



Published in final edited form as:

J Safety Res. 2012 December ; 43(5-6): 417–420. doi:10.1016/j.jsr.2012.10.010.

Self-reported seatbelt use, United States, 2002–2010: Does prevalence vary by state and type of seatbelt law?★

Ruth A. Shults* and Laurie F. Beck

Division of Unintentional Injury Prevention, CDC, Atlanta, Georgia

Abstract

Problem—Motor-vehicle crashes are a leading cause of death in the United States. Seatbelts are highly effective in preventing serious injury and death in the event of a crash. Not all states have primary enforcement of seatbelt laws.

Methods—Data from the 2002, 2006, 2008, and 2010 Behavioral Risk Factor Surveillance System were used to calculate prevalence of seatbelt use by state and type of state seatbelt law (primary vs. secondary enforcement).

Results and discussion—Self-reported seatbelt use among adults in the United States increased steadily between 2002 and 2010, with the national prevalence reaching 87% in 2010. Overall, seatbelt use in 2010 was 9 percentage points higher in the states with primary enforcement laws than in the states with secondary enforcement laws (89% vs. 80%). Impact on industry: Primary enforcement seatbelt laws and enhanced enforcement of seatbelt laws are proven strategies for increasing seatbelt use and reducing traffic fatalities.

Keywords

Seatbelt use; Primary enforcement; Secondary enforcement

1. Introduction

Motor-vehicle crashes are the leading cause of death in the United States among persons aged 5–34 years (Centers for Disease Control, Prevention [CDC], 2011). Seatbelts reduce the risk for fatal injuries from motor-vehicle crashes by about 45% and serious injuries by about 50% (National Highway Traffic Safety Administration [NHTSA]). Primary enforcement seatbelt laws (primary laws) allow police to stop drivers and issue citations solely because occupants are unbelted. Secondary enforcement laws allow police to issue a seatbelt citation only after stopping a motorist for another reason. The first primary law in

★ *The Journal of Safety Research* has partnered with the Office of the Associate Director for Science, Division of Unintentional Injury Prevention in the National Center for Injury Prevention & Control at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, USA, to briefly report on some of the latest findings in the research community. This report is the 28th in a series of CDC articles.

* Corresponding author at: Division of Unintentional Injury Prevention, CDC, 4770 Buford Hwy, NE, MS F-62, Atlanta, GA 30341. rshults@cdc.gov (R.A. Shults).

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the United States was enacted by New York in 1984. Five additional states passed a primary law during the latter 1980s, and in the 1990s, nine states and the District of Columbia followed suit. Since 2000, 17 more states have passed primary law, bringing the total number of jurisdictions with these laws to 32 in July 2012 (Insurance Institute for Highway Safety [IIHS], 2012). States with primary laws have consistently higher seatbelt use rates than states without such laws (Beck, Shults, Mack, & Ryan, 2007; Dinh-Zarr et al., 2001; NHTSA, 2011).

CDC collaborates with state health departments to monitor self-reported seatbelt use through the Behavioral Risk Factor Surveillance System (BRFSS). This report summarizes trends in self-reported seatbelt use from 2002 to 2010, as monitored by the BRFSS, and compares 2010 seatbelt use in states with primary versus secondary enforcement laws.

2. Methods

We used data from the 2002, 2006, 2008, and 2010 BRFSS data to estimate the prevalence of self-reported seatbelt use among adults in the United States; the seatbelt question was not included in the 2000 and 2004 surveys. BRFSS is an ongoing, state-based, random-digit-dialed telephone survey that collects self-reported data on health-related behaviors and conditions (Li et al., 2011). Data are collected from noninstitutionalized, civilian adults aged 18 years. The Council of American Survey Research Organizations (CASRO) median response rate among states ranged from 51% to 59% for the years reported.

To assess seatbelt use, BRFSS respondents were asked, “How often do you use seatbelts when you drive or ride in a car?” Responses included always, nearly always, sometimes, seldom, never, or never ride or drive in a car. In this report, we assessed the prevalence of always wearing a seatbelt by state, after stratifying by type of state seatbelt law in 2010 (primary or secondary enforcement). New Hampshire, the only state without a seatbelt law for adults, was grouped with the secondary law states. Prevalence estimates, 95% confidence intervals, and chi-square statistics were calculated with SUDAAN to account for the complex sampling design.

3. Results

National self-reported seatbelt use increased from 80% (95% CI: 80–81%) in 2002 to 87% (95% CI: 86–87%) in 2010 ($p < 0.01$; Table 1). State-level seatbelt use in 2010 ranged from 62% in North Dakota and South Dakota to 94% in California (Table 1). Eleven states and the District of Columbia achieved seatbelt use of 90% in 2010 (Fig. 1), up from one state (California) in 2002. All 12 jurisdictions had primary laws. Overall, seatbelt use in 2010 was 9 percentage points higher in the states with primary enforcement laws than in the states without such laws (89%, 95% CI: 88%–89% vs. 80%, 95% CI: 80%–81%).

Seatbelt use increased substantially from 2002 to 2010 in both primary law states ($p < 0.01$) and secondary law states ($p < 0.01$). However, if the use of seatbelts in secondary law states had matched that of primary law states in 2010, an additional 4.6 million adults would have always been belted. Although the states with secondary laws represented 24% of the total U.S. adult population in 2010, 54% of unbelted adults lived in these states.

4. Conclusions and comment

Self-reported seatbelt use among adults in the United States increased steadily between 2002 and 2010, with the national prevalence reaching 87% in 2010. However, seatbelt use in states with secondary laws continues to lag behind that of states with primary laws. This lost opportunity has tremendous costs. NHTSA estimated that nearly 450 additional lives would have been saved, 12,000 nonfatal injuries prevented, and \$1.6 billion in societal costs saved in 2009 alone if all states had primary laws (NHTSA, 2009, unpublished data).

Several limitations of the BRFSS should be considered when interpreting these results. As of 2010, BRFSS had not incorporated wireless-only households into the survey. As of the second half of 2010, 28% of adults lived in wireless-only households (Blumberg et al., 2011). Because these adults are younger than adults with landline phones and young adults have lower seatbelt use rates than older adults, omitting wireless-only households likely results in overestimating seatbelt use. Second, the BRFSS is limited to noninstitutionalized, civilian adults and might not be representative of seatbelt use among youths, institutionalized persons, or military personnel. Finally, the data are self-reported, and social-desirability bias might result in overestimates of seatbelt use. However, a comparison of 2008 BRFSS seatbelt use to 2008 observed seatbelt use in each state found that self-reported use was lower than observed use in 38 states, suggesting that as seatbelt use has increased over time, any upward bias in self-reported use due to social desirability has substantially declined (Ibrahimova, Shults, & Beck, 2011).

Despite recent increases in seatbelt use, the United States has among the lowest seatbelt use rate (Vivoda & Eby, 2011) and among the highest population-based traffic fatality rate of any high-income country (World Health Organization [WHO], 2009). Primary enforcement seatbelt laws and enhanced enforcement of seatbelt laws are proven strategies for increasing seatbelt use (Dinh-Zarr et al., 2001; WHO, 2009).

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Biographies

Ruth A. Shults Ph.D., M.P.H., is a senior epidemiologist for the Transportation Team at CDC's National Center for Injury Prevention and Control. She conducts research in the area of road safety focusing primarily on alcohol-impaired driving, young driver safety, and occupant safety.

Laurie F. Beck M.P.H., is an epidemiologist for the Transportation Team at CDC's National Center for Injury Prevention and Control. She conducts research in the area of road safety focusing primarily on occupant safety and pedestrian safety.

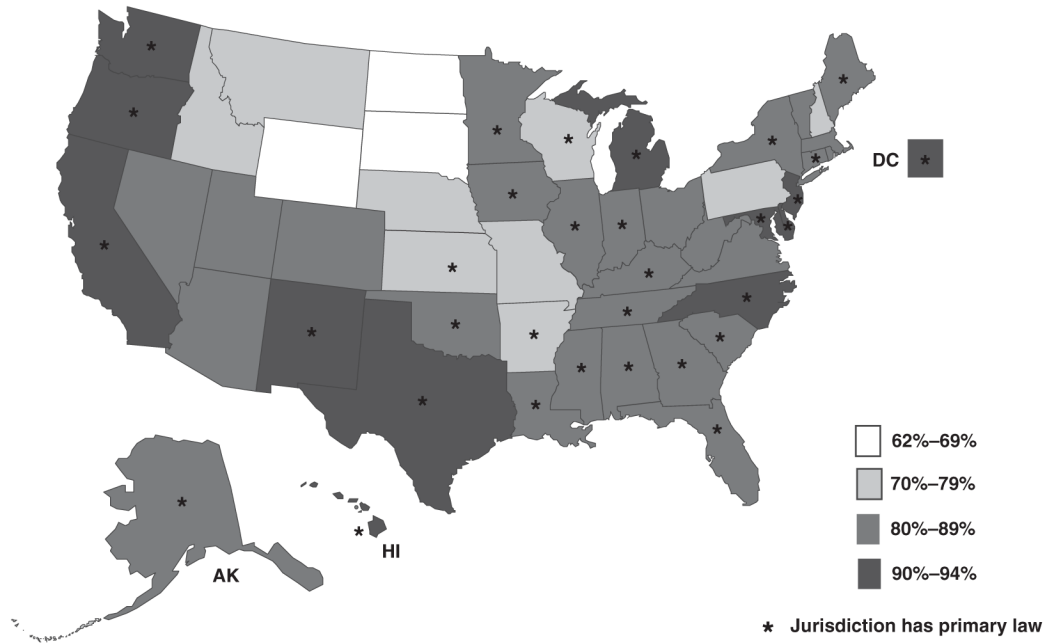


Fig. 1. Prevalence of always wearing seatbelt by jurisdiction and seatbelt law status, BRFSS 2010.

Table 1

Prevalence of seatbelt use by law status in July 2010 (primary or secondary), Behavioral Risk Factor Surveillance System, 2002, 2006, 2008, 2010.

State/District	2002	2006	2008	2010
	% (95% CI)*	% (95% CI)	% (95% CI)	% (95% CI)
<i>Primary Law in July 2010 (year law enacted)</i>				
Alabama (1999)	83 (82–85)	82 (80–84)	85 (83–87)	87 (86–88)
Alaska (2006)	70 (68–73)	77 (74–80)	81 (78–83)	84 (81–86)
Arkansas (2009)	65 (63–66)	70 (68–72)	71 (69–73)	77 (74–79)
California (1993)	92 (92–93)	92 (91–93)	93 (92–94)	94 (93–94)
Connecticut (1986)	82 (81–84)	84 (83–86)	86 (84–87)	89 (87–90)
Delaware (2003)	80 (79–82)	86 (84–87)	89 (87–91)	91 (90–93)
District of Columbia (1997)	88 (86–90)	87 (85–88)	89 (87–90)	90 (89–92)
Florida (2009)	83 (82–85)	83 (81–84)	86 (85–88)	88 (87–89)
Georgia (1996)	83 (82–85)	83 (81–83)	85 (84–87)	88 (87–89)
Hawaii (1985)	90 (88–91)	92 (91–93)	91 (90–92)	91 (90–92)
Illinois (2003)	75 (72–77)	81 (80–83)	85 (83–86)	87 (85–88)
Indiana (1998)	77 (76–78)	79 (78–81)	82 (80–84)	86 (85–87)
Iowa (1986)	76 (74–78)	80 (79–81)	84 (83–86)	85 (84–86)
Kansas (2010)	67 (65–68)	69 (67–70)	74 (73–76)	76 (75–77)
Kentucky (2006)	74 (73–76)	76 (74–78)	80 (78–81)	81 (80–83)
Louisiana (1995)	79 (78–81)	87 (86–88)	89 (88–90)	89 (88–90)
Maine (2007)	73 (71–75)	75 (74–77)	82 (80–83)	83 (82–85)
Maryland (1997)	88 (86–89)	88 (87–89)	90 (88–91)	91 (90–92)
Michigan (2000)	84 (83–85)	88 (87–89)	89 (88–90)	90 (89–91)
Minnesota (2009)	76 (74–77)	80 (79–82)	82 (80–83)	87 (86–89)
Mississippi (2006)	73 (71–75)	72 (70–73)	76 (75–78)	81 (79–82)
New Jersey (2000)	83 (80–85)	84 (83–85)	90 (89–91)	90 (89–91)
New Mexico (1986)	87 (86–88)	87 (86–89)	90 (89–91)	90 (89–91)
New York (1984)	81 (79–82)	84 (83–85)	86 (85–87)	88 (87–89)
North Carolina (1985)	87 (86–89)	87 (86–88)	88 (87–89)	90 (89–91)
Oklahoma (1997)	78 (76–79)	80 (79–81)	82 (81–83)	81 (80–82)
Oregon (1990)	88 (87–89)	91 (89–92)	94 (93–95)	93 (91–94)
South Carolina (2005)	75 (73–77)	78 (77–79)	82 (81–83)	85 (84–87)
Tennessee (2004)	81 (80–83)	83 (81–85)	85 (83–86)	85 (83–87)
Texas (1985)	86 (85–87)	90 (88–91)	91 (90–92)	92 (91–93)
Washington (2002)	86 (84–87)	92 (91–92)	92 (91–93)	93 (92–93)
Wisconsin (2009)	66 (65–68)	69 (67–71)	73 (71–75)	76 (74–78)
Subtotal for Primary Law States	83 (82–83)	85 (84–85)	87 (87–87)	89 (88–89)
<i>Secondary Law in July 2010 (year law enacted)</i>				
Arizona (1990)	80 (78–83)	82 (79–84)	83 (81–85)	88 (87–89)
Colorado (1987)	79 (78–81)	82 (80–83)	82 (81–83)	85 (84–86)

State/District	<u>2002</u>	<u>2006</u>	<u>2008</u>	<u>2010</u>
	% (95% CI)*	% (95% CI)	% (95% CI)	% (95% CI)
Idaho (1986)	65 (64–67)	73 (72–75)	77 (75–78)	76 (74–78)
Massachusetts (1994)	72 (71–73)	76 (75–78)	80 (79–81)	83 (82–84)
Missouri (1985)	67 (65–69)	69 (67–71)	73 (71–75)	73 (71–75)
Montana (1987)	69 (67–70)	68 (66–70)	69 (68–71)	72 (70–73)
Nebraska (1993)	69 (67–70)	66 (65–68)	70 (69–72)	72 (70–73)
Nevada (1987)	79 (77–81)	81 (78–83)	86 (84–87)	87 (84–89)
New Hampshire (no law)	64 (62–65)	65 (63–67)	66 (65–68)	71 (70–73)
North Dakota (1994)	52 (50–54)	58 (56–60)	59 (57–61)	62 (60–64)
Ohio (1986)	77 (75–78)	74 (72–77)	79 (78–80)	82 (80–83)
Pennsylvania (1987)	69 (68–70)	72 (70–73)	75 (73–76)	77 (76–78)
Rhode Island (1991)**	76 (74–77)	78 (76–80)	81 (79–82)	83 (81–84)
South Dakota (1995)	55 (53–57)	58 (57–60)	60 (58–61)	62 (60–64)
Utah (1986)	72 (70–74)	77 (75–78)	80 (78–81)	80 (78–81)
Vermont (1994)	76 (75–78)	79 (78–80)	82 (81–83)	84 (83–85)
Virginia (1988)	78 (76–80)	81 (79–82)	84 (82–86)	86 (83–88)
West Virginia (1993)	74 (73–76)	78 (76–80)	79 (78–81)	82 (81–84)
Wyoming (1989)	58 (56–60)	63 (61–65)	67 (66–69)	67 (65–68)
Subtotal for Secondary Law States	73 (72–73)	75 (74–76)	78 (78–79)	80 (80–81)
National	80 (80–81)	82 (82–83)	85 (85–85)	87 (86–87)

* CI: confidence interval.

** Rhode Island passed a primary enforcement law in 2011.