Research Note

Observed Safety Belt Use in 1994

In recent years, NHTSA has used several methods to measure national safety belt use. This Research Note presents findings of the latest measures and contrasts the nature of the various measurement methods.

From 1982 to 1990, the agency used a survey which sampled use in 19 U.S. cities as an indicator of national belt use. With the launch of the National "70% by '92" Safety Belt Program in 1991, the agency turned to a measure that would be sensitive to changes in each of the states. This measure combined the findings of individual state surveys to produce the national belt use rate. In 1994, NHTSA supplemented the state-based analysis with the new National Occupant Protection Use Survey (NOPUS).

Findings of the 1994 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. This note presents the results from the moving traffic study. Results from the other studies will be released as they become available. Shoulder belt use observed in the moving traffic study was as follows:

Passenger Cars: 62.8%
Light Trucks: 50.2%

Data collection from the moving traffic study was conducted at almost 4,000 randomly selected sites across the country in October and November 1994. Pairs of observers were stationed for 30 minutes at exit ramps, intersections with stop signs, and stop lights, and uncontrolled intersections. One observer counted shoulder belt use for the drivers of passenger cars and light trucks (vans, minivans, sport utility vehicles, and pick-up trucks). The second observer counted shoulder belt use for the right-front passengers of cars and light trucks and helmet use for motorcycle riders and passengers. 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.

NOPUS was designed as a multi-stage probability sample to ensure that the results would represent occupant protection use in the country. In the first stage, counties were grouped by region (northeast, midwest, south, west), level of urbanization (metropolitan or not), and level of belt use (high, medium, or low). Fifty counties or groups of counties were selected based on the vehicle miles of travel in those locations. In the next stage, roadways were selected from two categories: major roads and local roads. Finally, approximately 4,000 intersections or exit ramps were chosen on these roadways. Of the originally selected sites, some were found to be ineligible during mapping and data collection, and at some sites no vehicles were observed. A total of over 167,000 passenger cars, almost 84,000 light trucks, and 997 motorcycles were observed.

Detailed results of the moving traffic study are presented on the opposite page. 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. By simply adding and subtracting the 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.

Findings of the 1994 State Surveys

In 1994, the national belt use rate, based on individual state surveys, was 67%.

To calculate the national safety belt use rate from individual state use rates, each state's most recent rate is weighted by that state's proportion of the total U.S. population.

State safety belt surveys differ in design. However, 28 states, comprising over 70% of the U.S. population, conduct probability-based observational surveys as used in the NOPUS. The remaining states conduct surveys that are based on convenience samples. This means that their observation sites, which are usually adequate in number, are not randomly selected. Thus, no confidence interval can be calculated for their survey results. One state, Wyoming, uses crash reports rather than roadside observations to estimate belt use.

Some states do not conduct surveys every year. The 1994 national estimate is based on 34 state surveys conducted in 1994 and 16 that were conducted earlier.

Most state surveys measure shoulder belt use of both driver and front-seat passenger. Five measure use by drivers only. All states observe belt use in passenger cars, 28 states include light trucks, and 21 states include vans.

Comparison of Measurement Methods

The findings of the 1994 NOPUS generally support the national use rate estimates as calculated from state surveys.

Direct comparison of findings between the NOPUS and state surveys is difficult, primarily because of the differences in vehicle and occupant coverage. However, a rough comparison of overall use can be made between the state-based estimate of 67% and the NOPUS estimate for passenger car drivers and passengers of 63%. In this comparison, the state-based estimate falls within the 95% confidence interval of the NOPUS estimate.

The combination of surveys that has been used to measure safety belt use over the past several years also provides us with some insight with regard to change in use rates. Until 1990, the 19-cities survey was used as the index of national use. In 1990, that index for passenger car drivers was 49%. The NOPUS estimate of belt use among passenger car drivers in 1994 is 64%. The difference of 15 percentage points between the 19-cities index and the NOPUS estimate is consistent with the 14 percentage point change in use indicated by the aggregate of state surveys between 1990 and 1994 (i.e., 53% in 1990 and 67% in 1994).

State surveys provide an essential source of information for monitoring progress in the states. The NOPUS provides a probabilitybased sample of national use with the ability to estimate error. In addition, the NOPUS provides a unique source of detailed information concerning restraint use by vehicle type, age, gender, shoulder belt misuse, etc. Plans for repeating the NOPUS survey will be based upon the frequency of need for this level of analysis. Annual estimates of belt use progress will continue to be made with the state-based surveys.

1994 NOPUS: Moving Traffic Results by Region
(Estimates and 2 Standard Errors)

Shoulder Belt Use (%)	58.0 (3.8)	55.1 (8.2)	59.1 (5.8)	55.4 (6.4)	63.3 (8.4)
Passenger Cars (%)	62.8 (3.8)	57.5 (8.4)	63.9 (5.6)	60.7 (7.0)	69.1 (7.6)
Car Drivers (%)	64.2 (3.6)	57.8 (7.8)	65.3 (5.8)	62.2 (6.8)	71.2 (7.0)
Car Passengers (%)	59.1 (4.4)	56.8 (10.8)	59.8 (5.4)	57.5 (7.2)	63.5 (9.8)
Light Trucks (%)	50.2 (3.6)	47.8 (9.4)	50.6 (6.6)	47.9 (5.4)	54.9 (9.2)
Truck Drivers (%)	50.7 (3.8)	46.8 (9.8)	51.4 (7.0)	47.6 (6.6)	56.8 (**8.4**)
Truck Passengers (%)	49.1 (3.6)	50.5 (9.0)	48.4 (6.0)	48.7 (4.0)	50.2 (11.2)

1994 NOPUS: Moving Traffic Results by Day of Week and Time of Day
(Estimates and 2 Standard Errors)

Shoulder Belt Use (%)	58.4 (3.6)	57.0 (5.8)	58.0 (8.0)	58.0 (3.6)
Passenger Cars (%)	63.8 (3.2)	60.0 (6.6)	63.2 (7.0)	62.7 (4.0)
Car Drivers (%)	65.2 (3.2)	61.2 (6.2)	65.4 (5.8)	63.9 (3.6)
Car Passengers (%)	59.7 (3.6)	58.1 (7.0)	56.0 (11.0)	59.5 (4.6)
Light Trucks (%)	49.3 (4.2)	52.2 (4.0)	49.6 (8.8)	50.3 (3.2)
Truck Drivers (%)	50.0 (4.2)	52.3 (4.4)	51.9 (7.8)	50.4 (3.6)
Truck Passengers (%)	46.9 (5.0)	52.1 (4.0)	43.0 (12.0)	50.1 (2.8)
Helmet Use (%)	85.9 (7.8)	55.2 (9.0)	91.2 (10.4)	-) 60.6 (I5.0)