Belief about seat belt use and seat belt wearing behavior among front and rear seat passengers in the United States

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Abstract

Introduction: Unrestrained drivers and passengers represent almost half of all passenger vehicle occupant deaths in the United States. The current study assessed the relationship between the belief about importance of seat belt use and the behavior of always wearing a seat belt.

Method: Data from 2012 ConsumerStyles were analyzed separately for front and rear passenger seating positions. Multivariable regression models were constructed to identify the association between seat belt belief and behavior (i.e., always wears seat belt) among adults. Models controlled for type of state seat belt law (primary, secondary, or none).

Results: Seat belt use was higher in front passenger seats (86.1%) than in rear passenger seats (61.6%). Similarly, belief that seat belt use was very important was higher in reference to the front passenger seat (84.2%) versus the rear passenger seat (70.5%). For the front passenger seat, belief was significantly associated with seat belt use in states with both primary enforcement laws (adjPR 1.64) and secondary enforcement laws (adjPR 2.77). For the rear passenger seat, belief was also significantly associated with seat belt use, and two 2-way interactions were observed (belief by sex, belief by region).

Conclusions: Despite overall high rates of seat belt use in the United States, certain groups are less likely to buckle up than others. The study findings suggest that efforts to increase seat belt use among highrisk populations, such as those who live in states with secondary or no seat belt laws and those who ride in rear seats (which include people who utilize taxis or ride-hailing vehicles) could benefit from interventions designed to strengthen beliefs related to the benefits of seat belt use.

Practical applications: Future research that uses a theoretical framework to better understand the relationship between beliefs and behavior may inform interventions to improve seat belt use.

Keywords

Passenger vehicle occupant; Restraint use; Motor vehicle; Injury prevention; Health behavior

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1. Introduction

In 2016, 48% of passenger vehicle occupants (PVOs) killed in crashes in the United States were unrestrained drivers and passengers (National Highway Traffic Safety Administration, 2017). With overall levels of seat belt use at 90% in 2017, this means that the remaining 10% of the population accounts for almost half of all passenger vehicle occupant deaths in the United States (National Highway Traffic Safety Administration, 2016a).

Given the life-saving potential of seat belts, public health and transportation professionals have sought to identify strategies to improve seat belt use among drivers and passengers. Some of the most effective population-based interventions have been the implementation of seat belt laws and the enhanced enforcement of such laws (Dinh-Zarr et al., 2001; Goodwin et al., 2015; Lee et al., 2015). These interventions have been shown to increase seat belt use as well as decrease crash-related injuries and deaths. Primary enforcement seat belt laws, which allow police officers to stop vehicles and issue tickets when lack of seat belt use is observed, are more effective than secondary enforcement seat belt laws, which only allow police officers to issue tickets after the vehicle has been stopped for another reason (Beck, Shults, Mack, & Ryan, 2007; Dinh-Zarr et al., 2001; Sunshine, Dwyer-Lindgren, Chen, & Mokdad, 2017). Other factors, such as the amount of the fine and whether the seat belt law covers all seating positions (front and rear seats) or only the front seats, have been shown to affect seat belt use as well (Bhat, Beck, Bergen, & Kresnow, 2015; Goodwin et al., 2015; Houston & Richardson, 2005; Nichols et al., 2010). Similarly, enhanced enforcement of these laws, which involves a period of increased levels of enforcement accompanied by communications and outreach (in the form of both paid advertising and earned media), is associated with higher seat belt use (Dinh-Zarr et al., 2001; Goodwin et al., 2015; Nichols & Ledingham, 2008).

While seat belt use has reached record levels overall with the implementation of strategies such as those mentioned above, key populations continue to travel unrestrained. Groups with lower levels of seat belt use include men, young adults (18–34 years of age), obese people, rear seat passengers, and rural residents (Beck, Downs, Stevens, & Sauber-Schatz, 2017; Bhat et al., 2015; National Highway Traffic Safety Administration, 2017; Strine et al., 2010). There remains a critical need to identify approaches that can improve seat belt use among these at-risk populations.

The purpose of the current study was to investigate the association between the belief that seat belt use is important and the behavior of always wearing a seat belt among adults in the United States. Belief and behavior were investigated separately for front and rear passenger seats.

2. Materials and methods

We used data from Porter Novelli Public Services (2012), the most recent year for which data were available. Knowledge Networks: A GfK Company collected the data for Porter Novelli, randomly recruiting participants through probability-based sampling using random-digit dial and address-based sampling methods. Surveys were completed electronically, and

households without existing Internet access were provided with laptop computers and access to the Internet. The Summer ConsumerStyles survey was fielded from June 19 to July 3, 2012 to 6,402 adults (18 years or older) who had previously participated in the Spring ConsumerStyles survey. A total of 4,170 surveys were completed, for a response rate of 65%. Data were weighted to match the U.S. Current Population Survey proportions for sex, age, household income, race/ethnicity, household size, education level, census region, metropolitan status, and whether the respondent had internet access prior to joining the panel (Porter Novelli Public Services, 2012). CDC licensed the 2012 Summer ConsumerStyles survey data file (without personal identifiers) from Porter Novelli. Because CDC licensed previously collected data for secondary analysis, the project was exempt from institutional review board approval.

Survey respondents were asked two questions for each of three seating positions (driver, front seat passenger, and back seat passenger). They were asked both about their belief in the importance of seat belt use and about their seat belt wearing behavior. All analyses were stratified by seating position. Preliminary analyses indicated a strong correlation between seat belt use among drivers and front seat passengers (Spearman correlation: 86%) and between belief in importance of seat belt use among drivers and front seat passengers (Spearman correlation: 97%). Further, seat belt use and belief among front seat passengers was close to 100% predictive of the same in drivers (Gamma statistic). For these reasons, subsequent analyses focused only on front and rear seat passengers.

To measure belief, respondents were asked "how important is it to wear seat belts in the driver seat/front passenger seat/back seat of a car, truck, van, or sport utility vehicle (SUV)." Responses were assessed on a 5-point scale ranging from "not at all important" to "very important." Responses were dichotomized (very important vs. less than very important) for analysis. To measure seat belt use, respondents were asked "how often do you wear seat belts when you drive/ride in the front passenger seat/ride in the back seat of a car, truck, van, or SUV." Response options included always, nearly always, sometimes, seldom, never, or never ride in driver/front passenger seat/back seat. Those who reported that they never rode in the seat were excluded from analyses of that seating position (n=21 for front passenger seat, n=198 for rear passenger seat). Responses were then dichotomized (always vs. less than always) for analysis.

We examined the bivariable association between seat belt use (defined as always wears) and belief about seat belt use (very important or less than very important), type of state seat belt law, and a number of respondent- and household-level characteristics identified in the literature as being associated with seat belt use. These included sex, age group (18–24 years, 25–44 years, 45–64 years, 65+ years), racial/ethnic group (white non-Hispanic, black non-Hispanic, Hispanic, other non-Hispanic [American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and multiracial]), highest level of education completed (high school graduate or less, some college, college graduate), household income group (less than $25,000, $25,000 to less than $50,000, $50,000 to less than $75,000, $75,000 or more), and region of residence (North-east, Midwest, South, West) along with several dichotomous yes/no variables (currently married, currently employed, living in a metropolitan statistical area [MSA]). State seat belt laws for 2012 were identified with information from Insurance

Institute for Highway Safety, which maintains a list of traffic safety law characteristics by state (Insurance Institute for Highway Safety, 2018). For analyses of front seat passenger belt use, state seat belt law was grouped into two categories (primary or secondary enforcement for adult use). Because only one state (New Hampshire) had no law for adult use of seat belts, it was grouped with the secondary enforcement states for front seat passenger analyses (Fig. 1). For analyses of rear seat passenger belt use, state seat belt law was grouped into three categories (primary, secondary, or none for adult use; Fig. 2). Weighted percentages and 95% confidence intervals were computed for seat belt use along with chi-square tests of association for categorical variables. Linear trends were assessed where appropriate using the Cochran-Armitage test for linear trend.

Multivariable regression was conducted using the log-binomial model with a log link function to assess the association between belief and behavior regarding seat belt use, adjusting for state law and other demographic variables. Respondent sex, racial/ethnic group, and age group were forced into each model. Variables that were significant in bivariable analysis were also included in each initial model. Two-way interactions between belief and demographic characteristics found to be significant in preliminary analyses were also included in the initial models (front seat passengers: belief by state law; rear seat passengers: belief by sex, belief by state law, belief by region). Age group was subsequently removed from the initial model for front seat passengers due to model convergence issues. Interactions were assessed first using a backward stepwise approach followed by main effects, with non-significant predictors being removed in a backward stepwise manner. In addition to those variables forced into the model, variables with p-values < 0.05, Wald chi-square test, were retained in the final model as were any variables involved in two-way interactions, regardless of their significance, in order to keep the models hierarchical in nature. Results are presented in the form of adjusted prevalence ratios (adjPRs) and 95% confidence intervals (CIs). All analyses were conducted using Statistical Analysis Software (SAS) version 9.3 (SAS Institute, Inc., Cary, North Carolina).

3. Results

Overall, the weighted sample was comprised of a slightly higher proportion of females (51.8%) than males (48.2%), and approximately 70% of the sample was aged 25–64 years (Table 1). The sample was predominately white/non-Hispanic (67.2%), married (53.8%), employed (55.5%), and living in an MSA (83.9%). More than one-third (37.2%) lived in the South, 18.1% lived in the Northeast, 21.6% lived in the Midwest, and 23.1% lived in the West. A total of 42.8% had at most a high school education, and 38.6% reported a household income of $75,000 or higher. Overall, 75.0% lived in states with a primary enforcement law for seat belt use in front seats. In contrast, only 38.5% lived in states with a primary enforcement seat belt law for the rear seats, 12.7% lived in states with a secondary enforcement law for rear seats, and almost half (48.7%) lived in states without laws that covered seat belt use in the rear seating position (Table 1).

3.1. Bivariable analysis – front seat passengers

The large majority of respondents (86.1%, 95% CI: 85.0–87.1) reported always wearing a seat belt when riding in the front passenger seat (Table 2). A total of 84.2% (95% CI: 83.1–85.3) reported believing that seat belt use was very important in the front passenger seat (data not shown). Belief about seat belt use was by far the strongest predictor for behavior among front seat passengers: those who indicated seat belt use was very important were almost two times more likely than others to report seat belt use (93.1% vs. 48.9%, respectively) (Fig. 3). Among front seat passengers, seat belt use increased with increasing age group, increasing education level, and increasing household income (p < 0.01, test for linear trend; Table 2). Use was also higher among females, those currently married, those living in an MSA, those living in primary enforcement states, and those living in the West relative to all other regions (p < 0.01). Seat belt use was also significantly higher in the Northeast and the South relative to the Midwest.

3.2. Bivariable analysis – rear seat passengers

While the majority of respondents (61.6%, 95% CI: 60.0–63.1) reported always wearing a seat belt when riding in the rear seat, seat belt use in the rear seat was significantly lower compared with the front passenger seat (Table 3). Similarly, belief that seat belt use was very important was lower for the rear passenger seat (70.5%, 95% CI: 69.1–71.9) than for the front passenger seat (data not shown). Like front seat passengers, belief was by far the strongest predictor of seat belt use among rear seat passengers with those indicating use was very important being almost four times more likely than others to report seat belt use (Fig. 3). Seat belt use was significantly higher among white non-Hispanic and Hispanic respondents compared with Black non-Hispanic respondents and non-Hispanic respondents of other races (Table 3). Use varied by age group and household income (p < 0.01, test for linear trend), as well as MSA status, region, and state law type (p < 0.01). Those living in primary law states were significantly more likely than those in secondary law states or those in no law states to report always wearing a seat belt when riding in the rear seat. Weaker associations were seen between rear seat belt use and sex (p = 0.06) and marital status (p = 0.03). There was no association between rear seat belt use and employment or education.

3.3. Multivariable analysis – front seat passengers

There was a significant 2-way interaction between state law and belief about seat belt use among front seat passengers (Table 4). While belief was an important predictor of seat belt use in both primary and secondary law states, it was significantly more important as a predictor among those living in secondary law states (adjPR 2.77, 95% CI: 2.26– 3.39) than among those living in primary law states (adjPR 1.64, 95% CI: 1.51–1.78). Other important predictors of seat belt use among front seat passengers included female sex, white non-Hispanic race relative to those of Hispanic ethnicity, living in an MSA, and living in the South or West relative to the Midwest. Seat belt use also increased with increasing household income (p < 0.01, test for linear trend). Education level and current marital status, significant in bivariable analysis, were no longer significant and were removed from the adjusted model.

3.4.   Multivariable analysis – rear seat passengers

Because there were two significant 2-way interactions with belief about rear seat belt use in the model (belief by sex and belief by region; Table 5), results for the association between belief and behavior cannot be discussed without also including information on respondent sex and region of residence. Among females, the association between belief and seat belt usewas significantly stronger in theNortheast (adjPR 8.55, 95% CI: 5.72–12.76), relative to those living in the South (adjPR 4.14, 95% CI: 3.28–5.24) or the West (adjPR 3.46, 95% CI: 2.69–4.46). Among males, the same regional patternswere observed: the association between belief and seat belt use was significantly stronger in the Northeast (adjPR 5.52, 95% CI: 3.77–8.09), relative to those living in the South (adjPR 2.68, 95% CI: 2.22–3.23) or the West (adjPR 2.24, 95% CI: 1.77–2.83). In addition, the association between belief and use in the South was stronger among females than among males. Comparedwith all other age groups, those aged 25–44 were significantly less likely report seat belt use when riding in the rear seat. Regarding type of enforcement, those in both primary and secondary law states were significantly more likely than those in no law states to wear a seat belt. Marital status, household income, and living in an MSA, significant in bivariable analysis, were no longer significant and were removed from the adjusted model.

4.   Discussion

The current study found a strong association between belief about the importance of seat belt use and seat belt wearing behavior and further demonstrated that this relationship existed for both front and rear seat passengers. Previous research has also found that positive beliefs about seat belts (such as believing that seat belts are important for one's health) increased the likelihood of seat belt use (Boyle & Lampkin, 2008; Steptoe et al., 2002). In a 2016 survey of adults who did not always buckle up in the rear seat, common reasons for not doing so included beliefs that the rear seat was safer than the front, a crash was unlikely, or they were not needed because of the type of trip (e.g., short distance; Jermakian & Weast, 2018).

Belief in the importance of seat belt use was the strongest predictor of use for both seating positions in the current study, but the strength of that relationship varied by several important factors. In many cases, the belief-behavior relationship was strongest for groups with lower levels of belt use. For example, among front seat passengers, the association was stronger for residents of secondary lawstates (where those who reported belief that seat belt use is very important were almost 3 times more likely towear seat belts than thosewho did not report that belief) than for residents of primary law states (where thosewho reported belief that seat belt use is very important were 1.6 times more likely to wear seat belts than those who did not report that belief). The relationship was more complicated for rear seat passengers. In each of the four Census regions, both males and females who reported the belief that seat belt use is very important were more likely to buckle up than those who did not report that belief. However, the belief–behavior association was stronger for males and females in the Northeast (adjPR 5.52 and 8.55, respectively) than for those in the South (adjPR 2.68 and 4.14, respectively) or West (adjPR 2.24 and 3.46, respectively).

Despite the high overall level of seat belt use in the United States, certain groups are less likely to buckle up than others. The current study found that rear seat passengers were significantly less likely to always wear seat belts (62%) than were front seat passengers (86%), which is consistent with previous reports (Boyle & Lampkin, 2008; Jermakian & Weast, 2018). Similarly, only 71% of respondents believed that seat belt use is very important in the rear seating position, compared with 84% who believed the same for the front passenger seat. This is particularly concerning given recent research that finds gains in occupant safety for the front seat have outpaced those for the rear seat, and (depending on the occupant's age) the current vehicle fleet may not offer added protection in the rear seat (Durbin et al., 2015). Perceptions that the rear seat is safer than the front may be based on data from older vehicle models. In addition to the changes in relative safety of rear versus front seats, the growing popularity of ride-hailing services (Clewlow & Mishra, 2017) may lead to an increased proportion of adults who ride in rear seats. A 2016 study found that, among adults who had ridden in the rear seat in the past six months, 12% primarily rode in a hired vehicle (i.e., taxi or ride-hailing vehicle; Jermakian & Weast, 2018). The same study also found that seat belt use in the rear seat was lower among those who primarily used hired vehicles, compared to those who primarily used private passenger vehicles (Jermakian & Weast, 2018). People who use taxis or ride-hailing services may be an important target population for messaging about the importance of buckling up in the rear seat.

The study findings, in concert with previous research, suggest that interventions designed to change beliefs about the importance of seat belt use may have potential to change behavior, including in states without primary enforcement laws. With careful attention to messaging, mass media campaigns have been shown to promote positive health behaviors, including seat belt use (Wakefield, Loken, & Hornik, 2010). Mass media campaigns are most likely to be successful in conjunction with supportive resources (Wakefield et al., 2010). Enforcement of seat belt or alcohol-impaired driving laws that is accompanied by well-designed media campaigns is associated with reduced crash-related injuries and fatalities as well as increased prevalence of safety behaviors (Bergen et al., 2014; Dinh-Zarr et al., 2001; Piontkowski et al., 2015). For example, a combined media and enforcement campaign for *Click it or Ticket* in Nevada significantly increased seat belt use along with the belief that it is important for police to enforce seat belt laws (Vasudevan, Nambisan, Singh, & Pearl, 2009).

Effective media campaigns use theory as a conceptual foundation to identify which components of behavior change to target with messages and ensure that messages will guide the audience through behavior change (Noar, 2006). Past studies have used theoretical frameworks, including the Theory of Planned Behavior, the Health Belief Model, and Social Norms, to understand seat belt use. Positive attitudes (e.g., perceptions of seat belts as effective, comfortable to wear) were associated with an increased use of seat belts (Budd, North, & Spencer, 1984; Fhaner & Hane, 1974; Jonah & Dawson, 1982; Şimşekoğlu & Lajunen, 2008; Stasson & Fishbein, 1990). Perceived behavioral norms – that is, an individual's perception of whether his/her peers engage (or not) in a given behavior – were associated with seat belt use, both for adults (Jonah & Dawson, 1982) and adolescents (Dunlop & Romer, 2010; Litt, Lewis, Linkenbach, Lande, & Neighbors, 2014).

Many of these theory-based studies were conducted in the United States prior to widespread passage of seat belt laws (Stasson & Fishbein, 1990) or in other countries (Budd et al., 1984; Fhaner & Hane, 1974; Jonah & Dawson, 1982; im eko lu & Lajunen, 2008). In addition, the studies were primarily conducted with samples of teens or college students (Budd et al., 1984; Dunlop & Romer, 2010; Litt et al., 2014; im eko lu & Lajunen, 2008; Stasson & Fishbein, 1990). Since the time of the Stasson and Fishbein (1990) study, both seat belt laws and social norms about seat belt wearing have changed in the United States. New studies that incorporate a theoretical framework and a sample that is representative of all drivers are warranted in order to understand the effect of attitudes and beliefs on seat belt use within the current US population and how these attitudes, beliefs, and their effects may vary with different types of state laws that are now in place. Findings could inform development of interventions to promote seat belt use among those drivers and passengers who continue to ride unrestrained.

There were several limitations of the study. First, belief about importance of seat belt use was measured with a single question. Within relevant theoretical frameworks, the concept of beliefs – and their role in predicting behavior – is more complex and includes measures such as perceived benefits or harms of a given behavior and perceived likelihood and/or severity of a given health outcome (Ajzen, 2002; Rosenstock, Strecher, & Becker, 1988). Second, self-reporting of certain behaviors can be subject to social desirability bias. However, belt use reported by front seat passengers (86%) was similar to the 2012 observed belt use for front seat passengers (84%; National Highway Traffic Safety Administration, 2012), and a previous evaluation found minimal social desirability bias in self-reported seat belt use (Ibrahimova, Shults, & Beck, 2011). Third, the operationalization of seat belt use as "always" versus "nearly always, sometimes, seldom, or never" precluded the study of occupants who wear seat belts in some situations. Understanding partial seat belt use and the circumstances under which occupants choose to buckle up could also inform efforts to increase the proportion of occupants who always wear seat belts. Fourth, the survey response rate was 65%, which may limit generalizability to the US adult population. A strength of the study is that the sample was drawn using probability-based methods (random-digit dial and address-based sampling; Porter Novelli Public Services, 2012). In addition, the study was conducted well after state seat belt laws were implemented throughout the United States (in 49 states and DC), which allowed for the assessment of how the type of law (primary or secondary) affected the relationship between belief about seat belt use and seat belt wearing behavior. The data set also allowed for the assessment of this relationship by seating position.

5. Conclusions

The present study found a positive relationship between belief about the importance of seat belt use and the behavior of always wearing a seat belt, even in the context of overall high rates of seat belt use and widespread implementation of seat belt laws throughout the United States. Development and implementation of effective interventions that target at-risk populations may be successful in improving seat belt use among these high-risk groups and, ultimately, reducing crash-related injuries and deaths. The National Highway Traffic Safety Administration estimated that almost 2,500 additional lives could have been saved in 2016 if

all occupants (aged 5 + years) in the United States had been wearing seat belts (National Highway Traffic Safety Administration, 2016b). Because much of the theory-based literature on seat belt use was developed prior to changes in social norms and policies in the US landscape (Budd et al., 1984; Fhaner & Hane, 1974; Jonah & Dawson, 1982; Stasson & Fishbein, 1990), efforts to increase seat belt use may benefit from new research that relies upon validated behavioral theories. Given the differences observed by seating position in seat belt use and beliefs about seat belt use, these strategies may require that messages be tailored to front versus rear seat passengers.

Acknowledgments

Biography

Laurie F. Beck is an epidemiologist with the Centers for Disease Control & Prevention (CDC), National Center for Injury Prevention & Control (NCIPC), where her work has focused on transportation safety for the past 15 years. Her areas of focus include seat belt use and safe transportation for older adults. She received her Master of Public Health degree in behavioral sciences from the Emory University Rollins School of Public Health.

Marcie-jo Kresnow began working at the CDC in 1986 and has been with the National Center for Injury Prevention and Control since 1990 where she serves as the Statistics Team Lead, coordinating statistical work for a majority of the Center. She has worked on a variety of unintentional- and violence-related injury topics with a focus on complex survey design and analysis. Kresnow received her Bachelors of Science degree in Public Health from the University of Massachusetts, Amherst, MA and was awarded a Master of Science degree in Biostatistics from the University of Vermont in Burlington.

Gwen Bergen has been a behavioral scientist at the Centers for Disease Control and Prevention's National Center for Injury Prevention and Control since 2009. Prior to that, she was an injury data fellow at the CDC's National Center for Health Statistics. Gwen's work is in the areas of falls and older adult mobility. She received her Ph.D. in health policy and management at the Johns Hopkins Bloomberg School of Public Health and her Master of Public Health degree in social and behavioral sciences from the Emory University Rollins School of Public Health.

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Fig. 1.
State seat belt laws for adults, by type of enforcement for front seating positions[a], 2012
[a]Since 2012, these states have upgraded the front seat enforcement provision for adults: Utah and West Virginia (to primary).

Fig. 2.
State seat belt laws for adults, by type of enforcement for rear seating positions[a], 2012
[a]Since 2012, these states have upgraded the rear seat enforcement provision for adults:
Hawaii, Mississippi, Utah, and West Virginia (to primary); Maryland (to secondary).

Fig. 3.
Prevalence of seat belt use (always wears) among adults, by belief about importance of seat belt use and seating position, ConsumerStyles 2012 Data

Table 1

Weighted sample distribution, by selected characteristics, ConsumerStyles 2012 Data

	Sample Count	Weighted %	Lower 95% CI[a]	Upper 95% Cl
Overall	4,170	100.0		
Sex				
Female	2,161	51.8	50.3	53.3
Male	2,009	48.2	46.7	49.7
Age group				
18–24 years	522	12.5	11.5	13.5
25–44 years	1,427	34.2	32.8	35.7
45–64 years	1,473	35.3	33.9	36.8
65+ years	748	17.9	16.8	19.1
Race/ethnicity				
White. non-Hispanic	2,803	67.2	65.8	68.6
Black. non-Hispanic	472	11.3	10.4	12.3
Hispanic	597	14.3	13.2	15.4
Other race. non-Hispanic	299	7.2	6.4	8.0
Marital status				
Married	2,245	53.8	52.3	55.3
Not married	1,925	46.2	44.7	47.7
Education level				
High school or less	1,783	42.8	41.2	44.3
Some college	1,200	28.8	27.4	30.2
College graduate	1,187	28.5	27.1	29.8
Household income level (Annual)				
<$25,000	792	19.0	17.8	20.2
$25,000 to <$50,000	933	22.4	21.1	23.6
$50,000 to <$75,000	837	20.1	18.9	21.3
$75,000 +	1,608	38.6	37.1	40.0
Employment status				
Employed	2,314	55.5	54.0	57.0
Not employed	1,856	44.5	43.0	46.0
MSA[b] status				
Metropolitan	3,497	83.9	82.8	85.0
Non-metropolitan	673	16.1	15.0	17.3
Region				
Northeast	757	18.1	17.0	19.3
Midwest	901	21.6	20.4	22.9
South	1,551	37.2	35.7	38.7
West	962	23.1	21.8	24.3
State law type for front seating positions				

	Sample Count	Weighted %	Lower 95% CI[a]	Upper 95% Cl
Primary	3,127	75.0	73.7	76.3
Secondary[c]	1,043	25.0	23.7	26.3
State law type for rear seating positions				
Primary	1,607	38.5	37.0	40.0
Secondary	531	12.7	11.7	13.8
No law	2,032	48.7	47.2	50.3

[a]Confidence interval

[b]Metropolitan statistical area

[c]Includes one state with no law

Table 2

Prevalence of seat belt use (always wears) among front seat adult passengers, by selected characteristics, ConsumerStyles 2012 Data

Characteristic	Sample count	Weighted %	Lower 95% CI[a]	Upper 95% CI	Chi-square	p-Value
Overall	3,539	86.1	85.0	87.1		
Seat belt belief					883.4 (1)	**<0.0001**
Very important	3,214	93.1	92.2	93.9		
Less than very important	312	48.9	44.9	52.9		
Sex					47.2 (1)	**<0.0001**
Female	1,916	89.6	88.4	90.9		
Male	1,623	82.2	80.5	83.9		
Age group					26.8 (3)	**<0.0001**
18–24 years	436	84.0	80.2	87.8	$b_{4.6}$ (1)	**<0.0001**
25–44 years	1,173	83.7	81.6	85.8		
45–64 years	1,253	86.3	84.7	88.0		
65+ years	677	91.5	89.6	93.4		
Race/ethnicity					6.3 (3)	0.0971
White, non-Hispanic	2,398	86.3	85.1	87.5		
Black, non-Hispanic	390	84.2	80.6	87.8		
Hispanic	491	84.6	81.1	88.0		
Other race, non-Hispanic	259	90.1	86.2	93.9		
Marital status					11.2 (1)	**0.0008**
Married	2,943	87.7	86.4	89.0		
Not married	2,597	84.1	82.4	85.9		
Education level					34.7 (2)	**<0.0001**
High school or less	1,456	82.8	80.7	84.8	$b_{5.9}$ (1)	<0.0001
Some college	1,028	86.7	84.9	88.5		
College graduate	1,055	90.4	88.9	91.9		
Household income level (Annual)					46.3 (3)	**<0.0001**
<$25,000	623	80.0	76.9	83.0	$b_{6.2}$ (1)	**<0.0001**
$25,000 to <$50,000	787	85.9	83.7	88.2		

Characteristic	Sample count	Weighted %	Lower 95% CI[a]	Upper 95% CI	Chi-square	p-Value
$50,000 to <$75,000	697	84.5	82.0	86.9		
$75,000 +	1,431	90.0	88.5	91.4		
Employment status					0.03 (1)	0.8690
Employed	1,968	86.2	84.8	87.5		
Not employed	1,571	86.0	84.3	87.6		
MSA[c] status					42.7 (1)	< 0.0001
Metropolitan	3,020	87.6	86.5	88.7		
Non-metropolitan	519	78.0	74.8	81.3		
Region					29.4 (3)	< 0.0001
Northeast	643	85.7	83.3	88.2		
Midwest	717	81.1	78.7	83.5		
South	1,324	86.8	85.1	88.6		
West	855	89.7	87.8	91.7		
State law (front seating positions)					55.8 (1)	< 0.0001
Primary	2,722	88.4	87.3	89.5		
Secondary[d]	817	79.1	76.7	81.5		

[a] Confidence interval

[b] Cochran-Armitage Test for Linear Trend

[c] Metropolitan statistical area

[d] Includes one state with no law

Table 3

Prevalence of seat belt use (always wears) among rear seat adult passengers, by selected characteristics, ConsumerStyles 2012 Data

Characteristic	Sample Count	Weighted %	Lower 95% CI[a]	Upper 95% CI	Chi-Square	P-Value
Overall	2,430	61.6	60.0	63.1		
Seat belt belief					1115.7 (1)	**< 0.0001**
Very Important	2,184	78.1	76.6	79.6		
Less than very important	235	20.8	18.4	23.2		
Sex					3.6 (1)	0.0578
Female	1,308	62.9	60.9	65.0		
Male	1,122	60.0	57.7	62.3		
Age group					32.9 (3)	**< 0.0001**
18–24 years	321	62.2	57.2	57.2	[b]3.9 (1)	**< 0.0001**
25–44 years	757	55.7	52.9	58.6		
45–64 years	886	64.3	61.9	66.6		
65+ years	466	67.1	63.8	70.4		
Race/ethnicity					20.0 (3)	0.0002
White, non-Hispanic	1,664	63.1	61.4	64.9		
Black, non-Hispanic	250	56.4	51.4	61.4		
Hispanic	368	63.2	58.6	67.9		
Other race, non-Hispanic	149	51.8	45.2	58.3		
Marital status					4.6 (1)	**0.0319**
Married	1,343	63.1	61.1	65.0		
Not married	1,087	59.8	57.3	62.2		
Education level					2.8 (2)	0.2477
High school or less	1,009	60.4	57.7	63.1		
Some college	725	63.5	60.8	66.2		
College graduate	696	61.3	58.8	63.8		
Household income level (Annual)					12.9 (3)	**0.0048**
<$25,000	418	57.9	54.0	61.8	[b]2.8 (1)	**0.0050**
$25,000 to <$50,000	547	61.8	58.6	65.0		
$50,000 to <$75,000	467	58.7	55.3	62.1		

Characteristic	Sample Count	Weighted %	Lower 95% CI[a]	Upper 95% CI	Chi-Square	P-Value
$75,000 +	1,000	64.6	62.3	66.9		
Employment status					0.7 (1)	0.4186
Employed	1,374	62.1	60.1	64.1		
Not employed	1,056	60.8	58.5	58.5		
MSA[c] status					8.2 (1)	**0.0042**
Metropolitan	2,076	62.5	60.9	64.2		
Non-metropolitan	355	56.5	52.4	60.5		
Region					109.8 (3)	**< 0.0001**
Northeast	368	51.8	48.2	55.4		
Midwest	489	57.7	54.6	60.8		
South	866	59.7	57.1	62.3		
West	708	75.2	72.4	78.0		
State law (rear seating positions)					108.1 (2)	**< 0.0001**
Primary	1,103	71.0	68.7	73.3		
Secondary	312	62.0	57.6	66.4		
No law	1,015	53.7	51.5	55.9		

[a]Confidence interval

[b]Cochran-Armitage Test for Linear Trend

[c]Metropolitan statistical area

Table 4

Adjusted model of factors associated with seat belt use among front seat adult passengers, ConsumerStyles 2012 Data

Characteristic	Adjusted prevalence ratio	Lower 95% CI[a]	Upper 95% CI	Chi-square	p-Value
State law (front seating positions) x belief [b]				27.8 (1)	**<0.0001**
Primary – very important	**1.64**	**1.51**	**1.78**		
Secondary[c] – very Important	**2.77**	**2.26**	**3.39**		
Sex				15.7 (1)	**<0.0001**
Female	**1.04**	**1.02**	**1.05**		
Male	1.00				
Race/ethnicity				11.9 (3)	**0.0076**
White, non-Hispanic	1.00				
Black, non-Hispanic	0.98	0.94	1.01		
Hispanic	**0.96**	**0.94**	**0.99**		
Other race, non-Hispanic	0.97	0.95	1.00		
Household income level (annual)				15.6 (3) [d]1.2 (1)	**<0.0014** **<0.0012**
<$25,000	1.00				
$25,000 to <$50,000	1.01	0.98	1.05		
$50,000 to <$75,000	1.03	0.99	1.06		
$75,000 +	**1.05**	**1.02**	**1.08**		
MSA[e] status				8.4 (1)	**<0.0036**
Metropolitan	**1.04**	**1.01**	**1.07**		
Non-metropolitan	1.00				
Region				28.8 (3)	**<0.0001**
Northeast	1.02	0.99	1.05		
Midwest	1.00				
South	**1.04**	**1.01**	**1.07**		
West	**1.04**	**1.01**	**1.07**		

[a] Confidence interval

[b] Referent group in each instance is Belief= Less than very important

[c] Includes one state with no law

[d] Contrast for linear trend

[e] Metropolitan statistical area

Table 5

Adjusted model of factors associated with seat belt use among rear seat adult passengers, ConsumerStyles 2012 Data

Characteristic	Adjusted prevalence ratio	Lower 95% CI[a]	Upper 95% CI	Chi-square	p-Value
Belief (very important) x sex[b]				13.6 (1)	**0.0002**
Belief (very important) x region[b]				22.6 (3)	**<0.0001**
Females –					
Northeast	**8.55**	**5.72**	**12.76**		
Midwest	**5.36**	**3.95**	**7.26**		
South	**4.14**	**3.28**	**5.24**		
West	**3.46**	**2.69**	**4.46**		
Males –					
Northeast	**5.52**	**3.77**	**8.09**		
Midwest	**3.46**	**2.65**	**4.51**		
South	**2.68**	**2.22**	**3.23**		
West	**2.24**	**1.77**	**2.83**		
Age group				[c]37.8 (4)	**<0.0001**
18–24 years	**1.09**	**1.03**	**1.16**		
25–44 years	**1.00**				
45–64 years	**1.15**	**1.10**	**1.20**		
65+ years	**1.22**	**1.06**	**1.18**		
Race/ethnicity				7.3 (3)	0.0636
White, non-Hispanic	1.00				
Black, non-Hispanic	0.95	0.89	1.02		
Hispanic	1.01	0.97	1.06		
Other race, non-Hispanic	0.93	0.85	1.01		
State law (rear seating positions)				37.8 (2)	**<0.0001**
Primary	**1.14**	**1.09**	**1.19**		
Secondary	**1.10**	**1.03**	**1.17**		
No law	1.00				

[a]Confidence interval

[b]Referent group in each instance is Belief= Less than very important

[c]Contrast for linear trend