

Less Use of Seat-belts among Drivers and Passengers in inter-urban routes than suburban routes, Causes and Effects

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Abstract

Using the seat belt in Iran's roads has been reported 3 to 56%, and it doesn't any detailed statistics available in using this instrument in the streets. According to the statistics provided, in different countries, using seat belts in inter-urban routes is less than using it, in suburban's routes. The main objective of this paper is examine the use of seat belts on routes within the cities less than the suburban routes. For this purpose, 300 persons were asked with this questionnaire. The questionnaire data consist of the personal information, the use of seat belts, the discomfort with the use of seat belts, the amount of discomfort with the use of seat belts, risk and safety levels, belief in the efficacy of the seat belt, the degree of concern about the encounter to a car accident, and the fear that this accident is the end of their lives and using the seat belts among family and friends (to investigate the influence of social). In this study, McNemar's test was used for data analysis as well as accuracy. The test is non-parametric statistical tests, and variables can have nominal or ordinal scales. At the end of this paper recommended some policies to increase using seat belts in inner-city routes such as making more comfortable seat belts by car makers, described in terms of using seat belts in cities to reduce injuries to contacts, better enforcement by the traffic police and etc.

Keywords: Seat belts, Inner-city routes, Driver behavior

1. Introduction

Nowadays in modern society, travelling by car is a required and common activity [1]. Interests of motor vehicles, it is well-known and includes things like: Rapid movement of people and goods, Convenience, Wide range of purposes, low-cost transfer and etc.

However, motor vehicle's adverse consequences such as air pollution, noise and accidents also take [2]. Traffic accidents are one of the main public health problems that modern society encounter with it [3, 4]. The most widespread type of protective equipment, aimed at reducing the (number and intensity) of injuries and deaths caused by traffic accidents are the seat belts. Widely known which seat belts save lives [5, 6, 7, 8]. In the event of an accident, proper use of seat belts reduces the probability of death at high speed up to 5 percent and in low speed reduces injuries [9]. Thus, increasing use of seat belts is one solution to reduce the number of fatalities on the roads. This is especially true in cases studied to show those drivers who don't fasten their seatbelts are more involved in this accident than those who do [10, 11, 12].

According to a report on the website of the Young Journalists Club has been published on October 16, 2012). About 30 to 35 percent of those who have suffered the injury as a result of not having a seat belts or Child's seat. In another paper, the use of seat belts in different states has been expressed to separate the driver and passengers. The ratio among drivers this proportion is 81 to 91 percent and among passengers is 34 to 44 percent [13]. However, in other parts of the world also the same process has passed, For example, in Spain, seat belts for passengers in the front and in suburban roads were mandatory since 1970, and this Act was compulsory for all passengers and in all the ways since 1992 [13]. However, the use of seat belts in Spain, was between 81 to 85 percent and in inter-urban routes was 50 percent [14].

Research that has been done in USA by Eby et al. [15] have shown that using seat belts in highways (or freeways) is more than using it on inter-urban routes. The exact cause of this type of behavior is not set yet. The majority believe that it can be treated by the belief that it is safer to drive in the city, or drivers during travel would bring the probability of danger in their minds.

Psychological research has shown people who give more importance to their own health. The use of seat belts as a means of their personal protection is valuable [13]. Although research shows that both drivers and passengers know that the seat belts are effective in preventing or reducing injuries [7,16], and they know that they may face fines, but continuously they don't use seat belts on the inter-urban routes (Despite a fine of 90 euros in Europe) [17]. Other guesses about the use of seat belts have been introduced on routes within the city that are not justified. Therefore, this study aimed to investigate why the number of usage of seat belts on routes within the city are lower than suburban routes have been done. The variables are examined in this study based on behaviors that man can do to protect themselves from danger and in previous research external similar has been checked too and includes: convenience, risk perception, perceived safety, belief in the efficacy of the seat belts, beliefs about the seriousness of an accident and penalizing because of not fasten seat belts. Then it has been tried to be identified the main reasons for fasten seat belts or not on the inter-urban routes.

2. Methodology

2.1. Sampling

Participants in this study consisted of 217 students of Azad University of Tehran that education Engineering and humanities and 83 person are graduates of various universities.

2.2. Data and Methods

Listeners were asked questions to participate in a study of the seat belts participants voluntarily were attended and the questionnaires were anonymous. The questionnaires were distributed to the participants the following question was put:

1: Personal Information

Age, gender, place of residence and occupation were asked to participants. They were also asked, how long they have been the driving license, how often will they drive, how many miles will they drive in a week.

2: The frequency of using seat belts

Using a scale of five ratings (1 = never to 5 = always) whether fasten their seat belts on inter-urban routes and suburban routes were asked.

3: discomfort

Participants at the level of discomfort and difficulty when using the seat belts in urban and suburban routes were asked. Scale from 1 (very easy) to 5 (very sad) was segmentation.

4: Risk perception and understanding of safety

The participants were asked about degree of risk (Risk of injury from an accident) and understanding of risk not fasten seat belts in urban and suburban routes

Furthermore, the feeling of safety, when they use seat belts in urban and suburban routes were asked. For the first question the scale of 1 (no risk) to 5 (are completely unsecured) were classified.

5: The belief in the use of seat belts

One thing that was asked of the participants was that the use of seat belts at speeds of 40, 80, and 100 and 120 miles per hour, how to prevent or reduce accidents and injuries are effective. To this question the scale of 1 (effect less) to 5 (Quite effective) were classified.

6: Think about the seriously of Collision

The participants were asked about the most severe accident on the road or highway within the city have experienced how serious it is.

To this question the scale of 1 (Not serious) to 5 (very serious) were classified.

7: The degree of concern of experience of an accident or a fine because of not fasten seat belts.

The participants were asked that, their anxiety about have an experience of a severe accident because of not fasten seat belts (be injured in an accident) and how are concerned to be fine because of not fasten seat belts. To these questions the scale of 1 (Never be worry) to 5 (Quite worried) were classified.

8: Social impact

The participants were asked that, the friends, acquaintances and their families to what extent; they used seat belts. And scale from 1 (never) to 5 (always) were classified.

3. Presentation and analysis of data

As expected use of seat belts with the direction (urban, suburban) has connection. The majority of participants in this study stated that -only, always or usually- use seat belts in suburban's routes (91.3%) more than it in the inter-urban routes (55.8%). According to the figures obtained, from Mac Mar's test and X^2 are considered $\chi^2(1) = 58.01$ sub-ordinate $P < 0.0005$, this indicates that large difference is between urban and suburban routes and control the number of p in Non-parametric statistical tests is 5%. And as you can see, there isn't considerable difference in using seat belts among male (and $P = 0.37$ $\chi^2(1) = 1.06$) and female participants in this study. For Suburban routes and for urban routes (Fig. 1) ($P = 0.18$ and $\chi^2(1) = 0.82$).

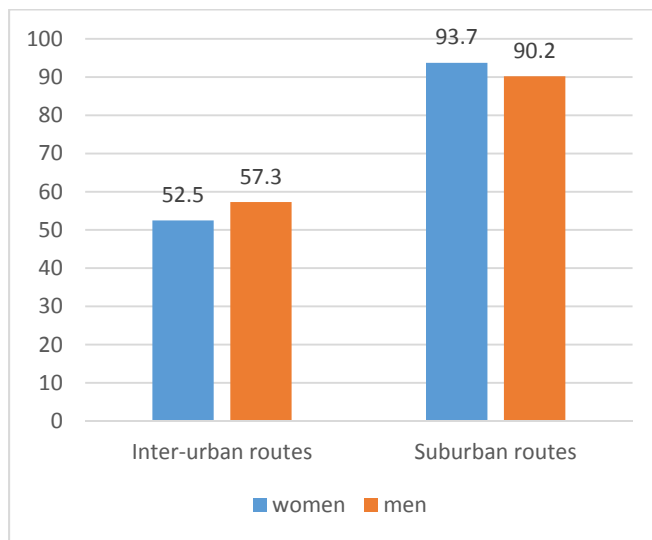


Fig. 1. The use of seat belts in terms of route and sexuality.

Fig. 2 shows that in between the five factors, fasten seat belts have the greatest impact. Furthermore, figure two shows us the obvious difference all of these parameters in the urban and suburban routes. These differences have been tested by the Willcoxon test. This test considers the difference between the ranks. In fact, this test is the way to check out the difference between Rating marked and Aligned pairs and to evaluate the difference between two sets of paired numbers that from one group of subjects was measured, and ranking is planned. As we see in this study, all five parameters of each participant were asked and because of that, Wilcoxon test was appropriate.

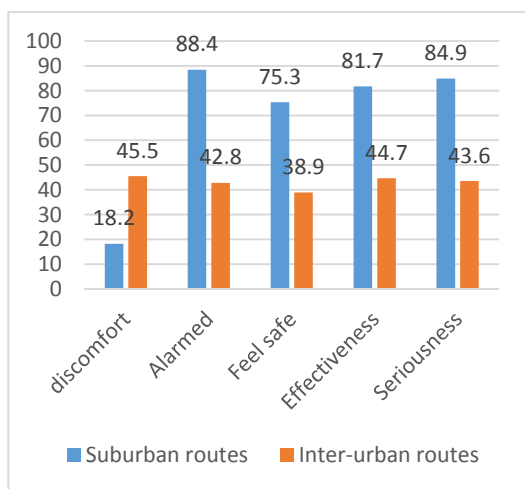


Fig. 2. Five more effective options in fasten seat belts

The test showed discomfort in the use of seat belts While driving in suburban roads is observable lower while driving on the roads within the city. ($P<0.0005$) in the section perceived risk and safety and ($Z=9.79$). This parameter is also significantly in suburban routes higher than the interurban routes ($P<0.0005$, $Z=15.34$, $P<0.0005$, $Z=12.51$).

In addition, participants in this study believed that the seriousness of the incident in highways is more than the inter-urban routes ($P<0.0005$ and $Z=-14.73$). Also, it was found that using of seat belts at speeds of 80, 100 and 120 Miles per hour to avoid death or injuries caused by accidents considered more effective to a speed of 40 kilometers per hour ($P<0.0005$, $Z=11.95$, $P<0.0005$, $Z=11.13$, $P<0.0005$, $Z=11.13$).

Fig. 3 shows the concern of the participants in the study, about the experience of having an accident, or fined for not fasten seat belts, in the urban and suburban routes. Wilcoxon test showed worry about Experience a crash in suburban routes, significantly is more than the routes inside the city ($P<0.0005$, $Z=12.77$).

The fear of being fined because of not fasten seat belts in roads is more than it in Inter-urban routes. It was fine, but in smaller amounts ($P<0.0005$, $Z=8.85$).

The mean and standard deviation in three cases are given in Table 1. Those most fasten seat belts, who sometimes (almost half of the cases) fasten their seat belts, those don't fasten their seatbelts on inter-urban routes. The results of the Kruskal-Wallis test come in the last column of the table. When Kruskal-Wallis test is significant that The Mann-Whitney test was used to compare groups (Table 2).

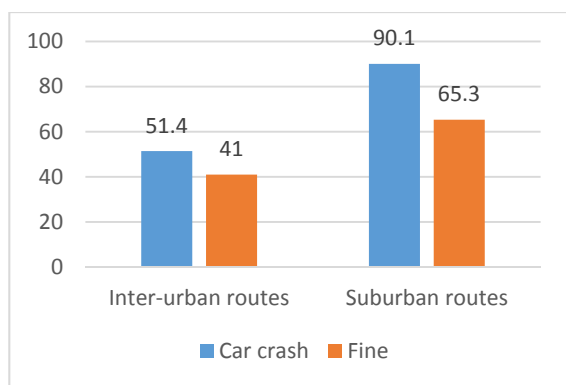


Fig. 3. The concern of about experience of an accident and penalizing.

Table 1. Mean, Standard deviation and the result of Kruskal-Wallis Analysis of variance

Variables	Mean(S.D) N=187 belted	Mean (S.D) N=42 Sometimes	Mean (S.D) N=70 unbelted	Kruskal- Wallis X ² (P)
Age	26.13 (1.98)	25.88 (2.45)	26.73 (2.56)	1.95 (0.43)
worry about experiencing crashes in Inter-urban routes	3.81 (1.08)	3.34 (1.12)	3.08 (1.22)	28.20 (<0.0005)
worry about experiencing crashes in sub routes	3.09 (1.37)	2.89 (1.14)	2.77 (1.20)	5.09 (0.079)
believe to seriousness of an accident in Inter-urban routes	3.61 (0.93)	3.34 (0.90)	3.17 (1.04)	15.62 (<0.0005)
difficulty and discomfort	1.72 (0.98)	2.54 (1.29)	3.75 (1.14)	142.4 (<0.0005)
Alarmed when not fasten seat belts in Inter-urban routes	3.71 (0.96)	3.16 (0.85)	2.74 (0.97)	62.14 (<0.0005)
feeling safety when not fasten seat belts in Inter-urban routes	3.69 (1.03)	3.11 (1.8)	2.43 (0.92)	82.79 (<0.0005)
Impact of the using seat belts in 40 kilometers in per hour	3.71 (1.09)	3.27 (1.17)	2.95 (1.29)	27.51 (<0.0005)
using seat belts by friends	3.42 (0.84)	2.47 (0.92)	2.33 (1.05)	92.73 (<0.0005)
using seat belts by acquaintances	3.67 (1.17)	2.82 (1.16)	2.26 (1.04)	83.77 (<0.0005)

Significant statistical difference for all variables Apart from age and fear of being fined was found in urban and suburban routes. Mann-Whitney U test showed the three groups of this study; that those who always fasten seat belts, who sometimes fasten their seat belts, and those not fasten seat belts, have differentiated in areas of concern about The experience of a traffic accident, According to the seriousness of a collision, difficulty and discomfort, alarmed, the feeling of safety, belief in the effectiveness of seat belts when driving in low speed and comments on the using of seat belts by friends and relatives.

Table 2. Compared to those who close their seat belts (belted), sometimes close (occasionally belted) and do not apply (unbelted) with Mann-Whitney U test

Variables	Unbelted/ belted Z (P)	Unbelted/ occasionally belted Z (P)	Belted/ occasionally belted Z (P)
Concerns about the impact of experience on urban routes	4.98 (<0.0005)	1.37 (0.17)	2.87 (0.004)
believe to seriousness of an accident in Inter-urban routes	3.75 (<0.0005)	1.22 (0.22)	1.97 (0.05)
difficulty and discomfort	11.69 (<0.0005)	5.28 (<0.0005)	4.67 (<0.0005)
Alarmed when not fasten seat belts in Inter-urban routes	7.43 (<0.0005)	2.80 (0.005)	3.94 (<0.0005)
feeling safety when not fasten seat belts in Inter-urban routes	8.89 (<0.0005)	3.59 (<0.0005)	3.64 (<0.0005)
Impact of the using seat belts in 40 kilometers in per hour	5.02 (<0.0005)	1.71 (0.09)	2.51 (0.01)
using seat belts by friends	8.25 (<0.0005)	0.96 (0.34)	6.81 (<0.0005)
using seat belts by acquaintances	8.63 (<0.0005)	3.05 (0.002)	4.69 (<0.0005)

By increasing concerns about the experience of an accident, alarmed when not using seat belts, feeling safety when using the seat belts, according to the seriousness of a collision and influence of using seat belts, because of that using seat belt's increases. Also the friends and relatives of those who didn't use seat belts, use it less than the relatives and friends who were using the seat belts more sadness, feelings of safety and using seat belts among relatives and friends created differentiation between the two groups (those who are always close seatbelts and who sometimes close seatbelts) (Table 2). To develop a model for predicting the use of seat belts in inner-city routes, a separate analysis was conducted. Four variables between those who are always closed seat belts, people who are sometimes the seat belts fastened, and those who seat belts are not fastened, has been created in the inter-urban routes. These four variables are: discomfort, social influences and familial of friends and relatives, feel safety when using the seat belts, discomfort is associated with the use of seat belts those who have expressed more discomfort in using seat belts, they have used seat belts in lower rates. Those audiences that have stated always or sometimes use seat belts have reported that their friends and relatives have used a greater degree of seat belts. Perception of safety, when you use seat belts in the inner-city routes, between those who have used seat belts more, was reported. Table 3 shows the results of the discriminant analysis.

Table 3. The results of the discriminant analysis

Step	Variables	λ	P(P-value)	St-C 1 st	St-C 2 nd
1	Uncomfortable	0.62	(<0.0005)	-0.69	0.46
2	Using Seat belts by friends	0.52	(<0.0005)	0.37	0.94
3	using Seat belts by relatives	0.49	(<0.0005)	0.29	-0.19
4	Feel safe	0.47	(<0.0005)	0.27	-0.08

St-C= Standardized coefficient

4. Discussion and Conclusions

More than 50 percent of the participants in this study stated that always or usually use their seat belts in the inner city routes, while the figures for suburban routes have been told by more than 90%.The numbers obtained in this study is higher than the rate provided a significant amount of previous research. One explanation for this difference can be expressed in this research is to obtain information because in this study was relatively specific audience.

More Iranian drivers and passengers always use seat belts on suburban routes. However, this rate is lower in urban routes, in order to deal this problem, in this study, due to less use of seat belts on inter-urban routes to suburban routes were investigated. Several reasons that because the drivers and passengers prefer to not use the seat belt in the inner city routes were determined. What also became clear that due to reasons of seat belts in suburban routes is Respondents have pointed to the fact that when have used seat belts on the inter-urban routes, feel more uncomfortable. These findings were compatible with similar research that has been done in other countries. One of the factors that seat belts may cause double discomfort and teasing in the inter-urban routes is the greater mobility of drivers while driving on routes within the city. Moves like; rollback to use the vehicle's gear, repeated walk and ride, frequent starting and stopping, successive change of car acceleration cause of the rise and fall speed over a relatively short path, all the above points have been due to the force of the seat belt into the seat body and ultimately have led to the more uncomfortable for seat body in the inter-urban routes. As former research suggests by providing a comfortable seat and design seat belts that are easier to use, can increase using seat belts. While the design of inter-urban routes so that while driving the occupants of the vehicle feel less momentum, is another approach the use of seat belts in urban routes. In future research on the factors affecting the level of discomfort can be paid and examine ways of alleviating these problems. The study also determined those who use seat belts less in inner-urban routes rather alarmed less and feel more safer when are not fasten seat belts. As the inter-urban routes while not fasten seat belts, alarmed is less and feeling safety is more than suburban routes, increased sense of danger and reduce the feeling of safety when not using seat belts is one of the ways of increase using seat belts. To achieve this goal cultural and commercial sector has an important task that to implement targeted and exact cultural studies should be carried out in accordance with people? In this study, the majority of majorities of respondents were of the opinion that using a seat belt isn't very effective at low speeds this view is completely wrong. In this context also awareness appropriately should be given to public until put the most extensive influence in society. Finally, to increase using seat belts, in the inter-urban route's imposition of significant fines and accurate implementation of the law is essential. The final solution for achieve the goal quickly and short- term is appropriate but to be institutionalized and change using of seat belts as a social behavior should attend to other solutions with the seriousness.

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