

On Road Observational Survey of Seat Belt Use Among Young Drivers in Qatar

Khaled Shaaban

Department of Civil Engineering and Architectural Engineering, Qatar University, Doha, Qatar. kshaaban@qu.edu.qa

Abstract

Traffic accidents are one of the main cause of death in modern societies. Next to circulatory diseases and cancer, road accidents are probably the third major cause of death in the developed world [1]. Traffic accidents kill 1.2 million people every year and injure or disable as many as 50 million more. They are the second leading cause of death globally among young people aged 5 to 29 years and the third leading cause of death among people aged 30 to 44 years [2]. In 2010, road traffic accidents were the cause of 228 people deaths and 568 major injuries in Qatar. In October 2007, a new traffic law was implemented in the State of Qatar in order to reduce the growing number of accidents and reckless driving in Qatar. The new law forced seat belt usage for all drivers and front-seat passengers. The objective of the paper was to investigate the seat belt use among university students drivers in Qatar after the implementation of the new traffic law using observational survey. Two higher educational facilities in Qatar were selected to conduct the research. Four students pursuing an engineering degree were trained in general traffic data collection methods and procedures and specifically on how to observe the vehicles approaching and how to collect data in sheets prepared in a specific coded way to gather the information needed. The trained observers stationed at four different entrances of the studied universities. The results of this study suggest that a significant percentage of university students do not wear their seat belts and is a clear indication that driving habits in Qatar have not improved since the implementation of the 2007 traffic law.

Introduction

Traffic accidents, one of the most important challenges of modern societies, are the third leading cause of death in most countries. There is no doubt that traffic accidents cause social and economic problems and leave a direct impact on people. With respect to economic problems, traffic accidents constitute a big burden on the society as a result of loss of life, injury and disability and increase in the amount of insurance and compensations. Although, in recent years, significant developments have been made in road safety in Qatar, and national traffic law was implemented, traffic statistics indicate that there is increasing in accidents in Qatar. In October 2007, a new traffic law was implemented in the State of Qatar. This law contained a package of rules and regulations in traffic system in addition to the awareness and preventive campaigns. The new law forced seat belt usage for all drivers and front-seat passengers. However, young drivers often do not wear seat belts. After more than four years of the implementation of the traffic law, it was necessary to investigate the seat belt use among young drivers. Better understanding of the behavior of young drivers is important since it will shed more light on developing plans or strategies to improve the traffic safety of this vulnerable group in society.

Studies show that seat belts can save lives and significantly decrease motorists' injury severity in crashes [1,8]. In 2008, 25,351 passenger vehicle occupants were killed in traffic accidents in the USA. Among these fatalities, more than 55 percent of the occupants were unrestrained [3]. The National Highway Traffic Safety Administration (NHTSA) estimates that an 80 percent safety belt use rate saves more than 15,000 lives per year and an overall societal cost of 50 billion dollars in the country each year [4]. NHTSA estimated that 13,250 lives were saved in 2008 due to the use of safety belts [5] among passenger vehicle occupants over age 4. Finally, according to the NHTSA, seat belts are approximately 50 percent effective at preventing fatalities in car crashes and save about 15,000 lives each year in the U.S. [6].

In order to reduce the growing number of accidents and reckless driving in Qatar, the government has introduced new traffic laws stipulating severe penalties in October 2007. This law contained a package of rules and regulations in traffic system in addition to the awareness and preventive campaigns. The new law forced seat belt usage for all drivers and front-seat passengers. Children under age of 10 have also been banned from sitting in the front seat of the car. However, young drivers often do not wear seat belts. Young drivers and students are

known to be a problem age group for road traffic safety in several countries. Motor vehicle crashes are the leading cause of death for US teenagers, accounting for 40% of fatalities. In a study in Colorado, a higher proportion of young drivers were found to be involved in over-speeding, reckless driving, charged with traffic violations, and safety belt non-use [7]. Young drivers in New Zealand contribute disproportionately to traffic accident injuries and deaths. In 1999, the 15-24 year age group accounted for 25% of road deaths and 31% of reported injuries [8]. The objective of the paper was to determine the seat belt use among university students drivers using observational survey.

Survey Design and Implementation

Two higher educational facilities in Qatar; Qatar University (QU) and College of the North Atlantic (CNA) were selected to conduct the research. These two high educational facilities were chosen due to the high number of students (approximately 8,200 and 4,600 students respectively) compared to other higher educational facilities such as Texas A&M University at Qatar (approximately 390 students) and Carnegie Mellon University in Qatar (approximately 320 students).

Four students pursuing an engineering degree were trained in general traffic data collection methods and procedures and specifically on how to observe the vehicles approaching and how to collect data in sheets prepared in a specific coded way to gather the information needed. Each student received a day-long training explaining the procedure and practicing on how to conduct the field data collection. Prior to conducting the actual survey, a pilot survey was administered. The four field observers were used to conduct the survey at one site. During the pilot survey, it was difficult to observe if drivers are wearing seat belt or not in some of vehicles (approximately 20%) due to the vehicles speeding. Therefore, it was decided to choose new locations where vehicles are forced to slow down. During the final survey, the trained observers stationed at four different entrances of the studied universities. The four locations were selected carefully where vehicles had to slow down at the speed humps located at the different entrances. This strategy allowed for easy capturing of all data needed from all vehicles approaching as shown in Figure 1.

The data was collected for 701 student vehicles between 7:00 am and 9:00 am, at the beginning of the school day and between 14:00 pm and 15:00 pm at the end of the school day. At the studied locations, the observers team collected the data while the approaching vehicles slowed down to enter the gate of the university. The surveys objective was to collect accurate and reliable data. They made the following observations: 1) whether the vehicles is a passenger car or SUV; 2) whether the driver is wearing a seat belt or not; 3) whether front-back seat passenger is wearing seat belts or not; 4) whether front-back seat passenger is wearing seat belts or not; 5) gender; 6) student or adult; and race. Observations were made during daylight hours to ensure clear visibility. It should be noted that gender and race for the driver, front-seat passenger, and back-seat passengers were identified as part of the survey. The driver and passenger races were categorized as Arab-Qatari, Arab-Non Qatari, Asian, and American/European. The data collected were recorded manually on paper survey forms to



Figure 1. Inspection place showing visibility of seat belt usage.

avoid any issues related to the visibility of the screen of electronic data collection equipment under sunlight conditions. According to the observers, the manual method was effective, accurate, and allowed them to verify and easily fix any issue at the time of data entry.

Analysis of Data

After conducting the survey, data was transferred from the field sheets to a main Excel spreadsheet by two team members and verified for accuracy by the other two team members. The verification for accuracy was achieved by comparing the results obtained by comparing the survey forms against the Excel spreadsheet. Three separate worksheets were established: 1) data dictionary; 2) survey data; and 3) survey data analyzed.

Conclusions

After collecting and analyzing the survey data, it was concluded that the method used in the collection was effective and adequate. The results of this survey provide a snapshot of seat belt use in Qatar among young drivers. Findings of this survey indicated that nearly 57.3% of the young drivers were not wearing seat belts. The number of male and female drivers in the random sample were 467 and 234 respectively. The paired t test, a parametric test, was conducted to identify if there were significant differences between male and female drivers. Using the two-tail t test, the null hypotheses was rejected at the 5% significance level, as the p value was 0.000. The results show that male drivers have a lower seat belt use rate with 71.5% of male drivers found not wearing seat belts compared to 29.1% of female drivers not wearing seat belts. In addition, it was found that Qatari students have a lower seat belt use rate than other non-Qatari categories. 76.1% of Qatari drivers were found not wearing seat belts compared to 32.9 non-Qatari not wearing seat belts ($p = 0.000$). Finally, vehicle type seems to show a significant gap between unbelted and belted students. Students in SUV's have a higher non-seat belt use rate (65.9%) than those in other vehicle types (46.6%).

The results of this study suggest that a significant percentage of university students do not wear their seat belts and is a clear indication that driving habits in Qatar have not improved since the implementation of the 2007 traffic law. There are no simple remedies for drivers not wearing seat belts, however, there are a variety of countermeasures. These countermeasures include children education, driver education and awareness, legislation and enforcement. Not using the safety belt is a behavioral issue, so educational programs targeting the change of the all driver's behavior will also lead to an increase in the safety use rate in the driving population. Previous research indicated that programs designed to encourage seat belt use in young children can increase seat belt use by the children and their parents, particularly in low income neighborhoods [9]. In addition, implementation of more restrict regulations will be necessary. Another study showed that an increase in fine level from \$25 to \$60 was associated with a three to four percent increase in observed seat belt use [10].

Acknowledgements

This research was made possible by a grant from the Qatar National Research Fund under its Undergraduate Research Experience Program award number UREP 11-109-3-022. Its contents are solely the responsibility of the author and do not necessarily represent the official views of the Qatar National Research Fund.

References

1. Abdel-Aty, M. (2003). Analysis of driver injury severity levels at multiple locations using ordered probit models. *Journal of Safety Research* **34**, 597-603.
2. O'Flaherty, C.A. (1997). *Transport Planning and Traffic Engineering*. Arnold Publications, London.
3. NHTSA's National Center for Statistics and Analysis (2009). *Traffic Safety Facts – 2008 Traffic Safety Annual Assessment – Highlights*. U.S. Department of Transportation, NHTSA, DOT HS 811 172.

4. The National Initiative for Increasing Safety Belt Use Buckle Up America Campaign (2005). Eight Report to Congress, Sixth Report to the President, U.S. Department of Transportation, NHTSA.
5. NHTSA's National Center for Statistics and Analysis (2008). *Traffic Safety Facts, 2008 Data – Occupant Protection*, U.S. Department of Transportation, NHTSA, DOT HS 811 160.
6. NHTSA's 2004 Motor Vehicle Occupant Protection Facts (2006). Washington DC: National Highway Safety Administration, U.S. Department of Transportation, DOT HS 810 654.
7. Gonzales M.M., Dickinson, L.M., DiGuseppi, C., Lowenstein, S.R. (2005). Student Drivers: A Study of Fatal Motor Vehicle Crashes involving 16-Year-Old Drivers, *Ann. Emerg. Med.* **45**(2), 155-156.
8. New Zealand Land Transport Safety Authority (2000). *Motor Accidents in New Zealand*.
9. Hazinski, M.F., Eddy, V.A., Morris, J.A. (1995). Children's traffic safety program: influence of early elementary school safety education on family seat belt use. *J. Trauma Injury Infect. Crit. Care* **39**, 1063–1068.
10. NHTSA's Strategies to Increase Seat Belt Use (2010). *An Analysis of Levels of Fines and the Type of Law*. Washington DC: National Highway Safety Administration, U.S. Department of Transportation, DOT HS 8110 413.