

Attitudes of commercial motor vehicle drivers towards safety belts

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Abstract

Despite the fact that Hawaii has one of the highest seat belt use rates for passenger vehicles in the United States, and has had a mandatory seat belt use law since the 1980s, studies have shown that commercial motor vehicles (CMV) seat belt use rates are low. To better understand this phenomenon, a comprehensive survey of commercial vehicle drivers was conducted in Hawaii to ascertain attitudes and self-reported behaviors regarding seat belt use. A total of 791 drivers responded to a written questionnaire implemented at weigh stations and distributed to various trucking firms and transport centers. Approximately 67% reported that they use seat belts “always” when driving a CMV (commercial motor vehicle), yet when asked how often do other CMV drivers use seat belts, only 31% responded “always.” Interestingly, 86% of these same drivers reported that they use seat belts “always” when driving a personal vehicle. The major reason cited for non-use of belts was “frequent stops/inconvenience” (29%), and “not safety conscious” (23%). Notably, the self-reported use of safety belts is highest among operators of vans (88% said “always”), followed by buses (87% said “always”) and lowest among truck drivers (only 60% said “always”). In this paper, some of the differences between self-reported users and non-users are explored and a multivariate logit model was developed to predict the odds of belt use as a function of various factors.

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1. Introduction

In spite of the fact that Hawaii has had a mandatory seat belt use law since the mid-1980s and has achieved one of the highest rates of passenger vehicle seat belt use in the nation, observational studies indicate that the use of belts by commercial motor vehicle (CMV) operators lags behind that of passenger vehicles (Kim and Tremblay, 2005). The low use rate among CMV drivers compared to other motorists in the nation has also been confirmed by national studies, which found a use rate among CMV operators in 2003 of approximately 48% (Knoblauch et al., 2003). This seems odd, in that the benefits of belt use have been well established, particularly for large vehicle operators who seem especially vulnerable to injury and death resulting from rollover crashes (FMCSA, 2005).

The research in this paper is motivated by three underlying questions. First what is the self-reported use of seat belts by CMV drivers? Second, how does self-reported belt use vary by

different attributes of drivers, vehicles, and other factors? Third, what kinds of interventions for increasing seat belt use present themselves as a result of the attitudes and self-reported behaviors demonstrated in this study?

While Hawaii conjures images of swaying palms and white sandy beaches, it is also an ideal environment for conducting research on traffic safety. Isolated from other land masses, it is possible to not only gather valuable information on targeted groups (such as CMV drivers) it is also quite feasible to design and implement and evaluate safety interventions with the full cooperation and coordination of law enforcement and safety planners. With only four counties and one state government comprising the entire state-local sector, information and data are much more centralized than in other places.

After a brief discussion of the data and methods, and the survey instrument, the findings are presented. Then, a logit model explaining the relationships between self-reported seat belt use and various background variables and factors was developed. Following a discussion of the results, suggestions for increasing seat belt use are described as are further directions for research and analysis.

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2. Data and methods

The data used in this analysis come from a two-page questionnaire that was developed and implemented in the Spring of 2005. Working with traffic safety personnel in the State of Hawaii and the Office of the Federal Motor Carrier Safety Administration, a series of questions were developed to ascertain basic attitudes towards seat belt use as well as background information on driver demographics and other factors that were hypothesized to be related to restraint use among CMV drivers. The survey instrument contained questions about the frequency of seat belt use, reasons why CMV operators do not use seat belts, and ideas about what would increase seat belt use among CMV operators. In addition, questions such as the number of years driving a CMV, the number of accidents, number of stops, gender, age, as well as other details regarding the vehicle and type of restraint system (shoulder-harness versus lap belt only) were included. The survey was then conducted statewide. A total of 1000 questionnaires were printed. There were a total of 791 completed questionnaires which were used in the analysis, translating into approximately a 79.1% response rate. A weighting method was used to sample the population of CMV drivers in Hawaii. This method was adjusted such that the islands and locations with a larger percentage of licensed CMV drivers received a greater weight. The underlying principle was to sample proportionate to the population.

The survey was conducted over a one month period at weigh stations and at various transportation and trucking companies. It was implemented by the State of Hawaii, Department of Transportation, Motor Carrier Safety staff. Several factors contribute to the high response rate. In addition to assuring respondents that their answers would be anonymous, a small token (a lanyard) was given to those who completed the questionnaire. The Motor Carrier Safety staff was extremely diligent about distributing the questionnaire and collecting it within a short time period. The instrument was designed and tested and refined so that it could be completed in less than 10 min. Many suggested questions and topics were dropped from the instrument in order to keep it short and easy to complete. A color-coded, pre-numbered system also helped to track which island and which type of vehicle operator (truck or bus) was being surveyed.

Upon receiving the completed questionnaires, a coding scheme was developed and each questionnaire was reviewed and coded and then entered into a computerized database for cleaning and standardizing the responses. Then, using SAS, statistical analysis package, various statistical procedures, models, and reports were generated for analysis and discussion. In addition to the customary univariate and bivariate statistical procedures, a logit model was developed which was used to explain the probability of self-reported seat belt use ($\text{Pr}(\text{SB})$) as a function of various driver (D), vehicle (V), and other (O) factors:

$$\text{Log}_e \left\{ \frac{\text{Pr}(\text{SB})}{[\text{Pr}(1 - \text{SB})]} = f(D, V, O, \dots) \right\} \quad (1)$$

This technique which has been used extensively by these researchers (Kim and Li, 1996; Kim and Yamashita, 2001) provides a method for understanding the multivariate interre-

lationships between variables related to seat belt use and is described more fully in standard texts (Feinberg, 1980; Agresti, 1990).

3. Findings and results

In this section, the general results from the survey are described. Some of the differences between self-reported users and non-users of safety belts are detailed. A copy of the questionnaire, listing the overall frequencies and percentage distributions is contained in [Appendix 1](#).

3.1. General characteristics of respondents

The ages of the respondents ranged between 18 and 75, with a mean of 42.8 and standard deviation of 10.9. Most of the respondents (approximately 72.4%) who provided an age (546/754) were under the age of 50. Only 2 were under 21 and 7 were over the age of 70. The largest age cohort was those between the ages of 40–49 years, followed by those aged 30–39. The vast majority of respondents, approximately 90% were males. In terms of driving experience, the mean years of driving were 13.9 with a standard deviation of 10.1 years. Only 5% reported driving for less than one year, 20% reported just less than 5 years, 20% reported just less than 10 years, 17% just less than 15 years, and 16% just less than 20 years. After 20 years, the number of drivers begins to drop off. Only 3% report that they have been driving just less than 30 years. The mean miles driven per week were 517 miles with a standard deviation of 1996. Out of the 791 responses, 508 (64.2%) were drivers of trucks, 154 (19.5%) were bus drivers and 92 (11.6%) drivers of other vehicles (mainly vans). The buses included public buses, tour buses, and school buses. The majority of respondents (64%) reported not having been involved in an accident as a CMV driver, while 19% reported having one accident and 9% stated that they had two accidents, while 5% reported having three accidents, with 4% reporting four or more accidents.

3.2. Self-reported seat belt use

Of the 791 respondents, the majority, 67%, reported that they use a seat belt “always” when driving a CMV. Fourteen percent responded that they use a seat belt “usually” while 7% claimed to use a belt “about half of the time.” Eight percent said that they “rarely” use seat belts and 3% said “never” when driving a CMV.

When asked about other CMV drivers, a different picture emerges. Asked in this manner, only 31% of the CMV drivers believed that others use belts “always.” Thirty-three percent responded that other CMV drivers use belts “usually” with 18% responding that other driver use belts “about half the time.” Approximately 18% of the respondents believed that other CMV drivers used belts “rarely” or “never.”

When asked the question, “how often do you use seat belts when you drive a personal vehicle?” 86% of the respondents said, “always” and another 8% said “usually.” Only 2% claimed

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