



Research Note

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National Occupant Protection Use Survey: Controlled Intersection Study

In late 1994, NHTSA conducted the National Occupant Protection Use Survey (NOPUS). NOPUS is composed of three separate studies: the *moving traffic study* which provides information on overall shoulder belt use, the *controlled intersection study* which provides more detailed information about shoulder belt use by type of vehicle, characteristics of the belt users and child restraint use, and the *shopping center study* which provides information on rear-seat belt use and shoulder belt misuse. The results from the moving traffic survey were released in an earlier research note. This note presents the first results from the controlled intersection study. Further results will be released as they become available.

Data Collection Methodology

Data collection for the controlled intersection study was conducted for 40 minutes at each of 2,500 randomly selected intersections with stop signs or traffic signals. Pairs of observers recorded shoulder belt use for drivers and right-front passengers of passenger cars and light trucks (vans, minivans, sport utility vehicles, and pickup trucks), the vehicle's license plate number, and the age group, sex and race of the observed person. Age, sex, and race were based on the best judgment of the observers. Child restraint information was collected for children under five in the front and second seats of the vehicle. Helmet use for motorcycle riders and passengers was also recorded. Every day of the week and all daylight hours (8 a.m. to 6 p.m.) were

covered by the study. Commercial and emergency vehicles were excluded.

General Results

Restraint use was observed for 72,000 drivers and 21,000 passengers in 50,000 passenger cars and 22,000 light trucks. Restraint use varied according to the driver's or passenger's age group, sex, race and depending on the type of area where the data were collected. A summary of results is presented below and detailed results are presented in the tables on the following pages. Restraint use by specific vehicle type and restraint system will be released after license plate numbers have been matched to state registration files.

Restraint Use by Age:

Infant (less than 1 year):	
child safety seats	88%
Toddler (1 through 4 years):	
belts or child safety seats	61%
Youth (5 to 15 years):	58%
Young Adult (16 to 24 years):	53%
Adult (more than 24 years):	59%

Shoulder Belt Use by Sex:

Female:	64%
Male:	54%

Shoulder Belt Use by Race:

White:	60%
Black:	53%
Other:	55%

Shoulder Belt Use by Type of Area:

City: 58%
 Suburban: 63%
 Rural: 53%

By simply adding and subtracting two standard errors from the estimates, an approximate 95% confidence interval can be created. This means that you can be 95% sure that the true use rate lies within this interval. More information about the sample design and the estimation procedures are available from the National Center for Statistics and Analysis.

Estimation Procedures

Each estimate has been statistically weighted according to the sample design. Since these are estimates from a sample, each has an associated margin of error or standard error. Two standard errors are given in parentheses next to each estimate.

Table 1: Shoulder Belt Use by Age Group
 (Estimates and 2 Standard Errors)

	Overall	Youth (5 to 15 Years)	Young Adult (16 to 24 Years)	Adult (Over 24 Years)
Shoulder Belt Use (%)	58.0 (4.2)	57.7 (7.2)	52.6 (5.6)	59.1 (4.4)
Passenger Cars (%)	62.7 (3.8)	59.0 (7.5)	55.8 (5.8)	63.9 (4.1)
Car Drivers (%)	63.2 (3.9)	n/a	57.1 (6.1)	64.1 (4.1)
Car Passengers (%)	61.3 (3.9)	58.8 (7.6)	50.4 (7.0)	64.0 (4.4)
Light Trucks (%)	50.0 (5.1)	54.8 (11.3)	45.7 (7.4)	51.0 (5.4)
Truck Drivers (%)	49.6 (5.3)	n/a	47.5 (7.3)	50.5 (5.6)
Truck Passengers (%)	52.2 (6.1)	57.1 (8.9)	41.7 (12.9)	53.1 (6.2)

n/a = not available

Table 2: Shoulder Belt Use by Area Type
 (Estimates and 2 Standard Errors)

	Overall	City	Suburb	Rural
Shoulder Belt Use (%)	58.0 (4.2)	57.7 (7.8)	62.9 (3.2)	52.8 (7.1)
Passenger Cars (%)	62.7 (3.8)	60.4 (7.9)	67.0 (2.5)	59.5 (6.6)
Car Drivers (%)	63.2 (3.9)	60.6 (8.2)	67.3 (2.6)	60.6 (6.5)
Car Passengers (%)	61.3 (3.9)	59.5 (6.9)	65.5 (4.2)	57.7 (6.6)
Light Trucks (%)	50.0 (5.1)	51.9 (9.6)	55.3 (5.5)	44.0 (7.4)
Truck Drivers (%)	49.6 (5.3)	52.1 (10.0)	54.6 (6.3)	43.3 (7.6)
Truck Passengers (%)	52.2 (6.1)	52.8 (11.2)	56.7 (8.0)	47.3 (8.3)

**Table 3: Shoulder Belt Use by Race and Sex
(Estimates and 2 Standard Errors)**

	White	Black	Other Race	Female	Male
Shoulder Belt Use (%)	59.6 (4.1)	53.0 (6.9)	54.6 (9.7)	64.4 (4.4)	54.4 (4.2)
<i>Passenger Cars (%)</i>	64.8 (3.8)	54.9 (6.7)	58.9 (10.2)	66.5 (4.2)	59.1 (3.8)
<i>Car Drivers (%)</i>	64.9 (4.1)	56.3 (7.0)	60.0 (10.2)	66.8 (4.0)	60.4 (3.9)
<i>Car Passengers (%)</i>	63.7 (3.7)	48.6 (7.7)	48.7 (11.5)	65.4 (4.5)	50.8 (5.3)
<i>Light Trucks (%)</i>	50.9 (4.8)	45.8 (10.6)	44.8 (12.2)	60.5 (5.5)	46.3 (5.4)
<i>Truck Drivers (%)</i>	50.6 (5.4)	45.9 (10.7)	46.6 (11.7)	61.9 (6.0)	46.7 (5.6)
<i>Truck Passengers (%)</i>	52.7 (5.3)	41.3 (18.4)	39.6 (19.7)	58.1 (7.1)	42.3 (7.0)

Results - Child Restraints

The NOPUS collection effort was the first time that NHTSA has conducted a child restraint survey at randomly selected sites. Previous efforts, such as the 19-cities survey, collected information on child restraint use at shopping centers, where children were most likely to be seen. Observing child restraint use at randomly selected sites, even 2,500 of these sites, poses certain collection and estimation problems. Since only 8 percent of the resident population of the country are children under the age of 5, observing enough children in passenger vehicles to produce reliable estimates is difficult. During the controlled intersection collection, a total of 336 infants and 1,237 toddlers were observed. For infants or toddlers separately, reliable estimates can be made only for overall restraint use. Combining infants and toddlers, reliable estimates can be made by vehicle type, seating position, time of day, and area type. For infants, the observed restraint type was always child safety seats. However, among restrained toddlers, 62% were observed in safety seats and the other 38% were observed using safety belts. Reliable estimates by individual restraint type could not be made due to the limited sample size. Some of the estimates in the following table are subject to large sampling errors and should be interpreted with caution.

**Table 4: Restraint Use by Children Under 5 Years
(Estimates and 2 Standard Errors)**

	Restrained (%)
Overall	66.1 (8.2)
<i>Infants (less than 1 year)</i>	87.7 (4.1)
<i>Toddlers (1 to 4 years)</i>	60.7 (10.3)
<i>Passenger Car</i>	68.4 (8.7)
<i>Light Truck</i>	60.6 (19.3)
<i>Front Seat</i>	61.1 (12.0)
<i>Back Seat</i>	70.0 (8.2)
<i>Rush Hour</i>	55.7 (13.2)
<i>Non-Rush Hour</i>	68.9 (7.4)
<i>Week day</i>	66.1 (9.8)
<i>Week end</i>	66.2 (11.1)
<i>City</i>	69.1 (18.0)
<i>Suburb</i>	68.1 (9.8)
<i>Rural</i>	59.8 (13.1)

No attempt was made to measure child safety seat misuse in this study. Another study, being conducted by NHTSA's Office of Program Development and Evaluation, will examine the misuse issue in detail.

Results - Drivers and Children

Drivers' shoulder belt use differed depending on whether a child was in the vehicle and whether that child was restrained. However, child restraint use did not differ significantly by the sex of the driver. These results are shown in the next column, each with two standard errors in parentheses. Since some of the errors are large due to the small sample sizes, comparisons between the estimates should be made with caution.

Driver Shoulder Belt Use by Child Restraint Use:

With Restrained Infant	86.1%	(3.4)
With Unrestrained Infant	33.6%	(22.3)
With Restrained Toddler	77.4%	(6.1)
With Unrestrained Toddler	30.3%	(13.7)
With No Children	58.1%	(4.3)

Child Restraint Use by Driver Sex:

Infants with Female Drivers	89.9%	(3.6)
Infants with Male Drivers	81.5%	(9.3)
Toddlers with Female Drivers	64.0%	(10.4)
Toddlers with Male Drivers	56.7%	(15.7)