

## Assessment of Drivers and Passengers Seat Belt Compliances in Baghdad City

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### ABSTRACT

*Baghdad city population is growing rapidly and soon it will reach 10 million, and this has increased the number of drivers on city streets which accompanied with the absence of adequate traffic enforcement and traffic control devices to match this increase. Current research main objective is to assess city drivers and passenger's compliance to use seat belts as a safety precaution. The study consists of two main surveys conducted in the field considering gender, vehicle type, and other drivers characteristics. The first one consists of a questionnaire asking respondents to answer multiple choice questions about seat belt use and other questions associated with respondents' demographics. Whereas second part involves observing seat belt use among city drivers and passengers at selected locations. Also, we sought information about seat belt use as a driver, front seat passenger, and rear seat passenger. Only 20% of the sample in field observational survey were wearing seat belt as a driver. Printed questionnaire reveals that only 12% are used to buckle up all the time, and 28% never use seat belt in their life, and the rest use seat belt occasionally. Seat belt rates for passengers were 5% only, and most passengers do not care about seat belts and many cars have disabled or malfunction seat belts. Four reasons for putting seat belt were considered and ranked as to avoid injuries, to avoid fines, to follow seat belt law, and wearing seat belt when people in the same car are wearing it.*

*Keywords: Traffic safety, seat belt use, seat belt awareness, traffic surveys*

### INTRODUCTION

There is no doubt that using seat belt saves thousands of lives every year and reduces crash severity by about 41% as proved in several studies (Şimşekoğlu & Lajunen, 2008). Usually, seat belt usage and comprehension are better observed in developed countries and are less observed in developing countries. This is true taking into consideration the cultural differences and the amount of education, training, and advertising allocated for such purpose. As for a country (i.e., Iraq) seeing one sign promoting for using seat belt or encouraging drivers and passengers to do so on any street, highway, or any other transportation facility is very rare. Meanwhile, traffic crashes have become a nightmare for Iraqis and deaths tolls has risen to scary numbers in recent years. Enormous research has been conducted to assess and study driver's behavior and compliance to seat belt use laws and enforcement protocols.

There is no argument that seat belt is effective in saving people's life and reduces severity of accidents. The problem is drivers know that, and most road users know that as well. Unfortunately, this is not the case when conducting field seat belt observational studies. The low rates are the predominant especially in third world countries when compared to developed countries in Europe and north America.

### RELATED LITERATURE

Seat belt laws are very important, and the majority of world countries have had these laws for a reasonable time. However, these laws are not necessarily accompanied with strict enforcement which makes it useless and ineffective. By having seat belt laws in not enough and studies have shown that using seat belt would not reduce the number of fatalities according to logic. The reason behind this, is that drivers with seat belt they feel more relax with extra feel of safety which lead to more reckless driving. This is what called "Compensating driver behavior" (O'Connor, Blomquist & Miller, 1996). However, seat belt was invented to safe people's life when accidents happened.

One of the very common reasons for not wearing seat belt in a country like Iraq is the severity of traffic congestion and the wasted hours of valuable time during peak hours as stated by (Al-Jabbar, Shubber & Aziz 2011) and its consequences are usually negative. Peak demands for goods and services often exceed the rate at which that demand can be met, creating delay. That delay can take the form of supermarket check-out lines, and long waits for a table at a popular restaurant. Automobile congestion has myriad impacts, from wasted fuel and added emissions to frayed nerves, more expensive goods, and elevated crash rates. Its clearest impact is delay, or lost time. Baghdad

city experienced severe traffic congestion. Especially in the present few years, and this normal in the absence of any modern techniques and traffic management studies to relieve or alleviate some of the adverse consequences of congestion mentioned above. In the present research a public questionnaire were made for an educational staff in one of Baghdad universities, some important questions were involved in this questionnaire like the presence of congestion places, time spent in the street, the possible reasons for traffic congestion, the volubility of building new interchanges and tunnels in Baghdad at specific locations, and the recommended remedies and solution for this problem. The analysis of answers shows some important points as follows: the grater participant factor in traffic congestion from their point of view is the military check points that separated over the whole city (i.e. Baghdad).

Enforcing the use of seat belt is considered the best safety countermeasure to reduce traffic accidents severity as the case in Malaysia where seat belt became mandatory in the early seventies (Kulanthayan, Law, Raha & Radin 2004) car drivers constitute about 9.0% and passengers 13.6% of fatalities. The major cause of car occupants' fatality in such accidents is head injuries, which consist of more than half (56.4%). This study aims to assess seat belt use in Selangor, Malaysia. The study sample consists of 237 participants and the results were analyzed using regression method. The results showed that 5 factors were considered to be crucial with respect to seat belt use: education level, seating position, night-time driving, location of travel, and traffic enforcement. Educated people tend to obey traffic seat belt laws better than uneducated ones.

Many researchers, traffic engineers, and other department of transportations have conducted decent research in this crucial field. The seat belt use surveys are very common as an essential part of every traffic directory to assess their laws and enforcement strategies. At the same time, this topic is hot topic for researchers and interested engineers.

Group of researchers studies the association between drivers' demographics, and other parameters on seat belt compliances and accidents involvement (Ai-madani et al. 2002). The survey conducted in two countries Qatar and United Arab Emirates, where 4200 questionnaires were distributed. The response rate of 45% was achieved in the study. The results showed that driving experience is directly related to accidents involvement (the higher the experience years the less likelihood of accidents). Seat belt compliances and frequency are related to social status, where married drivers are better than single drivers. Education and income proved to have no effect on the results.

Several studies focused on seat belt usage among younger drivers to identify possible reasons for not wearing seat belts (Begg & Langley 2000). The study involves conducting face to face interviews for about 948 (93%) of total sample size, all of interviewed sample are of age 21. Front and rear seat belt usage were observed, front seat belt results indicated a higher rate than the rear passengers seat belts. Although,

seat belts have been mandatory in New Zealand for over 20 years. Several reasons were gathered from the questioned sample about fastening rear seat belts. For instance, feeling uncomfortable, just don't like it as young people do not want to feel their movement restricted. On the other hand, very low percentages of front passengers were not buckled. The study emphasized that young male adults with high desire for reckless and thrilling driving and who have lower academic qualifications should be considered for any counter measures in the future. Gender differences need to consider in the process of designing television commercials educating people about the importance of using seat belts (Lewis, Watson & White 2008).

Another related study studied the compliances of front passengers to seat belt laws taking into consideration driver's seat belts condition (Nambisan & Vasudevan, 2007). A three years' worth of data were used for 50 sites in the state of Nevada. The results showed that front passengers are more likely to put seat belts if drivers are buckled up, and vice versa. These results are applied for both genders (male and female drivers) with no big difference.

Approximately 221 face to face interviews were conducted to determine seat belt use among different passengers and drivers during different travelling situations (ZlemO' & Lajunen 2008). The results showed that seat belt usage is related to perceived risk assessment. Perceived low risk conditions make road users feel relax and safe which result in lower seat belt usage, which is common in good weather, low speeds, and daytime driving. This contrary to high-risk situations, such as bad weather driving, and at night driving. The research pointed out that drivers with children on board tend to use seat belt frequently to show a good model and enhance children awareness of seat belt use. One main reason for not wearing the seat belt according to the interviewed sample is the lack of confidence in believing how effective is the seat belt in saving peoples life.

Several reasons were reported for not wearing the seat belt such as habit, avoiding traffic tickets, situational characteristics, and safety. These reasons are compatible with reasons in previous studies (Chliaoutakis et al. 2000); (Fockler & Cooper 1990).

Furthermore, Bus drivers are essential sample for seat belt related studies. A study conducted in Tehran, Iran to assess bus drivers seat belt use (Ghaffari et al. 2020). The study uses about 60 in person interviews conducted at bus terminals, universities, and traffic police offices. The study revealed that understanding what seat belt can do play a significant role of seat belt use. Also, education is another important factor to increase seat belt use. Absence of laws and enforcement encourage people not to put their seat belts. The main recommendation of this work is increase people awareness of importance and benefits of seat belt through television programs, and campaigns.

Studying seat belt use patterns and frequencies was conducted in China for over 4 years period using four main methods. These methods include roadside observations, interviews, focus groups, and in-taxi observations. These

taxis used to have reminder signs telling them if seat belts are on or off, and from observations they do not increase seat belt usage. Moreover, there is a sound warning in some cases which found to be efficient enough in Shanghai and Zhoushan, Zhejiang province. For seat belt to work properly and efficiently they need to be fully functional, hence they are retractable restraints to prevent drivers and passengers from lurching forward or thrown outside the car during a crash. On the contrary, disabled, or wrongly worn seat belts could lead to deadly accidents outcomes. This case was observed, and many taxi drivers used some kind of tampering clips into their cars. Seat belt rates were different from one method to another, in terms of face to face interviews the rates were higher. The respondents want to reflect a positive behavior Baghdad city, very rare to be stopped by traffic authorities for not wearing seat belt. Several reasons were given for not wearing seat belts such as low speed driving conditions, and short distance trips. However, severe accidents could happen at low-speed conditions. Furthermore, reasons such as fear of assaults by passengers, long working hours with hot and humid weather make the driving uncomfortable.

Rear seat passengers have the same importance of front passengers and many studies have been conducted to emphasize the necessity to buckle up not for their lives only but for front passengers as well (Bhat et al. 2015); (Jermakian & Weast, 2018) (Bose et al. 2013) (Taylor & Daily, 2019).

#### DATA COLLECTION AND ANALYSIS

Seat belt use was conducted using two methods, roadside observations and printed multiple choice questionnaire. Approximately 500 observations were made for each survey, which could be considered as sufficient representative sample. The first survey conducted on five randomly selected sites in Baghdad city. The collected data include vehicle type, passengers seat belt use (front and rear passengers). These sites were check points and signalized intersections (drivers slow down and stop at these interruptions), which enable the observer take notes of seat belt use. For every site there was about 100 observations. The 100 number is considered sufficient in statistics to reflect a reasonable sample size. Although, to cover a big city such Baghdad the number could be substantially bigger, and the number of sites should increase dramatically which will add a burden of cost, effort, and time. One more thing, the majority of road users can be considered as familiar commuters and their behavior kind a similar among different parts in the city. One observer (researcher) has conducted the survey on the first week of August 2021. These sites are primarily a security check points which are part of street network in the city of Baghdad. The traffic in these check points is reduced from multiple lanes to one lane which makes it easier for observing seat belt use. It is worth mentioning that these check points do not obligate use of seat belt and drivers are not behaving differently when approaching these points.

The second survey as mentioned above consisted of printed questionnaire which has multiple questions regarding socioeconomic factors and other questions related to seat belt use. The questionnaire contains 10 questions regarding seat belt use as a driver and as a passenger. In addition, asking participants about the main reasons for wearing seat, and for not wearing it. The questions and the responses are more detailed in results section.

It is very important to measure Cronbach alpha parameter which measures internal consistency. The measurement is essential for surveys of multiple question or uses Likert system in their answers options. For current study SPSS Software was used to calculate the Cronbach alpha, which was equal to 0.832 which considered as an acceptable value.

## RESULTS AND DISCUSSION

### SEAT BELT OBSERVATIONAL SURVEY

First survey type (direct field observations) as mentioned earlier was conducted on five randomly selected sites in Baghdad as shown in Table 1. This Table shows seat belt use percentage among the observed vehicles at these sites. The percentages of seat belt use were 19.3, 5.8, and 0.8 for drivers, front passengers, and rear seat passengers, respectively. The results for front passenger and rear passengers are shocking and this could explain the loss of thousands of lives yearly because of traffic accidents and the absence of following safety driving and travelling tips.

These results are surprising, since there is no clear traffic law that enforce drivers to put seat belt while driving in Iraq. The survey included all types of vehicles and there was no big difference in terms of seat belt compliance. After 2003 Iraqi market was sunk into millions of imported cars from all over the world. This was accompanied by the growing of economic capability of Iraqi people and most houses now has more than one car. It is very rare to notice or observe signs that promote for seat belt use and the advantages of using it. As a daily commuter in Baghdad, it is very rare to be stopped by traffic officers for not putting seat belt.

TABLE 1. Observational survey of seat belt use

Sites	driver	Front passenger seat belt use %	Rear passengers seat belt use %
Site A	20	6	1
Site B	18	4	1
Site C	24	5	2
Site D	15	8	0
Site E	12	4	0
Overall Average	19.3	5.4	0.8

PRINTED QUESTIONNAIRE SURVEY RESULTS

This survey contains multiple questions regarding seat belt use frequency and asking for their views of the importance of wearing seat belts. Figure 1 shows age groups of the surveyed sample. Car ownership and the ability to drive a car is not presented in Figure 2, the survey questions were targeting both drivers and passengers prospective of seat belt use. There was over 300 printed survey and only 240 answers were received. The response rate is 80% which is very good considering that peoples are not enthused about filling out related surveys.

Figure 3 and Figure 4 demonstrate the percent of drivers and passengers wearing seat belts, respectively. Only 12% of drivers buckle up all the time, and 28% never uses seat belt in his or her life. And the highest percent is for drivers who use seat belt not frequently. These results are not surprising, as long as there are no tickets or fines the majority of drivers does not put their seat belts. As a passenger, only 5% wear their seat belt and the rest which is 95% comprises both other choices not wearing at all and wearing it not frequently.

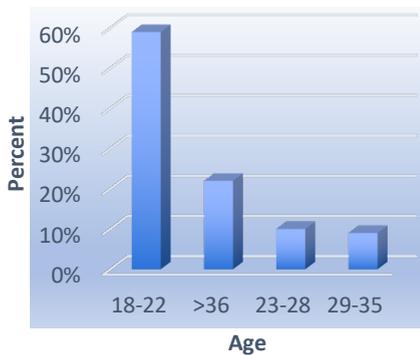


FIGURE 1. Distribution of age groups (years)

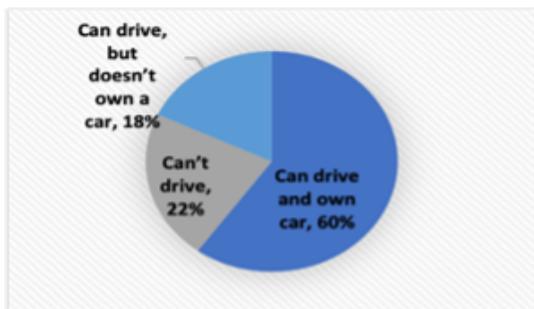


FIGURE 2. Percentage of car ownership and whether they can drive or not

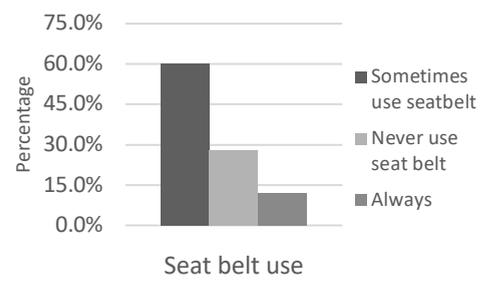


FIGURE 3. Seat belt use percentage while driving

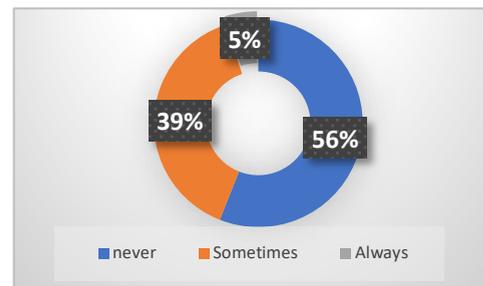


FIGURE 4. Seat belt use as a passenger

There are many reasons why drivers not wearing seat belts, and some of these reasons were highlighted in this survey. Figure 5 shows the suggested five reasons and their associated percentages. The highest percent was associated with inconvenience and feeling constrained in seat belt. Second highest percent was forgetting to put seat belts, driver safety should be always a top priority and most modern cars have seat belt reminders that keeps ringing till you put the seat belt. Other reasons were also observed such as driving at low speeds, driving for short distances, and feeling embarrassed. The issue of not wearing seat belt is a serious safety matter now in Iraq, therefore there was a noticeable increase in recent years in fatality due to traffic crashes.

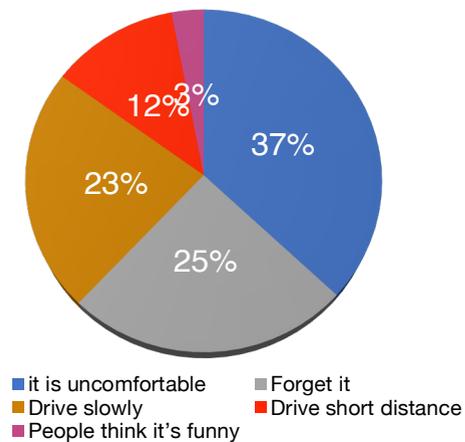


FIGURE 5. Reasons why not using seat belt

The questioned sample do believe that seat belts can effectively prevent severe injuries with 59% agree with this proved premise. whereas 38% does not believe so. This is because the lack of education regarding this important safety issue, which could explain some of the reasons behind the dramatic increase in severe car accidents and the fatalities associated with. People should be aware of traffic and safety laws not for their safety but for the safety of all road users. Figure 6 shows the answer to question does seat belt can help to prevent severe injuries.

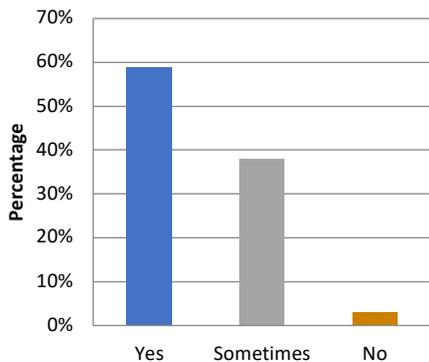


FIGURE 6. Answer to question: does seat belt can help to prevent severe injuries?

Only 18% agree that seat belt should be always put on regardless vehicle speed or how long or short is the driving distance. This very common justification, the premise that low speed or short distances does not require wearing seat belt. Although, recent research has shown many of severe accidents happened at low speed. There is an essential need to educate people about effectiveness and the possibility of preventing severity of car accidents. This issue has never been brought up by traffic agencies, and at the same time car accidents on the rise without proper safety counter measures. Nowadays, with modern technology and smart phones information spreading became easy and fast. Figure 7 shows answer to question do you think wearing seat belt is a mandatory regardless speed and traveling distance?

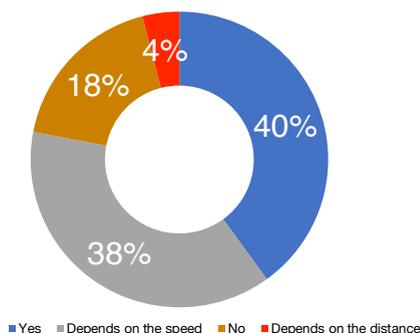


FIGURE 7. Answer to question: do you think wearing seat belt is a mandatory regardless speed and traveling distance?

Four main reasons were included in the questionnaire for wearing seat belt. Top ranked reason was to avoid

injuries, second reason was to avoid fines. Third reason is to obey the mandatory seat belt laws, and finally only 3% put their seat belt if other people in the same car are wearing their seat belts. Figure 8 shows the possible reasons for wearing seat belts.

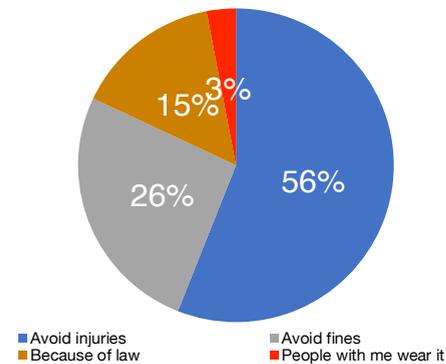


FIGURE 8. The possible reasons for wearing seat belts

It is very common to hold campaigns that educate public about benefits of using seat belts and their effectiveness of saving people’s lives in cases of severe accidents. As shown in Figure 9 only 40% of the questioned sample agreed that such campaigns can help to raise seat belt use. The remaining percent varies among sometimes, depends on campaign effectiveness, and no. The 40% considered a good indication that people believe that with proper audio, visual, and well-organized campaigns could bring up the notion regarding this serious safety issue. There is a serious need for holding such campaigns to enhance people education and awareness of proper traffic laws, and especially seat belt benefits and the possible risk of not using it.

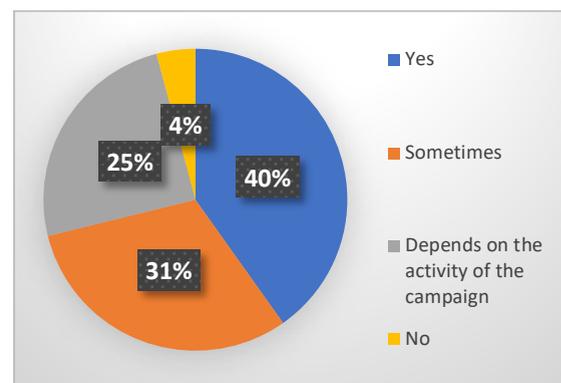


FIGURE 9. Answer to question: do you think that campaigns can increase seat belt use frequency?

CONCLUSIONS

Several findings can be drawn from current research results, which will be summarized below:

1. First roadside survey reveals that only 20% of observed cars were wearing their seat belts, this is very low percent which reflects a common sense. This is normal

in the absence of any enforcement of any kind regarding seat belt use for both drivers and passengers.

2. Front and rear seat passengers seat belt use were astonishing and highlight the ignorance of safety rules by passengers. Also, it shows the unawareness of the importance of seat belt in saving people's lives.
3. For printed questionnaire, the results were different a bit. Only 12 % of surveyed sample are used to wear their seat belts constantly. Also, 28% have never use seat belt in his or her life which is astonishing to know. The remaining 60% use seat belt occasionally. For passengers the results were completely different, only 5% use seat belt and the majority 95% does not wear seat belt as a front or rear passenger. This is very true in the case of City of Baghdad; it is very rare to notice rear passenger with seat belts on. This indicates the lack of knowledge about traffic safety and the governing laws. This issue is a big safety concern when you have children on board.
4. The surveyed sample were asked to choose the main reason behind not wearing seat belts from their point of view. Top reason chosen was the inconvenience of buckling up, which can be sometimes warranted due to long waiting hours in traffic jam. Also, many taxi drivers work for long hours in extreme hot temperatures in summer. The second top reason was forgotten to buckle up, although this is not feasible warrants. Drivers and passenger's safety should be always upfront and most modern vehicles equipped with seat belt visual and sound reminders. The rest three reasons vary between driving in slow speeds, driving for a short distance, and feeling embarrassed.
5. The majority agreed that enhancing people's awareness of seat belt benefits through campaigns would raise seat belt use frequency. For this reason, there is a growing need for holding such activities. These could involve variety of visual, audio messages and TV programs that can host experts in traffic safety and government officials to emphasize all issues related to traffic safety including seat belts.
6. There was a question about why using seat belt, there was four choices given to the surveyed sample. Top ranked reason was to avoid injuries, second reason was to avoid fines. Third reason is to obey the mandatory seat belt laws, and finally only 3% put their seat belt if other people in the same car are wearing seat belts.
7. Probably this research is the first to discuss and highlight this critical safety issue in a big city like Baghdad. Current work gives a snapshot of seat belt use among commuter drivers and passengers.

#### ACKNOWLEDGEMENT

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#### DECLARATION OF COMPETING INTEREST

None

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