

# **THE INFLUENCE OF ORIGIN COUNTRY IN DRIVERS BEHAVIOUR: A CASE STUDY OF DUBAI**

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## DEDICATION

I dedicate this work to my beloved husband for his support during this journey and give me this opportunity to experience studying abroad, caring for me and my kids. To my family for giving me some inspiration and strengthen in finishing this research. Special thanks to my friend Tagwa who always supports me, for all my colleagues, friends, and everyone who helped me to finish this study.

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## **ABSTRACT**

Based on the Traffic Police Department of Dubai (TPD), the city has the highest rate of accidents with different types of injuries and fatality comparing with the rest of the Emirates. Also reported that more than 70% of accidents caused by foreign drivers, and driving behaviour is the main reason for 80% of the accidents. Furthermore, understanding the impact of drivers' behaviour play an important role in road safety. The purpose of this research is to study the influence of home-country on drivers behaviour and evaluate the relationship between the nationality of drivers and their driving behaviour in terms of accidents and traffic violations. Moreover, the study provides suitable recommendations to improve the training programs to be more effective in increasing the concentration of drivers on their behaviour and suggests any evaluation program to monitor the drivers' behaviour in terms of their violations and accidents participation to ensure that they could set to extra training sessions if needed.

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## LIST OF ABBREVIATIONS

Abbreviation	Title
UAE	Unites Arab Emirates
GCC	Gulf Cooperation Countries
RTA	Road & Transport Authority
MDBQ	Manchester driving behaviour questionnaire
N	Nationality
HCDE	Home-country Driving Experience
DDE	Dubai driving Experience
DB	Driving Behaviour

## LIST OF SYMPOLS

Symbol	Title
$z$	z-score
$p$	p-value
$N$	Population
$\epsilon$	Margin of error
$r$	Regression correlation

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# CHAPTER 1

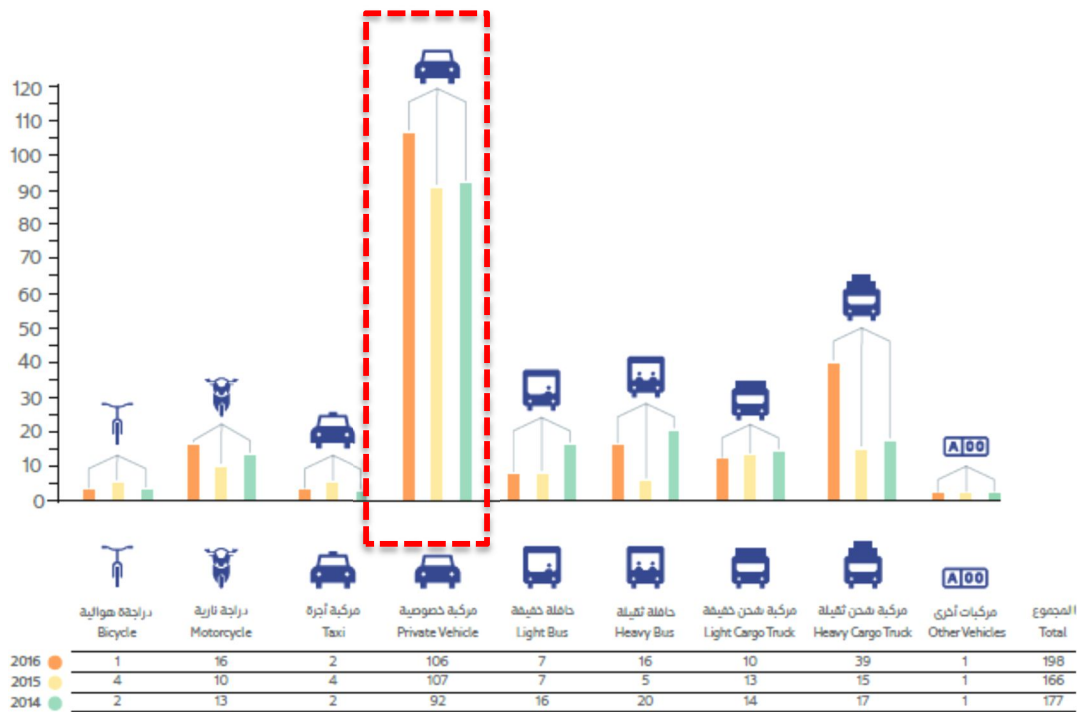
## INTRODUCTION

### 1.1 Research Background

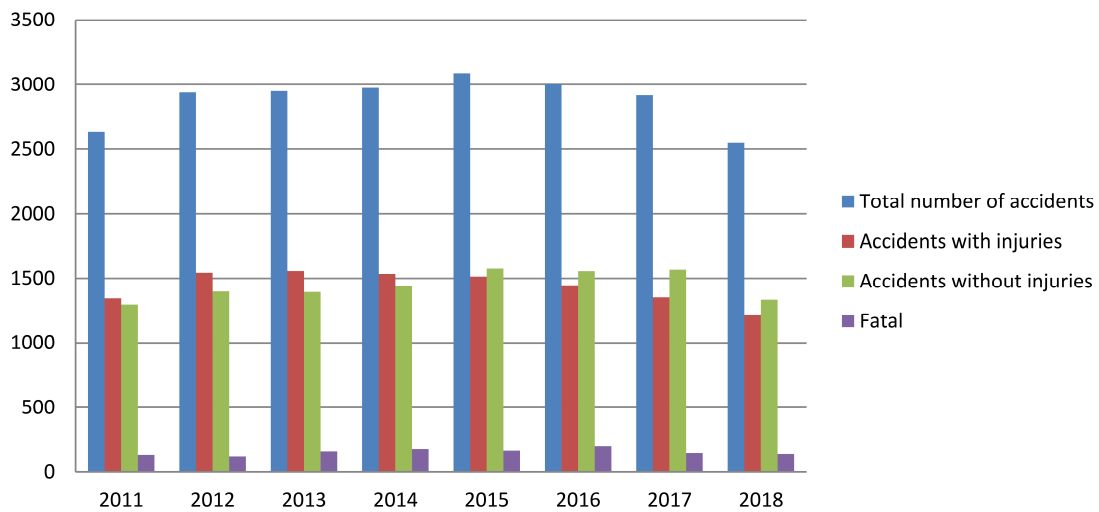
Comparing Gulf countries (GCC) to Western countries, GCC has a high rate of roads accidents and fatality. The United Arab Emirates (UAE) compared to other Gulf countries have the lowest rate of fatality accidents (Bener, Özkan, & Lajunen, 2008). The country reported more than 7.7 million speed violation and 525 fatalities during 2017 (Tanvir, Habib, & Walker, 2019).

Based on the Traffic Police Department of Dubai (TPD), the city has the highest rate of accidents with different types of injuries and fatality comparing with the rest of the Emirates. Figure 1.1 represented the number of accidents between 2014-2016 categorised by the mode of transports. Private cars registered the highest rate of accidents due to the high motorizing activity in the city. The Roads and Transport Authority (RTA) reported that the city registers about 1.7 million vehicles annually.

Moreover, the government noticed the high rate of accidents and implemented new policies and strategies to reduce the rate of fatality in every 10000 population to be zero in 2020. In terms of offences, the government tight the fines system and road safety regulations such as speed limit, errors, and violations (Akmal Abdelfatah, Mohamed Saif Al-Zaffin, & Waleed Hijazi, 2015).



**Figure 1.1** Total numbers of accidents with and without injuries (Dubai pulse, n.d.)



**Figure 1.2** Accidents with and without injuries years 2011-2018 (Dubai pulse, n.d.)

## 1.2 Problem Statement

Dubai is a city with high motorizing activity with an average of 540 vehicles for every 1000 residents, with around an 8.2% annual increasing percentage (Abouelhamd, 2020). The city has one of the most diverse population worldwide, this variety creates an extravagant cultural society which influenced by the different cultural background of immigrants from different countries (Tanvir et al., 2019). More than 4 million cars are daily available on the city roads during peak hours. Hence, the city welcoming around 45000 vehicles every morning from other cities (Abouelhamd, 2020). This traffic rush increases the accidents rate to be the highest among the other Emirates.

Besides, previous studies proved that almost 90% of the accidents could be attributed to drivers' behaviour characteristics ( Bener & Crundall, 2005), Driving style can measure the violation and errors of drivers on the road, and the road traffic affected by road culture, drivers behaviour and road safety policies (Abouelhamd, 2020). The scholars also found that 80% of the accidents in Dubai reflected the dangerous driving behaviour in the city. Abdelfatah et al.(2015) reported that driving behaviour is the main cause of accidents in Dubai, the researchers found that the most common type of accidents in the city from 2003 to 2012 was (hitting a stationary object and hitting a moving object) which represented 80% of the total number of accidents and reflect the bad drivers' behaviour. Moreover, RTA considered reckless driving is the most important reasons which lead to accidents with 35% of the total number of road accidents followed by speedy driving as a second reason. However, the traffic police report for 2018 stated the main reasons for accidents which are ( driving under alcohol with 23%, sudden turn 22%, not keeping safe distance 19%, and pedestrian 10%).

John & Shaiba (2019) stated that the majority of accidents in Dubai due to drivers not leaving a safe distance between vehicles and most of the accidents are happening during peak hours, late at night, and caused by drunk drivers.



Furthermore, The Traffic Police Department reported that more than 70% of accidents caused by foreign drivers from different nationalities, and estimated the number of violations per month to more than 1700.

On the other hand, RTA license issuance system allows the residents to convert their home country licenses to Dubai license after having theory and road assessment. While getting a new local license for residents takes about six months of a training program with three phases of theory and practical training inside the driving schools and on roads.

Therefore, this research study the influence of different cultural background as one of the factors that affected the driving behaviour and evaluate the impact of foreigners driving behaviour on road traffic.

### **1.3 Research Gap**

According to the literature review, previous studies have focused on factors such as socio-economic (Chen, Lu, & Zhang, 2017), lifestyle, and attitude effect on driving behaviour. The majority of these studies which conducted in the GCC countries including UAE have examined the driving behaviours for local citizens in term of over speed, violations, and errors which increase the rate of accidents and traffic congestion ( Abdelfatah et al., 2015).

Some studies have explored the effect of the different cultures in driving behaviour for professional drivers in Dubai(Tanvir et al., 2019) or even GCC countries as general (Timmermans et al., 2019), but as mentioned in the literature review that taxi and public transport drivers represent only 19% of all transportation modes.

A study conducted in Japan explained the driving behaviour of the tourists and foreign residents in terms of their willingness to stick with rules and the probability to cause any accidents (Yoh et al., 2017). But comparing Japan with Dubai as a tourism destination, this study couldn't reflect the situation in Dubai because of the various aspects for Dubai residents, road culture, and lifestyle. Therefore, this study is significant to evaluate the influence of multicultural driving background for drivers from various countries to provide and suggest any training program to be added to the license issuance system or improve any evaluation program to monitor the drivers' behaviour.

#### **1.4 Research Aim & Objectives**

This study aims to investigate the impact of the different culture (origin countries) on the non-national drivers' behaviour as the majority of Dubai residents and the impact of their driving behaviour on the roads traffic. Then suggest any extra training before issue/renew their licenses to motivate the foreign drivers to drive safely and stick to the traffic rules. The aim of the study would be achieved by the following objectives:

- a) Evaluate the influence of origin country road culture and driving experience on Dubai foreign drivers' behaviour. **(RO1)**
- b) Investigate the impact of foreign drivers' behaviour on road traffic in terms of accidents rate and traffic violations. **(RO2)**
- c) Propose a plan to improve road safety by monitoring and enhancing the drivers' behaviour. **(RO3)**

## 1.5 Research Questions

This research attempts to answer the following questions:

- a) What is the influence of the origin of country road culture on foreign drivers behaviour? **(RQ1)**
- b) How could the driving experience in the origin country and Dubai city affect the foreign drivers' behaviour? **(RQ2)**
- c) What is the impact of foreign drivers behaviour on road traffic? **(RQ3)**
- d) How can the authorities improve road safety or license issuance system based on the variety of drivers' behaviour? **(RQ4)**

## 1.6 Scope of the Study

The research covers the residents from various countries who drive on Dubai roads and have driving experience from their home country. From this study, local authorities could know the influence of home-country driving experience on drivers' behaviour and therefore the impact on road traffic. moreover, Decision-makers can decide whether foreigners need more training besides the license exam to ensure that their behaviour will be changed or therefore, have full knowledge about the culture of the roads.

The respondents from the drivers are selected randomly by distributing a questionnaire while data from authorities will be requested to analyse the information related to accidents and violation rate.

## **1.7 Research Assumptions**

In this study, the researcher tries to evaluate how far the different culture could affect the drivers' behaviour despite the tight traffic regulations and fines system. Also, approves that the driving behaviour must be monitored with new concepts or technologies to avoid horrible accidents or traffic violations and errors which can lead to accidents or increase congestion.

## **1.8 Limitations of Research**

Hence, the research will focus on the foreign drivers with local or converted license, it will not include the local drivers with Dubai driving license from origin citizens, non-national and the tourists who choose to rent cars during their visit, because based on a previous study which evaluated the perception of tourists on the sustainability of transports, the study found that most of the tourists prefer the public transport, two wheels transports and taxi more than private cars (Hosani & Salam, 2018). Therefore, this study will exclude local drivers and tourist from respondents.

## **1.9 Expected Contributions**

The success of this research is expected to contribute to the following:

- a) Foreign drivers
- b) Explore the rate of accidents which depended on drivers behaviour

Show the monthly rate of drivers violations

## 1.10 Thesis Outlines

The research is structured in a way to reach the objectives and answering the research questions. Therefore, the thesis chapter's outlines will describe the following information:

**Chapter 1** This chapter introduces the research study by identifying existing fact about the city and population, the problem background which explain the traffic culture in the city. Then state the problem, research questions, objectives and study scope and assumptions.

**Chapter 2** The literature review chapter represents the previous studies in driving behaviour which explain the influence of culture and other factors in driving in different countries and give examples for behaviour for different aspects within one country and from different countries.

**Chapter 3** illustrates the study methodology, Data Collection details, sampling data and analytical technique.

**Chapter 4** The chapter is about research findings, presenting the surveyed respondents information, their statistic descriptive with Comprehensive discussion based on Analysis through the selected evaluation variables had shown.

**Chapter 5** This chapter summarizing the information in the previous chapters, providing a full image of results. Also, it provides recommendation based on the findings to decision-makers for a suitable proposal to improve traffic safety.

## **1.11 Chapter Summary**

The chapter introduces the study by providing information about the city, population and traffic system. It explains the reason why this study focuses on foreign drivers behaviour as a majority of the city residents. Moreover, it implemented the concept of how to evaluate the impact of drivers behaviour on road traffic by analysing the accident and violation rates recorded by the traffic police department. The next chapter will attempt to structure the literature that is related to driving behaviour.

## References

- Abouelhamd, I. (2020). *Conceptual Development Solutions for Traffic Jams & Accidents in Dubai City By : Technical University of Berlin Campus El Gouna*. (February), 1–21.
- Akmal Abdelfatah, Mohamed Saif Al-Zaffin, & Waleed Hijazi. (2015). Trends and Causes of Traffic Accidents in Dubai. *Journal of Civil Engineering and Architecture*, 9(2), 225–231. <https://doi.org/10.17265/1934-7359/2015.02.011>
- Al Marzooqi, A. H., Badi, M., & El Jack, A. (2010). Road traffic accidents in Dubai, 2002-2008. *Asia-Pacific Journal of Public Health*, 22(SUPPL. 3), 2002–2008. <https://doi.org/10.1177/1010539510372834>
- Bener, A., & Crundall, D. (2005). Road traffic accidents in the United Arab Emirates compared to Western countries. *Advances in Transportation Studies*, (6), 5–12.
- Bener, Abdulbari, Özkan, T., & Lajunen, T. (2008). The Driver Behaviour Questionnaire in Arab Gulf countries: Qatar and United Arab Emirates. *Accident Analysis and Prevention*, 40(4), 1411–1417. <https://doi.org/10.1016/j.aap.2008.03.003>
- Blockey, P., & Hartley, L. R. (1995). Aberrant driving behaviour: Errors and violations. *Ergonomics*, 38(9), 1759–1771. <https://doi.org/10.1080/00140139508925225>
- Chen, Y., Lu, F., & Zhang, J. (2017). Social comparisons, status and driving behavior. *Journal of Public Economics*, 155, 11–20. <https://doi.org/10.1016/j.jpubeco.2017.08.005>
- Dubai pulse. (n.d.). No Title. Retrieved December 1, 2020, from <https://www.dubaipulse.gov.ae/dashboards/category>
- Elessawy, F. M. (2017). The Boom: Population and Urban Growth of Dubai City. *Academia.Edu*, 6(1), 51–66. Retrieved from <http://repositorio.unan.edu.ni/2986/1/5624.pdf>  
<http://fiskal.kemenkeu.go.id/ej>

ournal%0Ahttp://dx.doi.org/10.1016/j.cirp.2016.06.001%0Ahttp://dx.doi.org/10.1016/j.powtec.2016.12.055%0Ahttps://doi.org/10.1016/j.ijfatigue.2019.02.006%0Ahttps://doi.org/10.1

Harrison, W. (2009). Reliability of the Driver Behaviour Questionnaire in a sample of novice drivers. *Reliability of the Driver Behaviour Questionnaire in a Sample of Novice Drivers*, (November), 661–675. Retrieved from <http://casr.adelaide.edu.au/rsr/RSR2009/RS094080.pdf>

Hosani, N. Al, & Salam, A. (2018). Sustainable City Transport Strategies: Tourist Perspectives on Dubai. *Journal of Tourism Research & Hospitality*, 07(02). <https://doi.org/10.4172/2324-8807.1000184>

<https://www.dsc.gov.ae/en-us/Pages/default.aspx>. (n.d.). No Title. Retrieved December 1, 2020, from <https://www.dsc.gov.ae/en-us/Pages/default.aspx>

John, M., & Shaiba, H. (2019). Apriori-Based Algorithm for Dubai Road Accident Analysis. *Procedia Computer Science*, 163, 218–227. <https://doi.org/10.1016/j.procs.2019.12.103>

Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology*, 7(4), 396–403. <https://doi.org/10.9734/bjast/2015/14975>

Kilic, S. (2013). Linear regression analysis. *Journal of Mood Disorders*, 3(2), 90. <https://doi.org/10.5455/jmood.20130624120840>

Lajunen, T., Parker, D., & Summala, H. (2004). The Manchester Driver Behaviour Questionnaire: A cross-cultural study. *Accident Analysis and Prevention*, 36(2), 231–238. [https://doi.org/10.1016/S0001-4575\(02\)00152-5](https://doi.org/10.1016/S0001-4575(02)00152-5)

Lin, N., Zong, C., Tomizuka, M., Song, P., Zhang, Z., & Li, G. (2014). An overview on study of identification of driver behavior characteristics for automotive control. *Mathematical Problems in Engineering*, 2014(2). <https://doi.org/10.1155/2014/569109>

Maxwell, J. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review*, 62(3), 279–301. <https://doi.org/10.17763/haer.62.3.8323320856251826>



- Özkan, T., Lajunen, T., Chliaoutakis, J. El, Parker, D., & Summala, H. (2006). Cross-cultural differences in driving behaviours: A comparison of six countries. *Transportation Research Part F: Traffic Psychology and Behaviour*, 9(3), 227–242. <https://doi.org/10.1016/j.trf.2006.01.002>
- Shen, B., Ge, Y., Qu, W., Sun, X., & Zhang, K. (2018). The different effects of personality on prosocial and aggressive driving behaviour in a Chinese sample. *Transportation Research Part F: Traffic Psychology and Behaviour*, 56, 268–279. <https://doi.org/10.1016/j.trf.2018.04.019>
- Şimşekoğlu, Ö., Nordfjærn, T., Zavareh, M. F., Hezaveh, A. M., Mamdoohi, A. R., & Rundmo, T. (2013). Risk perceptions, fatalism and driver behaviors in Turkey and Iran. *Safety Science*, 59, 187–192. <https://doi.org/10.1016/j.ssci.2013.05.014>
- Tanvir, S., Habib, N. Z., & Walker, G. H. (2019). A Qualitative Investigation of Professional Driver Behavior Due to Socio-Economic, Cultural, Religious Factors and Its Impact on Dubai Road Safety. *Advances in Intelligent Systems and Computing*, 786, 764–775. [https://doi.org/10.1007/978-3-319-93885-1\\_70](https://doi.org/10.1007/978-3-319-93885-1_70)
- Timmermans, C., Alhajyaseen, W., Reinolsmann, N., Nakamura, H., & Suzuki, K. (2019). Traffic safety culture of professional drivers in the State of Qatar. *IATSS Research*, 43(4), 286–296. <https://doi.org/10.1016/j.iatssr.2019.03.004>
- Yoh, K., Okamoto, T., Inoi, H., & Doi, K. (2017). Comparative study on foreign drivers' characteristics using traffic violation and accident statistics in Japan. *IATSS Research*, 41(2), 94–105. <https://doi.org/10.1016/j.iatssr.2017.06.004>
- Johna, Maya and Shaiba, Hadil . (2019) “Apriori-Based Algorithm for Dubai Road Accident Analysis” *Journal of Procedia Computer Science* , Volume 163 , 2019, Pages 218-227. <https://doi.org/10.1016/j.procs.2019.12.103>