

ADVANCES IN TRANSPORTATION STUDIES

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Section A

Self-reported behavior, perceptions, and attitudes of drivers regarding seat belt use: a descriptive study

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Abstract

Increasing seat belt usage among motor vehicle occupants is considered one of the most effective ways of reducing negative effects of motorization in terms of fatalities. Even though the effectiveness of seat belts is widely known and accepted, seat belt usage remains relatively low in the United States. In addition to types of seat belt laws and associated enforcement practices, there seem to be many human factors related to non-use of seat belts.

Therefore, this study conducted road-user surveys with the intention of identifying human factor-related issues that are playing a role in relation to seat belt use. Perceptions, attitudes, understandings, stated compliance levels, potential motivators, etc. of road users were obtained through the survey in order to suggest more effective countermeasures to improve seat belt use. Based on identified critical areas, more focused education and training programs need to be developed. In addition, enforcement levels need to be increased, specifically in areas where the most benefit in terms of seat belt usage could be achieved. It was however, interesting to observe that even drivers themselves agree that stricter laws, higher fines, and other penalties are helpful in increasing the self-discipline needed to wear seat belts more frequently.

Keywords – seat belt use, seat belt laws, human factors, driver behavior, road user surveys

1. Introduction

Motor vehicle travel is the primary means of transportation in the United States, providing an unprecedented degree of mobility. However, traffic fatalities are one of the leading causes of death in the United States. In 2008, 37,261 people lost their lives in motor vehicle crashes, which converts to an average of 102 lives per day or one life every 12 minutes [9]. Even though the number of fatalities fell to record levels in 2010, the number stands at 32,788 which is still considerable [11]. Statistics also show that 86% of these fatalities involved vehicle occupants, while the remaining 14% involved pedestrians, bicyclists, and other non-occupants. Additionally, each year millions of unintentional injuries occur due to automobile crashes. While many factors might be contributing to these fatalities and injuries, increasing seat belt usage among motor vehicle occupants is undoubtedly considered as one of the most effective ways of reducing the toll.

Even though the effectiveness of seat belts is widely known and accepted, seat belt use remains low in the United States compared to Australia, Canada, and some European countries, which have average usage rates above 90 percent. Seat belt use rates in the U.S. vary from state to state reflecting differences in seat belt laws, public attitude, enforcement practices, legal provisions, education programs, etc. [1].

In the United States, a mandatory seat belt law was first enacted in New York in 1984. Lund et al. [6] found a nine percent decline in traffic fatalities in the first nine months when New York enacted mandatory seat belt law. By 1996, all states except New Hampshire had enacted mandatory seat belt laws, which consist of two categories, known as Primary Seat Belt Law and Secondary Seat Belt Law. Primary law has more power and allows police officers to stop and cite motorists solely for not wearing seat belts. However, under secondary law, police officers can penalize motorists for not wearing seat belts only if they are stopped for some other traffic infraction. As of early 2007, 26 states plus District of Columbia had enacted primary seat belt law and 24 states had secondary seat belt law [5]. New Hampshire is the only state where adults are legally not obliged to wear seat belts. General effectiveness of primary seat belt law in increasing seat belt usage is evident from the fact that average seat belt usage rate for states with primary law is about 11 percent more than that of secondary law the states [3].

In addition to the type of seat belt law and associated enforcement practices, there seem to be human factors related to non-use of seat belts. These non-quantifiable matters and their effects are rather difficult to be captured through methodologies such as statistical modeling. Therefore in this study, road-user surveys were conducted with the intention of identifying human factor-related issues that are playing a role in relation to seat belt use. Perceptions, attitudes, understandings, stated compliance levels, potential motivators, etc. of road users were obtained through the surveys in order to suggest more effective countermeasures to improve seat belt use.

2. Methodology

Since the objective was to identify the characteristics related to non-use, it seemed justifiable if the surveys were to be conducted in a secondary seat belt law state such as Kansas with relatively low seat belt usage rate as indicated by the National Occupant Protection Use Surveys (NOPUS). The seat belt usage rate in Kansas was 77% in both 2008 and 2009 while the nationwide average for the corresponding years were 83% and 84% [10]. Additionally, the Kansas Department of Transportation (KDOT) is highly motivated and interested in increasing seat belt usage within the state, which has a significant amount of rural highway mileage. Such areas are known to have relatively low seat belt usage rates, partly because of the practical challenges in maintaining higher levels of enforcement. While Kansas has achieved significant improvement in seat belt usage rate from 2005 to 2006 (69.0% to 73.5%), it is still not on a par with the national average, which stood at 81% for year 2006 [8]. Accordingly, surveys were conducted in Kansas at various locations throughout the state. The survey was expected to directly capture general understandings, compliance, attitudes, and behaviors of road users in Kansas and tie those to characteristics of the respondents. A survey questionnaire of 37 questions was prepared. The questions can be divided into four main categories: general characteristics, awareness of seat belt issues, seat belt use patterns and related factors, and others. For example, the category of "general characteristics" included questions about gender, median income, age group, marital status, etc. The "awareness of seat belt issues" category included questions about type of seat belt law in Kansas, penalty for not wearing seat belts, etc. Similarly, the category "seat belt use patterns and related factors" included questions about frequency of seat belt usage,

factors that would motivate higher seat belt use, factors influencing seat belt usage negatively, etc. Each category of question consisted of a reasonable amount of options to accommodate various types of responses. The survey form was developed considering factors affecting seat belt usage in United States, as discussed in the literature review, while referring to a compendium of surveys [4] which consists of questionnaires prepared in various countries for similar purposes.

The surveys were conducted by a group of four people going door to door in residential areas. Locations included both rural and urban areas and clusters of residential areas were selected without any particular regard, but with efficiency in mind. Surveys were administered during daytime hours on both weekdays and weekends.

The purpose of the survey was explained and the general public was requested to complete the survey form, where a reasonably satisfactory response rate was observed. Residential communities and other areas were selected randomly, and a total of 794 surveys responses were obtained. After discarding incomplete survey forms, about 753 survey forms were used for analysis purposes.

3. Results of the survey

This section presents details of the self-reported behavior of drivers in relation to seat belt usage. The first part briefly shows characteristics of the respondents and relationships among seat belt use, awareness of seat belt law, and other factors influencing use of seat belts are then presented in the form of charts.

3.1. Characteristics of respondents

Characteristics and distribution of respondents by categories such as age group, gender, median household income, employment status, type of employment, educational background, frequency and amount of driving, type of vehicle driven, etc. are considered in the study. The main purpose of analyzing the characteristics of the respondents was to see whether they were a representative sample of the population being studied. For example, if the number of responses from females was very low compared to those from males (or vice versa), the sample would not be a true representation of the average population where the distribution is relatively uniform, and therefore the results could be misleading. However, it was not possible to strictly control the characteristics of the respondents as the participation was voluntary. Young drivers for example, were much more willing to complete the survey form compared to other age groups, making them over-represented among the respondents. In the absence of an approach to require road users to respond, distribution of respondents within each category was assumed to be reasonably acceptable.

3.2. Seat belt law awareness

As shown in Figure 1, 50% of the respondents indicated that the seat belt law in Kansas is primary, which implies that half of the population is unaware that the seat belt law in Kansas is secondary. (Note: Type of law was explained in the survey form instead of using the words primary and secondary.) Only 43% of respondents answered the question correctly by saying Kansas has secondary seat belt law, and 6% said they did not know of the type of existing seat belt law. Hereafter, those who responded that the seat belt law in Kansas was primary, or that they were unaware of the seat belt law are referred as “Unaware” about the seat belt law and those who answered that seat belt law was secondary are referred as “Aware”.

Tab. 1 - Characteristics of survey respondents

Characteristic	Percentage in the Group
Age Group in Years	
16-24	43%
25-34	15%
35-44	14%
45-54	12%
55-64	8%
> 65	9%
Gender	
Male	52%
Female	48%
Household Income in \$	
< \$ 4,999	16%
\$ 5,000-19,999	20%
\$ 20,000-34,999	18%
\$ 35,000- 49,999	14%
\$ 50,000-69,999	19%
> \$70,000	14%
Employment Status	
Full time	39%
Part-time	24%
Unemployed	5%
Student	22%
Retired	11%
Educational Background	
No Formal Schooling	1%
High school	10%
Some College	51%
Bachelors Degree	25%
Graduate Degree	13%
Others	1%
Ethnic Background	
Hispanic	4%
African American	6%
Caucasian White	86%
Asian/Pacific Islander	3%
Other	1%
Not disclosed	1%
Frequency of Driving	
Every day	64%
4-6 days/wk	22%
2-3 days/wk	10%
Once a week	2%
Do not drive	2%

The survey also included a question on the penalty in Kansas for violating the seat belt law. Responses to this question are presented in Figure 2, which indicates that only 15% of respondents were aware of the correct amount of penalty/fine, which was \$ 10 at the time of the study.

Combining results on awareness of the seat belt law and penalty indicated that only 9% (category B) of respondents were aware of both the type of seat belt law and the penalty, as presented in Figure 3.