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# The Relationships between Demographic Variables and Risk-Taking Behaviour among Young Motorcyclists

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## ABSTRACT

In a previous study, it is well documented that adolescents are more likely than adults to engage in risky behaviour (Arnett, 1992). Most evidence suggests that risk-taking is the most important major factor underlying the high crash rates among teens. The objectives of this study were: 1) to examine the extent of risk-taking behavior of Malaysian motorcyclists, and 2) to investigate the relationship between demographic variables of motorcyclists and risk-taking behavior. A total of 540 respondents from six different areas in the Klang Valley (Jalan Kapar, Jalan Meru, Jalan Ampang, Lebuhraya Damansara Puchong, Jalan Tun Razak and Jalan Kuala Selangor-Sungai Buloh) were surveyed. The study found that there were significant gender differences in term of 'riding over speed limit' and 'riding without crash helmet'. In terms of age, there are significant differences between age and 'riding without crash helmet'. In terms of personal income, the result showed that there are significant differences between personal income and 'riding without crash helmet' and 'riding without headlights and not stopping at three-way junction'. However, there are no significant difference between race and highest education level and risk-taking behavior dimensions.

*Keywords:* Headlight, motorcyclists, risk-taking behaviour, speed limit, three-way junction

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## INTRODUCTION

In many countries, motorcycle is one of the most popular modes of transportation among road users. Because of the reasonable price, easy to handle, and the economical usage of petrol, motorcycle has been chosen as one of the better transportation modes to move

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from one place to another. According to the Road Transport Department, there were 8.9 million registered motorcycles in 2009, with an average of 468,054 motorcycles being registered annually from 2005 to 2009. In total, about 47% of the registered vehicles in Malaysia are motorcycles (RTD, 2010).

Malaysia has quite a high road accident rate (Mohd Rasdan & Mohamed Rehan, 2005). The number of vehicles that was on Malaysian roads in 2002 is 12,021,939. Almost 50 percent (5,842,617) of them are motorcycles. These numbers are still growing at a rate of more than 6 percent a year. Road crash statistics reported by the Royal Police Malaysia revealed that in 2002, out of 5886 fatality due to road accidents, 3030 of them involved motorcyclists. From the number, those accident fatalities for motorcyclists were almost 51 percent of the total accidents in Malaysia.

In 2009, the total motorcyclist fatality figure was 4,067 or 60% of the total recorded road fatalities (RMP, 2010). This figure represented an increase of 9% in the number of fatalities from the 2002 data. Fifteen years prior to that, motorcyclist in Malaysia were reported to have an overall relative risk of 20 times greater than that of car drivers' (Radin Umar, Mackay & Hills, 1995).

In general, this study endeavoured to examine the risk-taking behaviour of motorcyclists. In more specific, the main objectives of this study were to examine the extent of risk-taking behaviour of Malaysian motorcyclists and to investigate the relationship between the demographic variables of motorcyclists and risk-taking behaviour.

## BACKGROUND OF THE STUDY

Different groups of people have different exposures to risk. As population changes over time, so does the overall exposure of that population. Fluctuations in the relative sizes of different population groups will have a strong effect on the road traffic toll. The risk of a motorcyclist to be involved in an accident depends on several factors such as rider's age, sex, experience, type of road, characteristics of the motorcycle and exposure. The assessment of risks is complicated by the interactions between these and other factors (Sexton, Fletcher, & Hamilton, 2004). The current study proposed five demographic variables that would have impacts on risk-taking behaviour, namely gender, age, race, highest education and personal income.

Chesham, Rutter and Quine (1993) found that young male motorcyclists are at a higher risk of accident involvement than motorcyclists of other age groups. In general, young male drivers as a group behave more riskily than female and older drivers and are also worse at hazard perception than older drivers (McKenna, Waylen, & Burke, 1998). This factor is likely to influence accident liability. Young male drivers have a higher accident liability than females (Maycock, Lockwood, & Lester, 1991; McKenna *et al*., 1998).

There is a common belief that men are more inclined to take risks than women (Byrnes, Miller, & Schafer, 1999). In Delhi, however, not wearing a helmet was the only risk behaviour which was found to be prevalent more in females (77.7%) than

in males (70.3%) (Rahul, Vijay, Grover, & Chaturvedi, 2007). The explanation for this was that currently wearing helmet while riding a motorized two-wheeler was only mandatory for male riders.

It is well documented that adolescents are more likely than adults to engage in risky behaviour. For example, adolescents are more likely than adults to drive recklessly, to drive while intoxicated, to use varied illicit substances, to have unprotected sex, and to engage in both minor and more serious antisocial behaviours (Arnett, 1992). Most evidence suggests that risk-taking is the most important major factor underlying the high crash rates among teens (Finn & Bragg, 1986; Jonah, 1986; Williams, 2001).

The tendency for young drivers to engage in high-risk driving activities has been well documented (see for e.g., Cooper, 1987; Evans & Wasielewski, 1983; Jonah, 1986, 1990). For example, risk-taking behaviour in young drivers has even been identified as a major factor in young drivers' basic motivations not to use seatbelts, which is one of the reasons that their fatal crash rates are higher than those of the older age groups (Begg & Langley, 2000; Chliaoutakis, Gnardellis, Drakou, Darviri, & Sboukis, 2000; Hodgdon, Bragg, & Finn, 1981; Jonah, 1986; Mayhew & Simpson, 1999; Williams & Shabanova, 2002).

Motorcyclists who possess lower level of education tend to use motorcycles more. In a study conducted in Taiwan, they found that people of lower education level make up the higher number of motorcycle users (Hsu *et al*., 2003).

Numerous studies on adolescent risk behaviour have revealed significant differences among racial or ethnic groups, with the highest cigarette and alcohol uses reported among white teens, whereas earlier onset of intercourse has been consistently found among black youths (Robert *et al*., 2000).

Some adolescent health risk behaviours appear to be disproportionately high among youths of colour, adolescents of lower-income families and those living in poverty, but these demographic factors do not predict youth health risk behaviours well (Robert *et al*., 2000). Helmet use varies from slightly over zero in some low-income countries to almost 100 percent in places where laws on helmet use are effectively enforced. In several low-income countries, helmet use has been found to be lower at night (Ichikawa, Chadbunchachai, & Marui, 2003). Though the wearing of helmets is generally widespread in most high-income countries, there is some evidence of a decline. In the United States, for example, helmet use fell sharply to 58 percent in 2002 from 71 percent recorded two years previously (Glassbrenner, 2002).

## METHODOLOGY

This is a quantitative research that employed the quantitative survey method for data collection. Survey research is widely used to determine specific characteristics of groups and to measure the attitudes and opinions of groups towards certain issues (Ary, Jocobs, & Razaveih, 2002). A survey was conducted to examine the risk-taking

behaviour of Malaysian motorcyclists in the Klang Valley. The survey was carried out within three weeks (one week for two areas) from 8 March 2010 to 31 March 2010.

*Research Instrument*

The questionnaire consisted of three pages excluding the cover page. The questionnaire contained 11 demographic questions. This part sought information on the respondents' background, which is important for data analysis (e.g., the relationship between gender and crash experience). In more specific, the questions in this part include gender, age, race, highest education level, personal income and experience in riding motorcycle.

Measurement items in this study were generally generated from a previous research. However, minor modifications were done to suit the context of the current study. This was done following the feedback from the pre-testing. Nevertheless, the modifications do not alter the content of the constructs. Even though most of the measurement items were modified from the existing scales, some of the items were newly developed based on the perspectives of the current study .

Originally, this questionnaire was developed using the English language because all the adapted questions from the previous literature used the English version. The researcher translated the questionnaire into the Malay language. The translation of the questions into the Malay language was deemed appropriate since the levels of English language proficiency among Malaysians are different. Furthermore, the translation must be simple and easily understood by the respondents in order to get more meaningful answers. Both languages are presented in sequences in the questionnaire.

The questionnaire consisted of 11 pages excluding the cover page. The questionnaire in Part A was divided into six sections. Instructions were clearly and precisely stated on the first page of each section. The instruction was given to guide the respondents when answering the questionnaire. Itemized scales rating, i.e., Likert-type scale, was applied to all the questions in Part A. All statements and questions in Part A used a 5-point Likert scale (1= strongly disagree, 2= disagree, 3= not sure, 4= agree and 5= strongly agree).

*Sampling*

A total of 550 questionnaires were distributed in the Klang Valley to collect the data. The minimum targeted sample size was set at 540 respondents. This sample size is considered to be feasible, as well as being time and cost efficient for the researcher. A sample size that is too small might affect the generalizability of the results, whereas a sample size that is too large will not be feasible for the researcher to complete the data collection due to time and cost constraints.

Klang Valley is an area that comprises Kuala Lumpur and its suburbs and adjoining cities and towns in the state of Selangor, Malaysia. Six places were chosen from the Klang Valley area. These places were chosen

because they have recorded the highest number of road accidents. The selection of the area in this study was based on an area which was recorded as the route with the highest number of motorcycle accidents in the Klang Valley. Furthermore, the two routes from each area with the highest number of motorcycle accidents are Klang, Petaling Jaya and Jalan Bandar (MIROS Road Accident Analysis and Database System, M-Roads, 2008).

In this case, area sampling was used. In selecting the respondents in these localities, convenience sampling was used to select the target respondents. It was a self-administered and drop-off method of survey where no personal interview was involved but short briefing was given to the respondents prior to distributing the questionnaire. Using the convenience sampling, the researcher got the respondents from any places that the researcher could see motorcyclists such as in front of the shops, side of the road, shopping centres, etc.

## ANALYSIS OF RESULTS

The demographic profile of the respondents, namely, age, gender, race, higher education level and personal income, were included in this study. Frequency distribution and percentage distributions were used to describe responses on categorical demographic variables. In terms of gender, majority of the respondents are males (76%), whilst females contributed to about 24% of the respondents. In terms of age, most of the respondents were in the 21 – 30 age bracket (46.6%). In terms of race, majority of the respondents are Malays (90.2%). As for the education level, the majority of the respondents are SPM or MCE holders (46.4%). In terms of personal income, approximately half of the total respondents earned less than RM1,000 .

*Objective 1: To examine the extent of risk-taking behaviour of Malaysian motorcyclists.*

Generally, as shown in Table 1, most motorcyclists are not risk takers. They generally abide traffic laws. Only for statement no. 5, i.e., "I always ride my motorcycle without using a crash helmet in a residential area.", they tend to violate the traffic law (Mean=3.127). The highest level of agreement was for the statement no. 14, i.e. "While riding on motorcycle, as I am overtaking or turning into a junction, I will indicate or signal to the other drivers and ensure that it is safe to do so.", about 85 percent of the respondents agree with the statement (Mean=4.259).

*Objective 2: To investigate the relationship between demographic of motorcyclists and risk-taking behaviour.*

The result of the factor analysis shows a KMO value of 0.842, indicating that it is adequate to use the factor analysis. In addition, the Barlett's test of sphericity also exhibited $p<0.001$, indicating the appropriateness of using the factor analysis. A summary of the factor analysis results are presented in Table 2.

Table 2 shows that there are four factors extracted (see Table 3). There were five items on Factor 1, labelled as 'Riding over

TABLE 1
Risk-Taking Behaviour: Mean Scores and Standard Deviation

| | Risk-Taking Behaviour | Mean** | Standard Deviation | Agree*** | Not Sure | Disagree**** |
|---|---|---|---|---|---|---|
| 1. | When I ride on my motorcycle, I always stop at a stop sign.* | 3.860 | 1.137 | 70.7 | 14.9 | 14.4 |
| 2. | When I ride on my motorcycle, I used to overtake another vehicle in an area where overtaking is not allowed. | 2.438 | 1.260 | 24.6 | 13.4 | 62.0 |
| 3. | I always ride my motorcycle over the speed limit. | 2.615 | 1.302 | 28.7 | 18.1 | 53.2 |
| 4. | I always ride my motorcycle along a deserted road without using a crash helmet. | 2.832 | 1.406 | 39.1 | 13.4 | 47.5 |
| 5. | I always ride my motorcycle without using a crash helmet in a residential area. | 3.127 | 1.384 | 51.0 | 11.5 | 37.5 |
| 6. | I always take off my crash helmet while riding motorcycle before reaching my destination. | 2.415 | 1.289 | 25.4 | 10.6 | 64.0 |
| 7. | When I ride on motorcycle, I like to ride fast (over the speed limit). | 2.589 | 1.360 | 29.6 | 15.6 | 54.8 |
| 8. | I will ride fast on motorcycle even though I am not late for an appointment. | 2.524 | 1.254 | 57.7 | 16.6 | 25.7 |
| 9. | I like to beat the 'traffic light' when I ride on my motorcycle. | 2.285 | 1.245 | 20.4 | 12.3 | 67.3 |
| 10. | Sometimes I feel it is unnecessary to keep my motorcycle headlights on while I am driving in the daytime. | 2.582 | 1.418 | 33.0 | 10.4 | 56.5 |
| 11. | Wearing a crash helmet while riding a motorcycle is uncomfortable. | 2.386 | 1.383 | 25.7 | 8.6 | 65.7 |
| 12. | When riding on motorcycle, I do not have to stop at a three-way junction if there are no vehicles coming from the right and left directions. | 2.407 | 1.350 | 62.6 | 11.6 | 25.8 |
| 13. | While riding on motorcycle, I will indicate/signal to other vehicles behind me before turning left or right.* | 4.108 | 1.046 | 80.4 | 9.0 | 10.6 |
| 14. | While riding on motorcycle, as I am overtaking or turning into a junction, I will indicate or signal to the other drivers and ensure that it is safe to do so.* | 4.259 | 0.938 | 85.0 | 8.0 | 6.9 |

* Reversed Score
** Based on 5-point scale from 1= strongly disagree, 2= disagree, 3= not sure, 4= agree, 5= strongly agree
***Category 'Strongly Agree' and 'Agree' were merged into one category called "Agree".
****Category 'Strongly Disagree' and 'Disagree' were merged into a category called "Disagree".

Speed Limits', which depicts motorcyclists who are riding over the limit. On the other hand, Factor 2 was loaded by the items related to 'riding without crash helmet'. In total, three items were loaded on this factor. Factor 2, 'Riding without Crash Helmet', portrays individuals who do not wear helmet when riding their motorcycle. For the items, 'riding without using signal', it was basically loaded into the third factor. In total, two items were loaded into Factor 3. Factor 3, which is labelled as 'Riding without using Signal', refers to motorcyclists who do not like to use signal before they turn right or left. In Factor 4, two items from 'riding without headlights and not stopping at three-way junction' were loaded into this factor. Factor 4, 'Riding without Headlights and not Stopping at Three-way Junction', reflects individuals who think that riding with headlights is unnecessary. They also do not want to stop at three-way junction.

*The Relationship between Demographic and Risk-Taking Behaviour Dimensions*

Tests of significance were performed on the demographic variables including gender, age, race, personal income and higher education level. Independent sample t-test was used when comparing the means for two-group demographic variables, namely, gender and race. Meanwhile, one-way ANOVA was used to compare the means for three or more groups of the demographic variables, which include age, highest education level and personal income.

*The Relationship between Gender and Risk-Taking Behaviour Dimensions*

An independent sample t-test was used to test whether or not significant differences existed between the male and female respondents with regards to their means of the risk-taking behaviour dimensions. From Table 4, two dependent variables were found to be significant between the male and female respondents, namely, "riding over speed limit" and "riding without crash helmet" ($p < 0.05$). In terms of "riding over speed limit", the results suggested that the male respondents were more inclined to ride above the speed limit as compared to the female respondents. In terms of "riding without crash helmet", the result showed that the male respondents tended to have a higher tendency of not wearing helmet compared to their female counterparts.

The other two variables, namely, "riding without using signal" and "riding without headlights and not stopping at 3-way junction" indicated [$t(df) = 0.97$, $p > 0.01$]. Therefore, no significant differences were found between gender with regards to these dimensions.

*The Relationship between Age and Risk-Taking Behaviour Dimensions*

In terms of "riding without crash helmet", age was found to be significant ($F = 6.120$, $p = 0.000$). The results indicated that mean differences could be found among the various age groups. Younger respondents were found to have higher mean scores in terms of "riding without crash helmet". The

TABLE 2
Results of Exploratory Factor Analysis on Risk-Taking Behaviour

| | Risk-Taking Behaviour | Factor Loadings | | | |
|---|---|---|---|---|---|
| | | F1 | F2 | F3 | F4 |
| 1. | When I ride on my motorcycle, I always stop at a stop sign. | | | | |
| 2. | When I ride on my motorcycle, I used to overtake another vehicle in an area where overtaking is not allowed. | .515 | | | |
| 3. | I always ride my motorcycle over the speed limit. | .797 | | | |
| 4. | I always ride my motorcycle along a deserted road without using a crash helmet. | | .788 | | |
| 5. | I always ride my motorcycle without using a crash helmet in a residential area. | | .816 | | |
| 6. | I always take off my crash helmet while riding motorcycle before reaching my destination. | | .660 | | |
| 7. | When I ride on motorcycle, I like to ride fast (over the speed limit). | .816 | | | |
| 8. | I will ride fast on motorcycle even though I am not late for an appointment. | .735 | | | |
| 9. | I like to beat the 'traffic light' when I ride on my motorcycle. | .701 | | | |
| 10. | Sometimes I feel it is unnecessary to keep my motorcycle headlights on while I am driving in the daytime. | | | | .761 |
| 11. | Wearing a crash helmet while riding a motorcycle is uncomfortable. | | | | |
| 12. | When riding on motorcycle, I do not have to stop at a three-way junction if there are no vehicles coming from the right and left directions. | | | | .800 |
| 13. | While riding on motorcycle, I will indicate/signal to other vehicles behind me before turning left or right. | | | .875 | |
| 14. | While riding on motorcycle, as I am overtaking or turning into a junction, I will indicate or signal to the other drivers and ensure that it is safe to do so. | | | .868 | |

TABLE 3
Risk-Taking Behaviour Dimensions

| Factor | Risk-Taking Behaviour Dimension | No of Items |
|---|---|---|
| F1 | Riding over Speed Limit | 5 |
| F2 | Riding without Crash Helmet | 3 |
| F3 | Riding without using Signal | 2 |
| F4 | Riding without Headlights and not Stopping at 3-way Junction | 2 |

study also revealed that the respondents in the 16-20 years old age group had a greater tendency to not wearing their crash helmet when riding a motorcycle compared to those in the 21-30 and 31-40 years old age group. In terms of "riding over speed limit", "riding without using signal" and "riding without headlights and not stopping at three-way junction", the results showed that there was no significant mean difference between the respondents of different age groups.

This finding implies that the respondents do not differ in their attitudes in "riding over speed limit", "riding without using signal" and "riding without headlights and not stopping at three-way junction" when compared to their age groupings. Therefore, age is not a significant indicator of the "riding over speed limit", "riding without using signals and riding without headlights and not stopping at three-way junction". Nonetheless, the results of this study cannot be compared with previous study because no previous studies have looked into this particular issue, which is the relationship between age and "riding without crash helmet".

However, it can be concluded that in terms of age, younger Malaysian motorcyclists tend to have a higher tendency to not wearing crash helmet compared to older Malaysian motorcyclists.

### *The Relationship between Highest Education Level and Risk-Taking Behaviour Dimensions*

The mean differences between groups with regard to the respondents' highest education level were analyzed. The original highest education level was regrouped into three groups: UPSR/PMR/SRP/LCE, SPM/ MCE/STPM/HSC, and College/ Diploma/ Degree/Master/PhD. The p-value indicated that there were no significant differences between highest education level and the four risk-taking behaviour dimensions.

TABLE 4
Relationship between Gender and Risk-Taking Behaviour Dimensions

| Dependent Variables | Gender | N | Mean | t-value | Sig.^ |
|---|---|---|---|---|---|
| Riding over Speed Limit | Male | 408 | 13.11 | 5.37 | .000** |
| | Female | 129 | 10.48 | | |
| Riding without Crash Helmet | Male | 408 | 8.57 | 2.23 | .026* |
| | Female | 129 | 7.83 | | |
| Riding without Using Signal | Male | 408 | 8.37 | -0.04 | .966 |
| | Female | 129 | 8.38 | | |
| Riding without Headlights and not Stopping at 3-way Junction | Male | 408 | 5.04 | 1.02 | .310 |
| | Female | 129 | 4.80 | | |

* - significance at $p \leq 0.05$
** - significance at $p \leq 0.01$
^ - test of significance using the independent sample t-test

*The Relationship between Personal Income and Risk-Taking Behaviour Dimensions*

The mean differences between the groups with regard to the respondents' personal income were assessed using one-way ANOVA. Only two constructs, namely, "riding without crash helmet" and "riding without headlights and not stopping at three-way junction" were found to be significant (see Table 6).

With regards to "riding without crash helmet", the mean difference was found to be significant, with F=8.50, p=0.000. When the post-hoc test using the Scheffe test was performed, the results showed that the mean difference could be found between those earning between "Less than RM1,000" and those earning "RM2,000 to RM2,999". Those earning "Less than RM1,000" had a greater tendency to not wearing crash helmet compared to those earning RM2,000 - RM2,999. Meanwhile, other relationships were not found to be significant.

For the "riding without headlights and not stopping at three-way junction" variable, the results in Table 6 show that it is significant at [F = 3.86, p=0.009]. From the Scheffe post-hoc test, the significant mean differences were between "Less than RM1,000" and "RM1,000 – RM1,999". This means that those earning "Less than RM1,000" tended to have a greater inclination to "ride without having headlights and not stopping at three-way junction" compared to those earning "RM1,000 – RM1,999".

The results also showed no significant differences between personal income and the other two dependent variables in this study. Similarly, there were no significant mean differences between the subgroups in the personal income with regard to "riding

TABLE 5
The Relationship between Age and Risk-Taking Behaviour Dimensions

| Dependent Variables | Age | Mean | F | Sig.^ | Diff^^ |
|---|---|---|---|---|---|
| Riding over Speed Limit | 16-20 years old | 12.97 | 1.211 | .305 | - |
| | 21-30 years old | 12.42 | | | |
| | 31-40 years old | 11.81 | | | |
| Riding without Crash Helmet | 16-20 years old | 9.11 | 6.120 | .000** | I >II I>III |
| | 21-30 years old | 7.98 | | | |
| | 31-40 years old | 7.52 | | | |
| Riding without Using Signal | 16-20 years old | 8.32 | 1.352 | .257 | - |
| | 21-30 years old | 8.28 | | | |
| | 31-40 years old | 8.75 | | | |
| Riding without Headlights and not Stopping at 3-way Junction | 16-20 years old | 5.27 | 2.379 | .069 | - |
| | 21-30 years old | 4.94 | | | |
| | 31-40 years old | 4.4 | | | |

** significance at $p \leq 0.01$
^ test of significance using the one-way ANOVA
^^ to assess the pair-wise differences, the Scheffe post hoc analysis was used: I=16 to 20 years old; II=21 to 30 years old and III=31 to 40 years old

over speed limit" and "riding without using signal".

In general, for personal income, motorcyclists in the lower income group have a greater tendency to not wearing crash helmet and "riding without headlights and not stopping at three-way junction" compared to those in the higher income group. This study is consistent with the previous study by Ichikawa *et al*. (2003). In the study, they found that helmet use varied from slightly over zero in some low-income countries to almost 100% in places where laws on helmet use are effectively enforced. Helmet constructed in some low-income and middle-income countries are not always appropriately designed. In several low-income countries, helmet use has been found to be lower at night.

## CONCLUSION

This study was initiated with two objectives. The first objective of the study was to examine the extent of risk-taking behaviour of Malaysian motorcyclists. It was found that most motorcyclists are generally not risk takers. Instead, they generally abide traffic laws.

The second objective was to investigate the relationship between demographic of motorcyclists and risk-taking behaviour. The study found that the male respondents tended to be involved in "riding over speed limit" and "riding without crash helmet" when compared to female respondents. As such, road safety campaign in the future should target male motorcyclists. The campaign might need to emphasize on the dangers of "riding over speed limit"

TABLE 6
The Relationship between Personal Income and Risk-Taking Behaviour Dimensions

| Dependent Variables | Personal Income | Mean | F | Sig.^ | Diff^^ |
|---|---|---|---|---|---|
| Riding over Speed Limit | Less than RM1,000 | 12.79 | 1.269 | .284 | - |
| | RM1,000 – RM1,999 | 11.98 | | | |
| | RM2,000 – RM2,999 | 12.42 | | | |
| | RM3,000 and above | 11.58 | | | |
| Riding without Crash Helmet | Less than RM1,000 | 9.04 | 8.504 | .000** | I >II |
| | RM1,000 – RM1,999 | 7.46 | | | |
| | RM2,000 – RM2,999 | 8.08 7.74 | | | |
| | RM3,000 and above | | | | |
| Riding without Using Signal | Less than RM1,000 | 8.27 | 0.982 | .401 | - |
| | RM1,000 – RM1,999 | 8.52 | | | |
| | RM2,000 – RM2,999 | 8.25 | | | |
| | RM3,000 and above | 8.63 | | | |
| Riding without Headlights and not Stopping at 3-way Junction | Less than RM1,000 | 5.31 | 3.857 | .009** | I>II |
| | RM1,000 – RM1,999 | 4.60 | | | |
| | RM2,000 – RM2,999 | 4.61 4.95 | | | |
| | RM3,000 and above | | | | |

** significant at $p \leq 0.01$
^ test of significant using the one-way ANOVA
^^ to assess the pair-wise differences, the Scheffe post-hoc analysis is used: I=Less than RM1,000; II=RM1,000 – RM1,999; III=RM2,000 – RM2,999 and IV=RM3,000 and above.

and "riding without crash helmet". The study also revealed that teenagers tended to have higher inclination to "ride without crash helmet" compared to those of other age groups. Awareness campaign directed toward teenagers must emphasize the importance of wearing crash helmet when riding motorcycle.

When personal income of the respondents was examined, the study revealed that those in the lower income group tended to "ride without crash helmet" and "ride without headlights and not stopping at three-way junction" more often than those of the other personal income groups. Stricter enforcement of traffic laws might be able to reduce this tendency among motorcyclists, especially those of the lower income group.

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