



National Occupant Protection Use Survey - 2000 Controlled Intersection Study

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In the Fall of 2000, 21 percent more Young Adults (persons 16 – 24 years of age) were restrained by shoulder belts than were restrained in the Fall of 1998. These estimates were obtained through the National Occupant Protection Use Survey (NOPUS) which is conducted by the National Highway Traffic Safety Administration (NHTSA) under the direction of its National Center for Statistics and Analysis (NCSA). Although this 12 percentage point increase in shoulder belt use by Young Adults was the only age group with a statistically significant change from 1998, estimates from the Fall 2000 NOPUS, which was conducted in September and October 2000, continued to reflect the upward trend in shoulder belt use rates that has occurred since the NOPUS was first conducted in 1994. This is the second in a series of Research Notes from NCSA presenting the results from the Fall 2000 NOPUS survey.

NOPUS is composed of two separate studies: the *moving traffic study*, which provides information on overall shoulder belt use; and the *controlled intersection study*, which provides more detailed information about shoulder belt use by type of vehicle and person characteristics and child restraint use. This note presents results from the Controlled Intersection Study. The results from the Moving Traffic Study were released by NCSA in a Research Note dated February 2001, *Observed Safety Belt Use Fall 2000 National Occupant Protection Use Survey*. A third Research Note that will include more information on types of vehicles is being developed.

Data Collection Methodology

Data collection for the controlled intersection

study was conducted for 40 minutes at approximately 1200 randomly selected intersections with stop signs or traffic signals. Two observers recorded shoulder belt use for drivers and the right front seat passengers of passenger cars, vans, 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 judgment of the observers. Child restraint information was collected for children under five years old in the front and second seats of the vehicle. 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.

Sample Design and Sampling Error

The NOPUS is a multi-stage, probability-based sample survey. Consequently, each estimate has been statistically weighted according to the sample design and is subject to sampling variability. Estimates in the following tables are shown with their sampling errors in parentheses. Adding and subtracting twice the sampling error from the estimate will produce an approximate 95 percent confidence interval. This means that one can be 95 percent confident that the true use rate lies within this interval. More information about the sample design and estimation procedures is available from the National Center for Statistics and Analysis.

Results

Restraint use was observed for 7,516 drivers and 2,354 passengers in passenger cars, 2,851 drivers and 985 passengers of vans and SUVs, and 1,908 drivers and 527 passengers in pickup trucks. Restraint use varied according to the

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driver's or passenger's age group, sex, race, and type of area where the data were collected.

Tables 1 and 2 compare observed rates from the 1994, 1996, 1998 and 2000 NOPUS Controlled Intersection Studies for selected characteristics. Tables 3 - 7 present detailed results from the 2000 study only.

The age categories used in this Research Note, unless otherwise noted, are defined as follows:

Infant - less than one year old;
Toddler - 1 to 4 years;
Youth - 5 to 15 years;
Young Adult - 16 to 24 years;
Adult - 25 to 69 years; and,
Senior - over 69 years.

Restraint use by specific vehicle type and available restraint system will be presented in a future Research Note.

Observing child restraint use at randomly selected 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 92 infants and 223 toddlers were observed. Consequently, estimates of child restraint use are subject to large sampling errors and should be interpreted with caution. For instance in Table 3, the margin of error on the estimate of 24 percent for Toddlers in passenger cars that were belted in the front seat is 23 percent. Therefore this estimate is unreliable. The Infant and Toddler categories are combined in Tables 2 and 7 due to the small number of observations.

In addition to the significant increase in the use rate for Young Adults, Table 1 shows a 2 percentage point decrease in the restraint use rate for Infants and a 6 point decrease for Youth from 1998 to 2000. However these decreases are not statistically significant.

Table 2 shows large increases in restraint use for children under 5 in several categories from 1998 to 2000. There was a 9 percentage point increase in suburban areas, a 15 point increase for front seat children, and a 20 point increase during the prime commuting hours. Each of these categories has exhibited substantial

increases since 1996. The 22 point drop in rural areas is not statistically significant, and may have been caused by a small number of observations.

Although it is safest for children under 5 to be placed in an age appropriate child safety seat in the rear seat of passenger vehicles, in the Controlled Intersection Study occupants in this age group (Infants and Toddlers) were counted as "restrained" if they were in a child safety seat or a shoulder belt (but not if in a lap belt) in either the front or rear seat. Table 3 shows that 3 percent of Infants and 45 percent of Toddlers were observed in shoulder belts and that at least 49 percent of Infants and 35 percent of Toddlers were in the front seat. At least 65 percent of Infants in passenger cars, and 50 percent of Toddlers in vans and SUVs were in the front seat. We do not give estimates by restraint type for pickups due to the small number of children under 5 observed in pickups. No attempt was made to measure child safety seat misuse.

Tables 4-6 show the continuation of many patterns of belt use. Belt use continues to be higher in passenger cars (73 percent) and in vans and SUVs (74 percent) than in pickup trucks (60 percent), as shown in Table 4. In fact passengers in pickup trucks consistently exhibited the lowest use rates among all occupant and vehicle types. Belt use is higher among older occupants than younger (e.g. 76 percent for seniors versus 66 percent for youth). Use rates in rural areas (Table 5) were slightly lower, but not statistically different, than those in urban and suburban areas. However, pickup truck occupants have statistically higher belt use in cities (73 percent) than in suburban (45 percent) or rural areas (53 percent). Table 6 shows that there are no significant differences in belt use among races overall, but that use rates between the sexes are statistically different (77 percent for females versus 67 percent for males).

Although it may be true that children under 5 are more likely to be restrained when their drivers are restrained or female, the results in Table 7 are not statistically significant. Similarly, there is no significant difference in restraint use of drivers among those with restrained children, unrestrained children, and no children.

Table 1
Percent Restraint Use by Year, Age, Sex, Race, and Urbanization
(Estimates and Sampling Errors)

Category	Year			
	1994	1996	1998	2000
Age				
Infant	88 (2.0)	85 (7.3)	97 (5.2)	95 (2.9)
Toddler	61 (5.1)	60 (7.5)	91 (4.0)	91 (3.7)
Youth	58 (3.6)	65 (3.8)	72 (4.9)	66 (7.4)
Young Adult	53 (2.8)	50 (4.0)	57 (2.5)	69 (3.5)
Adult	59 (2.2)*	62 (1.8)	70 (1.4)	72 (3.0)
Senior		69 (3.3)	77 (3.0)	76 (3.7)
Sex				
Female	64 (2.2)	68 (1.6)	76 (1.4)	77 (2.6)
Male	54 (2.1)	57 (1.8)	63 (1.6)	67 (3.0)
Race				
White	60 (2.0)	63 (1.5)	70 (1.3)	74 (2.9)
Black	53 (3.4)	51 (2.9)	65 (3.3)	69 (4.8)
Other	55 (4.8)	58 (6.5)	65 (5.1)	69 (5.9)
Urbanization				
Urban	58 (3.9)	61 (1.7)	74 (1.7)	72 (7.0)
Suburban	63 (1.6)	64 (1.5)	67 (2.2)	72 (2.9)
Rural	53 (3.5)	60 (3.8)	67 (1.8)	68 (3.7)

*1994 NOPUS collected only *Adult (25 years or older)*

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 1994-2000.

Table 2
Percent Restrained Children Under 5 Years For Selected Categories by Year
(Estimates and Sampling Errors)

Category	Year			
	1994	1996	1998	2000
Overall	66 (4.1)	61 (6.6)	92 (3.6)	91 (3.6)
Infants	88 (2.0)	85 (7.3)	97 (5.2)	95 (2.9)
Toddlers	61 (5.1)	60 (7.5)	91 (4.0)	91 (3.7)
Passenger Cars	68 (4.3)	57 (8.0)	90 (4.5)	92 (3.0)
Vans, SUVs, and Pickup Trucks	61 (9.6)	69 (9.8)	95 (1.8)	98 (0.9)
Front Seat	61 (6.0)	61 (6.5)	79 (5.7)	94 (3.2)
Back Seat	70 (4.1)	62 (9.8)	97 (9.8)	91 (3.9)
Rush Hour	56 (6.6)	55 (12.5)	75 (12.5)	95 (3.6)
Non-Rush Hour	69 (3.7)	62 (7.8)	95 (7.8)	92 (4.0)
Weekday	66 (4.9)	62 (7.8)	92 (7.8)	94 (2.9)
Weekend	66 (5.5)	53 (10.4)	89 (10.4)	84 (15.8)
City	69 (9.0)	69 (5.0)	94 (5.0)	96 (2.3)
Suburban	68 (4.9)	79 (6.0)	85 (6.0)	94 (2.7)
Rural	60 (6.5)	36 (11.0)	94 (11.0)	72 (13.7)

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 1994-2000.

Table 3		
Restraint Use for Children Under 5 by Vehicle Type, Seat Position, and Restraint Type (Estimates and Sampling Errors)		
Vehicle Type / Seat Position / Restraint Type	Infants*	Toddlers*
Restraint Use in All Passenger Vehicles	95 (2.9)	91 (3.7)
Front Seat - Front Facing Car Seat	36 (30.0)	14 (6.7)
Front Seat – Rear Facing Car Seat	13 (8.3)	2 (1.4)
Front Seat – Belted	0 (0.0)	19 (6.4)
Rear Seat - Front Facing Car Seat	32 (20.6)	25 (6.5)
Rear Seat – Rear Facing Car Seat	11 (4.6)	6 (2.3)
Rear Seat – Belted	3 (3.1)	26 (8.8)
Restraint Use in Passenger Cars	97 (2.6)	91 (3.4)
Front Seat - Front Facing Car Seat	48 (38.8)	9 (4.3)
Front Seat – Rear Facing Car Seat	17 (14.0)	2 (1.6)
Front Seat – Belted	0 (0.0)	24 (11.3)
Rear Seat - Front Facing Car Seat	21 (17.3)	18 (7.6)
Rear Seat – Rear Facing Car Seat	7 (6.8)	5 (2.7)
Rear Seat – Belted	3 (4.0)	32 (13.1)
Restraint Use in Vans and SUVs	98 (1.2)	98 (1.0)
Front Seat - Front Facing Car Seat	1 (0.8)	11 (9.4)
Front Seat – Rear Facing Car Seat	11 (10.8)	3 (3.6)
Front Seat – Belted	0 (0.0)	36 (16.5)
Rear Seat - Front Facing Car Seat	53 (24.0)	34 (9.4)
Rear Seat – Rear Facing Car Seat	33 (17.0)	7 (5.3)
Rear Seat – Belted	1 (0.7)	7 (2.3)
Restraint Use in Pickup Trucks**	75 (59.2)	99 (1.2)

*Totals might not sum due to rounding.

**Estimates by restraint type not given due to the small numbers of observations.

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000.

Table 4					
Percent Shoulder Belt Use by Type of Vehicle, Person Type and Age Group (Estimates and Sampling Errors)					
Vehicle Type / Person Type	Overall	Age Group			
		Youth	Young Adult	Adult	Senior
Overall	71 (2.8)	66 (7.4)	69 (3.5)	72 (3.0)	76 (3.7)
Passenger Cars	73 (2.8)	72 (8.3)	73 (4.3)	74 (3.0)	78 (4.2)
Drivers	74 (2.7)	N/A	69 (4.6)	75 (2.9)	79 (4.3)
Passengers	72 (3.9)	72 (3.8)	73 (4.8)	70 (4.3)	81 (5.6)
Vans and SUVs	74 (3.3)	75 (8.8)	75 (5.3)	75 (4.0)	76 (5.7)
Drivers	73 (3.6)	N/A	76 (5.3)	73 (4.4)	78 (5.3)
Passengers	75 (3.8)	75 (8.8)	66 (7.4)	75 (5.5)	61 (12.3)
Pickup Trucks	60 (4.9)	45 (12.7)	50 (9.2)	59 (5.4)	60 (11.3)
Drivers	61 (5.3)	N/A	48 (10.1)	59 (5.8)	62 (11.3)
Passengers	58 (4.9)	45 (12.7)	45 (19.2)	61 (4.4)	39 (21.7)

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000.

Table 5				
Percent Shoulder Belt Use by Type of Vehicle, Person Type and Urbanization (Estimates and Sampling Errors)				
Vehicle Type / Person Type	Overall	Urbanization		
		City	Suburban	Rural
Overall	71 (2.8)	72 (7.0)	72 (2.9)	69 (3.7)
Passenger Cars	73 (2.8)	73 (6.8)	74 (3.1)	71 (5.1)
Drivers	74 (2.7)	74 (6.9)	75 (3.1)	73 (4.5)
Passengers	72 (3.9)	73 (7.5)	73 (4.4)	63 (7.4)
Vans and SUVs	74 (3.3)	70 (7.2)	78 (2.6)	74 (5.7)
Drivers	73 (3.6)	69 (8.5)	77 (2.6)	74 (5.4)
Passengers	75 (3.8)	73 (6.8)	78 (4.3)	74 (8.2)
Pickup Trucks	60 (4.9)	67 (10.2)	56 (5.6)	55 (5.2)
Drivers	61 (5.3)	66 (11.3)	60 (6.2)	55 (5.1)
Passengers	58 (4.9)	73 (9.3)	45 (4.0)	53 (8.2)

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000.

Table 6					
Percent Shoulder Belt Use by Type of Vehicle, Person Type, Race and Sex (Estimates and Sampling Errors)					
Vehicle Type / Person Type	Race			Sex	
	White	Black	Other	Female	Male
Overall	74 (2.9)	69 (4.8)	69 (5.9)	77 (2.6)	67 (3.0)
Passenger Cars	77 (2.9)	68 (5.2)	69 (7.1)	76 (3.0)	70 (2.8)
Drivers	77 (2.7)	70 (5.4)	73 (7.9)	78 (3.0)	70 (2.7)
Passengers	76 (2.7)	65 (8.3)	55 (8.8)	72 (4.3)	69 (5.1)
Vans and SUVs	75 (2.9)	69 (6.3)	78 (3.9)	76 (5.0)	71 (3.3)
Drivers	75 (2.8)	69 (7.6)	78 (4.2)	81 (2.7)	70 (3.9)
Passengers	78 (4.3)	70 (6.5)	71 (8.4)	71 (6.8)	69 (6.2)
Pickup Trucks	57 (4.8)	53 (14.3)	78 (9.7)	62 (5.3)	58 (5.3)
Drivers	59 (5.1)	46 (22.9)	80 (10.1)	62 (6.5)	59 (5.3)
Passengers	44 (6.1)	67 (19.8)	83 (12.1)	55 (9.6)	54 (10.6)

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000.

Table 7	
Relationship Between Restraint Use for Drivers and Children Under 5 (Estimates and Sampling Errors)	
Category	Restraint Use
Shoulder Belt Use for	
Driver with Restrained Children Under 5	79 (5.6)
Driver with Unrestrained Children Under 5	54 (13.9)
Driver with no Children Under 5	72 (2.9)
Child Restraint Use for	
Children Under 5 with Restrained Driver	97 (2.0)
Children Under 5 with Unrestrained Driver	86 (9.8)
Child Restraint Use for	
Children Under 5 with Female Driver	97 (3.5)
Children Under 5 with Male Driver	90 (5.2)

Source: National Center for Statistics and Analysis, NHTSA, National Occupant Protection Use Survey, 2000.

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For additional copies of this research note, please call (202) 366-4198 or fax your request to (202) 366-7078. For questions

regarding the data reported in this research, contact Nancy Bondy [202-366-5353] or Donna Glassbrenner [202-366-5358] of the National Center for Statistics and Analysis. This research note and other general information on highway traffic safety may be accessed by Internet users at: <http://www.nhtsa.dot.gov/people/ncsa>.

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