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Safety Belt Use in 2002 – Use Rates in the States and Territories

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In 2002, Hawaii, the state of Washington, and Puerto Rico joined California in reaching the 90% milestone in safety belt use. Vermont and Washington made the greatest gains, each reducing its nonuse rate by 50% or more. These results are from surveys conducted by nearly all states and territories, and reported to NHTSA.

Continued Evidence that Primary Laws Save Lives

Primary belt laws allow police officers to pull over and cite motorists simply for not using their safety belt. A secondary law only allows police to give a belt citation if the motorist is pulled over for another infraction, such as an expired license tag.

While a law is only as good as its enforcement, we have consistently seen higher use rates in states (or territories) with primary laws. In 2002, belt use in primary states was 11 points higher than in secondary states (80% vs. 69%). [G]

The lower rates associated with secondary laws have real consequences. Safety belts are approximately 50% effective for preventing fatality in severe crashes. Belts save 13,000 lives each year, while 7,000 die because they did not use belts.

Most jurisdictions, however, have secondary laws. Secondary laws were in effect throughout 2001 and 2002 in 31 states, while 17 states, the District of Columbia, and Puerto Rico had primary laws. The state of Washington enacted a primary law in May 2002, having previously had a secondary law. New Hampshire effectively has no belt law, since it is legal for occupants over 18 in that state not to use belts.

The enactment of Washington's belt law was accompanied by a substantial increase in use. The state's use rate increased from 83% in 2001 to 93% in 2002. (The 2002 survey was conducted after enactment.)

Measuring Improvement

Raising belt use one percentage point from 80% is more difficult than it is from 70%. If one thinks of people as belt users and nonusers, then raising belt use from 80% to 81% requires converting a greater percentage of the nonusers to users. (In addition, when there is a large nonuser population, a substantial fraction of them are often more easily persuaded by measures designed to raise belt use, such as media and enforcement campaigns.)

Because of this disparity, we do not measure improvement by the increase in belt use. A more rational measure is the reduction in belt nonuse, which for brevity we call the *conversion rate*.

For instance, Alaska's conversion rate was 8%, having increased its use from 63% to 66% (i.e. 0.08 = (66-63)/(100-63)). Conversion rates are negative when belt use declines, as it did in Georgia, for example. They are 0% when belt rates remain unchanged, as they did in Alabama.

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The conversion rate is so called because it would be the percentage of nonusers that were converted to users if people either always used or always did not use belts. However we know from telephone surveys that many people use belts some, but not all, of the time. The Motor Vehicle Occupant Safety Survey estimates that about a quarter of the population consists of part-time users. These people ride unbuckled on some short trips and sometimes simply forget to buckle up. [M] Because of these occupants, it is not entirely accurate to think of the conversion rate as the percent of nonusers converted.

The word "conversion" can also be misleading in that some number of people buckle up temporarily in response to, e.g., a belt enforcement campaign. That is, some are not permanently "converted".

Despite these shortcomings, it can be useful to think of the conversion rate as the percent of nonusers who were converted to users. For instance, the 23% conversion rate in Minnesota represents a substantial achievement, roughly corresponding to converting about a quarter of nonusers in a single year.

The Best and Worst Jurisdictions in 2002

Belt use is highest in California, Hawaii, Washington and Puerto Rico, where rates are 90% or higher. Use is lowest in Massachusetts at only 51%.

Vermont and Washington showed the most improvement in 2002, with conversion rates of about 55% each. South Carolina, whose belt use dropped in 2002, had the worst conversion rate of –13%. Table 1 presents belt rates from 2001 and 2002 and the conversion rates in 2002.

Maine, New Hampshire, and the U.S. territories not in Table 1 did not report rates in 2001 or 2002. Wyoming did not report a rate in 2001, but did in 2002. Note that since a state (or territory) might have enacted a primary law in 2002 (Washington is the only case of this), the boldfacing in Table 1 indicating primary laws is applied to the rates, not to the state names.

Survey Methodologies

The rates in this note were obtained by surveys conducted in accordance with criteria established by NHTSA. These criteria assure a certain degree of uniformity and accuracy, while allowing jurisdictions the flexibility to design surveys that measure belt use in a cost-efficient manner. The criteria are listed in Exhibit 1. In this text, which is lifted verbatim from Title 23 of the U.S. Code, "States" are defined to be the 50 states, the District of Columbia, and Puerto Rico.

Note in particular that the surveys are probability-based and observe belt use on the roads, rather than, e.g., interviewing people about their belt use.

Note also that surveys from different states may be conducted at different times of the year. There may be some seasonality to belt use, in that for instance men not wearing shirts might find belts uncomfortable against their skin. However most surveys were conducted in June, following a belt enforcement campaign.

Because they are observational, these surveys measure belt use in the front seat during daylight hours. Belt use may be lower in the rear seat and at night, but it is not practicable to observe use in the dark or in older vehicles that do not have shoulder belts in the rear seat.

The particular procedures used to satisfy the NHTSA criteria differ from state (or territory) to state. For more information on a state's procedures, contact the state's highway safety office.

The rates in this note are not entirely comparable to NHTSA's estimate of the national belt use rate. The National Occupant Protection Use Survey (NOPUS) measures belt use nationwide each year from a probability sample of roadways. Because it is also observational, NOPUS measures front seat use during daytime.

However NOPUS does not employ the cost-saving measure in Criterion 3 of Exhibit 1, which allows a state (or territory) to exclude a certain amount of sparsely populated areas. These exclusions might result in a slight overestimate of use because use is lower in rural areas. In addition, many states conduct their observations solely at intersections controlled by a stop sign or stoplight. Belt use tends to be higher at such sites because they are more prevalent in urban areas. For these reasons, NOPUS produces a more accurate estimate of national use than would be obtained by combining the results in this note.

Table 1: Safety Belt Use Rates in the States and Selected Territories**

Jurisdiction	Use in 2001	Use in 2002	Reduction in Nonuse	Jurisdiction	2001	2002	Reduction in Nonuse
Alabama	**79%**	**79%**	**0%**	Montana	76%	78%	8%
Alaska	63%	66%	8%	Nebraska	70%	70%	0%
Arizona	74%	74%	0%	Nevada	75%	75%	0%
Arkansas	55%	64%	20%	New Hampshire	*	*	*
California	**91%**	**91%**	**0%**	New Jersey	**78%**	**81%**	**14%**
Colorado	72%	73%	4%	New Mexico	**88%**	**88%**	**0%**
Connecticut	**78%**	**78%**	**0%**	New York	**80%**	**83%**	**15%**
Delaware	67%	71%	12%	North Carolina	**83%**	**84%**	**6%**
District of Columbia	**84%**	**85%**	**6%**	North Dakota	58%	63%	12%
Florida	70%	75%	17%	Ohio	67%	70%	9%
Georgia	**79%**	**77%**	**-10%**	Oklahoma	**68%**	**70%**	**6%**
Hawaii	**83%**	**90%**	**41%**	Oregon	**88%**	**88%**	**0%**
Idaho	60%	63%	8%	Pennsylvania	71%	76%	17%
Illinois	71%	74%	10%	Rhode Island	63%	71%	22%
Indiana	**67%**	**72%**	**15%**	South Carolina	70%	66%	-13%
Iowa	**81%**	**82%**	**5%**	South Dakota	63%	64%	3%
Kansas	61%	61%	0%	Tennessee	68%	67%	-3%
Kentucky	62%	62%	0%	Texas	**76%**	**81%**	**21%**
Louisiana	**68%**	**69%**	**3%**	Utah	78%	80%	9%
Maine	*	*	*	Vermont	67%	85%	55%
Maryland	**83%**	**86%**	**18%**	Virginia	72%	70%	-7%
Massachusetts	56%	51%	-11%	Washington[#]	83%	**93%**	**59%**
Michigan	**82%**	**83%**	**6%**	West Virginia	52%	72%	42%
Minnesota	74%	80%	23%	Wisconsin	69%	66%	-10%
Mississippi	62%	62%	0%	Wyoming	*	67%	*
Missouri	68%	69%	3%	Puerto Rico	**83%**	**91%**	**47%**

*** An asterisk indicates that the state did not conduct a survey that met the criteria in Exhibit 1.**

****Rates observed in jurisdictions that have primary enforcement laws are in boldface.**

Source: Surveys conducted in accordance with Section 157 in Title 23 of the United States Code.

Exhibit 1: Survey Criteria

1. Estimates must be obtained through a survey using actual observation of occupant shoulder belt use in vehicles on roadways. Use rates determined from secondary sources, e.g., police crash reports or use reported through telephone surveys, are not permitted.

2. The survey must be probability based. Statistical procedures must be employed to select sites at which observation of shoulder belt use are made. Following probability-based sampling procedures permits estimates that are "representative" of the use rate in the desired population and makes it possible to calculate their standard errors.

3. The survey must be designed and conducted to permit estimating shoulder belt use for the following population of interest:
   - Front seat, outboard passengers, i.e., the driver and right front seat passenger.
   - All passenger motor vehicles, i.e. automobiles, pickup trucks, vans, minivans, and sport utility vehicles, must be observed, regardless of the State (or county) of registration.
   - Observational sites in the largest geographic areas (usually counties) in the State containing at least 85 percent of the State's population must be included in the sampling frame and have positive probability of selection. This criterion permits the exclusion of large, sparsely populated geographic areas where few observations are expected.
   - Observations must be conducted during all daylight hours and on all days of the week and must be scheduled without regard to day-of-week and time-of-day (for daylight hours).

4. The survey must be designed to produce an overall estimate of shoulder belt use with a relative precision (the estimated sampling error of the use divided by the estimated use rate) of +/- 5 percent. This ensures that there are a sufficient number of observation sites and observed vehicles to produce a statistically reliable estimate.

5. The survey design and results must be properly documented for evaluation of survey results by NHTSA and others and to determine compliance with Criteria 1-4 listed above.

Source: Section 157 of Title 23, United States Code.

References

[G] D. Glassbrenner, *Safety Belt and Helmet Use in 2002 – Overall Results*, NHTSA Technical Report, DOT HS 809 500, September 2002

[M] A. Block, *2000 Motor Vehicle Occupant Safety Survey, Volume 2: Seat Belt Report*, NHTSA Technical Report, DOT HS 809 389, November 2001

For additional copies of this research note, please call (800) 934-8517 or fax your request to (202) 366-3189. For questions regarding this note, contact Donna Glassbrenner at (202) 366-5358. Additional information on highway traffic safety is available at http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html

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