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Passenger use of and attitudes toward rear seat belts

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ABSTRACT

Objectives: This study sought to identify attitudes toward belt use in the rear seat and to gain insight into the experiences of rear-seat passengers. *Method*: A telephone survey conducted between June and August 2016 targeted adult passengers who had recently ridden in the rear and who did not always wear their seat belt when doing so. Respondents were questioned regarding their reasons for not buckling up and possible conditions under which they would be more likely to buckle up during rear-seat travel. *Results*: Of 1163 recent rear-seat passengers, 72% reported always using their seat belt in the rear. Full-time belt use was lower among passengers who primarily travel in the rear of hired vehicles compared with personal vehicles. The most common explanation for not buckling up was that the back seat is safer than the front. Four out of five agreed they do not buckle up because of type of trip; two-thirds forget or do not see the need; and two-thirds agreed with reasons related to design, comfort, or usability issues. Nearly 40% agreed that they sometimes do not buckle up in the rear because there is no law requiring it. *Conclusion*: Many reasons for not using belts in the rear are similar to reasons in the front, such as forgetfulness, inconvenience, or discomfort. One difference is that many rear-seat passengers perceive using the belt is unnecessary because the back seat is safer than the front. More than half of part-time belt users and nonusers reported interventions such as rear seat belt reminders, stronger belt-use laws, and more comfortable belts would make them more likely to use their seat belt in the rear seat. *Practical applications*: This study identifies barriers to rear seat belt use that point to the need for a multi-faceted approach to increase belt use.

1. Introduction

Seat belt use in the rear seat has improved over time but remains consistently lower than belt use in the front seat. A national observational survey on seat belt use among occupants 8 years and older found that while rear seat belt use increased between 2004 and 2015 (from 47% to 75%), the gap between front- and rear-seat belt use has remained; rear-seat restraint use has averaged about 11 percentage points lower than front-seat use over the past decade (Pickrell, Li, & Kc, 2016; Pickrell & Ye, 2010). In a 2008 nationally representative telephone survey, 86% to 88% of respondents reported they always use their belt in the front seat, while only 58% always use their belt in the rear seat (Boyle & Lampkin, 2008).

The gap in restraint use translates into a larger proportion of unbelted fatally injured occupants in the rear compared with the front; 56% of fatally injured rear-seat occupants were unbelted in 2015, compared with 49% of fatally injured front-seat occupants (National Highway Traffic Safety Administration, 2017). In a study of fatal crashes, unrestrained rear-seat passengers were nearly 3 times as likely to be fatally injured compared with belted ones (Mayrose et al., 2005). In a study of nationally representative data on towaway crashes during 2007–2012, unrestrained occupants in the rear were nearly 8 times as likely to suffer a serious injury compared with restrained occupants (Durbin et al., 2015).

In addition to posing a risk to themselves, unrestrained rear-seat passengers increase the risk of fatal injury to other occupants in the vehicle. In a study of fatal crashes occurring during 2001–2009, drivers were 2.37 times as likely to be fatally injured in crashes in which the left rear passenger was unrestrained compared with crashes in which the passenger was restrained (Bose, Arregui-Dalmases, Sanchez-Molina, Velazquez-Ameijide, & Crandall, 2013). The risk of fatality increased with each additional unrestrained rear-seat occupant. An earlier study using 1995 to 2001 fatal crash data reported the odds of death for a driver in front of an unrestrained passenger in a frontal crash were 2.27 higher than the odds of death when the rear-seat passenger was restrained (Mayrose et al., 2005). Research on fatalities in Japan also shows an increased risk of death to front-seat occupants from unrestrained rear-seat occupants (Ichikawa, Nakahara, & Wakai, 2002). In another study looking at occupants in all rows exposed to an unrestrained occupant, the restrained occupant was nearly 5 times as likely to be fatally injured when positioned between an unrestrained occupant and the principal direction of force of the crash (MacLennan, McGwin Jr., Metzger, Moran, & Rue III, 2004).

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Previous studies have found belt use is associated with occupant age and sex, vehicle age, time of day, geographic location, and whether the belt-use law has primary or secondary enforcement (Beck & Shults, 2009; Strine et al., 2010; Tison, Williams, & Chaudhary, 2010). Most of this work, however, has focused on either general belt use or use by front-seat occupants; minimal work has specifically examined restraint use by rear-seat passengers. Bhat, Beck, Bergen, and Kresnow (2015) used the ConsumerStyles web-based survey data to look at predictors of rear seat belt use and found belt use varied by demographic factors such as age, race/ethnicity, household income, geographic factors such as census region and metropolitan status, and belt-law enforcement type. Notably, the predictors of rear seat belt use are similar to those of front seat belt use, with the exception of occupant's sex and age. In the rear seat, male occupants were as likely as females to be belted, and adults age 18 to 24 years reported higher belt use than those 25 to 44 years.

Telephone surveys indicate the most common reasons for not using seat belts are driving short distances, forgetting or being in a rush, or finding the belt uncomfortable (Boyle & Lampkin, 2008; Kidd & McCartt, 2014). For those who never use seat belts, the most common reasons include discomfort, the perception that the belt is not needed, and a dislike of being told what to do (Kidd & McCartt, 2014). The adults surveyed in past studies were asked about their belt-use habits in general, not specific to the rear-seat environment. The current study aims to extend this work by identifying factors and attitudes that specifically influence belt use by rear-seat passengers.

2. Methods

2.1. Sample design

The current study targeted adults 18 years old and over who had ridden as a passenger in the rear seat within the preceding six months and who did not always use their seat belt when doing so. Opinion America Group (Cedar Knolls, NJ) carried out the survey, utilizing random samples of both landlines and cellphones with the aim of sampling evenly from each group. Surveys were completed between June and August 2016.

Opinion America began with an initial random sample of 10,807 working U.S. phone numbers (5250 landlines and 5557 cellphones). Of those, 4133 people were reached. That number includes 1499 who refused to participate, 219 who did not qualify or otherwise did not complete the survey, and 2415 who completed the survey, for a 58.4% cooperation rate. A total of 1163 of the 2415 survey respondents had ridden in the rear seat of a passenger vehicle in the prior six months, and 316 met the additional inclusion criterion of not using a seat belt on every trip when riding in the rear seat. Those 316 participants completed the full survey. Those participants who did not meet inclusion criteria for the full survey were skipped to the final demographic items of the survey, and finished their participation in less than 5 min on average. The full survey took about 11 min to complete.

2.2. Survey instrument

Participants answered screening questions to identify their rear-seat passenger and belt-use habits. Those participants who met inclusion criteria then answered 41 questions probing the details of their reasons for not consistently wearing a seat belt when traveling in the rear seat, and possible conditions under which they would be more likely to wear a seat belt during future rear-seat travel. Several questions prompted follow-up questions to ascertain more specific information about preferences and behavior.

Following these questions, participants were asked 11 questions about their state's seat belt laws, to which kinds of passengers they apply, and whether the state practices primary enforcement. The survey concluded with six demographic questions.

2.3. Data analysis

Data for all respondents, including those who did not meet inclusion criteria for the full survey, were weighted to reflect the age and gender distribution of the U.S. population according to 2010 census data. Since the full survey focused on recent rear seat passengers, the final study sample has different age and gender distributions than the U.S. population. All descriptive analyses were calculated as weighted percentages with 95% confidence intervals (95% CI). Survey respondents who reported riding in the rear seat were categorized as full-time belt users, part-time belt users, or nonusers based on whether they reported seat belt use in the rear seat all the time (full-time users), most or some of the time (part-time belt users), or rarely or never (nonusers). Respondents were categorized as hired vehicle passengers if they reported most or all of their rear-seat passenger trips were in a hired vehicle such as a taxi, Uber, or Lyft (ride-hailing services). Otherwise, they were categorized as personal vehicle passengers. Chi-square tests were used to evaluate differences in responses among respondent categories.

3. Results

A total of 2415 respondents were screened for whether they ride as a passenger in a vehicle and, if so, whether they have been a rear-seat passenger in the past six months. The 1163 respondents who reported riding recently as a rear passenger were asked about their belt-use habits in more detail. Table 1 summarizes characteristics of rear-seat passengers. Ninety-one (91.4) percent said they always used their seat belt in the front seat, but only 72.1% said they always used their seat belt in the back seat (data not shown). Twenty-eight (27.9) percent of recent rear-seat passengers reported they use their belt in the back seat most of the time, some of the time, or rarely or never; 16.2% were part-time users and 11.7% were nonusers (data not shown).

Participants who reported that they always use their seat belt when riding in the rear seat differed from those who didn't in a few notable ways (Table 2). Significantly fewer men than women reported always buckling up when riding in the back seat, prime-age adults – between the ages of 35 and 54 – were significantly less likely to report always buckling up than both younger (ages 18–34) and older adult drivers (ages 55+). Participants who had at least some college education reported always using their seat belt at a higher frequency than those who had achieved education levels less than college. Finally, passengers who reported riding in a hired vehicle – either a taxi or ride-hailing

Table 1
Distribution of age, sex, education level, and whether most trips are in a hired vehicle or personal vehicle among respondents who have ridden in the rear seat in the past 6 months. Distribution provided as weighted percentages and 95% confidence intervals with unweighted n.

	All rear seat passengers weighted percent (95% CI) (n = 1163)
Age (years)	
18 to 34	31.9 (29.2–34.6)
35 to 54	33.3 (30.6–36.0)
55 to 69	24.7 (22.2–27.2)
70 and older	9.5 (7.8–11.2)
Sex	
Male	41.0 (38.2–43.8)
Female	59.0 (56.2–61.8)
Education level	
Some high school	1.1 (0.5–1.7)
High school graduate	16.5 (14.4–18.6)
Some college	30.6 (28.0–33.2)
College graduate	28.3 (25.7–30.9)
Graduate school	21.7 (19.3–24.1)
Most trips are in a…	
Hired vehicle	12.1 (10.2–14.0)
Personal vehicle	87.9 (86.0–89.8)

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