Comparing Road Users with High and Low Perceived Risk of Being Caught for Traffic Infringement in Malaysia

Nor Fadilah Mohd Soid and Noradrenalina Isah

Road User Behavioural Change Research Centre
Malaysian Institute of Road Safety Research
Kajang, Selangor, Malaysia

ABSTRACT

The 'balik kampung' or visiting hometown among city dwellers generates a high volume of traffic due to the increasing number of vehicles on the road during festive seasons. Moreover, there will be an increment in the number of fatalities recorded compared to the previous year. Thus, a series of enforcement programmes within two weeks was conducted every festive season in order to solve the problem. The purpose of the study was to explore factors associated with perceived risk of being caught among motorists to ensure better strategies can be formulated to instill discipline of traffic obligations. A total of 1219 drivers were asked to complete a set of questionnaires in order to assess their perceived risk of being caught. The study identifies nine variables associated with motorists perceived risk of being caught, however only four were statistically associated with higher perceived risk of being caught for traffic infringement. The study concludes that there is a need to elevate the perceived risk of being caught when infringes traffic rules. Despite several years of conducting integrated enforcement programmes, a substantial portion of drivers does not feel it likelihood to be caught if committed traffic offenses.

Keywords: Low risk perceiver, high risk perceiver, perception of being caught

INTRODUCTION

Motor vehicle crashes are a leading cause of death in Malaysia and are the number two cause of death for male ages from 15 through 64 years old (Department of Statistics, Malaysia 2008). Road traffic fatalities are expected to increase as the world population and motorisation continue to increase. Similarly, Malaysia itself is undergoing rapid motorisation. In the last 5 years, the number of motor car registered an increase from 537,092 in 2008 to 628,239 in 2012 (Road Transport Department, 2012). This phenomenon was reflected during long holidays or festive season as it generates a high volume of traffic nationwide on expressways and major roads due to people went back to their hometown.

In order to instill discipline among road users, various initiatives and preventive measures with regard to the enforcement aspect had been undertaken by the respective government agencies. As a result, the Royal Malaysia Police (PDRM) and together with the Road Transport Department (JPJ) and Land Public Transport Commission (SPAD) had conducted an Integrated Safety Ops to coincide with the Raya holiday season by combining several enforcement programmes which included enforcement operations along expressways, federal roads and state roads.

Enforcement is one of the essential components in changing road user behaviour (Loner et al. 1995). Traffic enforcement seeks to generate a general deterrence effect on motorists. General deterrence is based on road user's perception of being cited or arrested for a traffic violation. If enough potential violators believe there is a strong probability that they will be caught, some of them will avoid committing traffic offences, at least some of the time. The overall goal is to increase compliance by motorists to traffic laws, resulting in reduced vehicle crashes (National Highway Traffic Safety Administration 2005; McGee and Eccles 2003).

Several studies have shown that enforcement and education are able to increase road users' perceived risk of being caught (POBC). The intervention through traffic infringement is important in efficient road safety system. A study in Norway by Assum and Ingebrigtsen (1990) indicated that the elimination of traffic offences could reduce crashes by 20% to 25%. Furthermore, Haglund and Aberg (2000) and Elliot et al. (2007) state that police surveillance and enforcement activities can have a significant effect on the compliance of traffic rules and regulations. As reported by Institute for Road Safety Research (SWOV) (2010), different method of speed enforcement helps to reduce speeding offences and crashes. It was shown as speed cameras reduce 20% of injury crashes at road sections. A total of 95% of respondents consider red light running enforcement were meaningful. This is accordance with road users believed of higher risk of being caught if punishment and enforcement are stronger.

However, the results of the mentioned studies are not reflecting the current scenario in Malaysia. Although, series of enforcement and education programme have been launched, yet Malaysia recorded a number of 462,423 road accident with 6,917 fatalities in 2012 (Royal Malaysian Police, 2012). Understanding on such scenario is still lacking and study of perceived risk of being caught (POBC) are expected to offer a better understanding regarding this matter. POBC can be understood from several dimensions and a number of studies have looked on the influence demographic factors (Knight et. al., 2013), experience of being summons (Stanojevic et al. 2013; Yannis et al., 2008), number of summons received (Factor, 2014), perceived of current enforcement level (Haglund and Aberg, 2000; Elliot et al., 2007), enforcement visibility (Becker, 1968), media exposure (Delhomme et al. 1999), experienced of traffic enforcement (Stanojevic et al. 2013; Yannis et al., 2008), severity of traffic punishment (Bertelli and Richardson, 2008) and, recently see enforcement activities on POBC among motorists (Glendon, 2003).

Unlike global trend, however, to date, fewer local studies relevant to POBC have been conducted by local scholars. Consequently, neglecting these dimensions will inevitably hinder concern parties' ability to effectively construct the best strategies that can further minimize the number of traffic crashes in Malaysia. In response to this, the present study attempt to explore factors associated with POBC among motorists in Malaysia. The present study is expected to produce in a number of significance. Firstly, the findings of the study will enrich existing literature by providing new data regarding factors associated with pobc among motorist. Secondly, it can specifically assist concerned parties in developing concrete strategies that fit the needs, abilities and interests of the motorist to ensure better strategies can be formulated to instill discipline of traffic obligations. Thirdly, it will serve as a guide or basis for framing future research on the topic.

METHODOLOGY

The respondents for this study comprised motorists who were fully-licensed drivers. The data for this study were collected by administering surveys of 1219 drivers with state proportion of race type. Race proportion was based on the population census from the Department of Statistics Malaysia (2010).

Studies were conducted at several locations covering North, Central and South Malaysia. These were included Klang and Puchong in Selangor; Kota Setar and Sg. Petani in Kedah; RnR Tapah, Taiping And Ipoh In Perak; Batu Pahat and Johor Bharu in Johor; and RnR Seremban in Negeri Sembilan. The purpose of this survey was to monitor the road users' perceived risk of being caught every festive season. Selection of the survey sites was primarily based on high fatality rates. The subjects were approached by team members at different location of federal roads and expressways for each state. They were informed about the objectives of the study and were assured that the information obtained would remain confidential. No names or identification card numbers were recorded to keep the questionnaires anonymous. Data collection was completed within eight weeks (four weeks in January to February, and four weeks in August to September 2013).

MEASURES

A self-administered questionnaire was developed in the national language and examined for face and content validity. Specifically, this study measures several variables namely:

1. Motorists' POBC for ten (10) specific offenses;

Each construct is measured by 10 specific traffic offenses with varied rating scales. Respondents were asked how strongly they agreed with the statements above for the construct using 11-point scale with 0 – 3 indicating that their POBC was low; 4 – 7 moderate and 8 - 10 high.

2. Factors that associated with the POBC:
   a) Visibility of enforcement activities;
   b) Media exposure and road safety campaign;
   c) Prior experience of being caught for committing traffic offenses; and
   d) The severity of traffic punishments for violating traffic laws.

Respondents were asked how strongly they agreed with the statements in respect of the above on a scale of 1 - 7; with 1 meaning that they strongly disagree to 7 strongly agree.

Respondents were asked whether they had seen any enforcement activities during the week. If seen, which law enforcement agencies they saw as to whether it is the Royal Malaysian Police, Road Transport Department or Land Public Transport Commissioner and how often they were seen. They also need to specify the type of enforcement that they saw during the week based on the respective law enforcement agencies.

3. Level of Visibility of Enforcement Activities

Respondents were asked to what extent the level of enforcement that they have seen during the week with an 11 point scale (0 = Very low up to 10 = Very High).

ANALYSIS

Data will be coded and analysed using SPSS to answer the objectives of the study. The data analysis was carried out using descriptive statistics and inferential statistics. The descriptive analysis elicited POBC between the low and high risk perceiver. The inferential statistics were used to compute difference in means and relationships. A series of cross-tabulations was performed in which the two groups of drivers (high POBC risk perceiver vs. low POBC risk perceiver) were compared, using the chi-square test. Variables that differed significantly in these bivariate comparisons were then selected for inclusion in a series of logistic regression. A stepwise logistic regression using Enter method with probability of forward LR at 0.10 and removal at 0.05 was run. For the purpose of logistic regression analysis, drivers' POBC likert scale was then categorised to dichotomous outcome variable (from 0 to 5 were recorded as Low POBC while 6 to 10 were recorded as High POBC). The independent variables identified were gender, age, race, monthly income, experience of being summons (were recorded as yes or no), number of summons received (were recorded as received less than five tickets and more than five tickets), perceived of current enforcement level (were recorded as low and high level), factors associated with POBC (enforcement visibility, media exposure, experienced of traffic enforcement and severity of traffic punishment) and, recently see enforcement activities (were recorded as yes or no).

RESULT

Table 1 shows the summarised statistics of the survey respondents. Of 1219 respondents, 585 (48.0%) were males and 634 (52.0%) were females. The age distributions was dominantly represented by the younger age group with overall mean (SD) age of 33 (11.9) years old. According to race, majority of the respondents were Malay (46.5%), Chinese (33.7%), Indian and others (19.8%). Most of the respondents are reported with monthly income above RM3000 with 69.8%. Out of 565 who have reported experience of being summons, only 11.3% of drivers reported that they have more than five tickets while remaining were reported to have less than five tickets. Most of the drivers reported of seeing enforcement activities recently (66.1%). However, less of the respondents rated as high level of enforcement activities (43.5%).

Based on the data, it can be seen that females were more likely to have higher POBC than males. High risk perceivers were most likely to be among those who above 36 years old. In addition, someone who generates monthly income below RM 3000 was more likely to associate with high risk perceiver rather than low risk perceiver. Drivers who felt it likely that if they would be caught if commit traffic offences were less likely to have been summons. If they have been summons, they were most likely to received less than five summonses throughout their years of driving. In reporting of seen current enforcement in that particular week, those who are recently have seen enforcement activities were likely to be associated with high POBC (Refer Table 2).

Furthermore, in order to see which variables differed significantly with the drivers of high versus low POBC risk perceiver, chi-square test were performed. Out of twelve variables that were identified has the potential association with the classification of POBC group, only six variables appear to be significant. The variables were age group (χ^2 = 13.278, p < .01), perceived of current enforcement level (χ^2 = 22.960, p < .0001) and factors associated with POBC (enforcement visibility (χ^2 = 29.239, p < .0001), media exposure (χ^2 = 27.254, p < .0001), severity of traffic punishment (χ^2 = 25.464, p < .0001) and experience of traffic enforcement (χ^2 = 11.027, p < .01)).

These variables were then used in a series of binary logistic regression analysis that compared high versus low POBC perceive risk drivers. Table 2 shows the outcome of the logistic regression analysis where the level group of POBC was the dependent variable. The results of the analysis revealed that four variables (age, perceive of current enforcement level, experienced of traffic enforcement and severity of traffic punishment) were significantly associated with POBC group after controlling for other variables. Drivers who felt it likely that they would be caught for traffic infringement were more likely to age from 46 years old and above (χ^2 = 7.053, p-value < .05) and more likely to reported high level of current enforcement activities (χ^2 = 14.608, p-value < .01). In addition, they were more likely to be associated with factors of enforcement visibility (χ^2 = 8.404, p-value < .05) and severity of traffic punishment (χ^2 = 6.038, p-value < .05). However, factors associated with POBC; experience of traffic enforcement and media exposure were not statistically associated with the POBC group.

Table 1: Summary statistics of the survey respondents *(n = 1219)*

	n (%)	Mean (SD)
Gender (%)		
Male	585 (48.0)	
Female	634 (52.0)	
Age group (%)		33.0 (11.9)
16-25 years old	342 (28.1)	
26-35 years old	341 (27.8)	
36-45 years old	262 (21.5)	
46-55 years old	203 (16.7)	
Above 56 years old	71 (5.9)	
Race (%)		
Malay	567 (46.5)	
Chinese	411 (33.7)	
Indian & others	241 (19.8)	
Income (%)		2,150.63 (1,489.25)
Below RM 3000	368 (30.2)	
Above RM 3000	169 (69.8)	
Experience of being summons		
Yes	565 (46.3)	
No	654 (53.7)	
No. of summons received		
Less than 5	501 (88.7)	
More than 5	64 (11.3)	
Recently see enforcement activities		
Yes	806 (66.1)	
No	413 (33.9)	
Current enforcement level		
Low level	688 (56.5)	
High level	530 (43.5)	
Factors associated with POBC		
Enforcement visibility		
Yes	451 (37.0)	
No	768 (63.0)	
Media exposure		
Yes	658 (54.0)	
No	561 (46.0)	
Experience of traffic enforcement		
Yes	407 (33.4)	
No	812 (66.6)	
Severity of traffic punishment		
Yes	595 (48.8)	
No	624 (51.2)	

Table 2: Comparison between low POBC and High POBC *(n = 1219)*

		Low POBC (n = 588)	High POBC (n = 631)
Gender (%)			
	Male	49.6	50.4
	Female	47.0	53.0
Age group (%)			
	16-25 years old	53.2	46.8
	26-35 years old	50.4	49.6
	36-45 years old	48.1	51.9
	46-55 years old	40.9	59.1
	Above 56 years old	35.2	64.8
Income (%)			
	Below 3000	46.2	53.8
	Above 3000	49.1	50.9
Experience of being summons (%)	Yes	50.3	49.7
	No	46.5	53.5
No.of summons received	Less than 5	48.3	51.7
	More than 5	46.9	53.1
Recently see enforcement activities	Yes	47.5	52.5
	No	49.6	50.4

DISCUSSION

The primary aim of this study was to explore factors associated with POBC among motorists to ensure better strategies can be formulate to instil discipline of traffic obligations.

From the logistic regression, drivers who perceived that there was a greater likelihood that they would be caught of traffic infringement were significantly less likely to report low level of current enforcement programme. This could be due to their frequent exposure to enforcement activities especially during festive seasons. Noradrenalina, Nor Fadilah & Sanizah (2011) also shown that road users perceived risk of being caught were increased during the implementation of enforcement programme as compared to before it started. Furthermore, Haglund and Aberg (2000) and Elliot et al. (2007) state that police surveillance and enforcement activities can have a significant effect on the compliance of traffic rules and regulations.

In addition, drivers who have been reported that having influence of severity of traffic punishment were more likely to have greater likelihood that they would be caught of traffic infringement compared those who did not. This is not possible as current living cost in Malaysia are highly cost, and it was unbearable to have spent salaries on traffic fines some more. Bertelli and Richardson (2008) suggest that the perceived likelihood of an arrest may be more

important than the perceived probability of a conviction, given the high financial costs that are almost always associated with an arrest (court, lawyer, fines, insurance, etc.)

Moreover, drivers who perceived that there was a greater likelihood that they would be caught of traffic infringement were significantly more likely to report of enforcement visibility were associated with their POBC. This is accordance with decision–theoretic model of deterrence suggests that increases in the probability of conviction and/or the severity of punishment will decrease the probability of violations (Becker, 1968). As having seen more or expose to enforcement activities on the road, drivers perceived of being caught will be increased and their tendency to commit traffic infringement will be less.

However, factors associated with POBC; experience of traffic enforcement and media exposure were not statistically associated with the POBC group. This is contrast with the study by Delhomme et al. (1999) which suggested that combination of enforcement and education increases the success of a campaign.

Furthermore, age of maturity (46 years old and above) were significantly associated with high POBC rather than younger group. This could due to younger group are often associated with sensation seeking as majority of them were inexperienced of driving. So, they are more vulnerable in committing traffic offences as compared to older group (Knight et al., 2013).

Table 2: Logistic regression analysis: Association of drivers who perceive high POBC for traffic infringement compared to drivers who perceive low POBC

Variables in the model	β	Wald	*p-value*	OR	95% C.I	Low POBC n (%)	High POBC n (%)
Age group (%)							
16-25 years old	1	1	1	1	1	182 (53.2)	160 (46.8)
26-35 years old	0.078	0.245	0.621	1.081	(0.795,1.469)	172 (50.4)	169 (49.6)
36-45 years old	0.143	0.714	0.398	1.153	(0.829,1.605)	126 (48.1)	136 (51.9)
46-55 years old	0.487	7.053	0.008**	1.628	(1.136,2.333)	83 (40.9)	120 (59.1)
Above 56 years old	0.677	5.963	0.015*	1.968	(1.143,3.389)	25 (35.2)	46 (64.8)
Current enforcement level							
Low level	1	1	1	1	1	373 (54.2)	315 (45.8)
High level	0.103	14.608	0.0001**	1.108	(1.051,1.168)	214 (40.4)	316 (59.6)
Factors associated with POBC							
Enforcement visibility							
No	1	1	1	1	1	416 (54.2)	352 (45.8)
Yes	0.391	8.404	0.004*	1.478	(1.135,1.926)	172 (38.1)	279 (61.9)
Media exposure							
No	-	-	-	-	-	316 (56.3)	245 (43.7)
Yes	-	-	-	-	-	272 (41.3)	386 (58.7)
Experience of traffic enforcement							
No	-	-	-	-	-	419 (51.6)	393 (48.4)
Yes	-	-	-	-	-	169 (41.5)	238 (58.5)
Severity of traffic punishment							
No	1	1	1	1	1	345 (55.3)	279 (44.7)
Yes	0.315	6.038	0.014*	1.370	(1.066,1.762)	243 (40.8)	352 (59.2)

Model chi-square = 63.632, p < .001;
*significant at p < .05; ** significant at p < .01

CONCLUSIONS

This study highlights the potential targeted group of road users in designing future intervention programmes. A greater intensity of enforcement activities over a longer period will be needed to increase road users' perceived risk of being caught. Because a lack of enforcement officers is always noted as the reason for poor enforcement activities, the media can be used to advocate and promote the seriousness and visibility of the enforcement activities. Hence, the enforcement bodies can take the measures to revise their current enforcement strategies. This is vital in making the enforcement factors significant in reducing road accidents as well as decreasing number of traffic violations. The result will be indicated as successful as of higher perceived risk of detection among the road users.

This study has a number of limitations. First, with regard to its selection of areas of data collection where it is believed that the data might be enriched if respondents from east coast region of Peninsular Malaysia, Sabah and Sarawak are included. Second, the data is expected to produce different results if the data collection process is conducted during non-festive season. A number of future studies can be conducted particularly with regards to the effectiveness of media (e.g. television, radio, newspaper, internet) in road safety education program and level of understandings on the road safety media campaign among motorists in Malaysia.

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