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Occupant Restraint Use in 2023: Results From the NOPUS Controlled Intersection Study

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16. Abstract

This report presents results from the 2023 National Occupant Protection Use Survey (NOPUS) Controlled Intersection Study, the only nationwide probability-based occupant restraint use survey. NHTSA's National Center for Statistics and Analysis conducts this survey annually. The 2023 NOPUS found no significant changes for front- or rear-seat belt use, but many historical trends persisted. Specifically, seat belt use continued to be lower for males (90.4%) than females (93.8%) in the front seat for ages 8 and older, seat belt use continued to be lower in rear seats (80.4%) than in front seats (91.9%) for 8 and older, and seat belt use continued to be lower among Black occupants (85.7%) than White occupants (92.4%) and members of other races (93.5%) in the front seat for 8 and older.

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Table of Contents

List of Figures

List of Tables

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Definitions

The estimates computed from the 2023 National Occupant Protection Use Survey (NOPUS) Controlled Intersection (CI) Study reflect the population of all occupants on the road at a typical daylight moment, not just those at intersections.

Vehicle occupants observed in the NOPUS are counted as "belted" if they appear to have a shoulder belt across the front of the body. NOPUS does not observe the use of lap belts because these restraints cannot be reliably observed from the roadside.

The survey classifies a child as follows.

- **Restrained in a rear-facing car seat** if the child appears to be on a seat on top of the vehicle seat, facing the rear of the vehicle, with harness straps across the front of the child.
- **Restrained in a forward-facing car seat** if the child appears to be on a seat on top of the vehicle seat, facing the front of the vehicle, with harness straps across the front of the child.
- **Restrained in a high-back booster seat** if the child appears to be on a seat on top of the vehicle seat with a shoulder belt across the front of the child.
- **Restrained in a seat belt or backless booster seat** if there is a shoulder belt across the front of the child but the observers cannot see if the child is in a seat on top of the vehicle seat.
- **Restrained** if the child is restrained by any of the above.
- The remaining children are classified as **unrestrained**. Note that in the survey there is no mention of being "unrestrained" in, for example, a forward-facing car seat. NOPUS does not observe the use of lap belts and does not distinguish between seat belts and backless booster seats, because these assessments cannot be reliable if observed from the roadside.

The racial categories "Black," "White," and "Members of other races" in NOPUS reflect subjective characterizations by roadside observers regarding the race of vehicle occupants. Likewise, observers record age groups (8 to 15 years old, 16 to 24 years old, 25 to 69 years old, and 70 and older) that best fit their visual assessment of each observed occupant.

"Expressways" are defined as roadways with limited access, while "surface streets" are all other roadways.

A roadway is defined to have "fast traffic" during the observation period if the average speed of passenger vehicles passing the observers exceeds 50 mph, with "medium-speed traffic" defined as 31 to 50 mph, and "slow traffic" defined as 30 mph or slower.

A roadway is defined to have "heavy traffic" during the observation period if the average number of vehicles on the roadway is greater than 5 per lane per mile, with "moderately dense traffic" defined as greater than 1 but less than or equal to 5 vehicles per lane per mile, and "light traffic" as less than or equal to 1 vehicle per lane per mile. Please note that this traffic density breakdown was revised in the 2011 NOPUS to better capture the traffic patterns.

Urban and rural area classifications are based on the Census Bureau's 2010 urban area classification (U.S. Census Bureau, 2010). Urban areas are made up of urban (Census-identified

urbanized areas of 50,000 or more people) or suburban (Census-identified urban clusters of at least 2,500 and less than 50,000 people) zones. Rural areas are not designated as urban areas or urban clusters.

The NOPUS sample design does not allow for State-by-State restraint use estimates; however, NOPUS produces estimates by region, defined as follows.

Northeast: Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

Midwest: Iowa, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, North Dakota, Nebraska, Ohio, South Dakota, Wisconsin

South: Alabama, Arkansas, the District of Columbia, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, Wyoming

Executive Summary

NOPUS is the only nationwide probability-based survey of seat belt use for occupants 8 and older in both front and rear seats, motorcycle helmet use, child restraint use for children under 8 years old, and driver electronic device use in the United States. The National Highway Traffic Safety Administration's National Center for Statistics and Analysis (NCSA) conducts the NOPUS annually. Two sub-surveys – the Moving Traffic (MT) Survey and the Controlled Intersection (CI) Study – make up the NOPUS.

In the CI Study, passenger vehicles occupants are observed from the roadside at intersections controlled by stop signs or stoplights. Only stopped vehicles are observed to allow ample time to collect a variety of information required by the survey. NOPUS derives its estimates of seat belt use in rear seats, child restraint use, driver electronic device use, and demographic characteristics of vehicle occupants from the CI Study. Estimates from this study reflect the population of all occupants on the road at a typical daylight moment, not just those at intersections. Details about the NOPUS sample design are in the NOPUS Methodology section of this report.

This report presents results of occupant restraint use from the 2023 NOPUS CI Study. NHTSA publishes the driver electronic device use results and the motorcycle helmet use results in separate research notes. Here are the major findings from the 2023 NOPUS CI Study.

Front-Seat Belt Use (Among Occupants 8 and Older):

- Overall front-seat belt use in 2023 was 91.9 percent, not statistically different from 91.6 percent in 2022.
- Seat belt use continued to be lower for males (90.4%) than for females (93.8%).
- Seat belt use continued to be lowest among 16- to 24-year-olds (87.8%) and highest among those 70 and older (93.6%).
- Seat belt use continued to be lower among Black occupants (85.7%) than White occupants (92.4%) and members of other races (93.5%).

Children Riding in Rear-Seats:

- The percentage of children riding in rear seats significantly increased from 88.6 percent in 2022 to 94.5 percent in 2023.

Rear-Seat Belt Use (Among Occupants 8 and Older):

- There were no significant changes in rear-seat belt use for any of the subcategories (gender, age, and race).
- Seat belt use continued to be lower among occupants of rear seats (80.4%) than those in front seats (91.9%).
- Rear-seat belt use is higher in States requiring belt use in all seating positions (81.3%) than in States requiring belt use only in the front seats (75.8%), breaking from the previously close trend observed in the 3 years.

Child Restraint Use (for Children From Birth to 7 Years Old):

- Restraint use for children from birth to 7 years old in 2023 was 90.9 percent, not statistically different from 93.3 percent in 2022.

- Among the four regions, the West had the highest child restraint use rate of 96.2 percent in 2023, while the Northeast had the lowest child restraint use rate of 87.6 percent.
- Restraint use for children driven by belted drivers (92.3%) continued to be higher than for those driven by unbelted drivers (70.7%).
- Restraint use for children driven by belted drivers significantly decreased from 94.7 percent in 2022 to 92.3 percent in 2023.
- Restraint use for children traveling on expressways significantly decreased from 96.9 percent in 2022 to 91.1 percent in 2023.
- Restraint use for children traveling in moderately dense traffic significantly decreased from 93.7 percent in 2022 to 87.3 percent in 2023.
- Restraint use for children driven by a white driver significant decreased from 95.8 percent in 2022 to 92.6 percent in 2023.

Introduction

NOPUS is the only nationwide probability-based survey of seat belt use for occupants 8 and older in both front and rear seats, motorcycle helmet use, child restraint use for children under 8 years old, and driver electronic device use in the United States. NCSA conducts the NOPUS annually. Two sub-surveys, the MT Survey and the CI Study, make up the NOPUS.

In the MT Survey, front-seat occupant shoulder belt use data and motorcyclist helmet use data are collected either at the roadside or by data collectors in vehicles (on expressways). NOPUS estimates of front-seat belt use and motorcycle helmet use are from the MT Survey. The collective front-seat belt use estimate (also known as NHTSA's national seat belt estimate) is described in Seat Belt Use in 2023 - Overall Results (NCSA, 2024).

By contrast, the NOPUS CI Study data is collected at intersections controlled by stop signs or stoplights, where vehicle occupants are observed from the roadside. Since the vehicles are stationary, data collectors have enough time to record occupants' characteristics such as race, age, and sex. NOPUS derives its estimates of rear-seat belt use, child restraint use, driver electronic device use, and demographic characteristics of the vehicle occupants from the CI Study.

Only motorcycles and passenger vehicles (passenger cars, pickup trucks, SUVs, and vans) are observed in the NOPUS. The population of interest includes all 50 States and the District of Columbia, and the sample observation sites included Federal, State, and county highways, residential streets, and rural roads. Data is collected only during daylight hours when light is adequate to observe seat belt use through the vehicle windshield.

The 2023 NOPUS Data waswas collected from June 5 to June 24, 2023. The 2022 NOPUS data was collected from June 6 to June 24, 2022. In a typical year, data is collected in early June, immediately following the *Click It or Ticket* campaign. The 2023 NOPUS data is based on the results of 69,504 occupants observed in 51,769 vehicles are approximately 8 percent more than the 2022 sample. Of those observed occupants, 2,287 were children under 8. More details on the NOPUS sampling, data collection, and estimation are discussed in the NOPUS Methodology section below.

Please note that the terms "significant" and "statistically significant" are used interchangeably throughout this report. "Significant" always means "statistically significant," and the statistical significance level is alpha = 0.05. In the tables below, the data with *p*-values that are less than or equal to .05 are formatted in boldface type.

The percentages provided in this report are interpreted as the percentage of occupants during an average daylight moment.

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Demographic Results in Front Seats

The national seat belt use estimate in 2023 was 91.9 percent, not a significant change from 91.6 percent in 2022 (Werth, 2024). This section presents a demographic breakdown of the occupants who used seat belts in 2023. Table 1 presents passenger vehicle occupant seat belt use in front seats for occupants ages 8 and older by demographic and other characteristics in 2022 and 2023. NOPUS demographics are highlighted below.

Age

Figure 1 and Table 1 show comparisons of seat belt use rates from 2022 and 2023 across four age groups. None of the age groups experienced a significant year-to-year change in seat belt use rate.

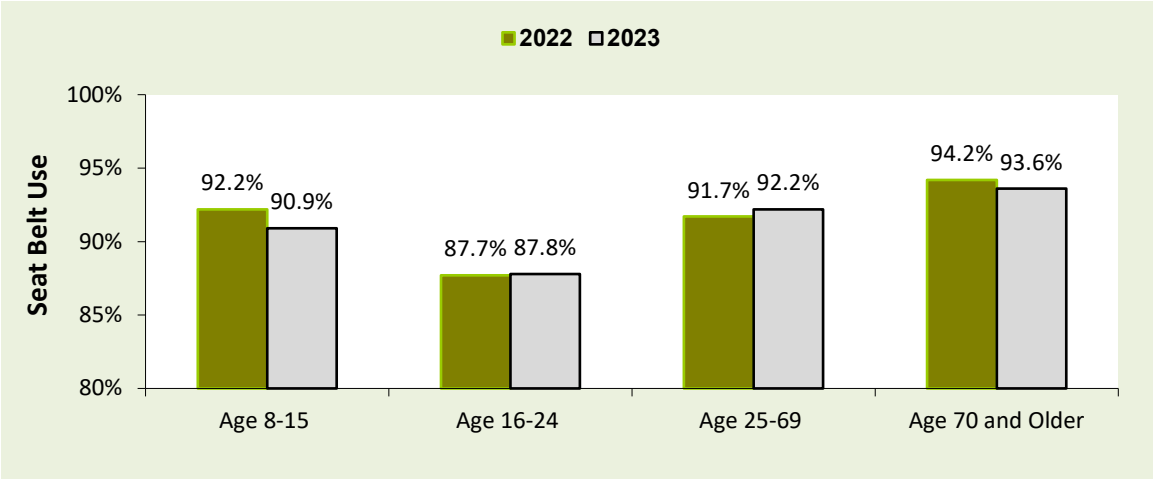

Figure 1. Seat Belt Use by Age for Occupants 8 and Older in 2022 and 2023

Figure 2 shows the trends of seat belt use for the four age groups over a 10-year period (2014 to 2023). Seat belt use among 16- to 24-year-olds has been consistently lower than other age groups. Seat belt use among occupants ages 70 and older was higher than other age groups in 2023.

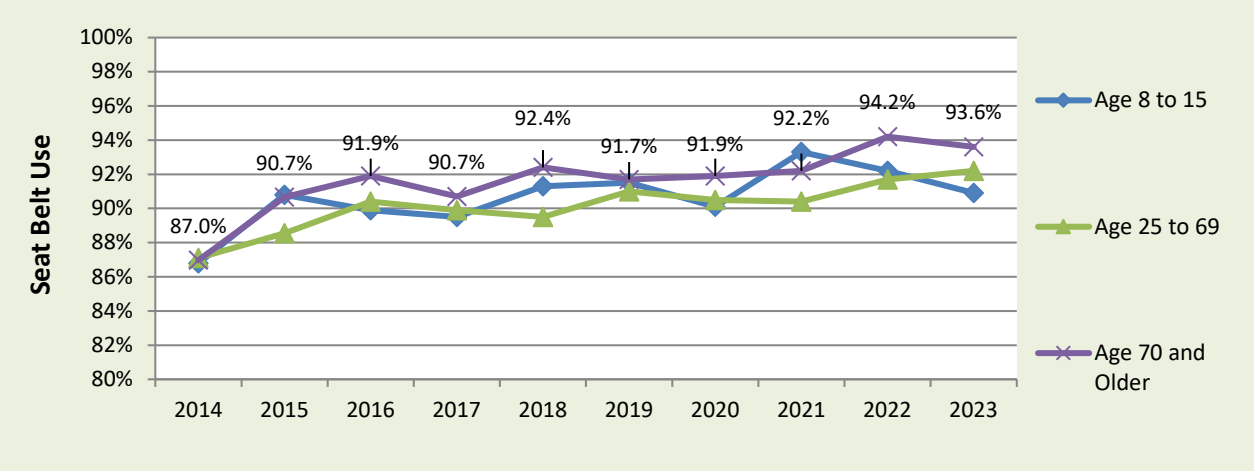

Figure 2. Seat Belt Use by Age for Occupants 8 and Older, 2014 to 2023

Sex

Figure 3 shows the trends of seat belt use for male and female occupants over a 10-year period (2014 to 2023). In 2023 seat belt use continued to be lower for males (90.4%) than females (93.8%). During the 10-year period, seat belt use for males and females was highest in 2023.

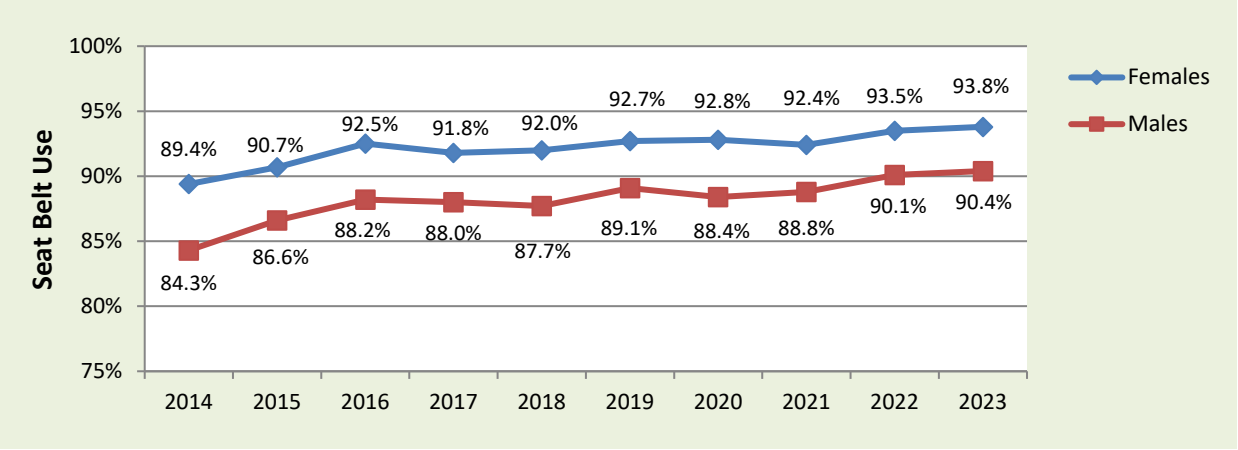

Figure 3. Seat Belt Use by Sex for Occupants 8 and Older, 2014 to 2023

Race

In NOPUS observed vehicle occupant race categories are Black, White, and members of other races. This characterization is based on the visual assessment of the data collectors who observe vehicle occupants from roadsides.

Figure 4 shows the trends of seat belt use among the three race categories over a 10-year period (2014 to 2023). In 2023 seat belt use continued to be lower among Black occupants than White occupants and members of other races.

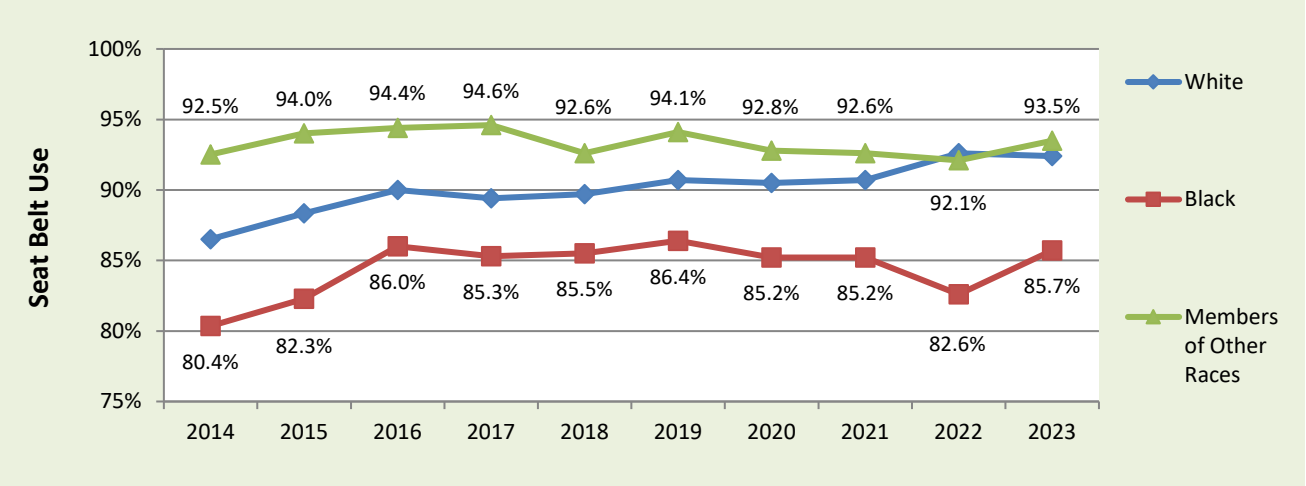

Figure 4. Seat Belt Use by Race for Occupants 8 and Older, 2014 to 2023

Presence of Passengers and Seat Belt Use

Figure 5 shows that seat belt use continued to be lower for a driver driving alone (91.6%) than for a driver driving with at least one passenger in the vehicle (93.4%). Both of these use rates are the highest during the 10-year period shown below.

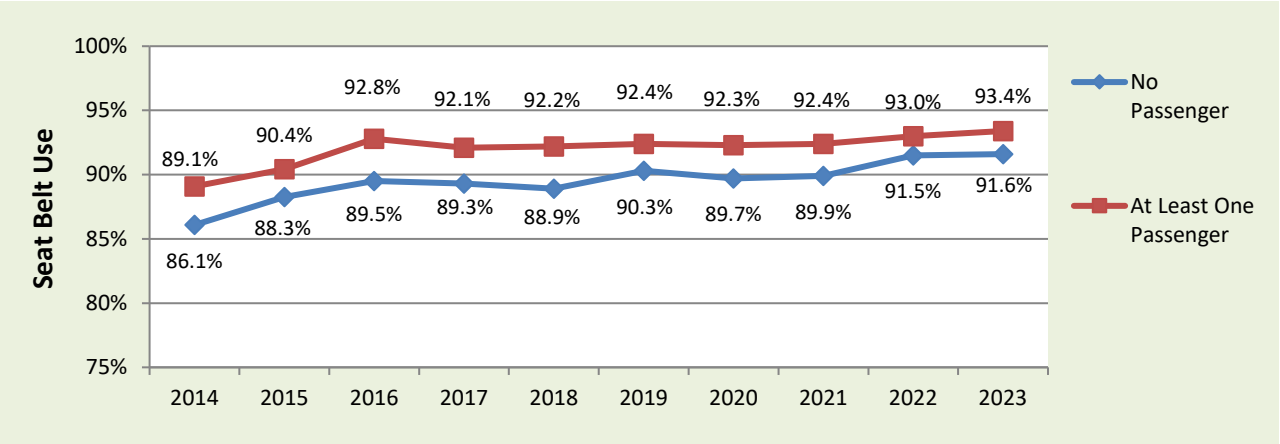

Figure 5. Passenger Effect on Seat Belt Use for Occupants 8 and Older, 2014 to 2023

Table 1. Passenger Vehicle Occupant Seat Belt Use in Front Seats (8 and Older) by Demographic and Other Characteristics

Occupant Group[1]	2022		2023		2022-2023 Change		
	Belt Use[2]	95% Confidence Interval[3]	Belt Use[2]	95% Confidence Interval[3]	Change in Percentage[7]	95% Confidence Interval[4]	*P*-value[5]
All Occupants	91.6%	(90.0, 92.9)	91.9%	(90.6, 93.0)	0.3	(-1.4, 2.0)	0.73
Males[6]	90.1%	(88.3, 91.6)	90.4%	(88.7, 91.9)	0.3	(-1.7, 2.4)	0.74
Females[6]	93.5%	(92.0, 94.7)	93.8%	(92.8, 94.6)	0.3	(-1.2, 1.7)	0.69
Occupants by Age Group[6]							
8 to 15	92.2%	(87.9, 95.1)	90.9%	(86.7, 93.8)	-1.3	(-6.4, 3.7)	0.60
16 to 24	87.7%	(84.2, 90.5)	87.8%	(85.5, 89.7)	0.1	(-3.0, 3.2)	0.95
25 to 69	91.7%	(90.2, 93.0)	92.2%	(91.0, 93.2)	0.4	(-1.3, 2.1)	0.61
70 and Older	94.2%	(92.2, 95.7)	93.6%	(90.8, 95.5)	-0.6	(-3.8, 2.5)	0.68
Occupants by Race[6]							
White	92.6%	(91.2, 93.8)	92.4%	(90.8, 93.7)	-0.2	(-2.2, 1.7)	0.81
Black	82.6%	(76.8, 87.2)	85.7%	(81.5, 89.1)	3.1	(-0.4, 6.6)	0.08
Members of Other Races	92.1%	(89.3, 94.2)	93.5%	(91.7, 94.9)	1.4	(-0.9, 3.7)	0.23
Drivers With							
No Passengers	91.5%	(90.0, 92.9)	91.6%	(90.1, 92.8)	0.0	(-1.9, 2.0)	0.96
At Least One Passenger	93.0%	(91.3, 94.4)	93.4%	(92.1, 94.6)	0.4	(-1.4, 2.2)	0.63
Drivers With							
No Passengers	91.5%	(90.0, 92.9)	91.6%	(90.1, 92.8)	0.0	(-1.9, 2.0)	0.96
Passengers All Under 8	95.4%	(93.7, 96.6)	93.7%	(89.7, 96.3)	-1.6	(-4.9, 1.6)	0.31
Passengers All 8 and Older	92.8%	(91.1, 94.3)	93.4%	(92.0, 94.6)	0.6	(-1.2, 2.4)	0.50
Some Passengers Under 8 and Some 8 or Older	92.4%	(88.0, 95.3)	93.1%	(90.4, 95.1)	0.7	(-3.4, 4.8)	0.73

Occupant Group[1]	2022		2023		2022-2023 Change		
	Belt Use[2]	95% Confidence Interval[3]	Belt Use[2]	95% Confidence Interval[3]	Change in Percentage[7]	95% Confidence Interval[4]	*P*-value[5]
Drivers 16-24 With							
No Passengers	87.8%	(84.4, 90.5)	87.6%	(85.0, 89.8)	-0.2	(-3.4, 3.0)	0.92
Passengers All 16-24	87.3%	(80.2, 92.2)	87.7%	(84.0, 90.7)	0.4	(-6.0, 6.8)	0.91
At Least One Passenger Not 16-24	91.1%	(82.1, 95.9)	90.9%	(84.8, 94.7)	-0.3	(-8.0, 7.5)	0.95
Occupants 16-24 When							
All Occupants Are 16-24	87.0%	(83.1, 90.2)	87.1%	(84.6, 89.3)	0.1	(-3.4, 3.6)	0.97
At Least One Occupant Is Not 16-24	89.3%	(85.7, 92.0)	89.4%	(86.6, 91.6)	0.1	(-3.4, 3.6)	0.95

[1] Drivers and right-front passengers of passenger vehicles.

[2] Use of shoulder belts observed from 7 a.m. to 6 p.m.

[3] The Wilson confidence interval is used in the estimated percentages in the occupant group (e.g., occupants who are male), which is in the form: $\left\{(2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)}\right\}/\left(2(n_{EFF} + t^2)\right)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/D_{EFF}$ is the effective sample size (where n is the sample size and D_{EFF} is the design effect), $t = t_{(1-\alpha/2)}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages, these endpoints are multiplied by 100.

[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{(1-\alpha/2)}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{(1-\alpha/2)}(df)$ is a multiplier from the t-distribution with df degrees of freedom.

[5] A p-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the year-over-year estimates for the group in question, **indicated with bold type**.

[6] The age, sex, and racial classifications are based on the subjective assessments of roadside observers.

[7] The "Change in Percentage Points" column was computed using unrounded estimates and may not equal the difference between the rounded estimates displayed in the table.

Source: NOPUS, 2022, 2023.

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Seat Belt Use in Rear Seats

According to Federal Motor Vehicle Safety Standard No. 208, *Occupant crash protection*, all passenger cars shall have integral lap and shoulder belts at every front outboard designated seating position and every rear designated seating position (except for side-facing seating positions). Using the 2020 vehicle registration data from the National Vehicle Population Profile (R. L. Polk & Co., 2006), NHTSA estimated that 96.4 percent of passenger vehicles on the road have shoulder belts in the rear outboard seating positions. Of the 3.6 percent of vehicles that have only lap belts in the rear outboard seats, all observed rear-seat vehicle occupants are counted by NOPUS as *unbelted (not restrained with a shoulder belt)*, even if they are using lap belts. So, NOPUS rear-seat shoulder belt use estimates reflect both the degree that vehicle occupants use restraints and the availability of shoulder belts in these seating positions. Please note that NOPUS only observes up to two passengers in the second row of seats and none in the third row and beyond.

Table 2 shows results of seat belt use in rear seats of passenger vehicles in 2022 and 2023 as well as the changes between the 2 years. Some major results are highlighted below.

Seat Belt Use in Rear Seats Versus in Front Seats

Figure 6 shows the front- and rear-seat belt use trends from 2014 to 2023. As in previous years, seat belt use in 2023 was lower in rear seats (80.4%) than in front seats (91.9%).

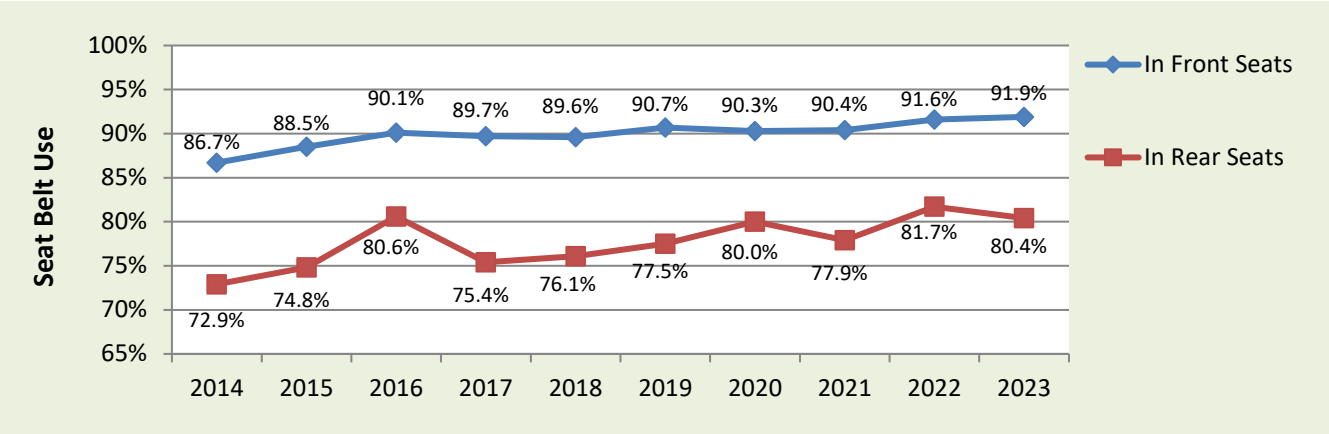

Figure 6. Seat Belt Use by Seating Position for Occupants 8 and Older, 2014 to 2023

State Laws and Rear-Seat Belt Use

At the time the 2023 NOPUS survey was conducted, 32 States and the District of Columbia required all vehicle occupants 18 and older to use seat belts when riding in rear seats (Highway Loss Data Institute, 2023). Please note that rear-seat belt use laws are secondary in Alabama, Connecticut, Idaho, Kansas, Maryland, Massachusetts, Montana, Nevada, New Jersey, North Carolina, Vermont, and Wyoming. Secondary seat belt laws state that a law enforcement officer may issue a ticket for not wearing a seat belt only when there is another citable traffic infraction. New Hampshire is the only State that does not have mandatory seat belt laws for adults 18 and older.

The following States and the District of Columbia had laws in effect as of June 5, 2023, that require people 18 and older to use seat belts in all seating positions (Highway Loss Data Institute, 2023).

Alabama, Alaska, California, Connecticut, Delaware, District of Columbia, Hawaii, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Montana, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming.

Figure 7 shows the trend of rear-seat belt use among passengers in the States with or without laws requiring belt use in all seating positions over the period 2014 to 2023. Rear-seat belt use in States with laws requiring belt use in all seating positions decreased from 81.7 percent in 2022 to 81.3 percent in 2023, while rear-seat belt use in States with laws requiring belt use only in the front seat decreased from 81.5 percent in 2022 to 75.8 percent in 2023. Both of these decreases are not statistically significant.

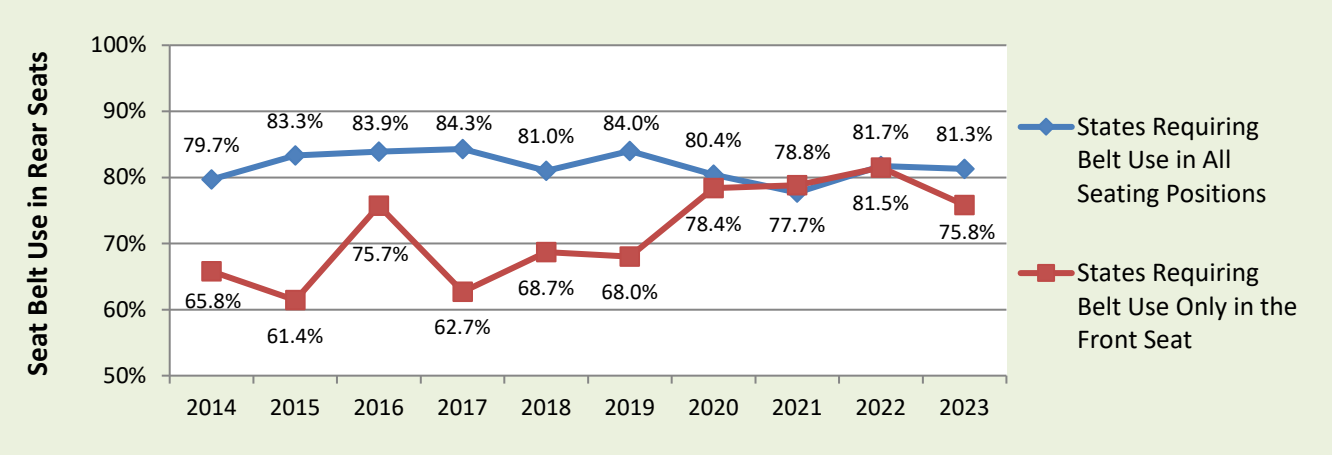

Figure 7. Seat Belt Use in Rear Seats by State Law Type for Occupants 8 and Older, 2014 to 2023

Seat belt use among female passengers in rear seats (80.9%) was higher than the seat belt use among male passengers in rear seats (79.9%). Seat belt use continued to be lower among Black occupants (65.6%) than White occupants (84.5%) and members of other races (75.4%) in rear seats.

Table 2. Seat Belt Use in Rear Seats (8 and Older) of Passenger Vehicles, by Major Characteristics

Passenger Group[1]	2022		2023		2022-2023 Change		
	Belt Use[2]	95% Confidence Interval[3]	Belt Use[2]	95% Confidence Interval[3]	Change in Percentage[7]	95% Confidence Interval[4]	*P*-value[5]
All Passengers	81.7%	(75.1, 86.8)	80.4%	(73.3, 85.9)	-1.3	(-6.9, 4.4)	0.65
Males[6]	79.9%	(73.0, 85.4)	79.9%	(72.4, 85.8)	0.0	(-6.1, 6.1)	1.00
Females[6]	83.8%	(77.0, 88.9)	80.9%	(73.6, 86.5)	-2.9	(-9.2, 3.3)	0.35
Passengers by Age Group[6]							
8 to 15	89.5%	(84.4, 93.0)	85.1%	(79.4, 89.5)	-4.4	(-10.3, 1.6)	0.14
16 to 24	77.4%	(69.4, 83.9)	80.4%	(71.2, 87.2)	3.0	(-6.2, 12.2)	0.51
25 to 69	76.0%	(67.2, 83.0)	74.5%	(65.8, 81.6)	-1.5	(-8.3, 5.4)	0.66
70 and Older	91.7%	(81.1, 96.6)	87.8%	(76.4, 94.1)	-3.8	(-15.0, 7.3)	0.49
Passengers by Race[6]							
White	87.3%	(83.1, 90.6)	84.5%	(78.4, 89.1)	-2.8	(-7.8, 2.2)	0.26
Black	66.0%	(55.2, 75.3)	65.6%	(55.5, 74.4)	-0.4	(-13.8, 12.9)	0.95
Members of Other Races	69.2%	(58.8, 78.0)	75.4%	(64.0, 84.1)	6.2	(-3.2, 15.6)	0.19
Passengers in States With Laws Requiring Belts Be Used							
In All Seating Positions	81.7%	(74.0, 87.5)	81.3%	(72.8, 87.5)	-0.4	(-7.2, 6.3)	0.90
In Front Seats Only	81.5%	(70.2, 89.2)	75.8%	(68.0, 82.1)	-5.8	(-15.5, 3.9)	0.23

[1] Up to two passengers observed in the second row of seats in passenger vehicles.

[2] Use of shoulder belts observed from 7 a.m. to 6 p.m.

[3] The Wilson confidence interval is used in the estimated percentages in the occupant group (e.g., occupants who are male), which is in the form: $\left\{(2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)}\right\}/\left(2(n_{EFF} + t^2)\right)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/D_{EFF}$ is the effective sample size (where n is the sample size and D_{EFF} is the design effect), $t = t_{(1-\alpha/2)}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages, these endpoints are multiplied by 100.

[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{(1-\alpha/2)}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{(1-\alpha/2)}(df)$ is a multiplier from the t-distribution with df degrees of freedom.

[5] A *p*-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the year-over-year estimates for the group in question, **indicated with bold type**.
[6] The age, sex, and racial classifications are based on the subjective assessments of roadside observers.
[7] The "Change in Percentage Points" column was computed using unrounded estimates and may not equal the difference between the rounded estimates displayed in the table.
Source: NOPUS, 2022, 2023

Child Restraint Use

In 2023, NOPUS continued to collect roadside observational data on child restraint use for all children under 8 years old. Detailed results of child restraint use are shown in Table 3, Table 4, and Table 5. Table 3 shows the results of child restraint use in passenger motor vehicles by major characteristics in 2022 and 2023 as well as the changes between the 2 years. Table 4 shows results on child rear seat placement by major characteristics in 2022 and 2023 as well as the changes between the 2 years. Table 5 divides the child occupants into three age groups and reports restraint use by some other characteristics among these groups. Some of the major results of child restraint use are discussed below.

Child Restraint Use Among All Children Under 8 Years Old

Restraint use for children under 8 in 2023 was 90.9 percent, down from 93.3 percent in 2022, that is not a significant change. Figure 8 shows the child restraint use trend since 2014.

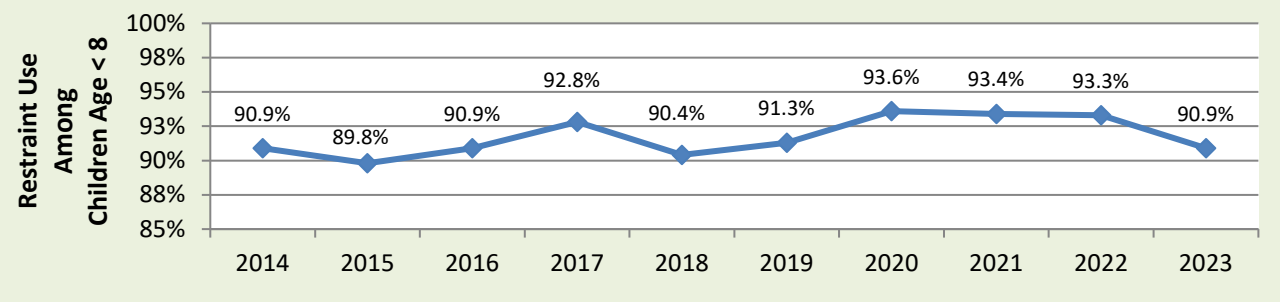

Figure 8. Child Restraint Use Among Children Under 8 Years Old, 2014 to 2023

Child Rear Seat Placement

Figure 9 shows the trends for each age group of rear-seat placement of children under 8 from 2014 to 2023. The 2023 NOPUS found that 91.7 percent of children under 8 rode in rear seats of vehicles, which is not a significant increase from 91.4 percent in 2022. In the infant group (from birth to 12 months), 99.3 percent rode in rear seats. 97.8 percent of children 1 to 3 years old and 86.6 percent of 4- to 7-year-olds were in rear seats in 2023. Rear seat placement among children under 8 in States with laws requiring children under 8 to be in the rear seat increased significantly from 88.6 percent in 2022 to 94.5 percent in 2023. Rear seat placement among children traveling in medium speed traffic increased significantly from 90.2 percent in 2022 to 94.0 percent in 2023. Lastly, rear seat placement among children in the South increased significantly from 89.8 percent in 2022 to 94.2 percent in 2023.

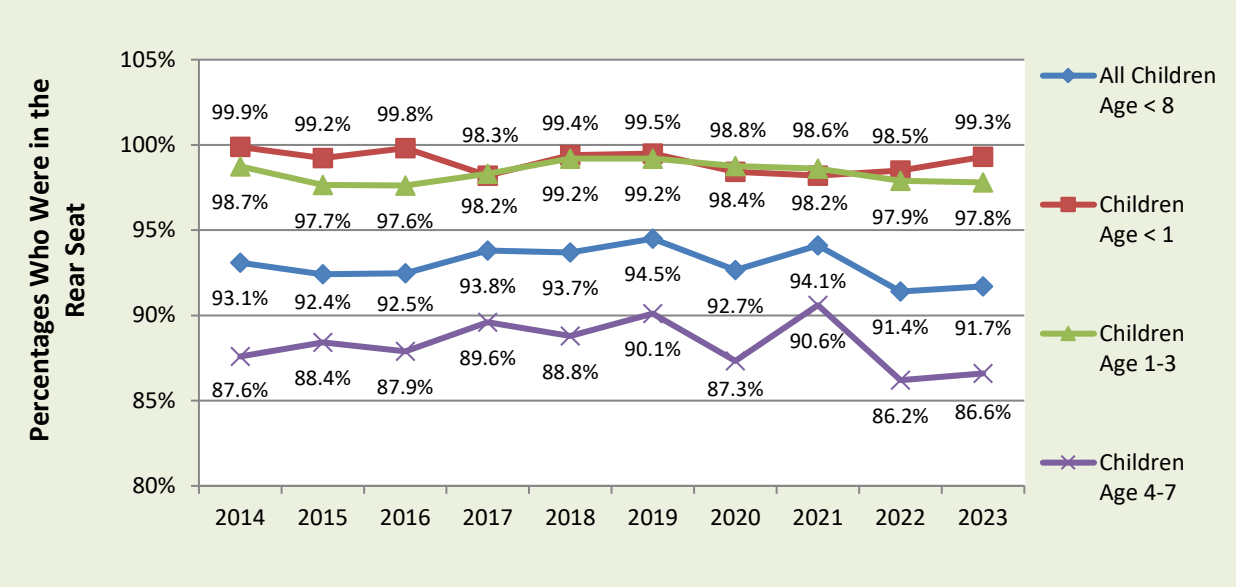

Figure 9. Child Rear Seat Placement, 2014 to 2023

As of June 5, 2023, at the time the 2023 survey was conducted, 11 States required children 5 and younger who weighed less than 80 pounds and were less than 54 inches tall, to ride in the rear seats of vehicles. The States are California, Georgia, Louisiana, Maine, Nebraska, New Jersey, Rhode Island, South Carolina, Tennessee, Washington, and Wyoming. In no other State did such laws take effect from June 6, 2022, to June 5, 2023. In Delaware, children 11 and younger and 65 inches or less must be in rear seats if air bags are active (Highway Loss Data Institute, 2023).

Child Restraint Use by Region

There were no significant changes in child restraint use from 2022 to 2023 in any of the regions, as shown in Figure 10. Among all regions, the biggest change occurred in the Northeast where child restraint use decreased from 92.0 percent in 2022 to 87.6 percent in 2023.

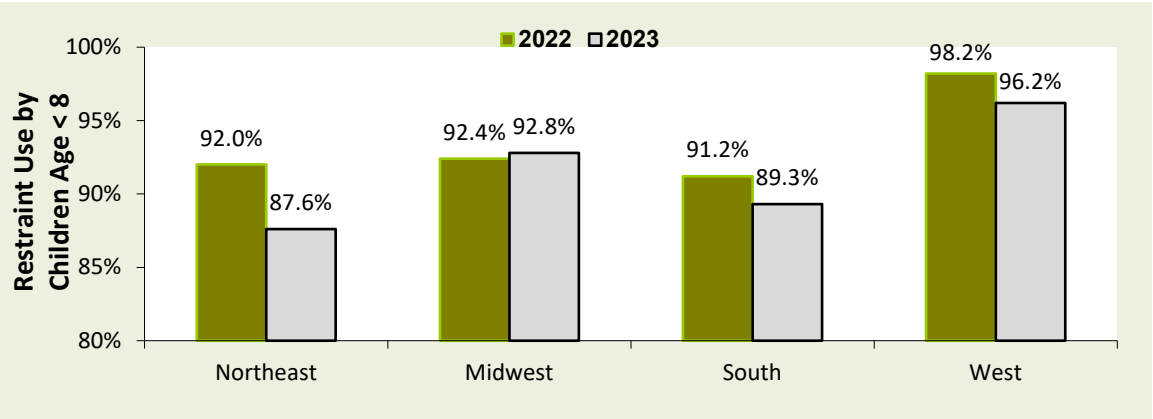

Figure 10. Child Restraint Use by Region in 2022 and 2023

Figure 11 shows the trends in child restraint use by region from 2014 to 2023. The West region had the highest restraint use rate of 96.2 percent in 2023, while the Northeast region had the lowest restraint use rate of 87.6 percent in 2023.

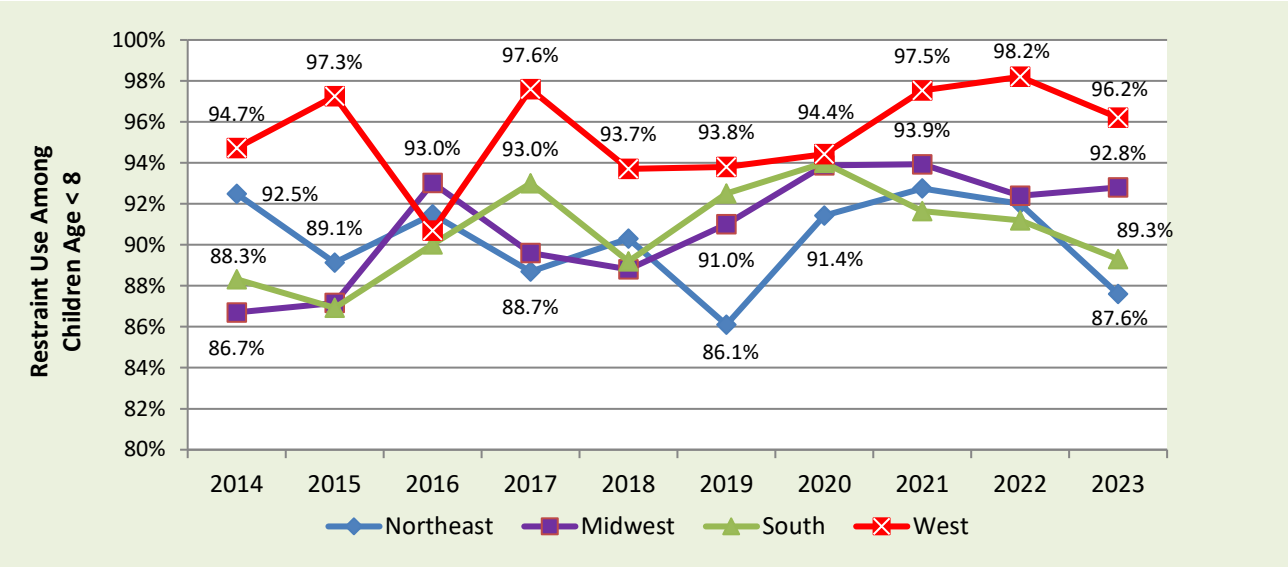

Figure 11. Child Restraint Use by Region, 2014 to 2023

Child Restraint Use by Time of Week

Child restraint use decreased for each of the time of week categories; however, none of the changes are statistically significant (Figure 12).

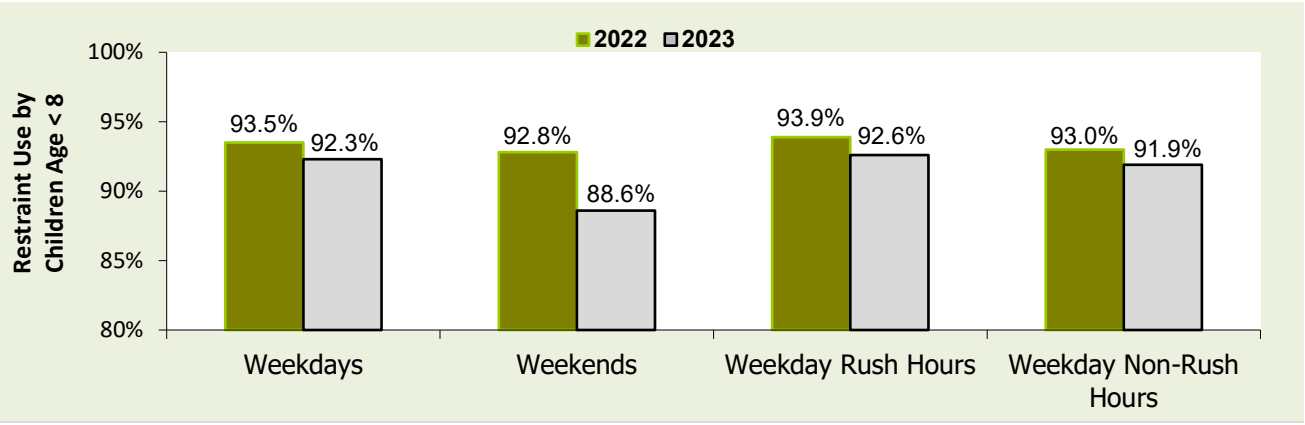

Figure 12. Child Restraint Use by Time of Week in 2022 and 2023

Child Restraint Use by Vehicle Type

Child restraint use decreased for each vehicle type. However, none of these changes are statistically significant (Figure 13).

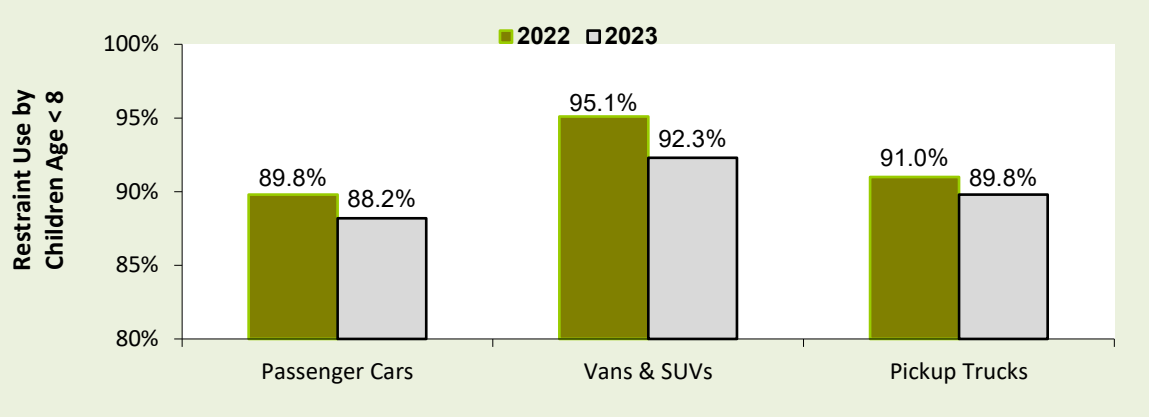

Figure 13. Child Restraint Use by Vehicle Type in 2022 and 2023

Child Restraint Use by Driver Type and Belt Use Status

As shown in Figure 14, restraint use for children driven by belted drivers continued to be significantly higher than for those driven by unbelted drivers.

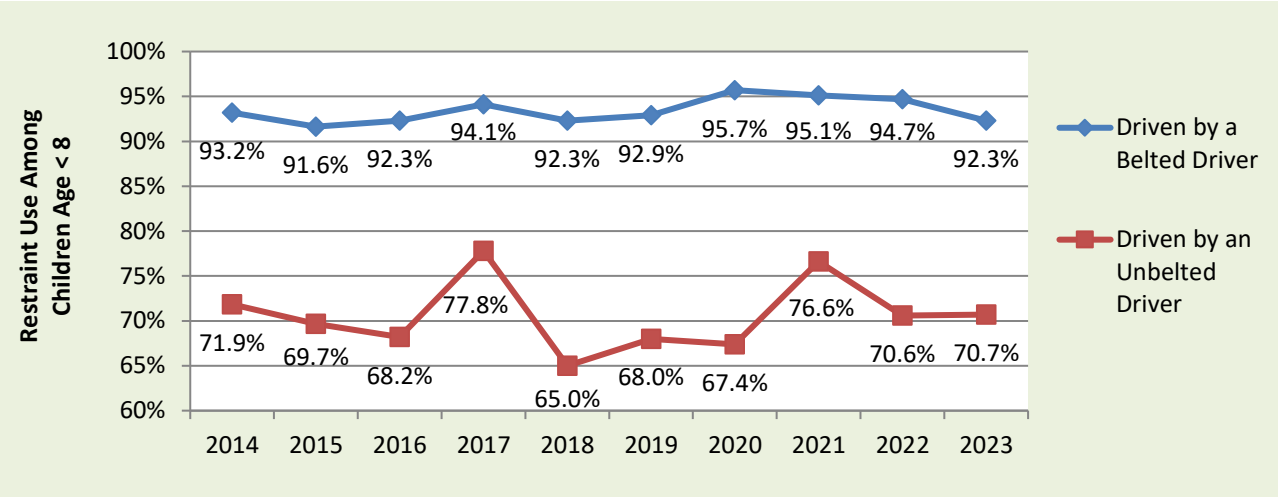

Figure 14. Child Restraint Use by Driver Belt Status, 2014 to 2023

Table 3. Child Restraint Use in Passenger Motor Vehicles, by Major Characteristics

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Restraint Use[2]	95% Confidence Interval[3]	Restraint Use[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
All Child Passengers (From Birth to 7 Years)	93.3%	(90.3, 95.4)	90.9%	(87.6, 93.5)	-2.3	(-5.1, 0.4)	0.09
0 (Infants)	97.6%	(94.1, 99.1)	97.7%	(92.7, 99.3)	0.1	(-3.4, 3.6)	0.96
1-3	96.1%	(93.1, 97.8)	95.0%	(92.3, 96.8)	-1.1	(-3.9, 1.7)	0.44
4-7	90.8%	(86.6, 93.8)	87.2%	(82.4, 90.8)	-3.6	(-8.1, 0.8)	0.10
Children Driven by							
a Belted Driver	**94.7%**	**(92.3, 96.3)**	**92.3%**	**(89.4, 94.5)**	**-2.4**	**(-4.5, -0.3)**	**0.03**
an Unbelted Driver	70.6%	(55.4, 82.3)	70.7%	(58.5, 80.5)	0.1	(-17.3, 17.5)	0.99
a Male Driver	93.4%	(89.4, 95.9)	90.6%	(86.9, 93.4)	-2.7	(-6.4, 0.9)	0.14
a Female Driver	93.2%	(90.1, 95.4)	91.2%	(86.1, 94.5)	-2.0	(-6.5, 2.4)	0.36
a Driver 16 to 24	91.1%	(81.7, 96.0)	89.2%	(78.9, 94.8)	-2.0	(-10.5, 6.6)	0.64
a Driver 25 to 69	93.4%	(90.7, 95.3)	91.3%	(87.9, 93.8)	-2.1	(-5.0, 0.8)	0.14
a Driver 70 and Older	NA	NA	80.9%	(50.7, 94.6)	NA	NA	NA
a White Driver	**95.8%**	**(93.4, 97.4)**	**92.6%**	**(89.0, 95.1)**	**-3.2**	**(-6.4, -0.0)**	**0.05**
a Black Driver	82.2%	(72.1, 89.2)	81.9%	(71.1, 89.3)	-0.3	(-11.2, 10.6)	0.95
a Driver Who Is a Member of Other Races	89.6%	(83.5, 93.6)	87.7%	(82.5, 91.6)	-1.8	(-9.3, 5.6)	0.61
Children in							
Front Seats	87.9%	(80.7, 92.7)	83.3%	(73.3, 90.0)	-4.7	(-15.8, 6.5)	0.40
Rear Seats	93.8%	(90.8, 95.9)	91.7%	(88.3, 94.1)	-2.2	(-4.9, 0.6)	0.12
Child Passengers on							
Expressways	**96.9%**	**(93.8, 98.5)**	**91.1%**	**(86.2, 94.4)**	**-5.8**	**(-10.5, -1.1)**	**0.02**
Surface Streets	90.4%	(86.8, 93.1)	90.8%	(87.1, 93.6)	0.4	(-2.7, 3.6)	0.79
Child Passengers Traveling in							
Fast Traffic	95.1%	(91.6, 97.1)	91.0%	(86.3, 94.2)	-4.0	(-8.3, 0.2)	0.06
Medium-Speed Traffic	93.2%	(89.5, 95.6)	92.5%	(88.6, 95.1)	-0.7	(-4.0, 2.6)	0.65

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Restraint Use[2]	95% Confidence Interval[3]	Restraint Use[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Slow Traffic	90.6%	(86.1, 93.7)	88.6%	(82.4, 92.8)	-2.0	(-6.6, 2.7)	0.40
Child Passengers Traveling in							
Heavy Traffic	94.2%	(91.0, 96.4)	92.4%	(88.5, 95.0)	-1.9	(-5.2, 1.5)	0.26
Moderately Dense Traffic	**93.7%**	**(91.2, 95.6)**	**87.3%**	**(83.0, 90.6)**	**-6.5**	**(-10.4, -2.6)**	**0.00**
Light Traffic	83.3%	(75.7, 88.9)	88.2%	(81.4, 92.7)	4.9	(-2.8, 12.6)	0.20
Child Passengers Traveling Through							
Not Clear Weather Conditions	97.2%	(92.4, 99.0)	92.8%	(85.3, 96.7)	-4.3	(-10.6, 1.9)	0.16
Clear Weather Conditions	93.0%	(90.0, 95.1)	90.8%	(87.3, 93.5)	-2.1	(-5.0, 0.7)	0.14
Child Passengers in							
Passenger Cars	89.8%	(84.8, 93.3)	88.2%	(83.4, 91.7)	-1.6	(-6.7, 3.5)	0.53
Vans and SUVs	95.1%	(92.7, 96.7)	92.3%	(88.1, 95.0)	-2.8	(-6.0, 0.4)	0.08
Pickup Trucks	91.0%	(83.5, 95.3)	89.8%	(83.4, 93.9)	-1.2	(-7.7, 5.2)	0.70
Child Passengers in the							
Northeast	92.0%	(85.7, 95.6)	87.6%	(74.9, 94.4)	-4.4	(-10.6, 1.8)	0.16
Midwest	92.4%	(87.3, 95.5)	92.8%	(88.6, 95.6)	0.5	(-5.7, 6.6)	0.88
South	91.2%	(83.3, 95.6)	89.3%	(83.0, 93.5)	-1.9	(-7.0, 3.2)	0.45
West	98.2%	(97.2, 98.9)	96.2%	(91.0, 98.5)	-2.0	(-5.5, 1.5)	0.25
Child Passengers in							
Urban Areas	93.6%	(90.4, 95.7)	92.1%	(87.6, 95.0)	-1.5	(-5.1, 2.1)	0.41
Rural Areas	92.6%	(88.8, 95.2)	88.3%	(84.1, 91.5)	-4.3	(-8.8, 0.1)	0.06
Child Passengers Traveling During							
Weekdays	93.5%	(89.6, 96.0)	92.3%	(88.8, 94.7)	-1.3	(-4.3, 1.8)	0.40
Rush Hours	93.9%	(89.3, 96.6)	92.6%	(86.8, 95.9)	-1.4	(-5.9, 3.1)	0.53

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Restraint Use[2]	95% Confidence Interval[3]	Restraint Use[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Non-Rush Hours	93.0%	(88.9, 95.6)	91.9%	(88.0, 94.6)	-1.1	(-4.9, 2.7)	0.56
Weekends	92.8%	(89.2, 95.3)	88.6%	(82.5, 92.7)	-4.2	(-10.3, 1.8)	0.16

[1] Passengers under age 8 observed from 7 a.m. to 6 p.m. in the right-front seat or the second row of seats in passenger vehicles that are stopped at a stop sign or stoplight. Age, sex, and racial classifications are based on the subjective assessments of roadside observers.

[2] Use of child car seats (forward- or rear-facing), booster seats, and seat belts.

[3] The Wilson confidence interval is used in the estimated percentages in the occupant group (e.g., occupants who are male), which is in the form: $\left\{(2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)}\right\}/\left(2(n_{EFF} + t^2)\right)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/D_{EFF}$ is the effective sample size (where n is the sample size and D_{EFF} is the design effect), $t = t_{(1-\alpha/2)}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages, these endpoints are multiplied by 100.

[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{(1-\alpha/2)}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{(1-\alpha/2)}(df)$ is a multiplier from the t-distribution with df degrees of freedom.

[5] A p-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the year-over-year estimates for the group in question, **indicated with bold type**.

[6] The "Change in Percentage Points" column was computed using unrounded estimates and may not equal the difference between the rounded estimates displayed in the table.

NA: Data was not sufficient to produce a reliable estimate.

Source: NOPUS, 2022, 2023.

Table 4. The Percentage of Children Who Rode in Rear Seats, by Major Characteristics

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
All Child Passengers (From Birth to 7 Years)	91.4%	(88.9, 93.4)	91.7%	(88.2, 94.2)	0.3	(-3.0, 3.5)	0.87
0 (Infants)	98.5%	(95.6, 99.5)	99.3%	(97.0, 99.8)	0.8	(-1.3, 2.8)	0.44
1-3	97.9%	(95.2, 99.1)	97.8%	(95.1, 99.1)	0.0	(-2.9, 2.8)	0.97
4-7	86.2%	(81.7, 89.8)	86.6%	(81.0, 90.7)	0.3	(-5.0, 5.6)	0.90
Child Passengers in States With[6]							
Law Requiring Children From Birth to 5 Years Be in Rear Seats	**88.6%**	**(81.6, 93.2)**	**94.5%**	**(91.9, 96.3)**	**5.9**	**(0.6, 11.1)**	**0.03**
No Such Law	92.1%	(89.4, 94.1)	91.0%	(86.1, 94.2)	-1.1	(-5.4, 3.1)	0.58
Children Driven by							
a Belted Driver	91.3%	(88.9, 93.3)	91.7%	(88.0, 94.4)	0.4	(-3.1, 3.8)	0.82
an Unbelted Driver	92.8%	(81.8, 97.4)	91.0%	(83.2, 95.3)	-1.8	(-9.5, 5.9)	0.63
a Male Driver	91.6%	(89.0, 93.7)	93.7%	(90.6, 95.8)	2.0	(-0.9, 4.9)	0.16
a Female Driver	91.2%	(88.3, 93.5)	90.1%	(85.6, 93.3)	-1.1	(-5.7, 3.4)	0.62
a Driver 16 to 24	85.7%	(67.7, 94.5)	94.3%	(90.2, 96.8)	8.6	(-4.9, 22.2)	0.20
a Driver 25 to 69	91.7%	(89.2, 93.7)	91.6%	(88.3, 94.0)	-0.1	(-3.5, 3.2)	0.94
a Driver 70 and Older	NA	NA	86.7%	(51.3, 97.6)	NA	NA	NA
a White Driver	91.4%	(88.6, 93.6)	91.6%	(87.0, 94.7)	0.2	(-3.6, 4.0)	0.91
a Black Driver	89.8%	(82.2, 94.3)	93.1%	(87.6, 96.2)	3.3	(-4.4, 11.0)	0.39
a Driver Who is a Member of Other Races	92.6%	(85.1, 96.4)	91.0%	(86.0, 94.3)	-1.6	(-6.3, 3.1)	0.49
Child Passengers on							
Expressways	92.7%	(88.7, 95.4)	94.0%	(90.7, 96.2)	1.3	(-2.7, 5.4)	0.50
Surface Streets	90.4%	(87.1, 92.9)	89.9%	(84.1, 93.7)	-0.5	(-5.8, 4.8)	0.84

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Child Passengers Traveling in							
Fast Traffic	92.4%	(88.0, 95.2)	92.6%	(89.3, 95.0)	0.2	(-4.3, 4.8)	0.92
Medium-Speed Traffic	**90.2%**	**(87.2, 92.5)**	**94.0%**	**(90.6, 96.3)**	**3.9**	**(0.3, 7.4)**	**0.04**
Slow Traffic	91.1%	(85.4, 94.7)	86.2%	(75.6, 92.7)	-4.8	(-14.4, 4.8)	0.32
Child Passengers Traveling in							
Heavy Traffic	91.7%	(89.1, 93.7)	92.0%	(87.6, 94.9)	0.3	(-3.7, 4.3)	0.87
Moderately Dense Traffic	92.2%	(88.9, 94.5)	90.4%	(86.7, 93.1)	-1.8	(-5.9, 2.3)	0.37
Light Traffic	86.4%	(76.0, 92.7)	91.9%	(84.9, 95.8)	5.5	(-0.8, 11.7)	0.09
Child Passengers Traveling through							
Not Clear Weather Conditions	93.1%	(82.9, 97.4)	86.4%	(71.2, 94.2)	-6.7	(-21.0, 7.5)	0.34
Clear Weather Conditions	91.3%	(88.6, 93.4)	91.9%	(88.3, 94.5)	0.7	(-2.7, 4.1)	0.67
Child Passengers in							
Passenger Cars	94.1%	(91.2, 96.1)	91.0%	(87.6, 93.6)	-3.1	(-7.1, 1.0)	0.13
Vans and SUVs	92.0%	(89.0, 94.2)	92.8%	(88.7, 95.5)	0.8	(-2.9, 4.5)	0.66
Pickup Trucks	78.7%	(72.4, 83.8)	86.6%	(79.2, 91.7)	8.0	(-0.7, 16.6)	0.07
Child Passengers in the							
Northeast	95.7%	(89.5, 98.3)	94.5%	(92.5, 96.0)	-1.2	(-6.3, 3.9)	0.64
Midwest	89.5%	(82.2, 94.0)	88.2%	(81.6, 92.7)	-1.3	(-10.8, 8.3)	0.79
South	**89.8%**	**(84.5, 93.4)**	**94.2%**	**(90.4, 96.5)**	**4.4**	**(0.3, 8.5)**	**0.04**
West	92.7%	(87.4, 95.8)	85.9%	(70.7, 93.9)	-6.8	(-17.3, 3.7)	0.20
Child Passengers in							
Urban Areas	91.2%	(88.6, 93.3)	91.5%	(86.9, 94.5)	0.2	(-4.0, 4.4)	0.91
Rural Areas	91.9%	(85.6, 95.6)	92.1%	(86.9, 95.4)	0.3	(-4.4, 4.9)	0.91

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Percentage Who Were in Rear Seat[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Child Passengers Traveling During							
Weekdays	90.1%	(86.8, 92.6)	91.5%	(88.6, 93.7)	1.4	(-2.3, 5.0)	0.44
Rush Hours	89.4%	(85.5, 92.3)	93.4%	(89.4, 96.0)	4.1	(-0.2, 8.3)	0.06
Non-Rush Hours	91.1%	(86.3, 94.4)	89.0%	(83.9, 92.7)	-2.1	(-8.5, 4.2)	0.50
Weekends	93.9%	(91.3, 95.8)	91.9%	(86.3, 95.4)	-2.0	(-7.1, 3.1)	0.43
Child Passengers in a							
Rear-Facing Car Seat	99.1%	(97.7, 99.7)	99.7%	(97.7, 100.0)	0.5	(-0.6, 1.7)	0.35
Forward-Facing Car Seat	99.1%	(97.5, 99.7)	99.1%	(97.9, 99.6)	0.0	(-1.2, 1.1)	0.97
High-Backed Booster Seat	100.0%	(100.0, 100.0)	99.3%	(96.4, 99.9)	-0.7	(-2.0, 0.6)	0.28
Seat Belt or Backless Booster Seat	82.0%	(76.5, 86.3)	83.1%	(75.8, 88.5)	1.2	(-6.5, 8.8)	0.76
No Restraint Observed	84.5%	(74.9, 90.9)	84.6%	(77.4, 89.7)	0.1	(-9.7, 9.8)	0.99

[1] Passengers under 8 observed from 7 a.m. to 6 p.m. in the right-front seat or the second row of seats in passenger vehicles that are stopped at a stop sign or stoplight. Age, sex, and racial classifications are based on the subjective assessments of roadside observers.

[2] The percentage of the child passenger group who were in the second row of seats at the time of observation.

[3] The Wilson confidence interval is used in the estimated percentages in the occupant group (e.g., occupants who are male), which is in the form: $\left\{(2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)}\right\}/\left(2(n_{EFF} + t^2)\right)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/D_{EFF}$ is the effective sample size (where n is the sample size and D_{EFF} is the design effect), $t = t_{(1-\alpha/2)}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages, these endpoints are multiplied by 100.

[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{(1-\alpha/2)}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{(1-\alpha/2)}(df)$ is a multiplier from the t-distribution with df degrees of freedom.

[5] A p-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the year-over-year estimates for the group in question, **indicated with bold type**.

[6] The "Change in Percentage Points" column was computed using unrounded estimates and may not equal the difference between the rounded estimates displayed in the table.

NA: Data was not sufficient to produce a reliable estimate.

Source: NOPUS, 2022, 2023.

Table 5. Child Restraint Use in Passenger Motor Vehicles, by Age and Other Characteristics

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Restraint Use[2]	95% Confidence Interval[3]	Restraint Use[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Infants (From Birth to 12 Months)							
Infants Driven by							
a Belted Driver	97.5%	(93.8, 99.0)	97.7%	(92.4, 99.4)	0.2	(-3.4, 3.9)	0.89
an Unbelted Driver	NA	NA	97.0%	(85.7, 99.4)	NA	NA	NA
a Male Driver	96.1%	(90.4, 98.4)	95.5%	(84.1, 98.8)	-0.6	(-7.9, 6.7)	0.87
a Female Driver	99.0%	(95.8, 99.8)	99.3%	(97.3, 99.8)	0.3	(-1.5, 2.2)	0.71
Infants in							
Passenger Cars	96.4%	(86.7, 99.1)	94.7%	(77.4, 98.9)	-1.7	(-12.4, 9.1)	0.76
Vans and SUVs	98.0%	(94.8, 99.2)	99.4%	(97.9, 99.8)	1.4	(-0.8, 3.6)	0.20
Pickup Trucks	NA	NA	NA	NA	NA	NA	NA
Infants in the							
Northeast	96.8%	(82.6, 99.5)	91.6%	(58.2, 98.9)	-5.2	(-23.4, 13.0)	0.57
Midwest	98.8%	(92.9, 99.8)	99.3%	(95.8, 99.9)	0.5	(-2.4, 3.4)	0.72
South	96.1%	(89.8, 98.6)	99.1%	(96.5, 99.8)	3.1	(-0.7, 6.8)	0.11
West	100.0%	(100.0, 100.0)	97.1%	(82.8, 99.6)	-2.9	(-9.2, 3.4)	0.36
Infants in							
Urban Areas	98.7%	(95.6, 99.6)	97.4%	(89.5, 99.4)	-1.3	(-5.7, 3.1)	0.55
Rural Areas	94.6%	(83.9, 98.4)	98.5%	(93.1, 99.7)	3.8	(-4.0, 11.6)	0.32
Children 1 to 3							
Children 1-3 Driven by							
a Belted Driver	97.0%	(94.3, 98.5)	95.8%	(93.5, 97.4)	-1.2	(-3.7, 1.3)	0.33
an Unbelted Driver	82.2%	(66.6, 91.5)	85.4%	(70.4, 93.5)	3.2	(-12.1, 18.4)	0.67
a Male Driver	96.8%	(93.1, 98.5)	95.7%	(92.7, 97.5)	-1.1	(-4.5, 2.2)	0.50
a Female Driver	95.6%	(91.0, 97.9)	94.5%	(90.9, 96.7)	-1.2	(-5.1, 2.8)	0.55
Children 1-3 in							
Passenger Cars	94.7%	(89.0, 97.5)	90.9%	(86.0, 94.2)	-3.8	(-8.3, 0.6)	0.09
Vans and SUVs	97.2%	(93.9, 98.7)	97.0%	(94.0, 98.5)	-0.2	(-3.0, 2.6)	0.88

Child Passenger Group[1]	2022		2023		2022-2023 Change		
	Restraint Use[2]	95% Confidence Interval[3]	Restraint Use[2]	95% Confidence Interval[3]	Change in Percentage Points[6]	Confidence in a Change in Use[4]	*P*-value[5]
Pickup Trucks	90.6%	(74.9, 96.9)	94.0%	(84.1, 97.9)	3.4	(-10.1, 16.9)	0.61
Children 1-3 in the							
Northeast	**96.0%**	**(87.2, 98.8)**	**91.4%**	**(85.5, 95.1)**	**-4.5**	**(-7.8, -1.2)**	**0.01**
Midwest	**93.7%**	**(87.2, 97.0)**	**98.6%**	**(95.0, 99.6)**	**4.9**	**(1.1, 8.7)**	**0.01**
South	95.4%	(88.2, 98.3)	93.9%	(87.6, 97.1)	-1.5	(-7.8, 4.7)	0.62
West	99.7%	(97.6, 100.0)	98.2%	(92.7, 99.6)	-1.5	(-4.4, 1.4)	0.30
Children 1-3 in							
Urban Areas	95.8%	(92.4, 97.7)	95.2%	(92.5, 96.9)	-0.6	(-3.5, 2.2)	0.66
Rural Areas	97.0%	(92.5, 98.8)	94.6%	(89.7, 97.2)	-2.4	(-7.0, 2.1)	0.28
Children 4 to 7							
Children 4-7 Driven by							
a Belted Driver	**92.8%**	**(89.6, 95.0)**	**89.2%**	**(84.9, 92.3)**	**-3.6**	**(-7.1, -0.1)**	**0.05**
an Unbelted Driver	57.4%	(37.8, 74.9)	52.6%	(35.9, 68.7)	-4.8	(-33.3, 23.7)	0.73
a Male Driver	91.0%	(83.6, 95.2)	86.7%	(81.3, 90.7)	-4.3	(-10.3, 1.7)	0.15
a Female Driver	90.7%	(86.6, 93.6)	87.5%	(79.9, 92.6)	-3.1	(-10.2, 4.0)	0.38
Children 4-7 in							
Passenger Cars	85.3%	(78.3, 90.4)	84.4%	(77.3, 89.6)	-0.9	(-10.1, 8.2)	0.84
Vans and SUVs	93.2%	(89.6, 95.6)	88.3%	(82.4, 92.4)	-4.9	(-9.9, 0.1)	0.05
Pickup Trucks	90.2%	(75.3, 96.5)	86.5%	(77.7, 92.2)	-3.7	(-13.8, 6.5)	0.47
Children 4-7 in the							
Northeast	87.0%	(77.8, 92.7)	84.1%	(66.4, 93.4)	-2.9	(-12.7, 6.8)	0.54
Midwest	90.7%	(83.5, 95.0)	89.4%	(82.6, 93.8)	-1.3	(-10.4, 7.8)	0.77
South	88.1%	(75.7, 94.6)	84.1%	(75.0, 90.3)	-4.0	(-12.7, 4.7)	0.35
West	97.2%	(95.4, 98.3)	95.0%	(86.6, 98.2)	-2.2	(-8.3, 3.9)	0.47
Children 4-7 in							
Urban Areas	91.1%	(86.1, 94.4)	89.0%	(82.3, 93.3)	-2.1	(-8.1, 3.9)	0.48
Rural Areas	**90.2%**	**(86.0, 93.3)**	**83.3%**	**(76.8, 88.2)**	**-7.0**	**(-13.6, -0.4)**	**0.04**

[1] Passengers under 8 observed from 7 a.m. to 6 p.m. in the right-front seat or the second row of seats in passenger vehicles that are stopped at a stop sign or stoplight. Age, sex, and racial classifications are based on the subjective assessments of roadside observers.

[2] Use of child car seats (forward- or rear-facing), booster seats, and seat belts.

[3] The Wilson confidence interval is used in the estimated percentages in the occupant group (e.g., occupants who are male), which is in the form: $\left\{(2n_{EFF}p + t^2) \pm t\sqrt{(t^2 + 4n_{EFF}pq)}\right\}/\left(2(n_{EFF} + t^2)\right)$, where p is the estimated percentage of Belt Use, $n_{EFF} = n/D_{EFF}$ is the effective sample size (where n is the sample size and D_{EFF} is the design effect), $t = t_{(1-\alpha/2)}(df)$, is a multiplier from the t-distribution with df degrees of freedom, and $q = 1 - p$. For percentages, these endpoints are multiplied by 100.

[4] The regular symmetric interval was used for the estimated change in percentage point, which is in the form: $p \pm t_{(1-\alpha/2)}(df)\sqrt{v(p)}$, where p is the estimated change in percentage point, $v(p)$ is its estimated variance, and $t_{(1-\alpha/2)}(df)$ is a multiplier from the t-distribution with df degrees of freedom.

[5] A p-value of 0.05 or less indicates that there is a statistically significant difference (at the alpha=0.05 level) between the year-over-year estimates for the group in question, **indicated with bold type**.

[6] The "Change in Percentage Points" column was computed using unrounded estimates and may not equal the difference between the rounded estimates displayed in the table.

NA: Data was not sufficient to produce a reliable estimate.

Source: NOPUS, 2022, 2023.

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NOPUS Methodology

The NOPUS sample was redesigned in 2015 and that design has since been used to conduct the survey. This section discusses the sample design, data collection, and estimation used in the 2023 NOPUS CI Study. Data collection, estimation, and variance estimation for NOPUS are conducted by Westat, Inc., under the direction of the NCSA under Federal contract number 693JJ918D000001.

Sample Design

The NOPUS uses a complex multistage probability sample, statistical data editing, imputation for unknown values, and complex estimation procedures. The sample sites for the 2023 NOPUS were entirely from the 2015 NOPUS sample redesign.

The redesigned NOPUS sample was selected using a stratified two-stage design. The first stage of selection was the individual county or set of adjacent counties, referred to as the primary sampling unit (PSU) in the design framework. The PSUs were targeted for selection based on their measure of size (MOS). A sample of 57 PSUs were selected from a frame of 1,588 PSUs.

The second stage of selection or secondary sampling unit (SSU), in the selected PSUs, is the road segment. At the road segment level, the NOPUS data collectors are then positioned so that they can efficiently observe seat belt use, motorcycle helmet use, and driver electronic device use.

The NOPUS sample frame of PSUs excluded Puerto Rico and the U.S. Territories. All other counties in the United States were included in the sampling frame with the exception of 37 counties and 3 areas in Alaska; these locations were excluded on the basis of low traffic volume measured in terms of vehicle miles traveled (VMT) or because they were geographically isolated. The sample frame of SSUs excluded segments along unnamed roads, cul-de-sacs, private roads, and a variety of other road types that have traditionally had very low traffic volume measured by VMT.

One PSU was sampled with certainty because of its large VMT, and the remaining PSUs were then grouped into the eight major strata based on the four Census regions (Northeast, Midwest, South, and West) and two urbanicity classes (Urban and Rural).

A sample of 57 PSUs was selected using a sequential Poisson method with probability approximately proportional to the VMT as the MOS (Ohlsson, 1998). The new NOPUS sample was selected to maximize PSU overlap with the old sample, thus maintaining comparability of the estimates from the current and previous samples. An SSU sample of road segments in each PSU is selected based on the types of roads and urban/rural status with specified sampling rates.

Table 6 shows the observed sample sizes of the 2023 CI Study. A total of 69,504 occupants were observed in 51,769 vehicles, both of which are approximately 8 percent more than the 2022 sample. Of these observed occupants, 2,287 were children under 8. Please note that due to ineligibility, construction, danger in the area, or road closure, observations could not be completed at some of the sampled observation sites.

Table 6. Sites, Vehicles, and Occupants in the 2023 NOPUS Controlled Intersection Study

Numbers of	2022	2023	Percentage Change
Sites Observed	1,618	1,631	0.80%
Vehicles Observed	48,081	51,769	7.67%
Total Occupants	64,233	69,504	8.21%
Occupants 8 and Older	62,102	67,217	8.24%
In Front Seat	59,639	64,596	8.31%
In Rear Seat	2,463	2,621	6.41%
Occupants Under 8	2,131	2,287	7.32%
Children Under 1	262	309	17.94%
Children 1 to 3	684	675	-1.32%
Children 4 to 7	1,185	1,303	9.96%

Data Collection

The 2023 NOPUS Data waswas collected from June 5 to June 24, 2023, while the 2022 NOPUS Data waswas collected from June 6 to June 24, 2022. In a typical year, data is collected in early June, immediately following the *Click It or Ticket* campaign.

Data collection protocols remain largely the same in the redesigned NOPUS from 2015; however, NHTSA made adjustments such as including government, emergency, and commercial vehicles, and those carrying hazardous materials. Such vehicles are subject to seat belt laws in relevant jurisdictions and should be observed.

In the CI Study, trained data collectors observe restraint use of drivers and other occupants of passenger vehicles (passenger cars, pickup trucks, SUVs, and vans) that have stopped at stop signs or stoplights during daylight hours from 7 a.m. to 6 p.m. Observations are made both on the surface streets and at the ends of the expressway exit ramps (where there are controlled intersections). Only stopped vehicles are observed based on the time required to collect the variety of information required by the survey, including subjective assessments of the vehicle occupant age and race. Observers collect data on the driver, right-front passenger, and up to two passengers in the second row of seats. Observers do not interview vehicle occupants, allowing NOPUS to capture the uninfluenced behavior of the occupants.

The CI Study is conducted annually following the NOPUS MT Survey and is usually scheduled for all surface streets and limited access highway ramps, where NOPUS data from previous years states that a controlled intersection exists. If the data collectors arrive at an assigned surface street site and the site is not controlled, they are instructed to search for an alternate data collection site further along the same road segment. After the data collectors have located a controlled intersection, they position themselves at the traffic signal or stop sign, facing the oncoming traffic from the side of the road. The data collectors walk in the direction of the oncoming traffic, away from the intersection to make their observations. When the traffic light turns green or they finish observing all vehicles, the data collectors return to the intersection to wait for the next traffic light cycle or next vehicle. They observe vehicles in the lane closest to their observational position, even if the closest lane is an exclusive turn lane (which is often the case at the controlled intersections.) When possible and if visibility allows, the data collectors

also observe the other lanes of traffic. The data collectors are instructed to record the first behavior of the driver that they observe.

Estimation

NOPUS estimates the proportion of occupants restrained in restraint type (R) among the occupants having characteristic (C) using the formula,

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

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 seat belt use by vehicle type is estimated using the above formula, where CR_{ijk} is the number of observed belted occupants in certain types of vehicles (such as passenger cars, vans and SUVs, or pickup trucks) and C_{ijk} is the number of ALL (belted and unbelted) occupants observed in that type of vehicle at the site k in the stratum j of the PSU *i*.

Note that estimates computed from the CI Study reflect the population of all occupants on the road at a typical daylight moment, not just those at intersections.

Prior to 2015 NHTSA's NOPUS publications reported integer percentage values for seat belt use point estimates. Along with updating the survey design, NHTSA has revised its NOPUS reporting format to be consistent with statistical best practices across the Federal Government. The new reporting format presents percentage-point estimates with one decimal place. Along with this change, 95 percent confidence intervals and *p*-values accompany the point estimates.

In certain instances, NHTSA does not provide estimates. These are typically restraint use estimates whose numerator is based on fewer than 5 people observed, or whose denominator is based on fewer than 30 people observed. These are reported as "NA" in publications. Any related estimate (i.e., change in use and confidence estimates) is not reported as well. The same criteria are used in reporting estimates from the National Survey of the Use of Booster Seats.

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