

Seat Belt Use Among Adult Workers — 21 States, 2013

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Roadway incidents involving motorized vehicles accounted for 24% of fatal occupational injuries in the United States during 2013 and were the leading cause of fatal injuries among workers.* In 2013, workers' compensation costs for serious, nonfatal injuries among work-related roadway incidents involving motorized land vehicles were estimated at \$2.96 billion.[†] Seat belt use is a proven method to reduce injuries to motor vehicle occupants (*I*). Use of lap/shoulder seat belts reduces the risk for fatal injuries to front seat occupants of cars by 45% and the risk to light truck occupants by 60%.[§] To characterize seat belt use among adult workers by occupational group, CDC analyzed data from the 2013 Behavioral Risk Factor Surveillance System (BRFSS) and found that not always using a seat belt was significantly associated with occupational group after controlling for factors known to influence seat belt use. Occupational groups with the highest prevalences of not always using a seat belt included construction and extraction; farming, fishing, and forestry; and installation, maintenance, and repair. To increase seat belt use among persons currently employed, states can enact and enforce primary seat belt laws, employers can set and enforce safety policies requiring seat belt use by all vehicle occupants, and seat belt safety advocates can target interventions to workers in occupational groups with lower reported seat belt use.

BRFSS is an annual, state-based, random-digit-dialed land-line and cell phone survey of noninstitutionalized adults aged ≥18 years residing in the United States.[¶] In 2013, all states asked survey participants about seat belt use.** Industry and occupation were first available on the BRFSS survey in 2013,

and 21 states asked currently employed respondents about their industry and occupation.^{††} This report describes self-reported seat belt use by occupational group among workers in those 21 states who were employed for wages or self-employed at the time of the interview. All responses to the question about frequency of seat belt use except "always" (i.e., "nearly always," "sometimes," "seldom," and "never") were combined and categorized as "not always." Participants' responses were coded to 2002 U.S. Census Bureau occupation numeric codes. Census occupation codes were then grouped for analysis into 2000 Standard Occupational Classification (SOC) System major groups. Records with missing occupation codes or that were not able to be coded because of insufficient information were excluded, as were records where the seat belt responses

^{††} Occupation was elicited by the question, "What kind of work do you do (for example, registered nurse, janitor, cashier, auto mechanic)?"

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* http://www.bls.gov/iif/oshwc/foi/foi_revised13.pdf.

† <https://www.libertymutualgroup.com/about-lm/research-institute/communications/workplace-safety-index>.

§ <http://www-nrd.nhtsa.dot.gov/Pubs/812153.pdf>.

¶ <http://www.cdc.gov/brfss/>.

** Seat belt use was elicited by the question, "How often do you use seat belts when you drive or ride in a car? Would you say—always, nearly always, sometimes, seldom, never?"



were blank, “don’t know/not sure,” “never drive or ride in a car,” or “refused.” Because BRFSS data are not representative of active duty service members, the 263 respondents who worked in the armed forces also were excluded.

Results were stratified by type of seat belt law in the state of residence because type of law is known to be associated with seat belt use (1,2). Fourteen of the 21 states had primary seat belt laws in 2013; in these states, a driver can be stopped and ticketed solely for not using a seat belt. Six states had secondary seat belt laws; in these states, a driver can be ticketed for not using a seat belt only if stopped for another offense. New Hampshire had no seat belt law covering adults^{§§} and was grouped with the secondary law states.

Data were weighted and analyzed to account for the complex BRFSS multistage sampling design. The prevalence of not always using a seat belt was estimated by occupational group and sociodemographic characteristics. Adjusted prevalences, stratified by type of seat belt law, were estimated with logistic regression controlling for the potential confounders of age, sex, race/ethnicity, education, marital status, body mass index, and county urbanization. All statistically significant interaction terms between occupational group and confounders, including the interaction between occupational group and type of seat belt law, were included in the model. County of residence was classified as metropolitan (codes 1–3), urban (4–7), or rural

(8–9), based on the U.S. Department of Agriculture’s 2013 Rural-Urban Continuum Codes.^{¶¶}

Among the 21 states, the overall survey response rates ranged from 31.1% to 59.2%.^{***} Data from 84,593 respondents were included in the analysis, including 54,187 (64%) who lived in states with primary seat belt laws and 30,406 (36%) who lived in states with secondary seat belt laws. The prevalence of not always using a seat belt varied by age, sex, race/ethnicity, education, marital status, body mass index, and county urbanization, and for each characteristic, was higher in states with secondary seat belt laws (Table 1).

For all occupational groups combined, the crude prevalence of not always using a seat belt was 10.4% in states with primary seat belt laws and 23.6% in states with secondary seat belt laws (Table 2). For every occupational group, the prevalence was higher in states with secondary seat belt laws. Crude prevalences ranged from 5.4% (business and financial operations) to 18.0% (construction and extraction) in the states with primary seat belt laws and from 8.1% (life, physical, and social science) to 55.5% (farming, fishing, and forestry) in states with secondary seat belt laws. Among workers in the transportation and material moving group, which includes several occupations that involve frequent driving, 12.4% and 33.7% in states with primary and secondary seat belt laws, respectively, did not always use a seat belt.

§§ <http://www.iihs.org/iihs/topics/laws/safetybeltuse?topicName=safety-belts>.

¶¶ <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx>.
*** http://www.cdc.gov/brfss/annual_data/2013/pdf/2013_dqr.pdf.

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TABLE 1. Prevalence* of not always using a seat belt among currently employed workers, by selected characteristics and state seat belt law status — Behavioral Risk Factor Surveillance System, 21 states, 2013

Characteristic	States with primary seat belt laws [†]		States with secondary seat belt laws [§]	
	No. in sample	Not always using seat belt % (95% CI)	No. in sample	Not always using seat belt % (95% CI)
Age group (yrs)				
18–24	2,753	19.9 (16.9–22.8)	1,671	33.3 (30.0–36.6)
25–34	7,232	13.1 (11.7–14.4)	4,353	27.9 (25.8–30.0)
35–44	10,010	9.2 (8.2–10.2)	5,579	21.1 (19.4–22.9)
45–54	14,304	8.4 (7.4–9.3)	7,590	21.4 (20.0–22.8)
55–64	14,346	7.5 (6.7–8.3)	8,037	19.6 (18.2–21.1)
≥65	5,542	6.8 (5.5–8.1)	3,176	21.3 (18.8–23.8)
Sex				
Men	24,770	13.3 (12.4–14.1)	14,622	30.1 (28.9–31.4)
Women	29,417	7.1 (6.4–7.7)	15,784	16.1 (15.1–17.0)
Race/Ethnicity				
White, non-Hispanic	41,022	10.8 (10.2–11.4)	27,048	24.2 (23.3–25.0)
Black, non-Hispanic	4,666	13.8 (11.3–16.2)	455	22.5 (15.7–29.4)
Other, non-Hispanic	2,962	8.1 (5.7–10.4)	1,305	20.4 (16.7–24.1)
Hispanic	4,778	8.3 (6.9–9.6)	1,300	19.1 (15.9–22.2)
Education				
Less than high school	2,534	11.2 (9.0–13.5)	1,063	33.5 (28.8–38.2)
High school graduate	12,356	13.2 (12.1–14.3)	7,406	31.9 (30.0–33.8)
Some college or technical school	15,034	11.4 (10.3–12.4)	8,972	25.8 (24.4–27.3)
College graduate or more	24,192	7.2 (6.5–7.9)	12,923	14.3 (13.4–15.2)
Marital status				
Married	31,262	8.4 (7.7–9.0)	19,086	20.3 (19.5–21.2)
Divorced, widowed, or separated	11,585	9.6 (8.5–10.6)	5,667	24.6 (22.5–26.7)
Never married or a member of an unmarried couple	11,089	14.9 (13.6–16.2)	5,538	30.6 (28.6–32.7)
Body mass index				
Underweight or normal	17,679	9.8 (8.8–10.9)	10,070	19.6 (18.3–20.9)
Overweight	19,256	10.2 (9.3–11.0)	10,963	24.4 (23.0–25.8)
Obese	15,029	11.7 (10.7–12.6)	8,041	29.8 (28.1–31.6)
Metropolitan/Urban/Rural county of residence				
Metropolitan	41,406	9.8 (9.2–10.4)	16,912	20.2 (19.2–21.2)
Urban	11,096	15.0 (13.6–16.4)	10,166	33.7 (32.3–35.1)
Rural	1,685	20.0 (16.4–23.6)	3,328	46.8 (44.5–49.2)

Abbreviation: CI = confidence interval.

* Weighted estimates.

[†] California, Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, Mississippi, New Jersey, New Mexico, New York, Oregon, Washington, and Wisconsin (n = 54,187, 64% of respondents).

[§] Massachusetts, Montana, Nebraska, New Hampshire (no seat belt law), North Dakota, Utah, and Wyoming (n = 30,406, 36% of respondents).

Among all occupational groups, the adjusted prevalence of not always using a seat belt was higher in states with secondary seat belt laws. The highest adjusted prevalences in states with primary seat belt laws were observed in the construction and extraction (14.1%); legal (14.0%); installation, maintenance, and repair (12.8%); protective service (12.7%); and farming, fishing, and forestry (12.7%) occupational groups. In states with secondary seat belt laws, the highest adjusted prevalences were in the farming, fishing, and forestry (38.1%); construction and extraction (32.1%); installation, maintenance, and repair (27.0%); building and grounds cleaning and maintenance (25.9%); and protective service (25.4%) occupational groups. Percentage-point differences between adjusted prevalences of states with primary and secondary seat belt laws ranged from a low of 2.0 (life, physical, and, social science) to a high of 25.5 (farming, fishing, and forestry) (Table 2).

Discussion

This analysis provides, for the first time, seat belt use estimates among a wide variety of occupational groups in 21 U.S. states. It indicates that self-reported seat belt use among adult workers in those states varies by occupation and that this variation persists after adjustment for factors known to be associated with seat belt use (age, sex, race/ethnicity, education, marital status, body mass index, county urbanization, and state seat belt law type). Overall and by occupational group, in 2013, seat belt use among employed adults was lower in states that did not have primary seat belt laws.

Limited data are available on work-related seat belt use. A CDC study found that approximately 14% of long-haul truck drivers did not use a seat belt on every trip and that never using a seat belt at work was associated with living in a state that did not have a primary seat belt law (3).

TABLE 2. Prevalence* of not always using a seat belt among currently employed workers, by occupational group† and state seat belt law status, ranked from lowest to highest crude prevalence among states with primary seat belt laws — Behavioral Risk Factor Surveillance System, 21 states, 2013

Occupational group	States with primary seat belt laws [§]			States with secondary seat belt laws [¶]			Percentage-point difference in adjusted % between primary and secondary law states
	No. in sample	Not always using seat belt, crude % (95% CI)	Not always using seat belt, adjusted** % (95% CI)	No. in sample	Not always using seat belt, crude % (95% CI)	Not always using seat belt, adjusted** % (95% CI)	
Business and financial operations	2,572	5.4 (4.0–6.7)	7.0 (5.4–9.0)	1,273	14.1 (11.4–16.9)	16.9 (13.9–20.4)	-9.9
Life, physical, and social science	1,014	6.2 (3.5–8.9)	8.1 (5.3–12.4)	519	8.1 (5.5–10.7)	10.1 (7.4–13.8)	-2.0
Architecture and engineering	1,481	6.3 (4.3–8.4)	6.6 (4.7–9.1)	797	15.7 (12.0–19.3)	14.9 (11.6–18.9)	-8.3
Health care practitioners and technical	4,658	6.7 (4.8–8.6)	9.1 (6.8–12.1)	2,530	15.1 (12.6–17.5)	19.2 (16.5–22.3)	-10.1
Education, training, and library	4,549	6.9 (5.1–8.7)	10.2 (7.8–13.1)	2,648	11.5 (9.7–13.4)	15.0 (12.6–17.8)	-4.8
Computer and mathematical	1,639	7.4 (5.0–9.9)	7.7 (5.5–10.7)	839	14.3 (10.3–18.4)	14.4 (10.8–18.8)	-6.6
Office and administrative support	6,561	8.1 (6.9–9.4)	9.5 (8.0–11.2)	3,692	17.7 (15.8–19.7)	18.4 (16.2–20.7)	-8.9
Healthcare support	1,353	9.2 (6.2–12.2)	9.8 (7.0–13.6)	733	21.1 (16.6–25.6)	20.6 (16.3–25.7)	-10.8
Community and social services	1,342	9.4 (6.1–12.7)	11.7 (8.1–16.7)	658	16.1 (11.8–20.4)	19.9 (15.5–25.3)	-8.2
Personal care and service	1,843	9.7 (5.4–14.0)	10.1 (6.7–15.0)	928	21.3 (16.3–26.4)	20.3 (15.6–26.0)	-10.2
Management	5,891	9.7 (8.4–11.0)	10.6 (9.1–12.2)	3,917	26.3 (24.1–28.6)	24.9 (22.6–27.2)	-14.3
Legal	895	9.8 (6.2–13.5)	14.0 (9.8–19.6)	333	14.6 (9.2–19.9)	20.6 (14.4–28.6)	-6.6
Sales and related	5,077	10.6 (9.0–12.1)	10.1 (8.7–11.8)	2,728	25.7 (23.0–28.4)	23.0 (20.5–25.8)	-12.9
Production	2,264	11.2 (9.0–13.4)	9.4 (7.7–11.4)	1,307	31.0 (26.9–35.1)	24.4 (21.0–28.1)	-15.0
Farming, fishing, and forestry	420	12.2 (7.6–16.8)	12.7 (8.7–18.1)	311	55.5 (47.1–63.8)	38.1 (29.7–47.3)	-25.5
Arts, design, entertainment, sports, and media	1,350	12.4 (6.3–18.6)	12.3 (7.4–19.8)	613	16.3 (11.9–20.7)	18.0 (13.5–23.7)	-5.7
Building and grounds cleaning and maintenance	2,027	12.4 (9.1–15.8)	11.6 (8.8–15.2)	973	28.8 (23.9–33.8)	25.9 (21.6–30.7)	-14.2
Transportation and material moving	2,328	12.4 (10.0–14.8)	10.6 (8.7–12.9)	1,426	33.7 (29.6–37.9)	25.0 (21.5–28.9)	-14.4
Food preparation and serving related	1,748	14.7 (11.4–17.9)	11.2 (8.7–14.2)	867	27.0 (21.9–32.1)	21.0 (16.8–25.9)	-9.8
Protective service	1,188	15.7 (11.7–19.7)	12.7 (9.6–16.7)	531	34.8 (26.8–42.7)	25.4 (18.9–33.3)	-12.7
Installation, maintenance, and repair	1,518	16.2 (12.9–19.5)	12.8 (10.3–15.8)	991	38.4 (32.9–43.8)	27.0 (22.7–31.9)	-14.2
Construction and extraction	2,469	18.0 (15.4–20.7)	14.1 (12.0–16.4)	1,792	43.7 (39.9–47.5)	32.1 (28.6–35.8)	-18.0
All occupational groups	54,187	10.4 (9.9–10.9)	—	30,406	23.6 (22.8–24.4)	—	—

Abbreviation: CI = confidence interval.

* Weighted estimates.

† From the 2000 Standard Occupational Classification System. <http://www.bls.gov/soc/>.

§ California, Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, Mississippi, New Jersey, New Mexico, New York, Oregon, Washington, and Wisconsin (n = 54,187, 64% of respondents).

¶ Massachusetts, Montana, Nebraska, New Hampshire (no seat belt law), North Dakota, Utah, and Wyoming (n = 30,406, 36% of respondents).

** Adjusted by age group, sex, race/ethnicity, education, marital status, body mass index, urban/rural county of residence, and state seat belt law type.

The current report estimates that workers in several groups with occupations for which driving is not a primary job duty (including construction and extraction; farming, fishing, and forestry; installation, maintenance, and repair; and protective service) report lower frequency of seat belt use than workers in transportation and material moving occupations. Previous research has suggested lower seat belt use rates among construction workers and occupants of commercial light vehicles (4), particularly pick-up trucks (5,6), and that police officers might view seat belt use as a safety concern in high threat situations (7). However, it is possible that not enough attention has been directed toward promoting seat belt use among the 14 million workers in these broad categories because driving is not their primary job duty.

The findings in this report are subject to at least five limitations. First, seat belt use is self-reported, which, because of social desirability bias, might result in higher reported frequency of seat belt use than that reported in observational studies. Second, this

analysis does not distinguish between work-related and personal driving, and there is evidence from one study that frequency of seat belt use among commercial motor vehicle drivers is higher when driving a personal vehicle than when engaged in work-related driving (4). Third, the seat belt use question says “car”; it is not known whether respondents who drive vehicles other than cars (e.g., trucks) interpreted “car” to include other vehicles. Fourth, households without telephones are excluded from BRFSS; however, this should have a minimal impact on the findings because only an estimated 2.5% of households do not have telephones.††† Finally, because the overall survey response rates among the 21 states ranged from 31.1% to 59.2%, nonresponse bias is possible.

Because seat belt laws are strongly associated with seat belt use (1,8), states that implement new primary seat belt laws might see a substantial increase in seat belt use by all drivers, including currently employed workers; this would benefit

††† http://www.cdc.gov/brfss/annual_data/2013/pdf/overview_2013.pdf.

Summary**What is already known about this topic?**

Although motor vehicle crashes are the leading cause of occupational fatalities, and seat belts have been shown to reduce injuries, previous reports on worker seat belt use have been narrowly focused on only a few occupations.

What is added by this report?

This is the first report on seat belt use among a broad range of occupational groups in a representative, population-based sample. For all occupational groups, the prevalence of not always using seat belts was higher in states with secondary seat belt laws (23.6% unadjusted) than in states with primary seat belt laws (10.4% unadjusted). After adjusting for age, sex, race/ethnicity, education, marital status, body mass index, county urbanization, and state seat belt law type, there was substantial variability among occupational groups in self-reported seat belt use. The occupational groups with the highest adjusted prevalences included construction and extraction (14.1%); legal (14.0%); installation, maintenance, and repair (12.8%); protective service (12.7%); and farming, fishing, and forestry (12.7%).

What are the implications for public health practice?

Employers can establish comprehensive safety programs that require consistent seat belt use at all times. States that implement primary seat belt laws might see a substantial increase in seat belt use by currently employed workers. Seat belt safety advocates could focus interventions on the occupational groups with the lowest reported seat belt use.

employers, workers, and the general public. Employers can reduce injuries among workers by implementing comprehensive safety programs that require seat belt use at all times for employees and contractors (drivers and passengers) and reinforcing this policy in training programs (3,6,9,10).^{§§§} Although many of the workers in occupations with low rates of seat belt use might be self-employed or work in small businesses that do not have comprehensive safety programs, it would still be beneficial for employers to focus on seat belt safety. Employers and seat belt safety advocates might consider developing additional interventions directed at workers in the occupations with the lowest self-reported seat belt use.

^{§§§} CDC. Preventing work-related motor vehicle crashes. DHHS (NIOSH) publication no. 2015-111. March 2015. <http://www.cdc.gov/niosh/docs/2015-111/>.

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