

The Relationship Between Driver Behaviour Towards Speeding in Muar

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DOI: <https://doi.org/10.30880/mari.2022.03.02.032>

Received 31 March 2022; Accepted 31 May 2022; Available online 28 July 2022

Abstract: Driver behaviour is often related to vehicle speed which can result in road accidents in Muar. Vehicle speed may vary in time depending on the external or internal factors which might affecting the driver. Several external and internal factors of the driver such as driving experience, emotional factors and the driver's knowledge of the speed limit need to be examined in order to have the connection between the driver's attitude and speed. This is because, driving speed is an important component in driving behaviour on the road and has an influence in the frequency and severity of accidents. The main objective of this study is to evaluate the drivers' behaviour and it should be understood to identify the cause of a road accident. Site observations and questionnaires survey methods were conducted to gather all the information required for this study. Site observations conducted around Muar are to see for themselves the attitude of drivers towards their speed when driving in the Muar area. In addition, questionnaires were distributed to residents around Muar to assess their attitude and driving. The results of the study have successfully proved the objective to assess the relationship between driver behaviour on speed in Muar. It can be concluded that this study has achieved its objective to identify the attitudes of driver in order to reduce the number of accidents in Muar. However, there are still some improvements and enhancements that need to be considered in terms of questionnaires such as the question of the involvement of respondents to accidents in Muar.

Keywords: Drivers' behaviour, Speed, Accidents, Muar

1. Introduction

The speed of driving is an important component of driving behaviour on the road and has influence in the frequency and severity of accidents. According to the World report on traffic injury prevention done by World Health Organization's (W.H.O) [1], speed has been highlighted as one of the primary reasons for injuries caused on the road and is a crucial element in the likelihood of road crashes and injuries as a result of the accident. W.H.O further indicates excess speed not suited for driving due respect to the road and traffic conditions that has causes injuries and deaths resulting from road crashes by exceeding the posted speed limit.

The main objective of this research is to investigate factors that influence driver exceeding the speed limit. In this research, there is three factors that need to be highlighted which are gender factor, driving

experiences factor and emotion factor. The scope of this study was conducted to evaluate the behaviour of the drivers and speed in Muar urban area. This study was intended to develop new information and find possible solutions to avoid over-speed conditions in Muar.

Table 1: Data released by the Royal Malaysia Police Muar showing the severity of accidents and the number of cases in Muar during January to June of 2021

Accident severity	Number of cases
Fatal accident	25
Serious accident	11
Mild accident	1
Damaged vehicles	1499

In the meantime, data related to accidents in the city of Muar during January to June of 2021 can be seen in **Table 1** to correlate between drivers' attitude, speed and accidents that have occurred. Furthermore, observations and questionnaires were conducted to obtain clearer data to strengthen this study.

1.1 Relationship between speed and accident

In terms of road safety, speed is an essential element. Speed influences the seriousness of an accident and the probability of accident. Several researches demonstrated that a higher speed will enhance the severity of collision and risk of crash [2]. Since car technology advances, vehicles become faster and drivers prefer to drive faster. Moreover, speeding increases the probability of a driver losing control of the vehicle, as there is less time to foresee risks. Besides, the probability for an accident to occur is at a higher speed. Drivers who drive faster on average than other drivers have a greater risk of accidents. There is no record showing that this condition occurs to drivers who drive more safely and slowly.

1.2 Speed limit and enforcement in Muar

Speed limit can be defined as the desires of road users include elements such as speed, comfort, convenience, economy and environmental compatibility [3]. The design speed is one of the factors to consider when planning a road. The design speed governs the road alignment, sight distance, spacing of intersections and a few other aspects which have direct effect on a driver's ability to safely handle his vehicle. Speed limits on different roads and design feature necessary to inform road users of the maximum and minimum speed on that road.

1.3 Drivers' behaviour towards speed limit

In a transportation system, the driver, the vehicle and the road are three major components which the driver is the most flexible and unstable component [4]. The behaviour of drivers is related directly to their speed and safety of cars. Speeding has been an important and very complicated safety problem for this many decades. A study by the Federal Highway Administration (FHWA) shows that seven of ten drivers are guilty of speed in urban areas, especially with low-speed limits of compliance with the stated speed limits [5].

The driver's decision to exceed the speed limit may be predicted with acceptable reason from the observations simply by taking the driver's behaviour and attitude. Driver's awareness of speed limit is directly linked to the driver's attitude issue from the design of the road to the design concept, which may be changed by using various variables, such view, stopping distance and other counter measures [6].

2. Methodology

For this study, two methods were used to obtain data to collect information related to the attitude of drivers around Muar, namely site observation and questionnaires.

2.1 Site observation

Muar District is located in the north-west Johor state, Malaysia. The district constitutes Muar City and also Tangkak's small district. Muar district is about 2346.12 square kilometers with a population of 328,695 people [7]. Considering the target population of Muar city, the survey is designed for road users from Muar City. The major justification for choosing this site was the convenience and time limits of obtaining the needed sample unit. The majority of road users in Muar were intend to use their vehicle for work. The sufficient and representative samples could be collected for this analysis. In this study, the sample size was determined on the basis of convenience, sample size, and needs of sample size for statistical analysis in previous comparable investigations. For this study, a sample size of 100 was selected to consider the requirements for sample size of previous studies. For the selection of responders, a random sampling was applied. The traffic condition in Muar city as shown in **Figure 1**.



Figure 1: (a) Traffic conditions in front of the Wetex shopping building in Muar (b) The situation of vehicles in the area that is often busy around Muar, namely in Bulatan Sulaiman

2.2 Questionnaire

The questionnaire was developed to provide information on several elements, which were considered likely to impact both the speed and accidents. The questionnaire was structured into three parts. The first part asked about demographic background which were relevant to the particular journey being made when the driver's speed was measured. The respondents need to disclose their background in term of age, gender, driving experience and their driving purpose. The second part asked respondents for their views about the behaviour of other drivers, the seriousness of specific speeding offences and their opinions on law enforcement. Part three of the questionnaire asked drivers to assess their own driving. In particular, respondents were asked to rate themselves as faster or slower than other drivers, about the frequency with which they were prepared to exceed the speed limit, and about the reasons for infringing the limit. A question intended to elicit their views about what kinds of measures might cause drivers to drive more slowly was also included. The questionnaire using the 'Google Form' platform was distributed to a total of 103 respondents consisting of various ages around the city of Muar.

3. Results and discussion

A study on the relationship between driver behaviour on speed in Muar has been conducted to prove its objective. To obtain the results of the analysis, two methods were performed. The first method is observation in the area that has been selected in the city of Muar. The observation was done to see for themselves the actual attitude of the drivers and the speed of their vehicles when driving around Muar. The second method is a questionnaire. Questionnaires in the form of 'Google Form' which has several sections of questions are distributed to residents around Muar.

3.1 Demographic Background

Table 2: Demographic characteristics of the respondents

Variables	Frequency	(N = 103) Percentage (%)
Age		
18-24 years old	64	62.1
25-31 years old	24	23.3
32-38 years old	6	5.8
39-45 years old	4	3.9
46-52 years old	4	3.9
53-59 years old	1	1.0
60 years and above	0	0
Gender		
Male	52	50.5
Female	51	49.5
Driving experience		
1 to 5 years	65	63.1
6 to 10 years	16	15.5
11 to 15 years	12	11.7
16 to 20 years	10	9.7
Driving purpose		
Working	58	56.3
Study	37	35.9
Shopping	60	58.3

The demographic background for respondents is reported in Table 2. As depicted in **Table 2**, 62.1% of respondents are from young driver's age of 18 to 24 years old, 23.3% and 5.8% are categorized respectively under age group of 25 to 31 years old and 32 to 38 years old. Meanwhile, equal proportion of 3.9% from two age groups can be seen among respondents under age group of 39 to 45 years old and 46-52 years old. The percentages for older drivers, represent the age of 53 to 59 years old on the road among the respondents are 1.0%. Referring to the percentage, this can be translated that high -speed cases involve more young and middle -aged drivers than older drivers. In terms of driving experience, the majority of respondents have little driving experience with a percentage rate of 78.6% having less than 10 years' experience while there are only 21.4% of drivers with more than 10 years' experience. This is because most of the respondents are young drivers aged 18 to 24 years. In addition, the majority of respondents drive for the purpose of going shopping with a percentage of 58.3% while as many as 56.3% go out driving for work purposes.

3.2 Drivers' behaviour and road safety in Muar.

Table 3: Driver behaviour in the Muar city area

Variables	Frequency	(N = 103) Percentage (%)
Drive slowly	24	23.3
Drive fast	53	51.5
Driving in dangerous conditions	42	40.8
Driving over the speed limit	37	35.9

According to **Table 3** related to the driving of some drivers in Muar, the average said most of them drive at high speeds and in dangerous conditions. A total of 35.9% of respondents said that some drivers exceeded the speed limit set in urban areas of 60 km/h while only 23.3% of respondents stated that drivers in the Muar area drive slowly. It can be concluded that the driving of most drivers in the Muar city area is very worrying and should be taken seriously. This is because, the matter will have various adverse effects on road users around Muar.

Table 4: Assessment of the seriousness of the offense that occurs at each speed when exceeding the speed limit of 60km/h

Variables	(N = 103) Percentage (%)				
	Not serious (1)	Less serious (2)	Not too serious (3)	Serious (4)	Very serious (5)
70 km/h	7.8	17.5	43.7	22.3	8.7
80 km/h	1.9	6.8	34.0	37.9	19.4
90 km/h	2.9	1.9	19.4	24.3	51.5

In addition, an assessment of the respondents' knowledge of the speed limit set in the Muar area of 60 km/h was done as listed in **Table 4**. This assessment aims to see the extent of the respondents' knowledge of driver's offense when driving over the prescribed speed limit. There are 5 scales to assess faults when driving at speeds of 70 km/h, 80 km/h and 90 km/h. At the speed of 70 km/h, the average respondent stated that the offense was not so serious. While at the speed of 80 km/h, 37.9% of the respondents stated that the offense was serious and 19.4% stated that it was very serious, so half of the respondents are aware that the offense of driving at a speed of 80 km/h in urban areas is serious because it can bring the risk of accidents. Lastly, the majority of respondents stated that the offense of driving at a speed of 90 km/h in the Muar city area is very serious. Therefore, it can be concluded that the respondents have high level of knowledge and awareness of offenses exceeding the speed limit. The level of seriousness for this section depends on how serious the offense exceeding the speed limit can lead to an accident. This is necessary because it can increase awareness among road users on the importance of complying with the speed limit that has been set.

Table 5: Situations when drivers exceed the set speed limit

Variables	Frequency	(N = 103)
		Percentage (%)
Driver not aware of the speed of the vehicle.	60	58.3
Driver in a hurry and deliberately drive over the speed limit.	38	36.9
Driver feel pressured by other drivers and deliberately drive over the limit.	7	6.8
Driver don't know the speed limit in that area.	38	36.9

Next, a study was made on the respondents about the situation when they drive above the prescribed speed limit. The majority of the respondents were not aware of the speed of their vehicle when driving. In addition, they also intentionally drive over the speed limit because they are in a hurry. Very few drives over the speed limit because they feel pressured by other drivers. However, there are also a few respondents who do not know the speed limit that has been set in the area. **Table 5** shows the percentage of situations selected by respondents when their driving exceeds the set speed limit.

Table 6: Respondents' opinions on speed limits and law enforcement

Variables	(N = 103)	
	Percentage (%)	
	Agree	Disagree
It is important to keep driving within the set speed limit.	96.1	3.9
Drivers who are negligent in causing an accident must have their driving license suspended.	93.2	6.8
Drive slower than the speed limit set when it rains.	79.6	20.4
Fines imposed for offenses exceeding the speed limit should be higher.	94.2	5.8

According to **Table 6** related to respondents' opinions on speed limits and law enforcement, the majority of respondents agreed on the importance of continuing to drive within the prescribed speed limits. In addition, the respondents also agreed that drivers who are negligent in causing an accident must have their driving licenses suspended and fines imposed for speeding offenses should be higher. Lastly, respondents also agreed that driving slower than the speed limit set when it was raining was practiced.

Table 7: Conditions that cause drivers to drive slowly

Variables	Frequency	(N = 103) Percentage (%)
There are many road bumps in the area.	78	75.7
There are many vehicles in the area.	60	58.3
Prudent driving campaign.	21	20.4
Increasing the number of AES (Automated Enforcement System) cameras.	51	49.5
Speed limit enforcement using speed traps.	52	50.5

Based on **Table 7**, there are several conditions that induce respondents to drive slowly. Among them is that 75.7% of respondents choose to drive slowly because there are many bumps in the area. This shows the effectiveness of the existence of humps in some areas to prevent road users from driving at high speeds. In addition, 58.3% of respondents drove slowly because there were many vehicles passing by in the area. This states that they have a high awareness of safety while on the road and are responsible road users. In fact, the prudent driving campaign conducted by the authorities also had an impact on the respondents to drive slowly and safely. Finally, the increase in the number of AES (Automatic Enforcement System) cameras as well as the enforcement of speed limits using speed traps is also one of the reasons for respondents to drive slower and not exceed the set speed limit. In conclusion, all the efforts made by the authorities to curb the problem of driving in excess of the speed limit clearly have an impact on road users to comply with the speed limit set.

3.3 The relationship between respondents' driving and behaviour.

Based on **Table 8**, several questions were posed to the respondents regarding their driving. A large number of respondents stated that their driving speed was more or less the same as the speed of other drivers. 37.9% rated their driving as slower while 20.4% stated their driving was faster than other drivers. Meanwhile, the same percentage of 2.9% stated that their driving was much slower and much faster than other drivers. This shows that the respondents are very sensitive to their driving.

In addition, there were 13.6% and 16.5% of the respondents stated that they never and rarely drove above the prescribed speed limit. 46.6% stated that they sometimes drive over the speed limit while 18.4% stated that they always drive over the speed limit. However, only 4.9% drove too often above the speed limit. However, this matter should also be taken seriously even though the percentage of respondents who frequently drive over the speed limit is low.

Besides, there were 9.7% and 20.4% of respondents stating that they never and rarely overtake other vehicles when driving. 39.8% stated that they only occasionally overtook other vehicles while 22.3% stated that they frequently did such things. Yet, only 7.8% overtook other vehicles too often when driving. This is not a serious problem because maybe they have emergencies or they overtake on permissible circumstances.

Lastly, it can be concluded that the average attitude of the respondents is cautious while driving. They are also patient, tolerant and drive safely. This can be evidenced by the percentage results of several previous questions related to their driving. Only a few of respondents had irritability and carelessness while driving. This can be seen from the low percentage of related problems when driving such as driving over the speed limit.

Table 8: General questions regarding respondents' driving

Variables	Frequency	(N = 103) Percentage (%)
Rate the speed of your vehicle with the speed of other drivers' vehicles.		
Much slower	3	2.9
A little slow	39	37.9
More or less the same	52	50.5
A little speed	21	20.4
Much faster	3	2.9
How often do you drive over the speed limit?		
Never	14	13.6
Rare	17	16.5
Sometimes	48	46.6
Frequent	19	18.4
Very Frequent	5	4.9
Do you often overtake other vehicles?		
Never	10	9.7
Rare	21	20.4
Sometimes	41	39.8
Frequent	23	22.3
Very Frequent	8	7.8
Kind of attitude when you drive.		
Irritable	17	16.5
Negligent	11	10.7
Be careful	80	77.7
Tolerate	60	58.3
Be patient	62	60.2
Drive safely	70	68.0

4. Conclusion and recommendation

In conclusion, there are some common threads among the respondents when it comes to the primary factors that influence drivers' behavior towards speeding such as time constraints. Several countermeasures addressing external and internal factors have been proposed to improve driver speed behaviour. The noise generated by vehicle tyres passing over the rumble strip provides an audible warning to drivers. A side from that, public awareness and enforcement are two additional proposed countermeasures for speeding behaviour. Public education campaigns designed to target male and young drivers since these groups have a higher tendency to speed in normal conditions. To summarise, the responses provided by the drivers were limited to their revealed preferences, which sometimes translated to the actual behaviour and sometimes did not. Future research, for example, is required to conduct a more in-depth investigation using empirical equipment and interviewing apprehended drivers to better understand the issue of speeding behaviour in Malaysia.

Acknowledgement

This research was supported by Ministry of Higher Education (MOHE) through Fundamental Research Grant Scheme (FRGS/1/2020/TK0/UTHM/02/22) or Vot No. K315. The authors would also like to thanks the Spatial Technology For Civil Engineering (STFORCE), Centre for Diploma Studies (CeDS), Research Management Centre, Universiti Tun Hussein Onn Malaysia for its support.

References

- [1] World Health Organization. Road safety -speed, 2004. https://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/speed_en.pdf
- [2] MIROS. "A Review of the Effects of Changing Speed Limits on Roads in Malaysia," 2020. <https://www.miros.gov.my/>
- [3] Araham Teknik, "A Guide on Geometric Design of Roads", 2000
- [4] Y. R. Rohaizan, "Effect of posted speed limit on drivers speed choice during off peak periods," 2016. <https://engineering.utm.my/civil/wp-content/uploads/sites/29/2016/12/Effect-of-Posted-Speed-Limit-On-Drivers-Speed-Choice-During-Off-Peak-Period.pdf>
- [5] S. Graham, "Will Higher Speed Limits Kill?", Traffic Safety, vol. 96, no. 3, 1996.
- [6] Letirand and Dolhomme, "Speed Bahaviour as A Choice Between Observing and Exceeding the Speed Limit", 2005. <https://sci-hub.se/10.1016/j.trf.2005.06.002>
- [7] Muar Municipal Council, "Muar Background", 2016. <https://www.mpmuar.gov.my/en/visitors/muar-background/page/0/1>