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Safety Belt Use in 2001 – State Rates

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In 2001, belt use in the fifty states, the District of Columbia, and Puerto Rico continued the general pattern of increase seen since use was first measured. All but three states reported use rates, which ranged from 52.3% in West Virginia to 91.1% in California. Rates were obtained using observational surveys that meet standards set by National Highway Traffic Safety Administration (NHTSA) to ensure consistent estimates of high quality.

Use continues to be higher in states that can enforce belt laws more strictly. State seat belt laws vary in terms of the vehicles and seating positions to which they apply and the fines that may be levied. (See [S] for a complete list of current laws.) Primary enforcement of seat belt laws allows police to stop and cite motorists simply for not wearing seat belts. Under secondary enforcement, motorists must be stopped for another reason in order to receive a seat belt citation. Belt use was estimated to be 78% in primary states and 67% in secondary states in 2001. [N1] (These estimates are more reliable than those obtained by averaging the rates in Table 1.) No states switched from primary to secondary enforcement or vice versa in 2001. There continue to remain 17 states with primary enforcement of laws for front seat occupants of passenger vehicles, 32 states with secondary enforcement of such laws, and one state (New Hampshire) in which it is legal for occupants 18 and over to be unbelted. The District of Columbia and Puerto Rico have primary enforcement laws. It is estimated that if all states had had primary laws in 2001, an additional 2,000 lives would be have been saved, on top of the 12,000 that were saved. [G]

The best measure of improvement in belt use is the *conversion rate*, which is the rate of decrease of belt nonuse from one year to the next. For instance, belt use in Alabama increased from 70.6% in 2000 to 79.4% in 2001. If one thinks of 70.6% of Alabama's population as belt "users", and its remaining 29.4% as "nonusers", then Alabama's nonusers decreased from 29.4% in 2000 to 20.6% in 2001, a 30 percent reduction. That is, Alabama "converted" 30% of its population that was not using belts in 2000 to use belts in 2001. (The user/nonuser categorization is a bit simplistic. According to NHTSA's Motor Vehicle Occupant Safety Survey, most people are part-time users. [M] However the use/nonuse categorization is helpful for illustrating conversion rates.) Nationally, about 8.5% of nonusers are converted to users each year. [N2]

Conversion rates are negative when belt use decreases. For instance, Arizona's observed belt rate decreased from 75.2% in 2000 to 74.4% in 2001. This corresponds to a 3% increase in "nonusers", from 24.8% nonusers in 2000 to 25.6% in 2001. That is, Arizona decreased its nonuser rate by –3%. Declines in observed belt use may correspond to actual declines in use or may be due to sampling error. To see which, one would compute the margin of error from the sampling error published in the state's annual report of its belt use survey. State belt survey reports are available from state highway safety offices and NHTSA regional offices.

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Conversion rates provide a better measure of improvement than increases or percentage increases in use. It would be challenging for California, with its 91.1% use rate in 2001, to raise belt use by one percentage point further (to 92.1%), since it would have to convert 11% of its nonusers. (In addition, it would be difficult to detect such a small increase with the survey's sampling error.) On the other hand, West Virginia would only have to convert 2% of its nonusers to raise its belt use one percentage point from its 2001 rate of 52.3%. That is, conversion rates assess improvement in a way that doesn't penalize states that already have high use rates.

In 2001, Alabama improved the most, converting 30% of its nonusers, while California continued to have the highest belt use rate at 91.1%. Table 1 contains the combined state shoulder belt use rates for drivers and right front seat passengers.

Table 1: 2001 State Belt Rates and Conversion of Nonusers**

State	2000	2001	Conversion Rate	State	2000	2001	Conversion Rate
Alabama	**70.6%**	**79.4%**	30%	Montana	75.6%	76.3%	3%
Alaska	61.0%	62.6%	4%	Nebraska	70.5%	70.2%	-1%
Arizona	75.2%	74.4%	-3%	Nevada	78.5%	74.5%	-19%
Arkansas	52.4%	54.5%	4%	New Hampshire	*	*	
California	**88.9%**	**91.1%**	20%	New Jersey[##]	**74.2%**	**77.6%**	13%
Colorado	65.1%	72.1%	20%	New Mexico	**86.6%**	**87.8%**	9%
Connecticut	**76.3%**	**78.0%**	7%	New York	**77.3%**	**80.3%**	13%
Delaware	66.1%	67.3%	4%	North Carolina	**80.5%**	**82.7%**	11%
District of Columbia	**82.6%**	**83.6%**	6%	North Dakota	47.7%	57.9%	20%
Florida	64.8%	69.5%	13%	Ohio	65.3%	66.9%	5%
Georgia	**73.6%**	**79.0%**	20%	Oklahoma	**67.5%**	**67.9%**	1%
Hawaii	**80.4%**	**82.5%**	11%	Oregon	**83.6%**	**87.5%**	24%
Idaho	58.6%	60.4%	4%	Pennsylvania	70.7%	70.5%	-1%
Illinois	70.2%	71.4%	4%	Rhode Island	64.4%	63.2%	-3%
Indiana	**62.1%**	**67.4%**	14%	South Carolina	73.9%	69.6%	-16%
Iowa	**78.0%**	**80.9%**	13%	South Dakota	53.4%	63.3%	21%
Kansas	61.6%	60.8%	-2%	Tennessee	59.0%	68.3%	23%
Kentucky	60.0%	61.9%	5%	Texas	**76.6%**	**76.1%**	-2%
Louisiana	**68.2%**	**68.1%**	0%	Utah	75.7%	77.8%	9%
Maine	*	*		Vermont	61.6%	67.4%	15%
Maryland	**85.0%**	**82.9%**	-14%	Virginia	69.9%	72.3%	8%
Massachusetts	50.0%	56.0%	12%	Washington	81.6%	82.6%	5%
Michigan[#]	**83.5%**	**82.3%**	-7%	West Virginia	49.8%	52.3%	5%
Minnesota	73.4%	73.9%	2%	Wisconsin	65.4%	68.7%	10%
Mississippi	50.4%	61.6%	23%	Wyoming	66.8%	*	
Missouri	67.7%	67.9%	1%	Puerto Rico	**87.0%**	**83.1%**	-30%

*** No rate reported.**

**** Rates in primary enforcement states are in boldface.**

[#] Switched from secondary to primary enforcement in April 2000.

[##] Switched from secondary to primary enforcement in May 2000.

Source: State belt use surveys conducted in accordance with section 157 of title 23, United States Code.

The rates in Table 1 are the best measures of belt use at the state level. In order to gather this information efficiently, states are allowed to employ certain cost-saving measures that might result in slight overestimates of use: States may omit up to 15% of their lowest-population areas and are allowed to collect data at intersections that are controlled by stoplights or stop signs. Because higher population areas and controlled intersections tend to have higher belt use, these measures might result in slightly inflated estimates of use. In addition, states are allowed to conduct multiple surveys meeting the standards in Exhibit 1 at any times in the calendar year and report the highest use rate. Consequently the rates in Table 1 might represent usage from different times of the year in different states. In particular, state rates might be conducted during or immediately following a major campaign to increase belt use through, e.g. increased enforcement of and advertisement of seat belt laws. The National Occupant Protection Use Survey (NOPUS) is a national observational survey that doesn't employ the cost-saving restrictions that the states may, and is conducted at least two weeks after any major belt campaigns. Consequently NOPUS provides the best measure of the belt use at the national level. [N1], [N2] For practical reasons, both NOPUS and the state surveys are conducted during daylight hours and observe shoulder belt use of drivers and right front seat passengers, and so both might overestimate belt use.

Additional information, such as belt use by various demographic categories or child safety seat use, may have also been collected in the state belt surveys. This information may be obtained by contacting the state highway safety offices or NHTSA regional offices.

The rates in Table 1 were obtained from observational surveys conducted in 2001. These surveys meet the following criteria, established by NHTSA in section 157 of title 23, 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 document for evaluation of survey results by NHTSA and others and to determine compliance with Criteria 1-4 listed above.

[G] D. Glassbrenner, *The New Methodology for Calculating the Lives Saved by Seat Belts and Air Bags*, NHTSA Technical Report, DOT HS 809 502, 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

[N1] D. Glassbrenner and D. Utter, *Observed Shoulder Belt Use from the 2001 Mini NOPUS*, NHTSA Research Note, DOT HS 809 319, August 2001

[N2] D. Glassbrenner, *Safety Belt and Helmet Use in 2002 – Overall Results*, NHTSA Technical Report, DOT HS 809 500, September 2002

[S] *Traffic Safety Facts 2000 – State Traffic Data*, NHTSA Fact Sheet, DOT 809 335, undated

For additional copies of this research note, please call (800) 934-8517 or fax your request to (202) 366-3189. For questions regarding the data reported in this research, contact Donna Glassbrenner at (202) 366-5358. This research note and other general information on highway traffic safety may be accessed by internet users at: http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html

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