Explaining state-to-state differences in seat belt use: A multivariate analysis of cultural variables

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ARTICLE INFO

ABSTRACT

There is considerable variation in seat belt use within the United States despite extensive evidence that the use of seat belts saves lives. Previous studies have identified some important factors that affect belt use rates, including gender, age, race, vehicle type, seat-belt enforcement laws, and amount of fine for belt-use law violation. In this study, we examined the influence of additional socio-demographic factors on state-level use rates: education (percentage of high school educated population), racial composition (percentage White), median household income, political leaning (percentage Democrat), and a measure of religiosity. These variables, which collectively characterize the 'culture' of a state, have received little attention in seat-belt studies. The paper reports results from a multiple regression analysis of data from the 2008 Fatality Analysis Reporting System (FARS). Many of the use rate patterns in FARS data were consistent with those found in other data sets, suggesting that conclusions based on FARS data are likely to hold for the population-at-large. Of the five cultural factors considered in the study, three were identified as important in explaining the differences in seat belt use at the state level: religiosity, race (percentage White), and political leaning (percentage Democrat). The other two variables – income and education – were not significant. Hold-out analyses confirmed that this conclusion was consistent across different subsets of data. The findings from this study are preliminary and have to be confirmed on other data sets. Nevertheless, they demonstrate the potential usefulness of cultural factors in explaining state-to-state variation in seat belt use rates. If factors such as religiosity are indeed important, they can be used to develop culturally appropriate programs for increasing belt use.

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1. Introduction

Traffic crashes are the leading cause of death in the United States (US) for people age 5–34 (Centers for Disease Control, CDC, 2011). The National Highway Traffic Safety Administration (NHTSA, 2010a) estimates that almost 34,000 people died in traffic crashes in the US in 2009. Increasing seat belt use has been shown to be the simplest and most effective way to decrease traffic fatalities and injuries (Automotive Coalition for Traffic Safety, 2001). NHTSA (2010b) estimates that seat belts saved more than 72,000 lives during the 5-year period between 2005 and 2009. Further, when lap and shoulder belts are used, they reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and reduce the risk of moderate-to-critical injuries by 50 percent (NHTSA, 1996). For occupants of light trucks, the benefits of seat belt use are even greater (NHTSA, 1996).

Despite the clear benefits of using seat belts, there is still considerable variation in belt use rates within the US. According to the National Occupant Use Study (NOPUS), seat belt use in the US was 85 percent in 2010 (Pickrell & Ye, 2011), while state-level rates in 2009 ranged from 68 percent in Wyoming to 98 percent in Michigan (Chen & Ye, 2010). A number of factors are known to influence belt use and thus partially account for differences in statewide belt use. For example, studies have found that belt use is higher in states with primary seat belt enforcement laws compared to states with secondary enforcement (see e.g., Beck et al., 2007; Chen and Ye, 2010; Eby et al., 2002b; Nichols et al., 2010; Wortham, 1998). Recent work has also shown that belt use is higher in states with belt-use-law-violation fines that are greater than $25 (Nichols et al., 2010). When fines are increased from $25 (the current national average) to $60,

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