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ORIGINAL ARTICLE

Road Safety Legal Compliance among Malaysian Motorcyclists

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ABSTRACT – With the ever increasing popularity of motorcycles as a mode of transport in Malaysia and several other countries in Southeast Asia, numerous of legislation, enforcement and other legal compliance are available to improve their effectiveness toward motorcyclists. The awareness level among motorcyclist toward legal compliance is very important to the motorcyclist to check and balance their knowledge and attitude toward road safety. The main objective on this study is to measure the level of compliance among motorcyclist towards Road Safety Legislations. Furthermore, the common errors done by motorcyclist during riding, and also legal compliance related to motorcycle are discussed in this study. A descriptive and cross sectional study was used to identify the level of awareness among motorcyclist towards legal compliance by using observation and a set of questionnaire. The result from the study revealed that knowledge and attitude among motorcyclists were good toward legal compliance of Road Safety regulations.

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INTRODUCTION

Road traffic injuries constitute a major public health and development crisis. It has the possibility to increase if the road safety is not prevents from earlier [1]. Road transport is the most complex and most dangerous systems that people have to deal every day. Without increased efforts and new initiatives, the total number of road traffic deaths worldwide and injuries is forecast to rise by 65% between 2000 and 2020 [2-3]. It is an urgent need to recognize the worsening situation in road deaths and injuries in order to take appropriate action to counter this problem recurrence.

Motorcyclists mostly are involved in accidents compare to other road users. Many are injured and killed each year and their proportion of all traffic injuries has increased, mainly due to the doubling of the number of motorcycle in use in the last decade [4]. Nationally, a strategy to increase safety for motorcyclists has been developed in collaboration between related authorities and organizations such as Malaysian Institute of Road Safety Research (MIROS) and Road of Transport Department. One part of the strategy is to find out how motorcyclists behave in traffic and the attitude among the motorcyclists toward road safety measures. There are a lot of international and Malaysian research papers on motorcycle safety and on various measures to support the importance of knowledge and attitude of motorcyclists toward road safety. There is also much legal compliance related to motorcycle such as wearing helmet in Malaysia to give a positive effect toward road safety. However, there is a gap that has been identified which is lacking of awareness among motorcyclist toward road safety and the legal compliance.

The remainder of this paper is organized as follows: Section 2 briefly presents an overview of methodologies were selected for achieving the study objectives. Section 3 provides the obtained results and discusses these results in detail. Lastly,section 4 concludes the paper.

METHODOLOGY

Reseach Design

This study used descriptive and cross sectional study as a research design. The descriptive study was used to observe and collect the data by using the techniques called observation and questionnaire (Umar, 2007). Based on these instruments, the responses from 103 respondents regarding awareness level among motorcyclist toward legal compliance had been collected.

Next, cross sectional study had been used to measure level of knowledge and atttitude among motorcyclist towards legal compliance (Figure 1). The data had been analysed using quantitative approach for the observation and questionnaire.

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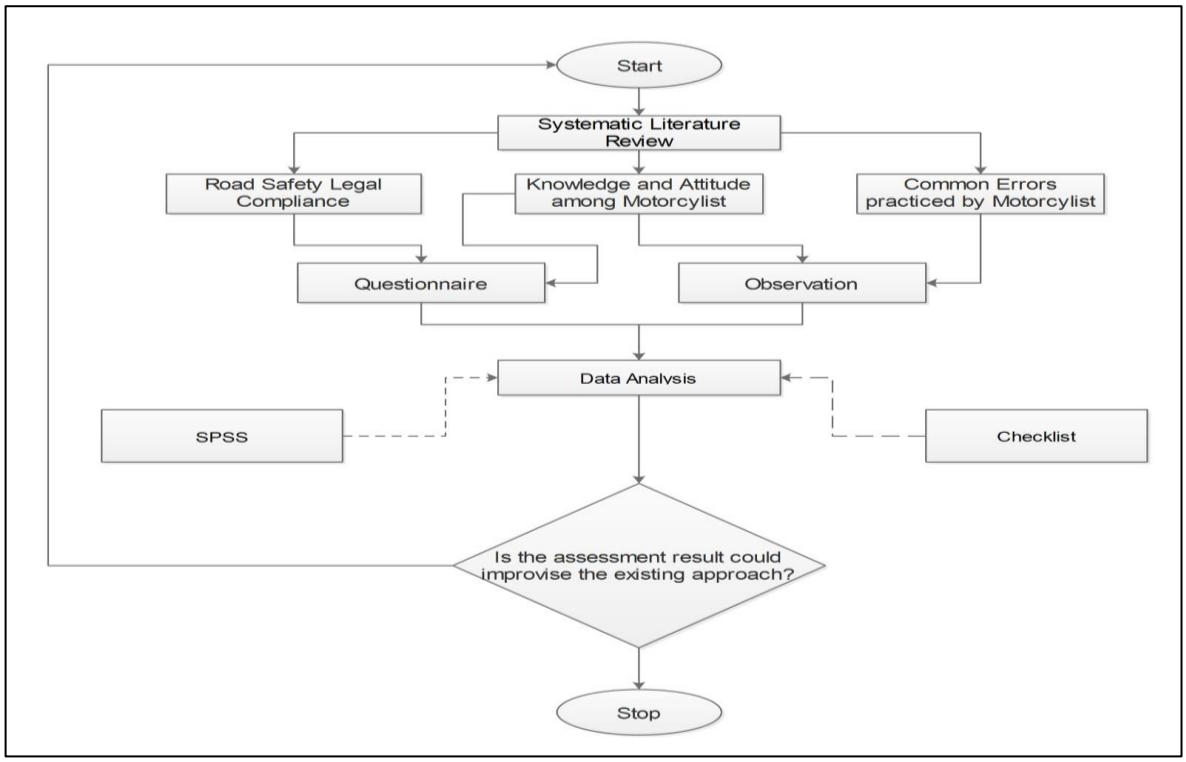

Figure 1. Research Flow

Reseach Area

There are several locations that have been chosen in Batu pahat, Johor Malaysia. The focus group is motorcycle users on the exact location as follow:

1. Two roads that are near to traffic light:
   - Jalan Bakau Condong Batu Pahat; and
   - Jalan Rugayah, Kampung Pegawai Batu Pahat.
2. Two straight roads:
   - Jalan Simpang Lima Parit Sulong Batu Pahat; and
   - Jalan Bukit Pasir Batu Pahat.

Reseach Instrumentation

- ✓ **Document reviews**: All data from statistic or police report regarding motorcycle accidents for the past years have been reviewed thoroughly. At the same time, a few documents had been referred from MIROS to be used as a baseline data for this study.
- ✓ **A set of questionnaire**: There were four sections including general information about the respondents, knowledge and attitude measure, driving experience and lastly the road safety awareness. Besides that, information about motorcyclist common errors and level of compliance among motorcyclists toward road safety legislations were collected.
- ✓ **Observation technique**: This technique used to record common errors by motorcyclists on the selected roads. By using checklist and capturing the pictures within the particular timeframe, all information on how the behaviour of motorcyclists on the road were recorded.

Data Analysis

For data analysis, the software known as Statistical Package for Social Science (SPSS) version 27.0 was used for conducting the statistical analysis. SPSS is the software computer program that be used for the purpose to program data entry and create graphs and tables. SPSS also capable to handling large amount of data and can analyse all the analysis that required. Most of the researchers used this type of software to analyse their data collection.

Interpretation for the data obtain from five (5) likert scale answer was defined by mean score, with the mean value of 1.00-2.49 categorized as low level, 2.50-3.49 categorized as moderate level, and 3.50-5.00 categorized as high level

(Weimar, 2000). This scale have been indicated by color coding as shown in Table 1. Meanwhile, Descriptive Test had been presented in the forms of frequency using tables and graph. The data from the observation had been used as the additional information to support the finding obtained in this study.

Table 1. Mean Score Range

Mean	Level	Color Coding
1.00-2.49	Low	
2.50-3.49	Moderate	
3.50-5.00	High	

RESULTS AND DISCUSSION

Validity Test Result

To validate the questionnaire, a pilot study has been conducted among 10 respondents. The respondents are from students of Universiti Malaysia Pahang, campus of Gambang. The data has been analysed to find Cronbach's Alpha (George & Mollery, 2003). The total numbers of items are 29 and the Cronbach's Alpha coefficient value is 0.788. Since the analysis shown the value is 0.788 which is at the range between 7 to 8, the coefficient value is acceptable.

Descriptive Analysis

Socio-Demographics

The data presented in Table 1 reveal that most of the respondents are from female which contribute 54.4% (56) compare to male which contribute 45.6% (47). This proves that most of the students use motorcycles are from female. According to table, most of the respondents were from 22 years old which contribute 26.2% (27). While the least of the respondents, were from 19 years old which contribute only 1% (1). This show the most of the respondents are in senior years.

According to the table 1, most of the respondents own a motorcycle which contributes 54.4% (56). The respondents who does not own a motorcycle contributes only 45.6% (47). This shows that most of the students from UTHM have their own motorcycle. Next, the highest respondents answering yes which contribute 75.7% (78) that they have their license. While, least respondents answering no which contribute 24.3% (25) that they do not have their license. As shown in table 1, more than half, 69.9% (72) of the respondents spend their time riding motorcycle for about 0 to 5 hours per day. While, only 3.9% (4) respondents spend their time riding motorcycle in average 16 hours and above.

According to the Table 2, most of the respondents did not have any motorcycle accidents during the last 2 years. More than half respondents answer none which contribute 60.2% (62) respondents. While, the least respondents were having 3 to 4 accidents during the last 2 years contributed only 2.9% (3) respondents. The result can be concluding that most of the respondents are following traffic rule and legal compliance. More than half of respondents answering none which contribute 60.2% (62) respondents while least of the respondents answering they had major accidents during the last 2 years which contribute only 7.8% (8) respondents. From the results, since most of the respondents answering they did not have any accidents during the last 2 years, most of the respondents answering none for this question. Excluding for the 'None' answer, the most common consequence of the accidents was minor accidents.

Table 2. Socio-Demographic Information

	Frequency (N=103)	Percentage (%)
GENDER		
Male	47	45.6%
Female	56	54.4%
AGE		
18	4	3.9%
19	1	1.0%
20	14	13.6%
21	24	23.3%
22	27	26.2%
23	25	24.3%
24	8	7.8%
OWN A MOTORCYCLE		
Yes	56	54.4%
No	47	45.6%
HAVE MOTORCYCLE LICENSE		
Yes	78	75.7%
No	25	24.3%
YEAR HELD MOTORCYCLE LICENSE		
Less than 2 years	27	26.2%
2 to 5 years	38	36.9%
6 to 10 years	13	12.6%
I do not have license	25	24.3%
HOUR SPENT RIDING MOTORCYCLE IN ONE DAY		
0 to 5 hours	72	69.9%
6 to 10 hours	20	19.4%
11to 15 hours	7	6.8%
16 hours and above	4	3.9%
MOTORCYCLE ACCIDENTS		
None	62	60.2%
1 to 2 accidents	32	31.1%
3 to 4 accidents	3	2.9%
5 or more accidents	6	5.8%
TYPE OF ACCIDENTS		
None	62	60.2%
Minor	33	32.0%
Major	8	7.8%

Common Errors Practiced by Motorcyclist during Riding

Table 3 shows the percentage and the frequency of common errors respondents always done during them riding even without getting any fine based on the questionnaires results. Based on the table 2 shown below, most of the respondents commonly did not wearing helmet during riding. Thus, the result for not wearing the helmet contribute higher mean which is 3.42 compare to the other common errors. The Road Safety Departments in its inspection found that there was still low awareness on the importance of helmets, especially among those from rural areas. Most of the common excuse was that short distances do no necessitate the wearing of helmets.

Next, the result for racing contribute lowest mean which is 2.24 compare to the other common errors. The level is low for the racing which is good for most of the respondents because they did not participated in any motorcycle racing. This is due to consider allowing legalised motorcycle street in certain area such as at Kuala Lumpur by the government.

Table 3. Common Errors Practices by Motorcyclist during Riding

Common Error	Mean	Level	Color Coding
Not wearing helmet	3.42	Moderate	
License expires	3.15	Moderate	
Breaking traffic light	3.13	Moderate	
Speeding	3.09	Moderate	
No license	2.57	Moderate	
Illegal race	2.24	Low	

Time-Frame Observation

In the original OBL concept, the agents and their opposite agents are asymmetric on the midpoint within the range of variables' current interval. This opposite agents might possibly flee from the global optimum, which leads to decrease the contribution of opposite points. Therefore, opposition-basedFrom the observation on two different roads at Table 4 and Table 5, it can be conclude that all the riders from Jalan Bakau Condong have some knowledge on the safety of wearing helmet, the safety of use phone during riding and not exceed two people when riding compare to riders from Jalan Rugayah. Other than that, most of them use to wear the helmet just for a matter of meeting legal requirements [9]. For others elements such as follow traffic light and screw around other transportations, some of the riders from both roads still did not follow the rule and did not aware of danger on screwing around others transportations.

Compared on both roads, all the riders at Jalan Bakau Condong, did not riding the motorcycle exceed than two people while at Jalan Rugayah there are three (3) riders exceed two people in one motorcycle around 12.00 to 2.00 pm and five (5) riders exceed two people in one motorcycle around 4.30 pm to 6.30 pm. This shows that some of the riders in Jalan Rogayah still are lacking on awareness of riding exceed more than two people. Besides that, based on the observation from both different roads, it shows that some of the riders still not following the traffic light. The table shows each different times of observation, there must be some riders who not following the traffic light. Other than that, from the results of both roads, most of the riders tend to screw around to others transportations to make sure they are near to the traffic light. Even though there are still no legal compliances toward the riders but there is still not safer to screw around others transportations.

Table 4. Number of Motorcyclist Recorded

Jalan Rugayah						Factor	Jalan Bakau Condong					
Time Record							Time Record					
7:30am – 9:00am		12:00pm - 2:00pm		4:30pm – 6:30pm			7:30am – 9:00am		12:00pm - 2:00pm		4:30pm – 6:30pm	
M	P	M	P	M	P		M	P	M	P	M	P
21	6	32	9	22	7	Wearing Full Helmet	11	3	12	4	14	3
10	5	17	4	20	4	Wearing Half Helmet	-	1	2	1	5	-
3	2	2	1	-	1	Not Wearing Helmet	-	-	-	-	-	-

**** Note**: M = Motorcyclist; P = Passenger*

Table 5. Common Errors Practices by Motorcyclists Recorded

Jalan Rugayah						Factor	Jalan Bakau Condong					
Time Record							Time Record					
7:30am – 9:00am		12:00pm - 2:00pm		4:30pm – 6:30pm			7:30am – 9:00am		12:00pm - 2:00pm		4:30pm – 6:30pm	
Y	N	Y	N	Y	N		Y	N	Y	N	Y	N
30	5	41	3	38	4	Follow Traffic Light	9	2	12	2	17	2
14	21	22	22	20	22	Screw Around	7	4	4	10	10	9
-	35	-	44	-	42	Use Handphone during Riding	-	11	-	14	-	19
-	35	33	41	5	37	Exceed two passengers	-	11	-	14	-	19

***Note**: Y = Yes; N = No*

Next, to know the speeding of the respondents, the radar gun had been used. The result had been shown in Figure 2 and Figure 3. For the Figure 2, the observation had been done at Jalan Bukit Pasir, Batu Pahat while for the Figure 3, the observation had been done at Jalan Simpang Lima, Parit Sulong Batu, Pahat. Both of the figures show the trend of motorcycle speeding on three different times.

From Figure 2, it indicated that around 12.00 pm to 2.00 pm, there are too many vehicles on the roads and some of the riders want to arrive at their destination quickly. These causes some of the riders tend to ride exceed the speed limit. The speed limit in Malaysia for state roads is 90 km/h. Meanwhile Figure 3, the overall results, it indicated that all the riders did not exceed the speed limit which is below 90 km/h. This is because, Jalan Simpang Lima, Parit Sulong, Batu Pahat is located at rurar area, which most of the riders are from young and old residents. Most of them ride their motorcycle to go to mosque or any destination related.

From all the results, that can be conclude that, even though the respondents at Jalan Bukit Pasir, Batu Pahat had good attitude on road safety regarding common errors compared to the respondents at Jalan Simpang Lima, Parit Sulong, Batu Pahat, but some of them still riding the motorcycle exceeding the speed limit. For Jalan Simpang Lima, all the respondents did not exceeding the speed limit when they were riding.

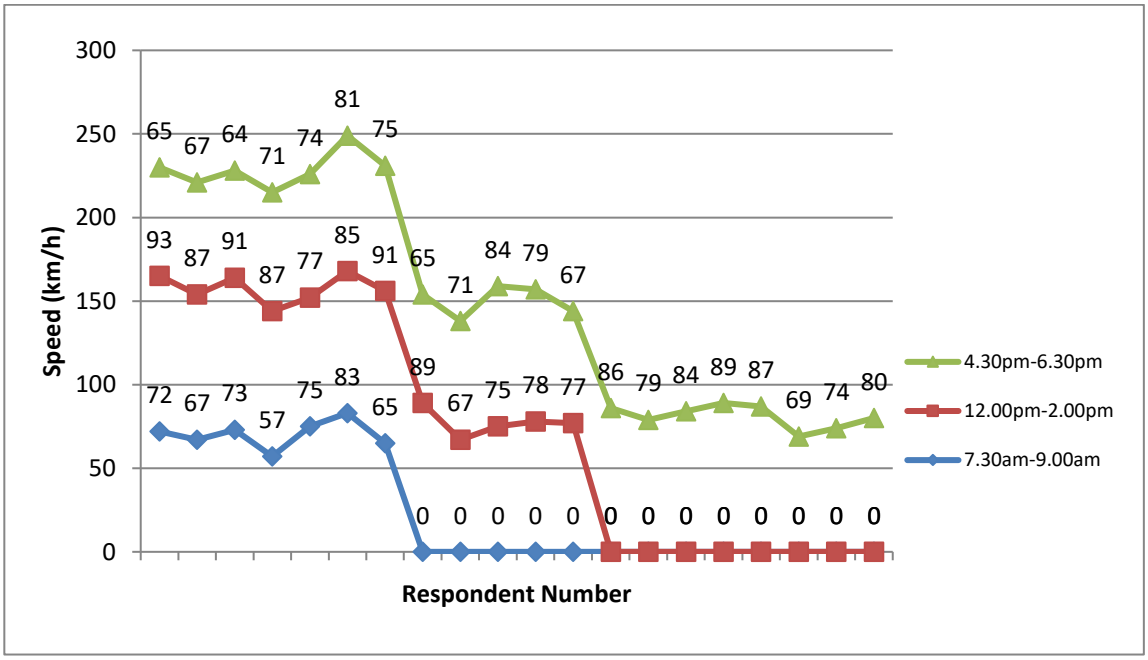

Figure 2. Motorcyclist Speed Recorded at Jalan Bukit Pasir

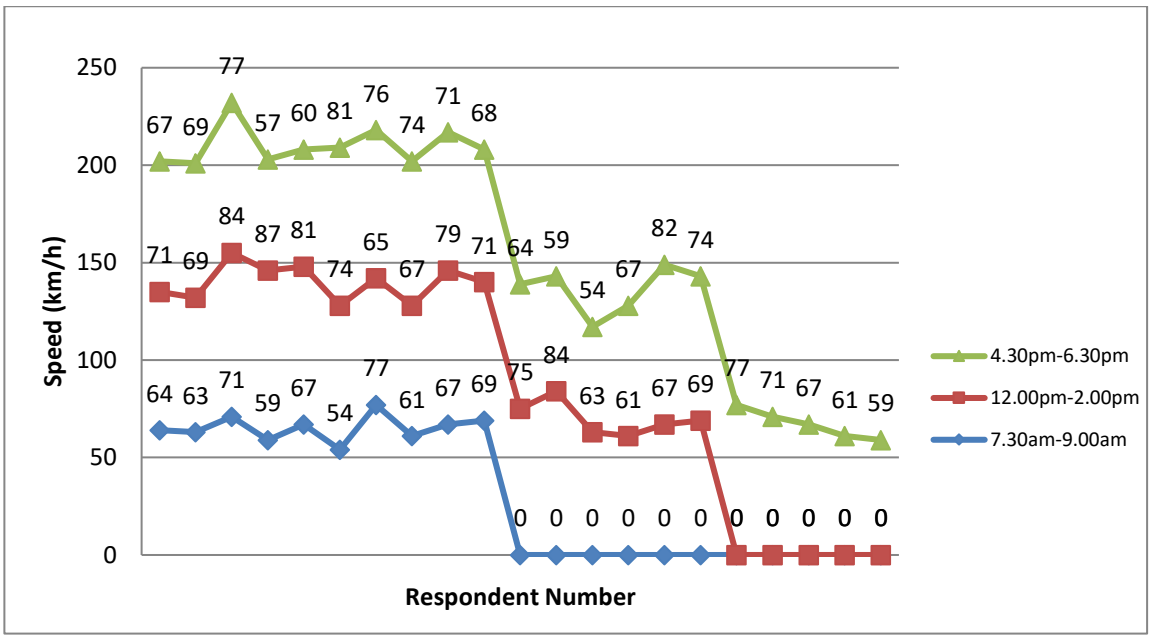

Figure 3. Motorcyclist Speed Recorded at Jalan Simpang Lima, Parit Sulong

From all the results, that can be conclude that, even though the respondents at Jalan Bukit Pasir, Batu Pahat had good attitude on road safety regarding common errors compared to the respondents at Jalan Simpang Lima, Parit Sulong, Batu Pahat, but some of them still riding the motorcycle exceeding the speed limit. For Jalan Simpang Lima, all the respondents did not exceeding the speed limit when they were riding.

Legal Compliance related to Road Safety for Motorcycle

This section will discuss on legal compliance related to common errors done by the motorcyclists. Some of the common errors are legally required for the motorcyclists to use when they are riding their motorcycle.

Table 6 shows the checklist on the existence of legal compliance on most common errors done by the motorcyclists. From the table, it shows that Law of Malaysia Act 333 Road Transport Act 1987 almost covers on each type of common errors exist in Malaysia. Besides that, each of the common errors had different section and different fined even though most of the commons errors had been covered in Road Transport Act 1987. Other than that, from the table shown at Table 5, the legal compliance towards the motorcyclists who screw around other transports and using their phone while they were driving still do not exists. But, when the motorcyclists were found guilty, they will receive the fined.

Next, from the checklists above, most of the legal compliance covers for the use of helmet during riding. There is at least three of legal compliance related to motorcycle helmets. This indicates that, there is an important role on the using of helmet since there is much legal compliance related to use of helmet.

Table 6. Checklist on Legal Compliance towards Motorcyclist Common Errors

Road Safety Regulations	MSS	RTA 1987	MSHE 1973	NSLO 1989
Common Errors				
No Helmet	√	√	√	
Exceed Speeding Limit		√		√
Breaking traffic light		√		
Illegal race		√		
License expires		√		
No license		√		
Screw around				
Use phone when riding				
Exceed more than two people		√		

**Note: MSS= Motorcycle Safety Standard; RTA 1987= Road Transport Act 1987; MSHE 1973= Motorcycle Safety Helmet Rule 1973; NSLO 1989= National Speed Limit Order 1989*

Knowledge : Legal Compliance related to Road Safety for Motorcycle

Table 7 show the sources of the advertising road safety campaign commonly heard or saw by the respondents. From the result, it shows driving school have the highest mean score which is 3.65. This indicated that most of the respondents have their own license and teaching staff or instructors at the driving school play an important rule toward the advertising campaign. Besides that, sources from television and social media also have the high mean of score. This indicated that people nowadays depending on social media and television as the medium they get the information [10]. Based on sharing of pictures or video of dangerous riding practice through the media Massa, the public can gain knowledge on the better road safety environments. From the television and social media, it can turn to create a safer riding experience for the public to ride their motorcycle every day.

Next, from the result shown at table 6 most of the respondents did not hear or see any advertising campaign on road safety at their workplace when they are doing their internship or when they are joining any program. This is because, the result indicates that the mean of score from both sources is low which 1.74 is at workplace and 2.18 when they are joining any program. Since most of the respondents still not have done their internship and never have the experience on doing part time job, most of them answering never which contribute more than half respondents. Besides that, since some of the respondents had different scope of their job, some of their company did not aware on the advertising the campaign related to road safety.

Table 7. Road Safety Information Resources

Resources	Mean	Level	Color Coding
At driving school	3.65	High	
Television	3.62	High	
Social media	3.51	High	
Radio	2.76	Moderate	
At school	2.75	Moderate	
Joining other program	2.18	Low	
At workplace	1.74	Low	

Attitude : Legal Compliance related to Road Safety for Motorcycle

Table 8 below show the attitude measures of personal protection often use by the respondents. Based on the result below, most respondents have the good attitude toward full helmet. The result show the mean of score for full helmet is

high which is 3.86. Besides that, the lower mean of score for attitude measure for personal protection were related to personal protective equipment which are safety reflector, safety glove and boots.

Since there is no legal requirement for personal protective equipment such as safety trouser, safety jacket, safety gloves and boots other than helmet, most of the respondents still have low attitudes to wear the personal protective equipment before riding the motorcycle [4]. There is potential for improvement toward safety trouser, safety gloves and boots since there are still more than 10% respondents who wear this personal protective equipment before riding.

Table 8. Personal Protective Choice

Personal Protective	Mean	Level	Color Coding
Full Helmet	3.86	High	
Half Helmet	2.85	Moderate	
Safety Trouser	2.55	Moderate	
Safety jacket / Reflector	2.16	Low	
Shoes/ Boots	2.11	Low	
Safety Gloves	1.73	Low	

CONCLUSION

This paper reports that common errors had been done by motorcyclists were speeding, not wearing helmet, breaking traffic light, participate on illegal racing, issues on license which is license expires and not having the license during riding, screw around other transports, use phone while riding and riding the motorcycle exceed more than two people. From all the errors, the highest results show most of the motorcyclist did not wear the helmet when riding. This is explained by the high of mean of score which is 3.42 compare than other common errors. This result can be supported by The Road Safety Departments as their inspection found that there was still low awareness on the importance of the helmets, especially among those from rural areas.

Based on the findings, there are many available law, regulation and legal compliance related to motorcycle in Malaysia. Some of the legal compliance related to motorcycle is Motorcycle Safety Standard, Law of Malaysia Act 333, Road Transport Act 1987, Motorcycle Safety Helmet Rule 1973 and National Speed Limit Order 1989. From the findings, most of the legal compliance has been states for the common errors done by motorcyclist. The most common errors that had cover in a legal compliance are 333, Road Transport Act 1987. This is because the regulation has been including most of the common errors with the fine.

To measure the level of awareness among motorcyclist toward road safety, knowledge and attitude of the respondents had been analyses. The finding indicates that most of the motorcyclists know the knowledge on road safety. This is explained by the highest respondents which is 97.1% (100) respondents aware of the danger of not using the helmet. Other than that most of the respondents have good knowledge on the road safety awareness and

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