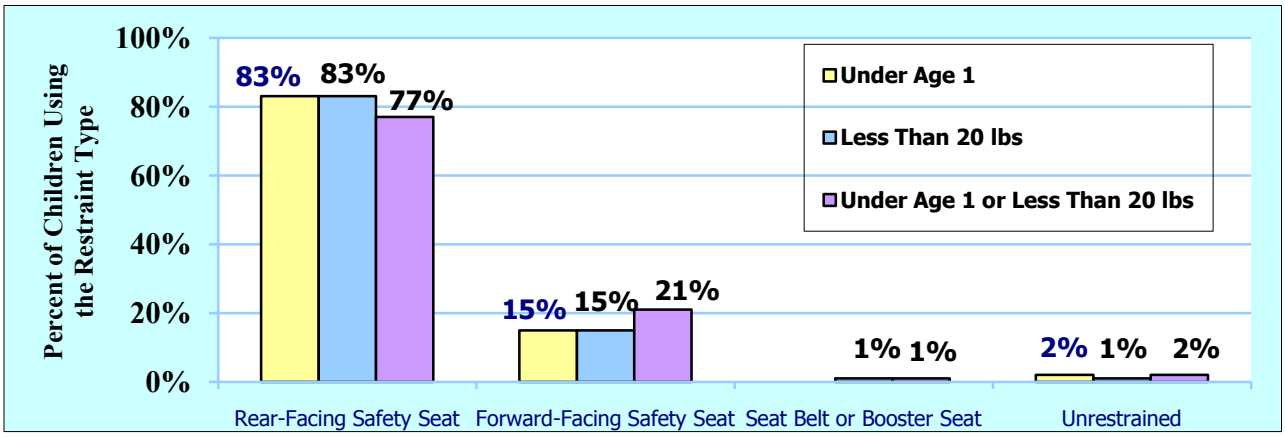

Figure 10: Distribution of Restraint Types in 2009 for Children Under 1 Year Old or Under 20 Pounds

However, the 2009 NSUBS found that:

- About 17 percent of children under age 1 were not in rear-facing seats in 2009 (14% in 2008).
- About 17 percent of children less than 20 pounds were not in rear-facing seats in 2009 (17% in 2008).
- About 23 percent of children who are under 1 or less than 20 pounds were not in rear-facing seats in 2009 (21% in 2008).

Most of the premature graduation for these children was to forward-facing child safety seats (Figure 10).

Premature Graduation Out of Forward-Facing Safety Seats

NHTSA recommends that when children outgrow their rear-facing seats (at a minimum age 1 and at least 20 pounds) they should ride in forward-facing child safety 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 (NHTSA, 2005).

The 2009 NSUBS found that 41 percent of children who are 20 to 40 pounds were not in forward-facing safety seats in 2009 (44% in 2008) (Figure 11). Note, however, that some 20- to 40-pound children could be infants who should be in rear-facing safety seats, and note that some booster seats have weight limits as low as 30 pounds.

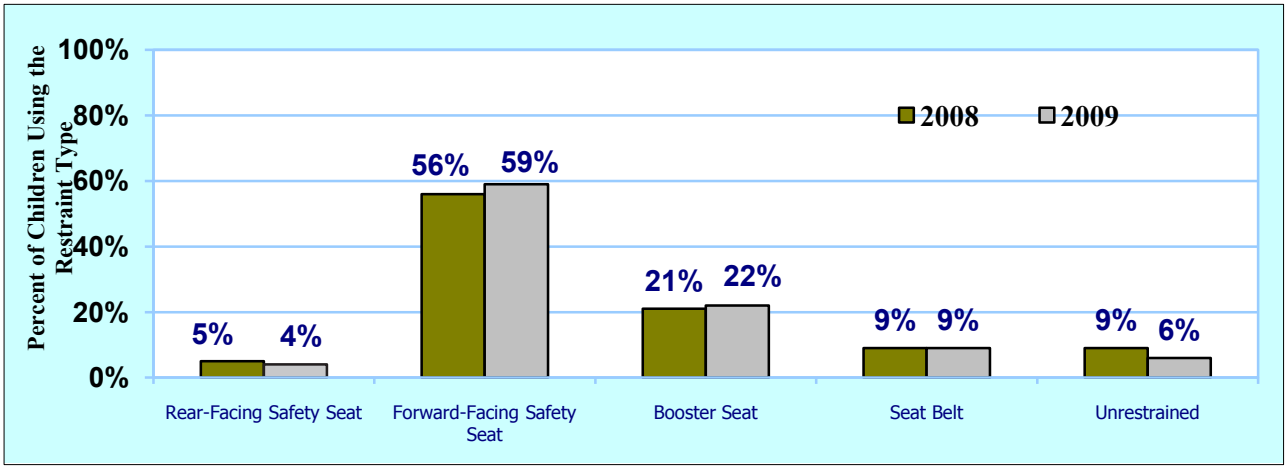

Figure 11: Distribution of Restraint Types for Children 12 and Under Who Were 20 to 40 Pounds

Premature Graduation to Seat Belts

NHTSA recommends that once children outgrow their forward-facing 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 4'9" tall (NHTSA, 2005).

However, the 2009 NSUBS found that:

- Fifty-one percent of children 12 and under who are 37 to 53 inches tall were either unrestrained or prematurely graduated to seat belts in 2009 (49% in 2008).
- Ninety-three percent of children 12and under who are 54 to 56 inches tall were either unrestrained or prematurely graduated to seat belts in 2009 (85% in 2008). However, since 54 to 56 inches is marginally below NHTSA's recommended height limit for seat belts, 57 inches (4' 9"), it might not be significant as a public safety result.

Figure 12 shows the results of the premature graduation to seat belts.

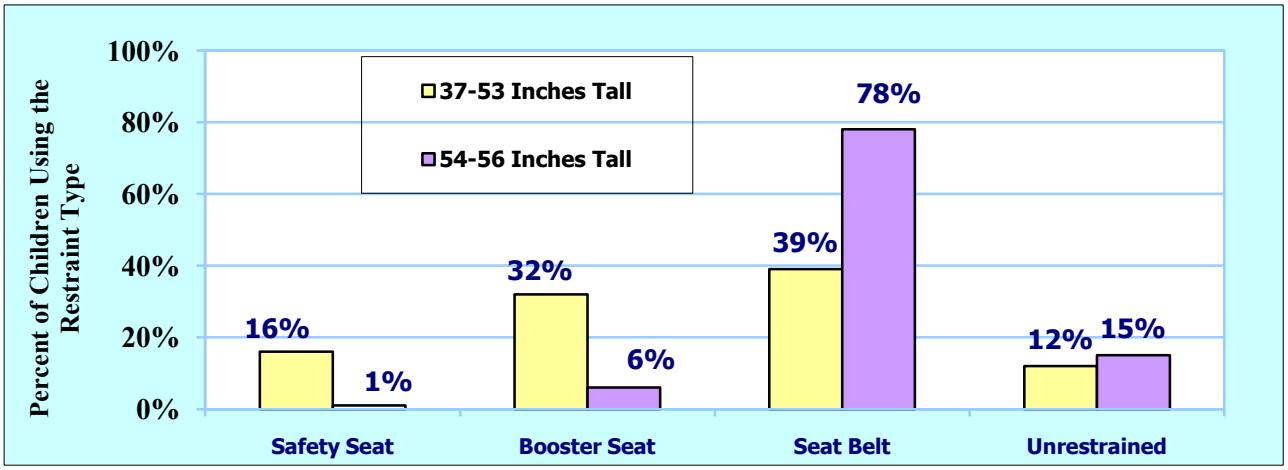

Figure 12: Distribution of Restraint Types in 2009 for Children 12 and Under Who Were 37 to 56 Inches Tall

Table 7: The Types of Restraints Used by Children 12 and Under, by Weight

Restraint Type[1]	2008		2009		2008–2009 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 Child Safety Seat	83%	7%	83%	3%	0	8%
Forward-Facing Child Safety Seat	12%	3%	15%	2%	3	84%
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	4%	5%	1%	1%	-3	58%
Children Who Weigh Between 20 and 40 Pounds						
Rear-Facing Child Safety Seat	5%	2%	4%	1%	-1	20%
Forward-Facing Child Safety Seat	56%	5%	59%	4%	3	61%
High-Backed Booster Seat	15%	3%	16%	4%	1	10%
Backless Booster Seat	6%	1%	6%	1%	0	9%
Seat Belt	9%	3%	9%	1%	0	20%
No Restraint Observed	9%	1%	6%	1%	-3	**99%**
Children Who Weigh Between 41 and 60 Pounds						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	8%	2%	8%	1%	0	15%
High-Backed Booster Seat	23%	2%	18%	2%	-5	**94%**
Backless Booster Seat	17%	3%	17%	2%	0	4%
Seat Belt	42%	4%	42%	2%	0	30%
No Restraint Observed	10%	2%	15%	4%	5	80%
Children Who Weigh More Than 60 Pounds						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	2%	1%	0%	0%	-2	**99%**
High-Backed Booster Seat	3%	1%	3%	1%	0	2%
Backless Booster Seat	4%	1%	4%	0%	0	58%
Seat Belt	75%	3%	79%	1%	4	**90%**
No Restraint Observed	16%	3%	14%	1%	-2	51%

[1] Survey data are obtained on children12 and under 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 2009 use rate is different from the 2008 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, 2008-2009

Table 8: The Types of Restraints Used by Children 12 and Under, by Height

Restraint Type[1]	2008		2009		2008–2009 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 Child Safety Seat	16%	4%	15%	2%	-1	26%
Forward-Facing Child Safety Seat	55%	3%	58%	2%	3	66%
High-Backed Booster Seat	10%	2%	9%	2%	-1	38%
Backless Booster Seat	4%	1%	4%	1%	0	24%
Seat Belt	7%	2%	8%	1%	1	49%
No Restraint Observed	8%	2%	6%	1%	-2	84%
Children Who Are Between 37 and 53 Inches Tall						
Rear-Facing Child Safety Seat	0%	0%	NA	NA	NA	NA
Forward-Facing Child Safety Seat	17%	4%	16%	2%	-1	19%
High-Backed Booster Seat	21%	2%	19%	3%	-2	34%
Backless Booster Seat	13%	2%	13%	1%	0	7%
Seat Belt	38%	4%	39%	2%	1	47%
No Restraint Observed	11%	2%	12%	3%	1	40%
Children Who Are Between 54 and 56 Inches Tall						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	2%	1%	1%	1%	-1	32%
High-Backed Booster Seat	4%	2%	2%	0%	-2	**98%**
Backless Booster Seat	8%	3%	4%	1%	-4	**94%**
Seat Belt	70%	5%	78%	3%	8	**90%**
No Restraint Observed	15%	4%	15%	2%	0	10%
Children Who Are Taller Than 56 Inches						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	0%	0%	NA	NA	NA	NA
High-Backed Booster Seat	2%	1%	1%	0%	-1	89%
Backless Booster Seat	1%	1%	1%	1%	0	22%
Seat Belt	81%	2%	85%	2%	4	84%
No Restraint Observed	16%	2%	13%	2%	-3	58%

[1] Survey data are obtained on children12 and under 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 2009 use rate is different from the 2008 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, 2008-2009

Table 9: The Types of Restraints Used by Children 12 and Under, by Age

Restraint Type[1]	2008		2009		2008–2009 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 Child Safety Seat	86%	5%	83%	4%	-3	48%
Forward-Facing Child Safety Seat	12%	5%	15%	3%	3	45%
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	43%
Children 1 to 3 Years Old						
Rear-Facing Child Safety Seat	2%	1%	3%	0%	1	63%
Forward-Facing Child Safety Seat	72%	7%	76%	2%	4	60%
High-Backed Booster Seat	11%	4%	11%	2%	0	1%
Backless Booster Seat	3%	1%	3%	0%	0	13%
Seat Belt	4%	2%	4%	1%	0	18%
No Restraint Observed	8%	2%	4%	1%	-4	**100%**
Children 4 to 7 Years Old						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	12%	3%	14%	2%	2	55%
High-Backed Booster Seat	26%	3%	24%	3%	-2	47%
Backless Booster Seat	17%	2%	17%	2%	0	4%
Seat Belt	34%	5%	32%	2%	-2	57%
No Restraint Observed	11%	1%	13%	3%	2	33%
Children 8 to 12 Years Old						
Rear-Facing Child Safety Seat	NA	NA	NA	NA	NA	NA
Forward-Facing Child Safety Seat	1%	1%	1%	1%	0	33%
High-Backed Booster Seat	2%	1%	2%	1%	0	59%
Backless Booster Seat	3%	1%	3%	0%	0	3%
Seat Belt	78%	3%	79%	1%	1	25%
No Restraint Observed	15%	3%	15%	2%	0	4%

[1] Survey data are obtained on children12 and under 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 2009 use rate is different from the 2008 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, 2008-2009

5. Occupants Traveling With Children

The NSUBS, although its primary purpose is to estimate booster seat use among 4- to 7-year-olds, also collects information on the race and ethnicity of other occupants traveling with children. This section reports the major race and ethnicity results of occupants traveling with children from the 2009 NSUBS.

The NSUBS data collectors approach passenger vehicles appearing to have child occupants 12 and under, 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 to 24) 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 12 and under to a restricted set of site types 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 2009 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 25 to 69 traveling with children (Figure 13 and Figure 14).
- 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 25 to 69 traveling with children (Figure 13).
- Restraint use for Hispanic occupants 13 to 15 dropped from 82 percent in 2008 to 66 percent in 2009 while restraint use for non-Hispanic occupants of the same age group also dropped from 83 percent in 2008 to 70 percent in 2009 (Table 10).
- Restraint use for Hispanic occupants 16-24 increased from 64 percent in 2008 to 92 percent in 2009 (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 is 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.

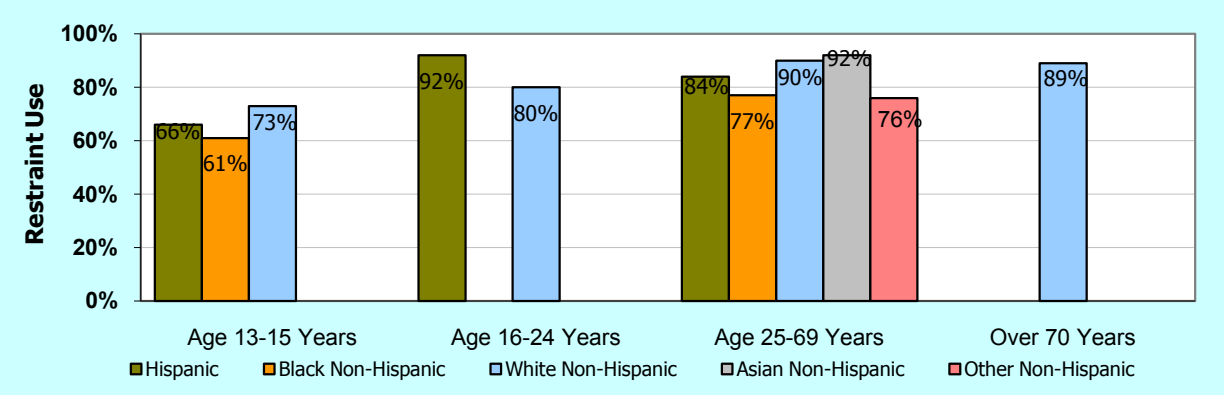

Figure 13: Restraint Use by Age and Race/Ethnicity for Occupants Traveling With Children in 2009

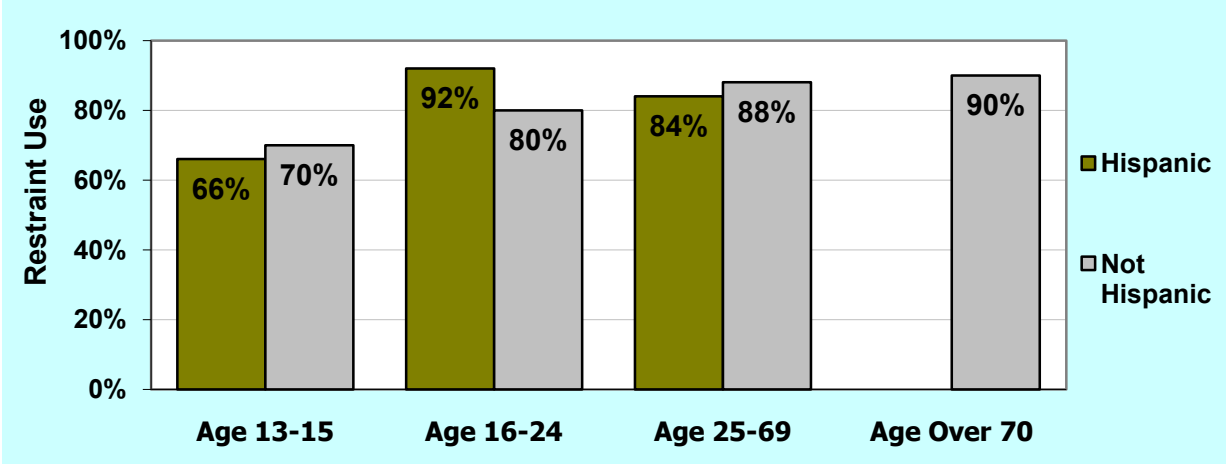

Figure 14: Restraint Use by Age and Race/Ethnicity for Occupants Traveling With Children in 2009

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

Subgroup of Occupants[1]	2008			2009			2008–2009 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 to 15 Years Old								
Occupants Reported to Be[5]								
White Non-Hispanic	89%	6%	**99%**	73%	6%	**90%**	-16	**100%**
Black or African-American Non-Hispanic	46%	19%	**100%**	61%	12%	77%	15	61%
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	82%	11%	53%	66%	4%	80%	-16	**94%**
Occupants Reported to Be[5]								
Hispanic or Latino	82%	11%	53%	66%	4%	80%	-16	**94%**
Neither Hispanic nor Latino	83%	5%	53%	70%	4%	80%	-13	**100%**
Occupants 16 to 24 Years Old								
Occupants Reported to Be[5]								
White Non-Hispanic	80%	10%	**96%**	80%	6%	84%	0	3%
Black or African-American Non-Hispanic	82%	5%	73%	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	64%	17%	**92%**	92%	5%	**96%**	28	**100%**
Occupants Reported to Be[5]								
Hispanic or Latino	64%	17%	**92%**	92%	5%	**96%**	28	**100%**
Neither Hispanic nor Latino	80%	9%	**92%**	80%	5%	**96%**	0	2%
Occupants 25 to 69 Years Old								
Occupants Reported to Be[5]								
White Non-Hispanic	91%	2%	**100%**	90%	1%	**100%**	-1	48%
Black or African-American Non-Hispanic	80%	7%	**99%**	77%	3%	**100%**	-3	67%
Asian Non-Hispanic	96%	4%	**100%**	92%	2%	**100%**	-4	86%
Other Non-Hispanic	85%	9%	72%	76%	6%	**98%**	-9	72%
Hispanic or Latino	85%	4%	**98%**	84%	2%	**99%**	-1	4%
Occupants Reported to Be[5]								
Hispanic or Latino	85%	4%	**98%**	84%	2%	**99%**	-1	4%
Neither Hispanic nor Latino	90%	2%	**98%**	88%	1%	**99%**	-2	**93%**
Occupants 70 and Older								
Occupants Reported to Be[5]								
White Non-Hispanic	89%	13%	73%	89%	5%	62%	0	3%
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	80%	19%	72%	NA	NA	NA	NA	NA
Occupants Reported to Be[5]								
Hispanic or Latino	80%	19%	72%	NA	NA	NA	NA	NA
Neither Hispanic nor Latino	88%	10%	72%	90%	4%	68%	2	22%

[1] Survey data are obtained on drivers and passengers of passenger vehicles appearing to contain a child 12 and under 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 2009 use rate is different from the 2008 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 African-Americanss 13 to 15 was 12 percent in 2009, which means that the margin of error for this estimate was +/- 24 percentage points, and thus the estimate could be as low as 37 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, 2008-2009

6. NSUBS Methodology

This section discusses briefly the sample design, sample size, data collection, and estimation used in the 2009 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) available at http://www-nrd.nhtsa.dot.gov/Pubs/811111.PDF.

Sample Design

The NSUBS uses a complex multistage probability sample. The primary sampling unit (PSU) sampling frame consists of the 50 sampled PSUs from the National Occupant Protection Use Survey of 2005, the time of the NSUBS design. 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 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 2009 NSUBS selected 674 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 2009 NSUBS, a total of 433 sites of the 674 sampled sites gave permission for the survey to be conducted on their premises. The cooperation rate was 64 percent. Of these 433 data collection sites, 192 were gas stations, 141 fast food restaurants, 55 day care centers, and 45 recreation centers.

Table 11 shows the observed sample size of the 2009 NSUBS. A total of 17,793 occupants were observed in the 6,033 vehicles at the 433 data collection sites. Of these observed occupants, 9,471 were children12 and under. The data on 7,284 children12 and under were obtained by interviews with adult occupants who were traveling together with those children.

Table 11: Sites, Vehicles, Occupants, and Children 12 and Under in NSUBS

Numbers of	2008	2009	Percentage Change
Data Collection Sites	441	433	-2%
Vehicles Observed	6,204	6,033	-3%
Occupants Observed	18,074	17,793	-2%
Children 12 and Under Observed	9,695	9,471	-2%
Children 12 and Under Interviewed*	7,632	7,284	-5%

* Data obtained by interview with an adult occupant.

Data Collection

The 2009 NSUBS data collection was conducted between 7 a.m. and 6 p.m. during the period from July 17 to August 1, 2009.

Trained data collectors approach passenger vehicles appearing to have child occupants 12 and under; 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 12 and under. The approximate ages of other occupants (expressed as an age range, such as 16 to 24) 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 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,

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

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 4 to 7 in booster seat and C_{ijk} is the number of observed children 4 to 7 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, 41 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 2009, 41 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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Appendix: Definitions and Categories in NSUBS

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

Rear-Facing Child Safety 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 Child Safety 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: 0, 1-3, 4-7, 8-12, 13-15, 16-24, 25-69, and 70 and above. The choice of these age groups is motivated by consistency with the NOPUS survey, which uses the age groups 0, 1-3, 4-7, 8-12, 13-15, 16-24, 25-69, and 70 and older, combined with taking into account that the NSUBS collects interview data on children12 and under. For consistency and clarity, the terms "0-12," "12 and under," and "under 13" have been changed to "12 and under" in most places in the text, since it is confusing to use three different terms to describe the same age cohort.

Height and weight categories

The NSUBS uses the following height categories: under 36 inches tall, 37-53 inches, 54-56 inches, and 57 inches or taller. The survey uses the weight categories 0-19 pounds, 20-40 pounds, 41-60 pounds, and 61 pounds or heavier. These categories were chosen because they are used in NHTSA's recommendation 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 are 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. 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 3, "Demographic Results," for the classifications of race and ethnicity in NSUBS

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