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TRAFFIC SAFETY FACTS
Research Note

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Seat Belt Use in 2011—Overall Results

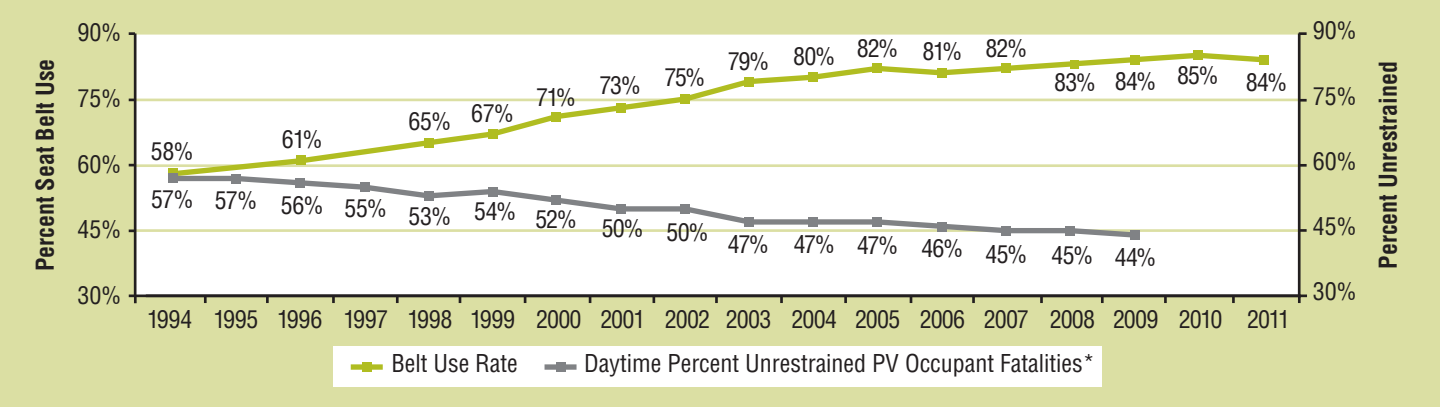
Seat belt use in 2011 was estimated at 84 percent, statistically unchanged from 85 percent in 2010. This result is from the National Occupant Protection Use Survey (NOPUS), which is the only survey that provides nationwide probability-based observed data on seat belt use in the United States. The NOPUS is conducted annually by the National Center for Statistics and Analysis of the National Highway Traffic Safety Administration.

Seat belt use has shown an increasing trend since 1994, accompanied by a steady decline in the percentage of unrestrained passenger vehicle (PV) occupant fatalities during daytime (Figure 1).

The 2011 survey also found the following:

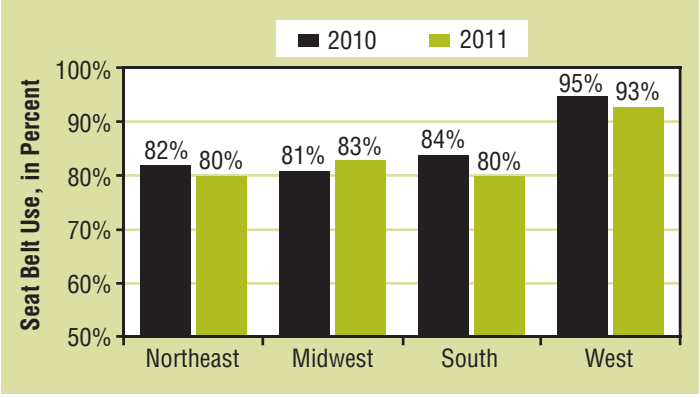
- Seat belt use for occupants in the West decreased significantly from 95 percent in 2010 to 93 percent in 2011 (Figure 2).
- Seat belt use continued to be higher in the States in which vehicle occupants can be pulled over solely for not using seat belts ("primary law States") as compared with the States with weaker enforcement laws ("secondary law States") or without seat belt laws (Figure 3).
- Seat belt use for occupants traveling during weekday rush hours dropped to 83 percent in 2011 from 86 percent in 2010 (Table 1).

Figure 1
NOPUS Seat Belt Use Rate and Daytime Percent of Unrestrained Passenger Vehicle Occupant Fatalities



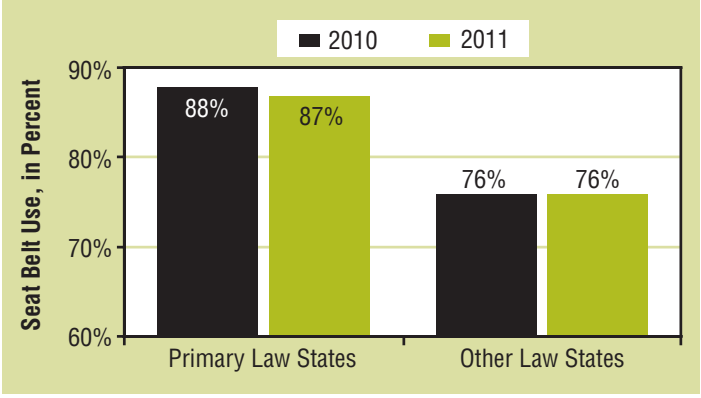
(Source: NOPUS and FARS) *The 2010 and 2011 data on the percent of unrestrained passenger vehicle occupant fatalities during daytime are not yet available.

Figure 2
Seat Belt Use by Region



(Source: NOPUS)

Figure 3
Seat Belt Use by Law Type



(Source: NOPUS)

Table 1
Seat Belt Use by Major Characteristics

Occupant Group[1]	2010		2011		2010 – 2011 Change	
	Belt Use[2]	Confidence That Use Is High or Low in Group[3]	Belt Use[2]	Confidence That Use Is High or Low in Group[3]	Change in Percentage Points	Confidence in a Change in Use[4]
All Occupants	85%		84%		-1	77%
Drivers	86%	**100%**	84%	**100%**	-2	82%
Right-Front Passengers	83%	**100%**	82%	**100%**	-1	49%
Occupants in States With[5]						
Primary Enforcement Laws	88%	**100%**	87%	**100%**	-1	61%
Secondary Enforcement Laws	76%	**100%**	76%	**100%**	0	16%
Occupants Traveling on						
Expressways	91%	**100%**	89%	**100%**	-2	**94%**
Surface Streets	82%	**100%**	81%	**100%**	-1	86%
Occupants Traveling in						
Fast Traffic	88%	**100%**	88%	**100%**	0	31%
Medium-Speed Traffic	85%	66%	83%	76%	-2	72%
Slow Traffic	80%	**100%**	76%	**100%**	-4	83%
Occupants Traveling in[6]						
Heavy Traffic	90%	81%	87%	**100%**	-3	38%
Moderately Dense Traffic	92%	**100%**	82%	**91%**	-10	**100%**
Light Traffic	85%	**100%**	70%	**100%**	-15	**100%**
Occupants Traveling Through						
Light Precipitation	82%	**96%**	84%	56%	2	44%
Light Fog	79%	78%	93%	**100%**	14	**93%**
Clear Weather Conditions	86%	**96%**	84%	69%	-2	**91%**
Occupants in						
Passenger Cars	86%	**100%**	85%	**100%**	-1	79%
Vans and SUVs	88%	**100%**	87%	**100%**	-1	69%
Pickup Trucks	75%	**100%**	74%	**100%**	-1	72%
Occupants in the						
Northeast	82%	89%	80%	88%	-2	45%
Midwest	81%	**99%**	83%	69%	2	68%
South	84%	73%	80%	**95%**	-4	78%
West	95%	**100%**	93%	**100%**	-2	**98%**
Occupants in						
Urban Areas	81%	86%	85%	57%	4	61%
Suburban Areas	87%	**100%**	86%	**97%**	-1	83%
Rural Areas	83%	**99%**	81%	**99%**	-2	84%
Occupants Traveling During						
Weekdays	85%	88%	83%	**99%**	-2	85%
Weekday Rush Hours	86%	**98%**	83%	64%	-3	**93%**
Weekday Non-Rush Hours	84%	**98%**	83%	64%	-1	57%
Weekends	86%	88%	86%	**99%**	0	24%

[1] Drivers and right-front passengers of passenger vehicles with no commercial or government markings
[2] Use of shoulder belts observed between the hours of 7 a.m. and 6 p.m.
[3] The statistical confidence that use in the occupant group (e.g., occupants in urban areas) is higher or lower than use in the corresponding complementary occupant group (e.g., occupants in suburban and rural areas). Confidences that meet or exceed 90 percent are formatted in boldface type. Confidences are rounded to the nearest percentage point, and so confidences reported as "100 percent" are between 99.5 percent and 100.0 percent.
[4] The degree of statistical confidence that the 2011 use rate is different from the 2010 rate.
[5] Use rates reflect the laws in effect at the time data were collected.
[6] To better capture the traffic patterns, the traffic density breakdown has been revised in the 2011 NOPUS. This definition revision might have some effect on the 2010–2011 changes.

Data Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

Survey Methodology

The National Occupant Protection Use Survey is the only nationwide probability-based observational survey of seat belt use in the United States. The survey observes seat belt use as it actually occurs at randomly selected roadway sites, and thus provides the best tracking of the extent to which passenger vehicle occupants in this country are buckling up.

Table 2
Sites, Vehicles, and Occupants[1] Observed

Numbers of	2010	2011	Percentage Change
Sites Observed	1,783	1,700	-5%
Vehicles Observed	97,326	78,324	-20%[2]
Occupants Observed[1]	123,600	99,320	-20%[2]

[1] Drivers and right-front passengers only.
[2] This change could be attributed in part to some site location changes from more densely populated observation sites in the old sample design to less densely populated observation sites in the new sample design.

The survey data is collected by sending trained observers to probabilistically sampled roadways, where they observe passenger vehicles between the hours of 7 a.m. and 6 p.m. Observations are made either while standing at the roadside or, in the case of expressways, while riding in a vehicle in the traffic. In order to capture the true behavior of passenger vehicle occupants, the NOPUS observers do not stop vehicles or interview occupants. The 2011 NOPUS data was collected between June 6 and June 17, 2011, while the 2010 data was collected between June 7 and June 26, 2010.

The NOPUS uses a complex, multistage probability sample, statistical data editing, imputation of unknown values, and complex estimation procedures. The sample sites for the 2011 NOPUS were entirely from the 2006 NOPUS sample redesign without incorporating any sites from the old design. During the transitional years between 2006 and 2010, sample sites were chosen both from the new design and the old design. Prior to 2006, sample sites were from the old design only. Table 2 shows the observed sample sizes of the 2011 NOPUS Moving Traffic Survey. A total of 99,320 occupants were observed in the 78,324 vehicles at the 1,700 data collection sites.

Because the NOPUS sites were selected probabilistically, we can analyze the statistical significance of its results. Statistically significant increases in seat belt use between 2010 and 2011 are identified in Table 1 by having a result that is 90 percent or greater in the table's column 7. Statistical confidences that use in a given occupant group, e.g., occupants in the Midwest, is higher or lower than in the complementary occupant group, e.g., occupants in the Northeast, South, and West, are provided in columns 3 and 5 of Table 1. Such comparisons are made within categories, such as road type, delineated by changes in row shading in the table. The exception to this is the grouping "Occupants Traveling During …," in which weekdays are compared to weekends, and weekday rush hours to weekday non-rush hours.

Data collection, estimation, and variance estimation for the NOPUS are conducted by Westat, Inc., under the direction of the National Center for Statistics and Analysis in NHTSA under Federal contract number DTNH22-07-D-00057.

Table 3
States With Primary Enforcement Seat Belt Laws*

Alabama	Alaska	Arkansas	California
Connecticut	Delaware	District of Columbia	Florida
Georgia	Hawaii	Illinois	Indiana
Iowa	Kansas	Kentucky	Louisiana
Maine	Maryland	Michigan	Minnesota
Mississippi	New Jersey	New Mexico	New York
North Carolina	Oklahoma	Oregon	South Carolina
Tennessee	Texas	Washington	Wisconsin

*States with laws in effect as of May 31, 2011. Since the primary seat belt law in Rhode Island did not go into effect until June 30, 2011, it is not included in this table.

Definitions

Under NOPUS observation protocols, a driver or right-front passenger is considered "belted" if a shoulder belt appears to be across the front of the body.

A jurisdiction that can enforce traffic laws, such as a State or the District of Columbia, has a "primary enforcement law" if occupants can be ticketed simply for not using their seat belts. Under "secondary enforcement laws" occupants must be stopped for another violation, such as an expired license tag, before being cited for seat belt nonuse. As of May 31, 2011, primary laws were in effect in 31 States and the District of Columbia, 18 States had secondary laws, and 1 State (New Hampshire) effectively has no seat belt laws. (In New Hampshire, it is legal for occupants over age 18 to ride unbelted.) Table 3 provides a list of the States with "primary enforcement laws". Table 3 does not include Rhode Island because the effective date of its "primary enforcement law," June 30, 2011, is after the completion of the 2011 NOPUS data collection period.

"Expressways" are defined to be roadways with limited access, while "surface streets" comprise all other roadways. "Rush hours" are defined to comprise the time periods 7 – 9:30 a.m. and 3:30 – 6 p.m.

A roadway is defined to have "fast traffic" if during the observation period the average speed of passenger vehicles that pass the observer(s) exceeds 50 mph, with "medium-speed traffic" defined as 31 – 50 mph and "slow traffic" defined as 30 mph or slower.

A roadway is defined to have "heavy traffic" if the average number of vehicles on the roadway during the observation period is greater than 5 per lane per mile, with "moderately

dense traffic" defined as greater than 1 but less than or equal to 5 vehicles per lane per mile, and "light traffic" as less than or equal to 1 vehicle per lane per mile. Please note that this traffic density breakdown has been revised in the 2011 NOPUS to better capture the traffic patterns.

The survey uses the following definitions of geographic regions, which are defined in terms of the States contained in the region below:

Northeast:	CT, MA, ME, NH, NJ, NY, PA, RI, VT
Midwest:	IA, KS, IL, IN, MI, MN, MO, ND, NE, OH, SD, WI
South:	AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV
West:	AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY

Seat belt use rates reflect the State laws in effect at the time of data collection.

For More Information

This Research Note was written by Timothy M. Pickrell, a mathematical statistician in the Mathematical Analysis Division, National Center for Statistics and Analysis, NHTSA, and by Tony Jianqiang Ye, a statistician employed by Bowhead Systems Management, Inc., working with NHTSA. For questions regarding the information presented in this document, please contact timothy.pickrell@dot.gov.

Additional data and information on the survey design and analysis procedures will be available in upcoming publications to be posted at the Web site http://www-nrd.nhtsa.dot.gov/cats/index.aspx in 2011.

Research has found that lap/shoulder seat belts, when used, reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of moderate-to-critical injury by 50 percent. In 2009 alone, seat belts saved an estimated 12,713 lives (Traffic Safety Facts: 2009 Data, NHTSA, DOT HS 811 390). For more information on the campaign by NHTSA and the States to increase seat belt use, see http://www.nhtsa.gov/CIOT.

The NOPUS also observes other types of restraints, such as child restraints and motorcycle helmets, and observes driver electronic device use. This publication is part of a series that presents overall results from the survey on these topics. Please refer to the upcoming research notes and technical reports in the series, such as "Motorcycle Helmet Use in 2011 – Overall Results," for the latest data on these topics.

For citation purposes, the suggested APA format for this document is:

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This research note and other general information on highway traffic safety may be accessed by Internet users at: www-nrd.nhtsa.dot.gov/CATS/index.aspx

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