Driver's Speeding Behaviour: A Case Study from Ho Chi Minh City, Vietnam

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Abstract: Speeding has been identified as one of the major contributory factors to cases of accidents in Vietnam. This study attempted to quantifying the speeding behavior among the drivers in relation to road safety in HCMC. Through convenience sampling, this cross-sectional study examined the speeding behaviour characteristics of 150 vehicular drivers. By applying regression analysis, it was found that average travel time has the highest significant contribution towards predicting the driver's speeding behaviour, followed by type of vehicle use, trip purpose, years of driving experience, speeding fined, marital and job status. The coefficient of determination (R^2) from the regression analysis indicated that 72.4% of variations in the dependent variable is explained in a linear relationship by the set of the predictors (independent variables). These findings can provide some guidelines to the related authorities towards further understanding the driving behaviour characteristics of the vehicular motorists in the city and ways towards reducing cases of accidents.

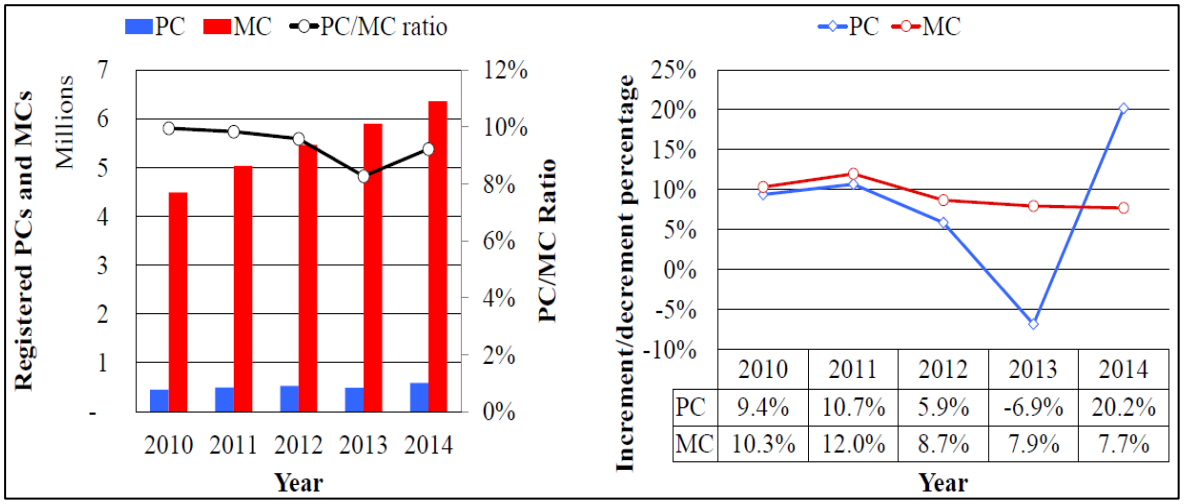
Keywords: speeding behaviour, demographic, Ho Chi Minh City

1. INTRODUCTION

The development of the urbanised area has a close relationship with the increasing need for urban travel. Meanwhile, an increased in the level of economic activites, coupled with the spatial spread of cities beyond their boundary, led to an increasing number of trips made and often considerably longer distance than before (Jamilah and Ibtishamiah, 2002).

The increasing growth of private vehicles continues to be an obstacle and part of an inevitable process facing by many developing countries including Vietnam. In May 2014, the number of registered private vehicles in Ho Chi Minh City (HCMC) was 6.5 million including 0.5 million cars and 6 million motorcycles (Department of Transportation, 2014 in Hoang and Okamura, 2015). According to Dung *et al.* (2015), even though the growth rate of motorcycles seems to decrease in the last four years, its rate of 7.7% is however still considered relatively high (Figure 1). The number of passenger cars has indeed decreased in both 2012 and 2013 but it grew rapidly in 2014, with an approximate increase of 20 percent. Internationally, this figure seems to be very high as compared to other countries such as Europe (1-2%) and USA (about 1%). Relatively, the transport situation in HCMC has worsened and traffic congestion has become one of six 'hot' problems that the local government has made as a priority (Nguyen *et al.,* 2013 in Dung *et al.,* 2015).

Developing a synchronous and modern transportation system is one of three strategic breakthroughs to raise national competitiveness. The total of USD48 billion is needed as an investment capital for infrastructural development in Vietnam for period 2016-2020, including USD30 billion for road, USD5.5 billion for railway, USD4.5 billion for airlines and USD3 billion for maritime road (http://www.mpi.gov.vn). On the other hand, the speed limit enforcement in Vietnam has been increased, effective from March 2016. On the normal two lane roads, the limit has been increased from 40kph to 50kph while on urban highways, the increase is to 80kph for cars and 6okph for motorcycles (60kph for cars and 50kph for motorcycles, respectively - before the new enforcement). Those changes are in line with the international speed limit standard used around the world (http://wordvietnam.com). Since the rapid improvement in infrastructure, particularly the national highways in the last decade, road users tend to speed up on highways. Dangerous overtaking mainly practiced by trucks, buses and passenger cars in mixed traffic situation have caused lower speed vehicles to other modes such as motorcycles and bicycles (Huong, 2011). Accordingly, the objective of this study is to examine the driver's speeding behaviour and attitude towards speeding for various types of vehicles, at accident hotspots within the city of Ho Chi Minh.



	2010	2011	2012	2013	2014
PC	9.4%	10.7%	5.9%	-6.9%	20.2%
MC	10.3%	12.0%	8.7%	7.9%	7.7%

Figure 1: Registered Motorcycles and Passenger Cars and its Ratios for 5 Years
Source: HCMCDOT 2015 (adopted from Dung et al 2015)

1.2 Background of the Study Area

Ho Chi Minh City (HCMC) is located in the south-eastern region of Vietnam about 1,760 km (1,090 mi) south of Hanoi. HCMC is the second largest city in Vietnam, covering an area of 2,095.5 km^2 (809 sq. mi or 0.63% of the surface of Vietnam) which includes 19 urban districts i.e. 12 numbered 'inner' districts plus seven named districts and 5 rural districts. The total population of HCMC is more than 9 million and is expected to grow up to 13.8 million people by 2025 (Hoang and Okamura, 2015). The density is about 3,800/km^2 or 9,900/sq.mi. HCMC and its seven surrounding provinces constitute the greater Ho Chi Minh City metropolitan that covers an area of 30,404 km^2 (Hoang and Okamura, 2015).

HCMC plays an important transport hub, linking the southern areas of Vietnam with other parts of the country as well as neighboring country, Cambodia. The demand for travel and transportation within the city is rapidly growing as well as the number of accidents involved. For example, Nguyen et al (2013) stated that the number of accidents reported by HCMC Traffic Police and Health Inspection Division for year 2010 and 2011 was slightly

different from each other, where the number of serious injury and fatality cases recorded by HCMC Health Inspection Division is much higher than that by HCMC Traffic Police (refer Table 1).

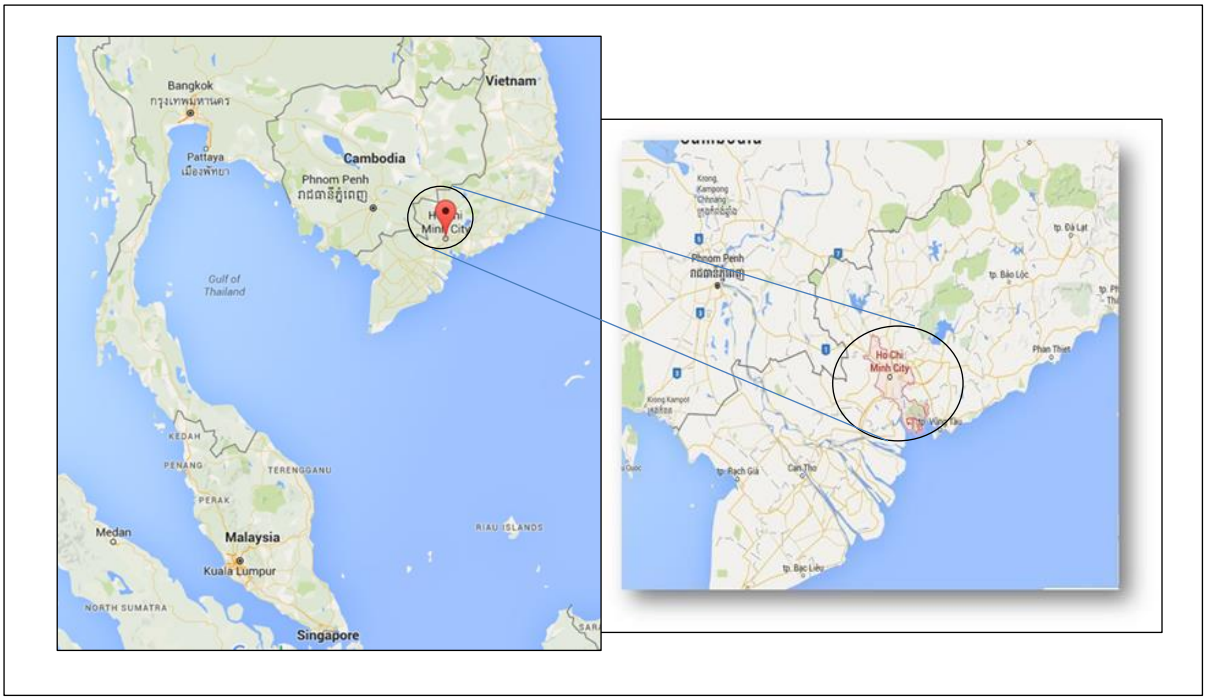


Figure 2: Ho Chi Minh City (HCMC) Study Area

Table 1: Comparison between two accidents data sources in HCMC (2010-2011)

Data Sources	Year 2010				Year 2011			
	No. of accidents	Fatalities[1)]	Serious Injuries[2)]	Slight Injuries[3)]	No. of accidents	Fatalities[1)]	Serious Injuries[2)]	Slight Injuries[3)]
(1)	10,928	1,058	536	9,651	8,641	1,028	557	8,565
(2)	-	1,685	3,889	8,669	-	2,030	4,797	8,565

- Not available; (1) Data from HCMC Traffic Police; (2) Data from Health Inspection Division; [1)] Refer to cases of death within 24 hours from arrived at hospital; [2)] Refer to cases of injury which required 30 days of treatment or more; [3)] Refer to cases of injury which required one day treatment or less

A study conducted by Dung *et al.* (2015) identified that 91% of HCMC citizens prefer to use private vehicles and only 8% prefer to use public transport. The statement is obviously true when it comes to the numbers of accidents involving this type of vehicles. It was reported that in year 2010, accidents involving motorcycles is the highest i.e. approximately about 60% (between motorcycles), 18% (between cars and motorcycles) and the remaining of 22% are car-car accidents, motorcycles-pedestrian accidents and others (Nguyen *et al* 2013). Based on the sampled accident data analysis, Huong (2011) identified that road traffic accidents in Vietnam are mainly caused by road users' errors, causing more than or less 75% in total and speeding has been identified as the primary contribution to the road traffic accidents. Data from 2006 indicate that 68 percent of all road traffic crashes in Vietnam involved cars and motorcyclists (Anh et al., 2006), meanwhile the statistical data from Road and Rail Transport Division (MOPS) shows that from 2002 – 2006, the main traffic accidents by caused lead by speeding, unsafe overtaking, unsafe lane shifting (refer table 2 below). In 2008, this number rose to 70.4 percent, 27.1 percent of those crashes resulting in brain injuries (MoH, 2009). Additionally, an evidence from a national sample mortality

surveillance system reported that age-standardized mortality rates were at 33.5 and 8.5 per 100,000 for males and females, respectively, again with the majority of deaths in males (79%) and 58% on motorcycle users.

Table 2: Traffic Accidents Data by Caused of Accidents (2002-2006)

Causes	Proportion (%)				
	2002	2003	2004	2005	2006
Speeding	24.4	24.1	26.0	25.8	24.8
Unsafe overtaking	18.9	16.8	15.8	12.7	13.7
Unsafe lane shifting	17.0	17.6	16.5	16.7	18.0
Turning without signal	4.1	3.4	2.4	1.6	1.7
Crossing intersection without signal	1.1	0.1	1.7	0.6	0.2
Not keeping safe distance	6.9	0.9	2.4	1.8	0.4
Careless driving	15.9	12.1	8.1	10.0	8.2
Careless crossing of pedestrians	0.7	2.3	2.9	3.2	2.6
Others	11.0	22.7	24.2	27.6	30.4

Source: Road and Rail Transport Division, MOPS 2006

2.0 LITERATURE ON SPEEDING BEHAVIOR

The driver speeding behavior has a close relationship with the illegal changing direction (IDC) behavior which has been regulated by the Vietnam government (Regulation No: 34/2010/ND-CP) signed by the Prime Minister (Trinh, et al 2013). The IDC components include turning left, turning right, turning around, which explained specifically as the following:

(a) Do not respect priority rights for pedestrian, handicapped, handicapped wheelchair, un-motorized vehicle on their lanes and vehicles on opposite lane,
(b) Without turning on signal, light of vehicle,
(c) In the pedestrian lane, bridge, under bypass, narrow road, limited seeing of curve, prohibited turn sign, and
(d) At the intersection between road and railway.

The act of speeding can be defined in numerous ways. In some studies, speeding is defined as excessive speed for the driving conditions at any point in time (Giles, 2004). Meanwhile, Johnston (2004) defined speeding in terms of a specific level above the posted speed limit, generally referred to as ‘tolerance’, mainly to account for the accuracy of vehicle speedometers, radar and speed cameras. However, tolerances vary markedly by jurisdiction. For instance, New South Wales has a zero tolerance for speeding (RTA, 2010), Victoria has a 3 km/h tolerance (Delaney et al., 2005) and New Zealand a 10 km/h tolerance (Johnston, 2004). Motorist's knowledge and attitudes of what is appropriate speed behaviour are central to the success of speed zoning (Fildes *et al.,* 1991).

There are many literatures available in explaining the speed in homogeneous traffic condition. Maurya, Dey and Das (2015) cited an example from Dixon et al (1999), Filippo and Marinella (2011), Christoper (1994), Khairi et al (2011), Hastim and Ramli (2013), Donal and Daniel (2008), where authors examined speed in rural multilane highway and found that the distribution of free flow speed was found to be normally distributed. On the other hand, Pan and Kerali (1999) in Maurya, Dey and Das (2015) developed a model to predict the effect of presence of non-motorised vehicle on motorised vehicle’s speed and found that flow of non-motorised vehicle is related linearly with the speed of motorised vehicle while Minh et al. (2005) and Sacchi et al. (2012) studied that the speed distribution

followed the normal distribution on urban road.

Wallen (2006) reiterated that which ever theory one uses to describe the factors causing, or contributing to accidents, there is a strong agreement within the research community that driving too fast is a behaviour that contributes to both the number and the outcome of accidents. This study tried to adapt closely a well-known Theory of Planned Behaviour (TPB) in predicting and explaining driver's speeding behaviour. TPB was extended from the Theory of Reasoned Action (TRA) and that included five variables in the model such as attitude, subjective norm, perceived behavior control, intention and behavior (CAST, 2009; Armitage and Conner, 2001 in Trinh, et al 2013). Generally, the TRA was created to explain human action with attitude towards the behaviour and subjective norm as important predictors (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975 in Wallen 2006). One of the reasons the TPB has become so popular is probably the clear description of how to measure the different constructs which have made the theory easy to apply. The TPB is a general model which has proven to be useful even in the area of traffic research. The driver behaviour questionnaire (Reason et al. 1990) is an instrument designed for traffic research to make a distinction between different aberrant driving behaviours. The TPB has been used as a frame of reference in traffic safety research to predict behaviours such as drinking and driving (Åberg, 1993; Beck, 1981; Parker, Manstead, Stradling & Reason 1992; Parker, Manstead, Stradling, Reason & Baxter, 1992), dangerous overtaking (Forward, 1997; Parker, Manstead, Stradling & Reason 1992; Parker, Manstead, Stradling, Reason & Baxter, 1992), close following (Parker, Manstead, Stradling & Reason 1992; Parker, Manstead, Stradling, Reason & Baxter, 1992) and lane discipline (Parker, Manstead & Stradling, 1995) in Wallen (2006).

According to Ajzen's (2006), people's attitude towards the behaviour, their subjective norm and their perceived behavioural control determine their behaviour (a defined action) indirectly via their intention (a willingness to try to perform the behaviour). Attitude towards the behaviour is determined by behavioural beliefs, which are beliefs about the likely consequences of the behaviour (behavioural belief strength), weighted by the evaluation of how good or bad these outcomes would be (outcome evaluation). Subjective norm is determined by normative beliefs, which are beliefs about what important others think of the behaviour (normative belief strength), weighted by the motivation to comply with these important others (motivation to comply). Perceived behavioural control is determined by control beliefs, which are beliefs about factors that may facilitate or impede performance of the behaviour (control belief strength), weighted by the perceived power of these factors (control belief power). Figure 3 below illustrates the above explanations.

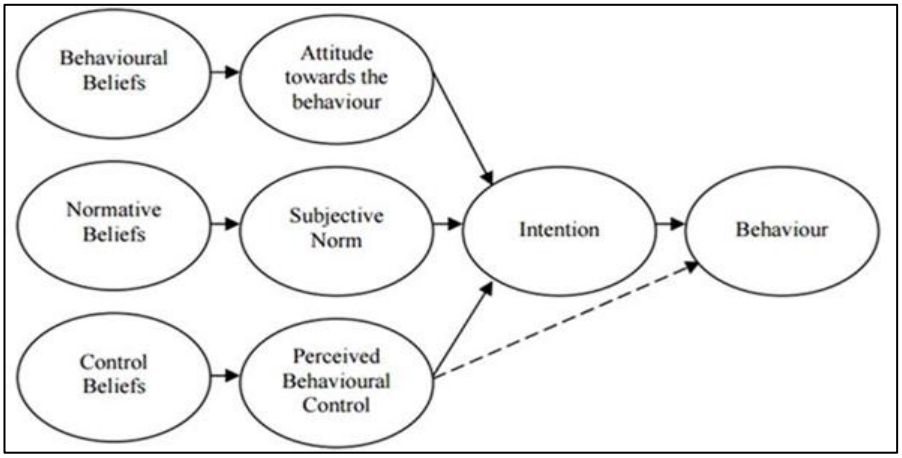


Figure 3: A schematic representation of the theory of planned behavior (after Ajzen, 2006) in Wallen (2006)

A study on TPB conducted by Newnam et al. (2004) over 204 Australian commercial drivers showed that the TPB could successfully be used to predict driver's intention to speed in both work-related and personal vehicles. The results also showed that the inclusion of anticipated regret improved the prediction of intention to speed for both work-related and personal vehicles. On the other hand, Letirand and Delhomme (2005) conducted a questionnaire study with 238 young French male drivers. The questionnaire included direct measures of the variables in the TPB with respect to both exceeding the speed limit 90 km/h (by at least 20 km/h) and complying with it. The results showed that an additional 12% of the variance in self-reported behaviour could be explained when both exceeding and complying with the speed limit were taken into account. In total, 47% of the variance in self-reported behaviour could be explained by intention and perceived behavioural control. Finally, Forward (2006) used the TPB as a framework to identify beliefs associated with speeding and dangerous overtaking using a qualitative approach.

2.1 Factors influencing Speeding

There are several factors influencing speeding behavior and amongst others are social, psychological, enforcement and driving environment. Those factors affected one another and contribute to speeding as there would not be a single factor caused speeding to occur.

(a) Social Factor
Social factor influence explained the effect others have on the attitudes and behavior of individual persons and groups (Berkman, 2000). It is further divided into direct and indirect social influence. The direct-indirect dimension regard social influence stemming from person present in the car while driving, meanwhile indirect influence are other road users present in the general traffic environment.

(b) Psychological
Positive emotion leads to cautious driving behaviour while negative emotion leads to aggressive driving behaviour. One of the most emotional reaction faced by road user while driving is anger and this led to aggressive driving behaviour (Pecher, Lemercier & Cellier, 2009).

(c) Enforcement
Enforcement can hinder road users from initiate speeding behaviour as road users know the consequences they may face after speeding. Consequences may vary according to countries and methods of enforcement would also be varied. Speed camera, speed laser gun, prowl police, speed trailer are among tools that have been used worldwide.

(d) Driving Environment
High quality roads are among possible reasons to facilitate road users' speeding behaviour. High quality roads have high design characteristics, good surfaces, wide sealed shoulders, traffic separation, and appropriate intersection control (Oxley et al., 2007). On the other hand, rough surfaces, narrow, winding, hilly, and where the direction of the road and boundaries are not well delineated would decrease the tendency of road users to speed (Edquist, et al., 2009).

3.0 METHODOLOGY

In terms of research design, the unit of analysis of this study focused on the individual motorists. Even though motorcyclists are the dominated group among motorists, the targeted respondents of this study were drivers of passenger cars, lorries and buses. The data were collected over one period i.e. from 12th – 26 May 2015, thus making this a cross-sectional study. Sampling design wise, the population of the study were all the motorists in the city who use the infrastructure on all accident hot spot areas (excluding the motorcyclists). The motorists were intercepted via convenience sampling. Based on Roscoe (1975) in Sekaran and Bougie (2016), for most research, a sample size of between 50 to 500 is considered reasonably sufficient to give a reasonably acceptable result. The sample size for this study is 150 respondents.

Empirical data collection was done at National Highway No. 1 at Binh Than District. The use of radar sensor as an equipment particularly to capture speed, number of vehicles, class and length where it was mounted on a light pole had made this research much easier. Those parameters captured were used to understand actual situation of driver behaviour on the road. The field survey via personally assisted or intercept survey by using a structured questionnaire was done at selected locations along the highways and federal roads. The questionnaires were divided into 4 sections i.e. vehicle used characteristic, driving experience, speeding behavior and close following behavior. The surveys was conducted in normal traffic flow and the survey was stationed at the rest areas.

4.0 FINDINGS AND DISCUSSION

4.1 Findings

Table 3 summarised the descriptive findings from the study for both demographic characteristics and driving experience. It was found that a majority of the respondents were male (90%), with age ranging between 18-24, 25-31, 32-38 and 39-45 years old, each category amounting to 20%. In terms of marital status, 64% of the respondents are married and a total of 62.7% of the respondents are in the professional fields. A relatively high percentage of 84.7% of the total respondents earned an average household income of VND6M with 34% of the total respondents owned a personal car for work trip purposes (77.3%).

Table 3: Demographic characteristics and driving experience

Demographic characteristics	
Gender	Male (90%), female (10%)
Age group	18-24 (20%), 25-31 (20%), 32-38 (20%), 39-45 (20%), 46-52 (13.3), 53-59 (6%), >60 (0.7%)
Marital status	Married (64%), single (36%)
Occupation	Professional (62.7%), self-employed (26%), executive/managerial (6%), Non-executive (4%), student (1.3%)
Household monthly income	Above VND 6M (84.7%), 3M-6M (14%), less than VND 800K (1.3%)
Vehicle use characteristics	
- Vehicle ownership	Car (34%), small lorry (21.3%), sarge lorry (16.7%), van (14%), bus (14%)
- Vehicle used type	Personal (66.7%), commercial (33.3%)
Trip purposes	Work (77.3%), home (10%), leisure (6%), educational (4.7%), shopping (2%)

Driving Experience	
Years of driving experience	4-10 (33.3%), > than 10 (30%), 1-3 (27.3%), < than a year (9.3%)
Fine for speeding	Never (56%), 1-4 times (22.7%), > than 10 times (16.7%), 5-10 times (4.7%)
Accident involved	Never (64%), 1-4 times (29.3%), 5-10 times (1.3%), > than 10 times (5.3%)
Maximum speed	41-50 km/h(43.3%),51-60 km/h(26.7%), 30-40 km/h(26%), > than 60km/h(4%)
Average travel distance	10-30 km (38%), > than 90 km (27.3%), 31-50 km(20%), < than 10 km(8%), 51-90 km (6.7%)
Average travel time	30-60 mins (43.3%), > than 4 hours (24%), 61-120 mins (20%), < than 30 mins (7.3%), 121-240 mins (5.3%)

In terms of driving experience, most of the respondents have a driving experience of between 4-10 years (33.3%), with 56% of them never received any fine on speeding while 64% never meet with any accident and more than 40% of respondents stated their maximum speed is between 41-50 km per hour. Their highest average travel distance is between 10-30 km (38%) while the highest average travel time stated is between 30-60 mins (43.3%).

Table 4: Respondents' Opinion on Speeding Issues

	Mean	Median	SD	Min	Max
I tend to speed when other road users start speeding	2.23330	2.0000	0.80616	1.0000	4.0000
I tend to speed as my friend encourages me to speed	1.97330	2.0000	0.74136	1.0000	4.0000
I tend to speed when I need to meet a deadline (meeting at 8am)	2.94000	3.0000	0.68767	1.0000	4.0000
I tend to speed as I want to reach the place quickly	2.91330	3.0000	0.70413	1.0000	4.0000
I tend to speed when there is no enforcement (speed camera/ police) around	2.44000	2.0000	1.06488	1.0000	4.0000
I tend to speed when I hear certain types of music	2.02000	2.0000	0.78124	1.0000	4.0000
I tend to speed during day as compared to night	2.34000	2.0000	0.60011	1.0000	4.0000
I tend to speed because I feel safer in my car (air brake system, airbag)	2.17330	2.0000	0.83342	1.0000	4.0000
I tend to speed on wide lane (highways, multiple lane)	3.04000	3.0000	0.79326	1.0000	4.0000
I tend to speed when I drive alone	2.56000	2.0000	0.98635	1.0000	4.0000
Speeding feeds my ego by giving me sense of power and control	2.17330	2.0000	0.96757	1.0000	4.0000
I tend to speed when I am moody	1.98000	2.0000	1.10805	1.0000	4.0000
I like the feeling of speeding	2.16110	2.0000	1.02711	1.0000	4.0000
I feel more relaxed when speeding	2.18670	2.0000	1.0452	1.0000	4.0000
I feel excitement and thrill while speeding	2.04000	2.0000	1.12852	1.0000	4.0000
I tend to speed when I am in angry mood	2.04670	2.0000	1.18342	1.0000	4.0000
I tend to speed due to slow drivers	2.36670	2.5000	0.7634	1.0000	4.0000
I believe that I can overtake other cars safely when I am speeding	2.51330	3.0000	0.65268	1.0000	4.0000
I believe I am skillful enough to avoid accident while speeding	2.18000	2.0000	0.74248	1.0000	4.0000
I believe speeding is a normal driving behaviour	2.31330	3.0000	0.87575	1.0000	4.0000

Table 4 outlined several scenarios given to the respondents for their options in relation to speeding. By using descriptive statistics it was found that the mean and standard deviation (SD) scores for the scenario of *"I tend to speed on wide lane (highways, multiple lane)"* are the highest, i.e. 3.04 and 0.79, respectively. It was closely followed by the scenario of *"I tend to speed when I need to meet a deadline (meeting at 8am)"*, 2.94 and 0.68, while the scenario of *"I tend to speed as I want to reach the place quickly"*, 2.91 and 0.70, respectively. Meanwhile, the 2 lowest scores identified was the scenarios of *"I tend to speed when I am moody"* with 1.98 and 1.10, and *"I tend to speed as my friend encourages me to speed"*, by 1.97 and 0.74, respectively.

4.2 Discussions

Table 5: Results from Principal Component Analysis

Variables	Items	Cronbach Alpha, α[1]	KMO Test[2]	Bartlett's Test of Sphericity X^2 (df)[3]	Percentage of Variance Explained
Speeding Behaviour	15	0.936	0.929	1761.96 (105)	66.57

Notes: [1] Measures of internal consistency, min p>0.6 (Sekaran & Bougie, 2013)
[2] KMO measure of sample adequacy, min value of 0.6 (Tabachnick & Fidell, 2013)
[3] p<0.05 as significant (Tabachnick & Fidell, 2013)

The information collected is first screened for error and the regroup into meaningful groups. Subsequently Principal Component Analysis (PCA) is used to extract dimensions/factors from items used. Table 5 shows factors that have been extracted and have fulfilled the requirement for PCA. The reliability test using Cronbach's Alpha for all variables. Subsequently, to examine the adequacy of the sample size, we use Kaiser-Meyer-Olkin (KMO) test. The results of KMO test for all variables are beyond 0.5, which according to Field (2013) is deemed acceptable. Furthermore, all results from Bartlett's Test of Sphericity are significant which indicate the suitability of the data for factor analysis.

The regression analysis results of Speeding Factor are presented in Table 6. The regression analysis results were exhibited only the statistically significant factors at 1-5% level. However, the signs are varied depending on the effect of each variable.

Table 6: Results of Regression Analysis for Speeding Behaviour

Independent variables	Model : Speeding Behaviour	Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
Vehicle use type	Car vs. Small lorry	-3.093 (0.037)**	1.462	-0.183 (0.037)**
	Car vs. Large lorry	-3.428 (0.028)**	1.542	-0.184 (0.028)**
	Private registered vs. Commercial	-2.436 (0.021)**	1.039	-0.166 (0.021)**
Trip purpose	Work trip vs. Educational	5.972 (0.019)**	2.503	0.182 (0.019)**

Years of driving experience	4-10 years vs. Less than 1 year	-5.415 (0.011)**	2.083	-0.227 (0.011)**
Speeding fined	Never vs. 1-4 times	3.204 (0.005)**	1.119	0.194 (0.005)**
	Never vs.5-10 times	-9.007 (0.034)**	4.186	-0.149 (0.034)**
Maximum speed	41-50 km/h vs. 30-40 km/h	5.261 (0.000)**	1.049	0.333 (0.000)**
	41-50 km/h vs. 51-60 km/h	-5.111 (0.000)**	1.064	-0.326 (0.000)**
	41-50 km/h vs. more than 60 km/h	-4.848 (0.043)**	2.369	-0.137 (0.043)**
Average travel time	30-60 minutes vs. more than 4 hours	10.912 (0.006)**	3.852	0.672 (0.006)**
Marital	Married vs. Single	3.920 (0.005)**	1.376	0.226 (0.05)**
Job status	Professional vs. Student	-10.311 (0.020)**	4.350	-0.171 (0.020)**
	Constant	25.578	2.515	
	Observations	150		
	R-squared	0.851		
	Adjusted R Square	0.619		

*** significant at p<0.05*

It is evident from the model that the significant characteristics influencing the speeding factor are type of vehicle use, trip purpose, years of driving experience, speeding fined, maximum driving speed, average travel time, marital and job status.

In contrast, the drivers who travelled to school or university were more likely to speed as compared to the drivers who travelled daily to their workplace. It was interesting to discover that the drivers who used small and large lorry were less like to speed as compared to drivers who used car as their vehicle. The drivers who drove commercial vehicles were less likely to speed as compared to the drivers who drove private registered vehicle for their journey.

Additionally, the years of driving experience exhibited statistically significant relationship towards speeding behaviour. The drivers who drove less than one year were less likely to speed as compared to drivers who drove between 4-10 years. The results were also similar to the answer obtained from the groups of drivers which drove within 51-60 km/h and more than 60 km/h for their journey.

Interestingly, the drivers who were students also less likely to speed as compared to the drivers who are working in professional field. In addition, the drivers who is single were more likely to agree as compared to the married drivers. In addition, it was interesting to discover that the drivers who have been charged for speeding fined, namely, 1-4 times were more likely to speed as compared to the drivers who never been fined due to speeding. However, it was interesting to discover that drivers who have been charged for speeding fined between 5 to 10 times were less likely to speed as compared to the drivers who never been fined due to speeding. With respect to average travel time, the drivers who travelled for more than 4 hours were more likely to speed as compared to the drivers who travelled within 30-60 minutes.

The regression analysis yielded a multiple correlation coefficient (R) of 0.851 which means that there was a strong relationship between the dependent variable and the set of predictors (independent variables) as a whole. The derived multiple coefficient of

determination (R^2) is 0.724 which means that 72.4% of variation in the dependent variables are explained by the set of predictors (independent variables). In other words, the accuracy of the socio-demographic characteristics, vehicle characteristics and driving characteristics in predicting levels of speeding behaviour is 72.4 percent.

5.0 LIMITATIONS

This study consists of some limitations due to time constraints and the area coverage. It is hopefully that the study can be extended into examining the everyday speeding behaviour within the larger areas, including both urban and rural areas, under an extended period of time.

6.0 CONCLUSION

The result from this study can be concluded that the significant characteristics influencing the speeding behaviour are type of vehicle use, trip purpose, years of driving experience, speeding fined, maximum driving speed, average travel time, marital and job status.

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