THE RELATIONSHIP BETWEEN DRIVER'S BACKGROUND AND DRIVER'S SPEED PREFERENCES

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Thesis submitted in fulfilment of the requirements
for the award of the degree
of Bachelor Civil Engineering

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JANUARY 2016

ABSTRACT

Nowadays, road accidents are common issues in the newspapers every day. The number of road accident cases increases year by year in Malaysia. According to statistics by Malaysian Institute of Road Safety Research, speeding is the second highest (21%) factors that contribute to crash. The aim of the study are to determine the speed preferences of the road users based on the environments of the road, to investigate the relationship between driver's background and driver's speed preferences, and to determine the difference between speed preferred by road users and the actual speed they used. A set of questionnaire was distributed to 90 respondents in University of Malaysia Pahang which consist of a variety of questions on gender, age, driving experience, classes of driving license, daily transportation, occupation, distance of residence to workplace and estimated driving hour for a day to get the driver's speed preferences. A radar gun was used to obtain the actual speed that road users used. The study areas are located at Federal Road 2 from KM3 until KM27. The result of this study showed that male drivers prefer to use higher speed compare to female drivers, the drivers aged below 50 years old prefer to use higher speed than drivers aged above 50 years old, the drivers who have driving license less than 5 years prefer to use slower speed, licensee for both classes B2 and D prefer to use higher speed compare to single license holder which is license B2 or D, car drivers prefer to use higher speed than motorcycle rider, the drivers with longer distance to workplace prefer to use higher speed and drivers with longer estimated driving hour will choose the higher speed. Other than that, the driver's speed preferences at each point have been identified where at point 1 is 80-90 km/hr, point 2 is 60-70 km/hr, and point 3 is 50-60 km/hr and lastly at point 4 is 80-90 km/hr. The result from cumulative frequency based on speed at 85^{th} percentiles, point 1 is 55 km/hr, point 2 is 90 km/hr, point 3 is 60 km/hr, and point 4 is 85 km/hr. In conclusion, this finding shows that driver's background imposed serious effects towards driver's speed preferences. Further research focusing on driver's background could be proposed in order to minimise contributing of speed as crash factors.

ABSTRAK

Pada masa kini, kemalangan jalan raya adalah isu yang kerap terpapar di akhbar setiap hari. Jumlah kes kemalangan jalan raya di Malaysia meningkat dari tahun ke tahun. Mengikut statistik oleh Institut Penyelidikan Keselamatan Jalan Raya, memandu laju adalah faktor kedua tertinggi (21%) yang menyumbang kepada kemalangan. Tujuan kajian ini adalah untuk menentukan had laju pilihan pengguna jalan raya berdasarkan persekitaran jalan, untuk mengkaji hubungan antara latar belakang pemandu dan had laju pilihan pemandu, dan untuk menentukan perbezaan antara had laju pilihan pengguna jalan raya dan kelajuan sebenar yang mereka gunakan. Satu set borang soal selidik telah diedarkan kepada 90 responden di Universiti Malaysia Pahang yang terdiri daripada pelbagai latar belakang pemandu. Senapang radar digunakan untuk memperoleh kelajuan sebenar yang digunakan oleh pengguna jalan raya. Kawasan kajian terletak di Jalan Persekutuan 2 dari KM3 hingga KM27. Hasil kajian ini menunjukkan bahawa pemandu lelaki lebih gemar menggunakan kelajuan yang lebih tinggi berbanding dengan pemandu wanita, pemandu yang berumur di bawah 50 tahun lebih gemar menggunakan kelajuan yang lebih tinggi daripada pemandu berusia 50 tahun ke atas, pemandu yang memiliki lesen memandu kurang daripada 5 tahun lebih gemar meggunakan kelajuan yang lebih perlahan, pemegang lessen bagi kedua-dua kelas (B2 & D) lebih gemar menggunakan kelajuan yang lebih tinggi berbanding dengan pemegang lessen tunggal dimana lessen B2 atau D, pemandu kereta memilih untuk menggunakan kelajuan yang lebih tinggi berbanding penunggang motosikal, pemandu dengan jarak yang lebih jauh ke tempat kerja lebih suka menggunakan kelajuan yang lebih tinggi, dan pemandu yang memandu dengan lebih lama memilih kelajuan yang lebih tinggi. Selain itu, pilihan kelajuan pemandu pada setiap titik telah dikenal pasti di mana pada titik 1 adalah 80-90 km/jam, titik 2 adalah 60-70 km/jam, dan titik 3 adalah 50-60 km/jam dan akhir sekali pada titik 4 adalah 80-90 km/jam. Hasil dari kekerapan kumulatif berdasarkan kelajuan di persentil ke-85, titik 1 adalah 55 km/jam, titik 2 adalah 90 km/jam, titik 3 adalah 60 km/jam, dan titik 4 adalah 85 km/jam. Kesimpulannya, kajian ini menunjukkan bahawa latar belakang pemandu memberi kesan yang serius terhadap had laju pilihan. Kajian lanjutan yang tertumpu kepada latar belakang pemandu boleh dicadangkan untuk mengurangkan penglibatan had laju sebagai faktor kemalangan.

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CHAPTER 1

INTRODUCTION

1.1 INRODUCTION

In Malaysia, road is one of the important aspects in transportation sector. The field of transportation plays a significant role in coordinating all countries' development programme. In fact, the rise in human activities indirectly increases the demand for various types of vehicles. Simultaneously, the number of vehicles on the road is also increased and this can be seen from it's rapid growth every year.

Transportation is a necessity for human movement that needs to be owned and being the main basis in one's daily life. In this era, an increase in number of vehicles in Malaysia has directly led to various issues and problems regarding to traffic particularly in road crashes. Road crashes are one of the major problems of this country involving various socio-economic aspects. Loss of human life among road users is a big loss in earnings of human resources in addition to the damage and loss of property.

In Malaysia, speed limit is displayed at road shoulders. The speed limit is designed based on several factors and it is ranging from 10 km/hr to 110 km/hr. Based on the explanation by the Minister of Works, the determination of speed limit either on the road or highway is determined by several factors such as road engineering design, density of traffic flow and the level of risk of accident. Hence, there are absolutely certain locations where the speed limit has to be reduced as compared to the rate of the national speed limit, which is 110 km/hr on highways and 90 km/hr in Federal Road.

However, it is also expected that driver's preferences played an important role in determining speed limit. The driver's preferences on the road area will affect the chosen speed. For example, drivers are believed to use lower speed in the urban area compared to rural area. This is due to development and existence of buildings in the urban area. Thus, the driver has to control the movement in accordance with the rules of the road. Sometimes drivers preferred to speeding and it can contribute to crashes. According to statistics by Malaysian Institute of Road Safety Research, speeding is the second highest factor that contributes to car crashes.

Table 1.0: Crash contributor's factors

Main crash contributing factors out of the 439 cases	Number	%
Risky Driving	121	28
Speeding	93	21
Fatigue	70	16
Safety, Health and Environment	38	9
Road Defects	36	8
Driving Under the Influence	24	5
Brake Defects	20	5
Conspicuousness	18	4
Overloading	11	3
Type Defects	14	3

Source: MIROS

Table 1.10 show speeding is the second highest factor that contributes to car crashes with 21%.

1.2 PROBLEM STATEMENT

The main goal of driving is to reach to a destination. In the decision-making process to achieve this goal, driver's behaviour will play a significant role. These days, road accidents can be found as common issues in the newspapers and daily news

bulletin. The number of road accident cases increases year by year in Malaysia. According to statistics by Malaysian Institute of Road Safety Research, speeding is the second highest factor that contributes to car crashes with 21%.

Sometimes, drivers tend to give minor attention to speed limit signs and also drive exceeding the speed limit. Excessive limit is defined as exceeding the speed limit or over the speed limit. It means the drivers drive at inappropriate speed which is not suitable for prevailing road and traffic conditions. Other than that, some drivers tend to reduce speed when they are near to the enforcement area and for only a short period of time. Based on research Ryeng (2011), drivers will reduce their speed when the level of police enforcement increases. To overcome this problem the speed preferences of the road users based on environment of the road will be determined and the relationship between driver's background and driver's speed preferences will be investigated. The results of this study would benefit Polis Diraja Malaysia (PDRM) and Jabatan Pengangkutan Jalan (JPJ). They can use the information from this study to monitor drivers who are driving beyond the speed limit.

1.3 OBJECTIVES

The objectives of this study are:

1) To determine the speed preferences of the road users based on the environment of the road.
2) To investigate the relationship between drivers' background and driver's speed preferences.
3) To determine the difference between speed preferred by road users and the actual speed they used.

1.4 SCOPE OF STUDY

i) This study involves University Malaysia Pahang (UMP) community only.
ii) The speed limit data is collected within Gambang Town and Kuantan Town (Federal Road 2) from KM 3 until KM 27.

iii) The data were obtained during traffic flow in normal condition including peak hours and at day time.

iv) Weather factors are also considered in the study because the study will not be conducted during rainy day. It is because it will affect the way of driving.

1.5 SIGNIFICANCE OF STUDY

Since speeding is related with road crashes, the results from this research can be implemented as indicator for reducing number of road crashes and speeding cases in Malaysia by Polis Di Raja Malaysia (PDRM) and Jabatan Pengangkutan Jalan (JPJ). This study also determine the actual speed road users used that have higher risk for speeding cases based on the statistical analysis.

CHAPTER 2

LITERATURE REVIEW

2.1 ROAD TRAFFIC ACCIDENT WORLWIDE

Road traffic accident is a vehicles collision whether between vehicles, between vehicle and pedestrian, vehicle and animal, or a single vehicle by itself overturned on the road. Road crash can also be defined as an unplanned incident and the incident that cannot be controlled where the action and response to the object or human until cause injury (Heinrich et al., 1980). Nowadays, road traffic accident can be classified as among the leading causes of death. A study by World Health Organization (2004) stated that road crashes are the second leading cause of death globally. Other than that, approximately 1.24 million people died on the road in the world each year.

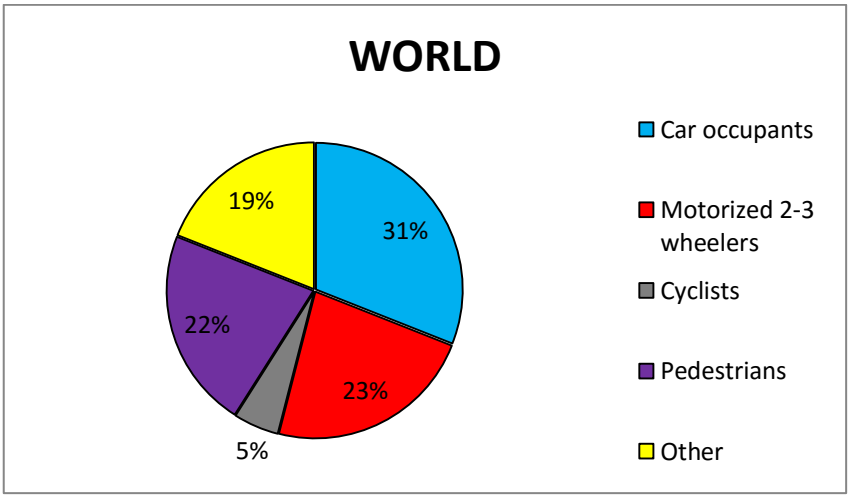

Figure 2.1: Road traffic death by type of road users

Source: WHO

2.2 ROAD ACCIDENT IN MALAYSIA

In Malaysia, road traffic accident has also becomes a severe problem. According to the statistic from Malaysian Institute of Road Safety Research (MIROS), the rate of road accidents occurred in year 2010 is 414,421 accidents. 2 years later in 2012, the rate of road accidents expanded to 462,423 accidents that increasing by 10.38% from the previous rate. Other than that, according to statistic of road traffic accident from World Health Ranking, Malaysia was ranked 20th in world with 34.5% of road traffic accident.

Table 2.1: General accident data in Malaysia (1995-2012)

Year	Population	Vehicle Registered	Vehicle Involved	Road Length	Road Accidents	Road Casualties	Road Deaths	Vehicles Ownership (Person per vehicle)
1995	20,096,700	6,802,375	275,430	62,221	162,491	52,152	5,712	3.0
1996	21,169,000	7,686,684	325,915	64,511	189,109	53,475	6,304	2.8
1997	21,665,600	8,550,469	373,526	66,108	215,632	56,574	6,302	2.5
1998	22,179,500	9,141,357	366,932	66,741	211,037	55,704	5,740	2.4
1999	22,711,900	9,929,951	390,674	67,069	223,166	52,937	5,794	2.3
2000	23,263,600	10,598,804	441,386	68,770	250,429	50,200	6,035	2.2
2001	23,795,300	11,302,545	483,351	74,217	265,175	50,473	5,849	2.1
2002	24,526,500	12,068,144	507,995	74,641	279,711	49,552	5,891	2.0
2003	25,048,300	12,819,248	555,634	79,667	298,653	52,741	6,286	2.0
2004	25,580,000	13,828,889	596,533	71,814	326,815	54,091	6,228	1.8
2005	26,130,000	15,026,660	581,136	71,814	328,264	47,012	6,200	1.7
2006	26,640,000	15,790,732	635,024	72,781	341,252	35,425	6,287	1.7
2007	27,170,000	16,813,943	668,173	73,032	363,319	33,999	6,282	1.6
2008	27,730,000	17,971,901	671,078	73,419	373,071	32,274	6,527	1.5
2009	28,310,000	19,016,782	705,623	100,002	397,330	31,417	6,745	1.5
2010	28,920,000	20,188,565	760,433	111,378	414,421	28,269	6,872	1.4
2011	29,000,000	21,401,269	817,151	127,517	449,040	25,570	6,877	1.4
2012	29,300,000	22,702,221	777,817	127,517	462,423	24,439	6,917	1.3

Source: MIROS

Based on a survey done by MUFORS (Malaysian Unite for Road Safety), 61.1% of respondents agreed that most of road crash takes place because of driver's attitude. Besides, based on the statistics by Polis Diraja Malaysia (PDRM), they found 85.7% of road crash happened because of human factor, 10.6% because of road condition and environmental while the other 3.7% comes from the vehicle itself.

Other than that, based on the research by Transport and Road Research Laboratory, TRRL (1991), the main factor that contributes to road crash is caused by human error with 94.75% while 28% of road crash caused by road environment and the other 8.5% of road crash caused by vehicle itself.

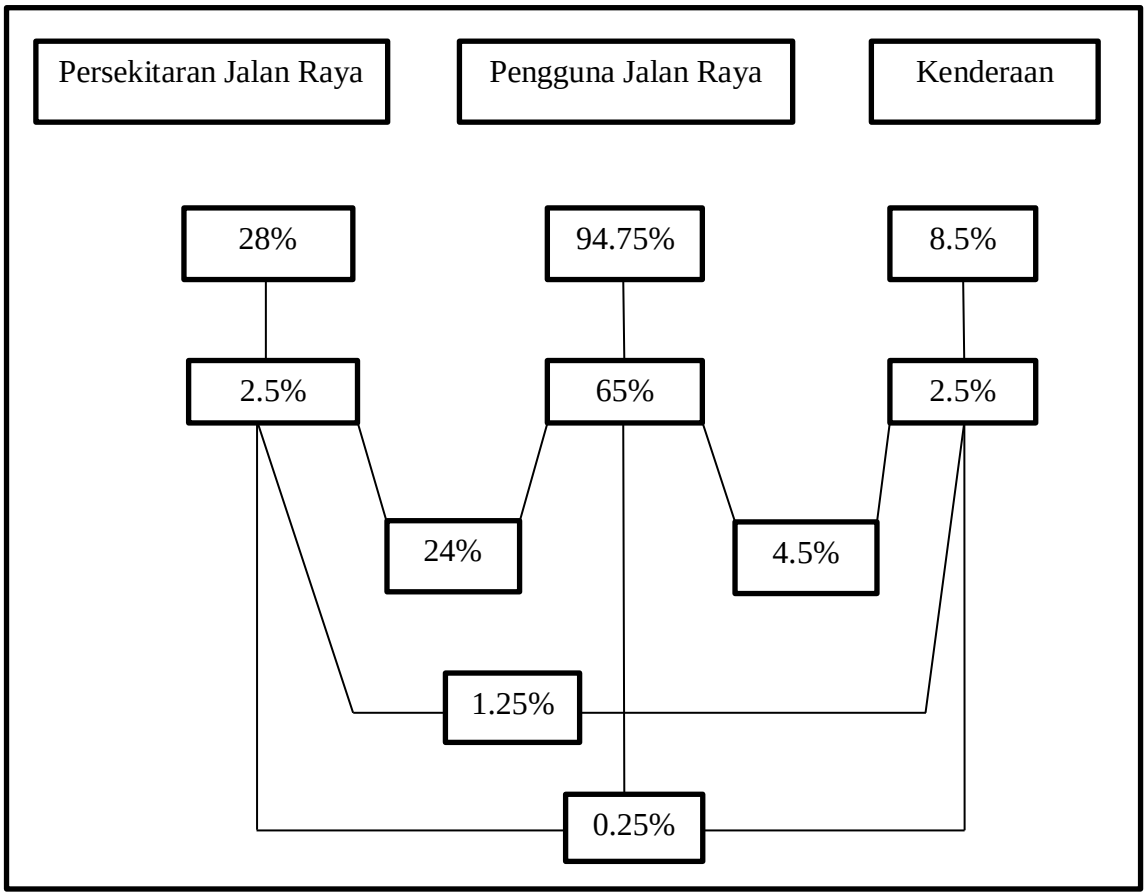

Figure 2.2: Factors that contribute to road accident

Source: TRRL (1991)

Speeding also is the leading killer. The vehicles involved in road crash are the vehicles driven with higher speed limit as compared to the other vehicles. The increasing in speed limit can give an effect to the crash that could cause injury (Brown & Cotton, 2003).

2.3 SPEED

Speed unit is defined as the rate of movement for vehicles in distance per unit time. Speed unit normally used as kilometres per hour. Based on research by Roshandeh et al. (2009) speed is an important consideration that is related to the transportation safety, time, comfort, convenience and economics.

2.3.1 Speed Limit

Speed limit is the maximum speed that is used on that particular road. Speed limit is the maximum speed that is permissible and legal where drivers drive along certain sections of road under the conditions of the road to have a good trip (WHO, 2008). Therefore, all the prescribed speed limit used by drivers on that particular road is based on the study and research done by highway and transport engineer towards that area.

In Malaysia, National Speed Limits (Had Laju Kebangsaan) is a set of speed limits applicable on Malaysian Expressway, federal roads, state roads and municipal roads. On 1 February 1989, the National Speed Limits was enforced by following National Speed Limit Orders, 1989 (Perintah Had Laju Kebangsaan, 1989). The drivers who drive exceeds the speed limit would be compounded up to RM300. As stated by National Speed Limits (starting from 1989), the speed limit for federal road is 90 km/hr, 60 km/hr for state road and 110 km/hr for highway. Moreover, the speed limit for heavy vehicles is 80-90 km/hr at highway while 70-80 km/hr at federal and state road. Nevertheless, Polis Diraja Malaysia had given leniency to the drivers with the added speed (10 km/hr) from the speed limit on the road before the summons of speed traps recorded.

Figure 2.3: Malaysian speed limit

Figure 2.4: Malaysian speed limit for heavy and light vehicle in highway

Drivers are obliged to follow minimum and maximum speed limit which have been set (Texas of Engineering Department of Traffic Division TEDTD, 2005). If the drivers are not following the speed limit which has been set, the drivers should be summoned by the authorities.

2.3.2 Basic of Speed Limit

There are 4 types of speed limit which can be enforced on road or highway:

1) Maximum speed limit – the highest speed allowed on the road or highway. Driving with the exceed of the maximum speed limit will cause the vehicle to lost control and at the same time trigger road accidents.

2) Minimum speed limit – the lowest speed allowed on the road or highway. Driving less than the minimum speed limit will likely lead to road accidents caused by collision with vehicle from the back.

3) Recommended speed limit – the maximum speed recommended for safe driving. The speed limit is enforced in most of the German Highway since most of the highway in Germany not set to a maximum speed limit. The drivers are allowed to drive exceeding the recommended speed limit but in the event of accident, the driver cannot claim for damages resulting from the accident from the insurance company respectively.

4) Variable speed limit – the speed limit can be changed according to season, weather and road conditions. Variable speed limit is usually used in some countries during winter and at the time, the usual or original speed limit will not be used temporarily.

It is compulsory for drivers to follow the speed limit that has been set either the maximum or minimum speed. The speed limit was established to reduce the risk of road accidents. The speed limit will also be more useful and meaningful if the driver complies with the stipulated speed limit. (Manual on Uniform Traffic Control Devices, MUTCD, 2009)

2.4 WHY DO PEOPLE SPEED?

Various programmes have been implemented by the Government to reduce road accidents such as “Ops Pacak”, “Ops Sikap” and “Ops Statistik”. But many accidents are still occurring. According to the Minister of Transportation, Dato’ Seri Kong Cho Ha, the situation on the road is very pathetic. This is because the Government has spent nearly RM 9 billion into various safety campaigns. Reminder “Berhati-hati di Jalan Raya”, “Patuhi Had Laju”, “Kelajuan Membunuh”, and the slogan “Pandu, Tunggang dan Jalan dengan Selamat” as well as “Anda Mampu Mengubahnya” stimulates the mind of road users to be careful while driving on the road. But in reality, road users in Malaysia are still careless, negligent and forgetful though they are provided richly with commemorative boards and slogans along the way.

Speeding can be related with driving with excessive speed limit. Speeding is the main contributor to the crash with 12% from the total crash and 28% from the total fatal crash (Mosedale et al., 2004). Nowadays speeding is considered as a normal matter on the road. This is because too many news were exposed by mass media about speeding car that ended up with crash. An example could be demonstrated by the current news about the crash between Myvi cars and Pajero sport car. That crash is a result because the Myvi cars speeding and causes 3 people dead (Fardy Bungga, Harian Metro, Mei 2015).

There are some factors why do people speed, such as they like to drive fast, they are in bad mood, and they do not realize that they were speeding as well as they were being selfish and impatient. Based on the research by INRETS (2004), they stated that the thrill and achievement can be felt by driving fast. Some drivers feel that by driving fast, they can feel more satisfaction. Usually, young drivers are more likely to speed because of the age factor. In 2002 at Australia, 80 percent of young drivers died in motor vehicle crash (Australian Transport Safety Bureau, 2003). Other than that, based on research by Thoma (1993), drivers could not estimate the proper speed limit when driving with the inappropriate speed limit and they cannot predict that the risk during raining can lead to road crash.

2.5 SPEED PREFERENCES

Speed preferences are speed that drivers prefer to use on the road or highway. Driver's speed preferences or driver's speed choice means the driver's decision to travel at a selected rate of motion (Ahie, 2014). In other word, speed preferences are the speed where the drivers will decide to use for their ride. Driving speed preferences is an important issue in traffic research (Haglund & Aburg, 2002). It is because the relationship between greater risks and severe consequences when an accident occurs is the reason for the need of studying speed preferences. Speed may be further constrained by the drivers themselves in choosing to drive at any speed they consider safe and comfortable (Kenallaidis, 1995)

There are a few different reasons for driver's speed preferences when driving such as money saving on fuel, driving safety, driving for fun or casual driving. Other than that, based on the research by Haglund (2011), speed preferences is one of the characteristics of driver's behaviour. The driver will choose the speed that they find appropriate during the driving. Higher speed tends to cause accidents because sometimes the speed choice is not suitable for use. Therefore, the driver's judgement about appropriate speed is important for the speed preferences.

Based on research conducted by Ahie et al. (2015) there is a huge difference between the speed preferences for the purpose of different driving. The highest speed could occur when a driver is driving for fun and the lowest speed is chosen when the goal is for economical purpose. Furthermore, every driver has different speed choice, such as the case when a driver thought that their usual speed is based on the safe speed that they believed. For example, a driver would not speed if they find it dangerous in doing so because their feeling of risk would lead them to be moderate in choosing the speed. Other drivers also indicated that they usually drive even slower than the speed that they thought was safe. So, it shows that the usual speed utilized was influenced by the driver's speed choices.