



**UNIVERSITI PUTRA MALAYSIA**

***RISK RIDING BEHAVIOURS OF YOUNG MOTORCYCLISTS AMONG  
STUDENTS IN UNIVERSITI PUTRA MALAYSIA, SERDANG,  
SELANGOR***

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**RISK RIDING BEHAVIOURS OF YOUNG MOTORCYCLISTS AMONG  
STUDENTS IN UNIVERSITI PUTRA MALAYSIA, SERDANG, SELANGOR**

**BY**

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**This thesis submitted in fulfilment of the requirement for the degree of Bachelor  
Science (Environmental and Occupational Health) from the Faculty of Medicine  
and Health Sciences, Universiti Putra Malaysia**

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## ABSTRACT

### RISK RIDING BEHAVIOURS OF YOUNG MOTORCYCLISTS AMONG STUDENTS IN UNIVERSITI PUTRA MALAYSIA, SERDANG, SELANGOR

NOOR SAKINAH BINTI AHMAD

**Introduction:** Road accidents involving young motorcyclists are one of the most concern issue in Malaysia. Motorcyclists in Malaysia has a higher vulnerability towards risk and higher possibility of involved in commuting accidents. Most of these risks are related to the motorcyclists riding behaviour. Most young university students used motorcycle as their daily mode of transportation. However, there is less study that has been conducted to analyses these young motorcyclists (university students) riding behaviour. **Objective:** Therefore, this study aims to determine the riding behaviours of motorcyclist. **Methodology:** This study used a cross-sectional study design and a simple random sampling method. It has been conducted among 184 respondents (92 males and 92 females) in Universiti Putra Malaysia, Serdang, Selangor. The respondents were given a set of a self-administered Motorcycle Rider Behaviour Questionnaire (MRBQ) containing 59 items which was adapted from previous studies. **Results and Discussion:** The result showed that the mean of MRBQ rating of UPM students was precaution factors ( $3.74 \pm 0.835$ ), traffic errors ( $2.91 \pm 0.523$ ), safety violation ( $2.23 \pm 0.251$ ), speeding ( $2.23 \pm 0.251$ ), and safety equipment ( $1.82 \pm 0.552$ ). The males have higher crash involvement in both road accidents and near-miss accidents compared to female respondents. The Traffic error ( $p = 0.009$ ), Speeding ( $p = 0.001$ ), Safety violations ( $p = 0.001$ ), and Safety equipment ( $p = 0.003$ ) has significant difference compared to both male and female students. Safety Violation and Precaution factor were the road crash significant predictors among UPM young motorcyclists. Young motorcyclists who have safety violation above the average was 2.724 times more likely exposed to road crash, however, young motorcyclist who have precaution above the average was 0.329 times less likely exposed to road crash. **Conclusion:** Thus, several prevention programs should be conducted for the students to educate them on motorcycle safety riding. It is intended by having early prevention for this young motorcyclist, which in the long term will have a positive impact on reducing the commuting accidents in the future. Additionally, this study also will serve as fundamental data (baseline) for the Malaysian Institute of Road Safety (MIROS) for Nation Road Safety.

**Keywords:** MRBQ, Risk riding behaviours, Young motorcycle riders, University students.

## ABSTRAK

### TINGKAHLAKU MENUNGGANG BERISIKO PENUNGGANG MOTOSIKAL MUDA DIKALANGAN PELAJAR UNIVERSITI PUTRA MALAYSIA, SERDANG, SELANGOR.

NOOR SAKINAH BINTI AHMAD

**Pengenalan:** Kemalangan jalan raya yang melibatkan penunggang motosikal muda adalah salah satu masalah yang paling membimbangkan di Malaysia. Penunggang motosikal di Malaysia mempunyai kerentanan yang lebih tinggi terhadap risiko dan kemungkinan lebih tinggi terlibat dalam kemalangan dalam perjalanan. Sebilangan besar risiko ini berkaitan dengan tingkah laku penunggang motosikal. Sebilangan besar pelajar universiti muda menggunakan motosikal sebagai kaedah pengangkutan harian mereka. Walau bagaimanapun, terdapat sedikit kajian yang dilakukan untuk menganalisis tingkah laku penunggang motosikal muda (pelajar universiti) ini. **Objektif:** Oleh itu, kajian ini bertujuan untuk menentukan tingkah laku menunggang penunggang motosikal. **Metodologi:** Kajian ini menggunakan kajian keratan rentas dan kaedah persampelan rawak. Ia telah dilakukan di kalangan 184 responden (92 lelaki dan 92 perempuan) di Universiti Putra Malaysia, Serdang, Selangor. Responden diberi satu set soal selidik Tingkah laku Penunggang Motosikal (MRBQ) yang dikendalikan sendiri yang mengandungi 59 soalan yang diadaptasi dari kajian sebelumnya. **Keputusan dan Perbincangan:** Hasil kajian menunjukkan bahawa min penilaian MRBQ pelajar UPM adalah faktor pencegahan ( $3.74 \pm 0.835$ ), kesalahan lalu lintas ( $2.91 \pm 0.523$ ), pelanggaran keselamatan ( $2.23 \pm 0.251$ ), kelajuan ( $2.23 \pm 0.251$ ), dan keselamatan peralatan ( $1.82 \pm 0.552$ ). Lelaki mempunyai penglibatan kemalangan yang lebih tinggi dalam kemalangan jalan raya dan hampir kemalangan jika dibandingkan dengan responden wanita. Kesalahan lalu lintas ( $p = 0,009$ ), kelajuan ( $p = 0,001$ ), pelanggaran keselamatan ( $p = 0,001$ ), dan peralatan keselamatan ( $p = 0,003$ ) mempunyai perbezaan yang signifikan diantara pelajar lelaki dan perempuan. Faktor pelanggaran keselamatan dan pencegahan adalah ramalan kemalangan jalan raya di kalangan penunggang motosikal muda UPM. Penunggang motosikal yang melakukan tingkah laku pelanggaran keselamatan melebihi purata 2.724 kali lebih terdedah kepada kemalangan jalan raya, namun penunggang motosikal yang mempunyai tingkah laku berjaga-jaga melebihi purata adalah 0.329 kali lebih kecil kemungkinannya terlibat dalam kemalangan jalan raya. **Kesimpulan:** Oleh itu, beberapa program perlu dilaksanakan sebagai pencegahan agar para pelajar dapat melatih diri mereka mengenai keselamatan menunggang motosikal. Pencegahan awal bagi penunggang motosikal muda ini bertujuan untuk mengurangkan kemalangan perjalanan di masa depan dan memberi kesan positif dalam jangka panjang. Selain itu, kajian ini juga akan berfungsi sebagai data asas (garis dasar) untuk Institut Keselamatan Jalan Raya Malaysia (MIROS) untuk Keselamatan Jalan Raya Negara.

**Kata kunci:** MRBQ, Tingkahlaku penunggang berisiko, Penunggang motosikal muda, Pelajar universiti.

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## LIST OF ABBREVIATIONS

|        |                                             |
|--------|---------------------------------------------|
| MRBQ   | Motorcycle Rider Behaviour Questionnaires   |
| MIROS  | Malaysian Institute of Road Safety Research |
| UPM    | Universiti Putra Malaysia                   |
| WHO    | World Health Organization                   |
| SOCISO | Social Security Organization                |
| OSHA   | Occupational Safety and Health Act 1994     |
| SOP    | Standard Operating Procedure                |
| MOT    | Ministry of Transport                       |
| RTD    | Road Transport Department                   |
| SDG    | Sustainable Development Goal                |
| DBQ    | Driving Behaviour Questionnaires            |
| SEM    | Structural Equation Model                   |

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background

In Malaysia, public universities are one of the most important educational assets. There are 20 public universities in Malaysia that enroll by hundreds of thousands of students. University is a large sector, and may have several hazards, especially physical hazards, causing road crash. Thus, road crash involving young motorcyclists is one of the most concern issue in Malaysia. Motorcyclists in Malaysia has a higher vulnerability towards risk also has a higher possibility of involved in road crash. In 2016, road crash ranked as 8<sup>th</sup> most prominent factor of death from all ages worldwide (WHO, 2018). South-East Asia was reported as second highest after Africa with more than 50% of road fatal accidents were among vulnerable road users (VRU) i.e. pedestrians, bicyclists, and bikers (WHO, 2018).

**Table 1: Leading causes of death, all ages, 2016**

| Rank              | Cause                                   | % of total deaths |
|-------------------|-----------------------------------------|-------------------|
| <b>All Causes</b> |                                         |                   |
| 1                 | Ischaemic heart disease                 | 16.6              |
| 2                 | Stroke                                  | 10.2              |
| 3                 | Chronic obstructive pulmonary disease   | 5.4               |
| 4                 | Lower respiratory infections            | 5.2               |
| 5                 | Alzheimer's disease and other dementias | 3.5               |
| 6                 | Trachea, bronchus, lung cancers         | 3.0               |
| 7                 | Diabetes mellitus                       | 2.8               |
| 8                 | Road traffic injuries                   | 2.5               |
| 9                 | Diarrhoeal diseases                     | 2.4               |
| 10                | Tuberculosis                            | 2.3               |

2016 WHO Global Health Estimates

(Adapted from WHO. (2018). Global Status Report on Road Safety 2018. In Geneva: World Health Organization (Vol. 2).)

**Figure 1.1: Leading causes of death, all ages, 2016 (WHO, 2018)**

According to Transport Statistics Malaysia 2017, there was 108,221 motorcycle involved in road crash in the year 2017 which was the second higher after motorcar (Ministry of Transport, 2019). Young motorcyclists have traditionally been considered a high-risk population. MIROS (2011) identified that there are more than half of the hundred percent of the motorcyclists involved in road crash which caused death is below aged 29 and half of the riders are between aged 20 to 29. According to WHO (2018), road crashes are the principal cause of death in younger population between 5 to 29 years old.

Motorcycles are more preferably as mode of transportation for most of the people in Malaysia because of the cost-benefit in terms of petrol, easy to handle and stress-free. Therefore, most young people used a motorcycle as their daily transportation to move from one place to another. In 2015, there were 12,094,790 motorcycles

registered with the Road Transport Department which contribute to 45.98% of the total motor vehicles in Malaysia (Road Traffic Department, 2015). Besides, according to the Ministry of Transport (2017), there were 494,225 new registrations for the motorcycle in the year 2017. The statistic showed that motorcycle is one of main transportation in Malaysia.

Thus, this study will focus specifically on the 18– 29-year-old age group using the Malaysian version of the Motorcycle Riding Behaviour Questionnaire (MRBQ) as an instrument to determine the risk riding behaviours of young motorcyclists among students in Universiti Putra Malaysia in Serdang, Selangor. There are five main factors in MRBQ which are Safety Violation, Speeding, Safety Equipment, Traffic Error, and Precaution. On the other hand, there are also additional information, for example, demographic information, riding experience, and crash involvement.

## **1.2 Problem Statement**

According to Global Status Report of Road Safety by the WHO, the riders of the motor vehicle in South-East Asia either two or three-wheeler contribute to 43% of worldwide deaths and road traffic accidents were the main factors that contribute to fatality among younger population between 5 to 29 years old (WHO, 2018). According to the Department of Statistics (2018), 70% of the total population in Malaysia is aged between 15 to 64 years old also considered as working age. Ministry of Health also reported that traffic accidents were the principal causes of

fatality for the population aged 15-40 in the year 2018. These data show that the largest population in Malaysia is the one that involved in traffic accidents.

In 2017, the Social Security Organization (SOCSO) has reported that the commuting accidents have reached the highest rate of commuting accidents compared to the year 2013 until 2016 which was 49 rates per 10,000 employees. The data showed an incremental value in commuting accidents cases. There is also an increase in the benefits paid in 2017 by RM324,658 million and an 11.04% annual increment from the previous year (SOCSO, 2018).

According to SOCSO (2018), the total number of accidents reported was 72,631 cases, of which 48 percent or 35,195 cases were commuting accidents and 666 deaths was reported. There also 76.9% of commuting accidents involved motorcyclists including the pillion passengers. SOCSO (2018) also reported that approximately RM600 million to RM800 million compensation payouts by SOCSO were related to deaths caused by commuting accidents.

Nevertheless, there are many efforts that have been done by the government to tackle this problem. There are several guidelines and codes of practice regarding safe commuting that have been developed by agencies like MOH, DOSH, SIRIM, and MIROS. In the year 2008, MOH has issued “Guidelines for the Prevention of Accidents at Workplace”. After that, the “Occupational Safety and Health Industry Code of Practise for Road Transport Activities” was published by DOSH under the Ministry of Human Resources in the year 2010 as one of the initiatives to curb the problems. On the other hand, Standard and Industrial Research Institute of

Malaysia (SIRIM) has produced a standard which is SIRIM 4: 2014: Good Practices in Implementing Commuting Safety Management and was introduced in the year 2014. Thereafter, MIROS has introduced “Guideline of Safe Driver and Rider Performance Evaluation: Focusing on Cognitive and Psychomotor Components” in the year 2017. Unfortunately, the work-related commuting accidents is kept on rising regarding the number of existing guidelines. Thus, the awareness level among the people, the implementation and enforcement of the existing program is still questionable.

According to Younas (2018), there are significant relationships between human behaviours and the number of commuting accidents. Human factors are one of the highest contributors to road crashes and the most difficult factors to control. There is a lack of information regarding the behavioural factors that can influence the road crashes and how to control the problems. Based on statistics from the Ministry of Transport, the motorcycle was the second highest that contribute to total road accidents in Malaysia after motorcar (Ministry of Transport, 2017). SOCSO (2018), also reported that commuting accidents still increasing from the year 2013 until year 2017.

In 2007, the Malaysian Institute of Road Safety Research (MIROS) was founded as one of organization under the Ministry of Transport Malaysia. MIROS is responsible to serve as a center of knowledge and information on road safety. Based on findings from research and evidence-based intervention programmes, MIROS serve the foundation of the formulation of new strategies, legislations,

policies, and enforcement measures, governing road safety at the national level (MIROS, 2020).

However, there is less study that has been conducted to identify the motorcycle riding behaviour among university students (motorcyclists) in Malaysia. The previous study in Malaysia (Azman et al., 2017) was conducted among young motorcyclists in Klang Valley, Malaysia. In 2017, there are 538, 555 enrolments of students in public universities and 94.84% of enrolments are local students (Ministry of Education, 2018). Since the target population is a young population it will be much easier to do at universities and there are also located multiracial students that come from various states in Malaysia. The motorcyclist's riding behaviour may vary between university students and the other populations as every community has different habits and behaviours. Through this study, it will determine whether university students engage with risk riding behaviours or not. This study also will serve as a fundamental data for the Malaysian Institute of Road Safety (MIROS) for Nation Road Safety.

### 1.3 Study Justification

Workers in the workplace need to fulfill their responsibilities to manage the production and management of their company. In their workplace, they are exposed to various hazards including physical, chemical, biological, psychosocial, and not only ergonomics hazards. However, this study will focus only on physical hazards causing road crashes. The road crashes that involved employees' route from their workplace to their homes or opposite from that can be defined as commuting accidents.

Road crashes can be caused by three main factors; human factors, environmental factors, and machine element factors. Human factors are the most difficult factors to control and one of the components in human factors in human behaviour. This study will focus on human behaviour that can lead to road crashes. This study is important as it will tackle down the commuting accidents problems by educating young people, especially university students as their preparation before entering the real working condition.

There is still a limited of study about the Motorcycle Rider Behaviour Questionnaire in Malaysia. This study needs to be conducted to develop and provide more data regarding risk riding behaviour among young adults, especially those who are riding the motorcycle as their main transportation. This study also will provide baseline data for Motorcyclists Riding Behaviour among university students. From the baseline data, the prevention and intervention programs can be developed to reduce and minimize the risk of road crashes among young

motorcyclists which can reduce the commuting accidents among the workers in the future.

This project will also help to achieve Road Safety Plan 2014 - 2020 has been launched in November 2014 by the Ministry of Transport as an effort to improve road safety in Malaysia on par with developed countries. This plan was provided with five Strategic Pillars; Road Safety Management, Safer Mobility and Road, Post-accident Management, Safer Vehicles and Safer Road Users (Road Safety Department, 2014).

#### **1.4 Conceptual Framework**

The conceptual framework below will show the flow of this study from the beginning, the collection data among young motorcyclists in UPM, risk riding behaviours and the MRBQ factors; speeding, safety violation, safety equipment, traffic error and precaution. There are also other elements which are demographic details, riding experience, summons details, and crash involvement of respondents. The instrument that will be used in determining the risk riding behaviours factors is Motorcycle Rider Behaviour Questionnaire (MRBQ).

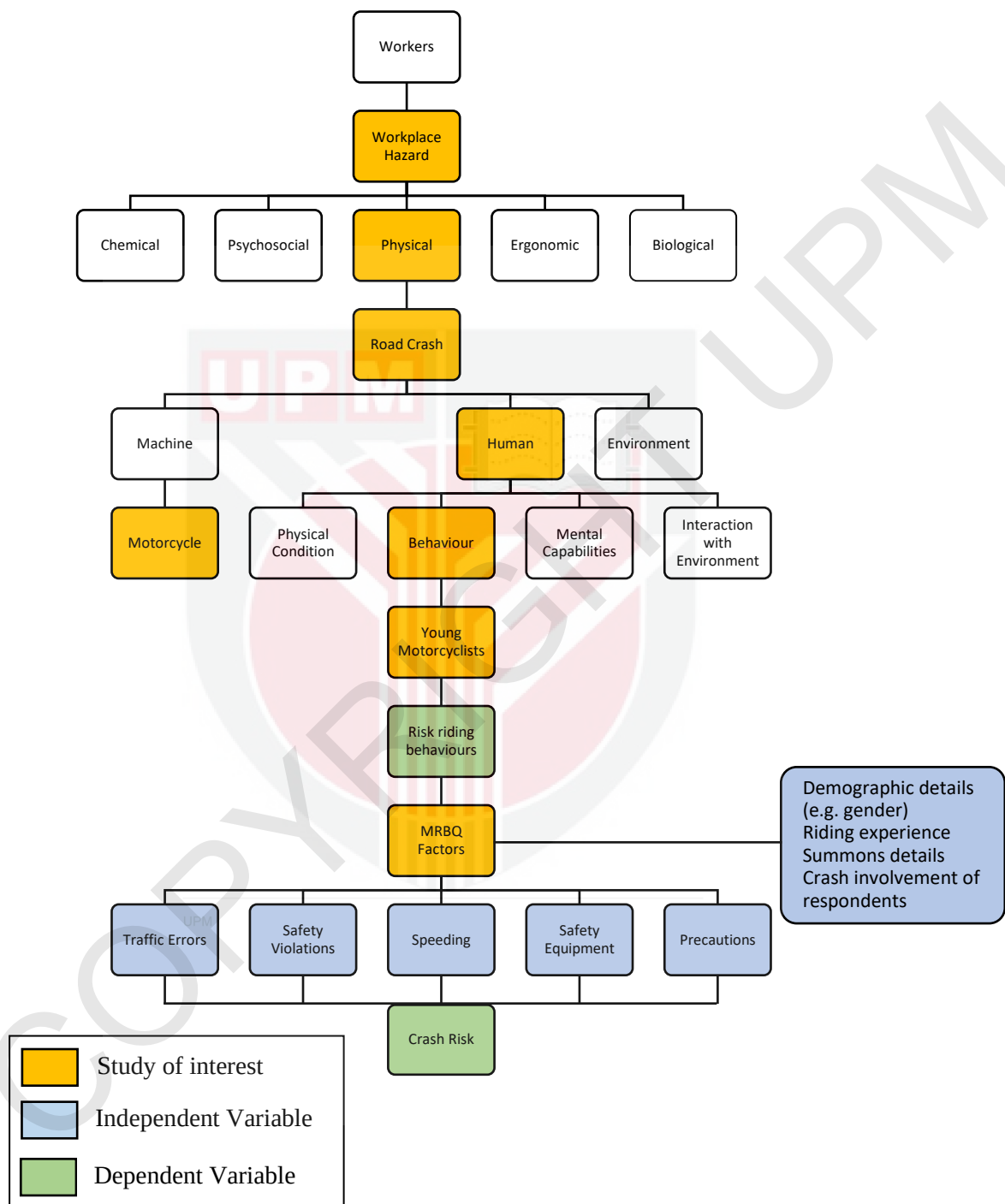


**Figure 1.2: Conceptual Framework**

## **1.5 Definitions of terms**

### **1.5.1 Conceptual Definition**

#### **Motorcyclist**

A person who rides a motorcycle (Oxford, 2019).

#### **Young Motorcyclist**

A person who is in his or her late teenage years or early twenties until the early thirties (Cambridge, 2019). World Health Organization (WHO) defines ‘Young People’ as individuals in the 10 to 24-years age group. The young motorcyclist is defined as a person who rides a motorcycle at the age of 10 – 29 years old.

#### **Risk riding behaviour**

Risk riding behaviour is defined as rider intentions and behaviour that may lead to fatal or serious injury crash involvement for the motorcyclist, their pillion passenger, or other road users. By definition, a risk rider is those who persist with dangerous behaviors while driving/ riding are considered high-risk drivers/riders and represent a higher accident risk (Eby & Charles, 2004; Watson et al., 2007).

## **University student**

University is defined as an institution for higher learning with teaching and research facilities typically including graduate school and professional schools that award master's degrees and doctorates and an undergraduate division that awards bachelor's degrees. A student is the one who attends school or studies.

### **1.5.2 Operational Definition**

#### **Young motorcyclist**

A young motorcyclist is defined as a person who rides a motorcycle at the age of 18 – 29 years old. The respondents are among UPM students who ride a motorcycle as their daily transportation. The respondents will be given a set of an adapted questionnaires from Motorcycle Rider Behaviour Questionnaire (MRBQ) to be answered.

#### **Risk riding behaviour**

Risk riding behaviour is defined as rider intentions and behaviour that may lead to fatal or serious injury crash involvement for the motorcyclist, their pillion passenger, or other road users. By definition, a risk rider is those who persist with dangerous behaviors while driving/ riding are considered high-risk drivers/riders and represent a higher accident risk (Eby & Charles, 2004; Watson et al., 2007). MRBQ is the instrument uses to study the riding behaviour of the motorcyclist.

There are five factors solutions of risk-taking behaviour for motorcyclists: safety violations, speeding, traffic errors, safety equipment, and precautions.

### **University student**

A group of university students riding a motorcycle. The respondents are among the UPM students, which can be from the Foundation, Undergraduate and Postgraduate students. The respondents will be given a set of an adapted questionnaires from Motorcycle Rider Behaviour Questionnaire (MRBQ) to be answered.

### **1.6 Research Question**

1. What are the riding behaviours of young motorcyclists among UPM students?
2. What are the factors contributing to the crash involvements of young motorcyclists among UPM students?
3. Which factors have higher significant contributing factors of riding behaviour among young motorcyclists?
4. Does the male have higher risk riding behaviour compared to female?
5. Does the male have higher crash involvement compared to female?
6. What is the significant predictor of road crash of young motorcyclists among UPM students?

## **1.7 Research Objective**

### **1.7.1 General Objective**

To determine the riding behaviours of young motorcyclists among students in Universiti Putra Malaysia, Serdang, Selangor.

### **1.7.2 Specific Objective**

- To study the socio-demographic factors among UPM students.
- To determine the road crash involvement of young motorcyclists among UPM students.
- To determine the MRBQ rating (safety violation, traffic error, speeding, safety equipment, and precaution) of young motorcyclists among UPM students.
- To compare the crash involvement of young motorcyclists between male and female students.
- To compare the MRBQ factors (safety violation, traffic error, speeding, safety equipment, and precaution) between male and female motorcyclists.
- To identify the significant road crash predictors of young motorcyclists among UPM students.

### 1.7.3 Hypothesis

- The MRBQ factors (safety violation, traffic error, speeding, safety equipment and precaution) have significant differences between gender.
- Male students have higher crash involvement and risk riding behaviours compared to female students
- The traffic error is a significant road crash predictor of young motorcyclists among UPM students.

## CHAPTER 2

### LITERATURE REVIEW

Motorcycle is one of the popular main transportation among Malaysian because of the cost-benefit in terms of petrol and toll, easy to handle and saving time during traffic congestion, and cheapest compared to a car. Despite that, motorcycle accidents in Malaysia has become a major concern since if compared to the car driver, motorcyclists more prone to get severe injuries even with minimal impact and young motorcyclists have traditionally been considered a high-risk population.

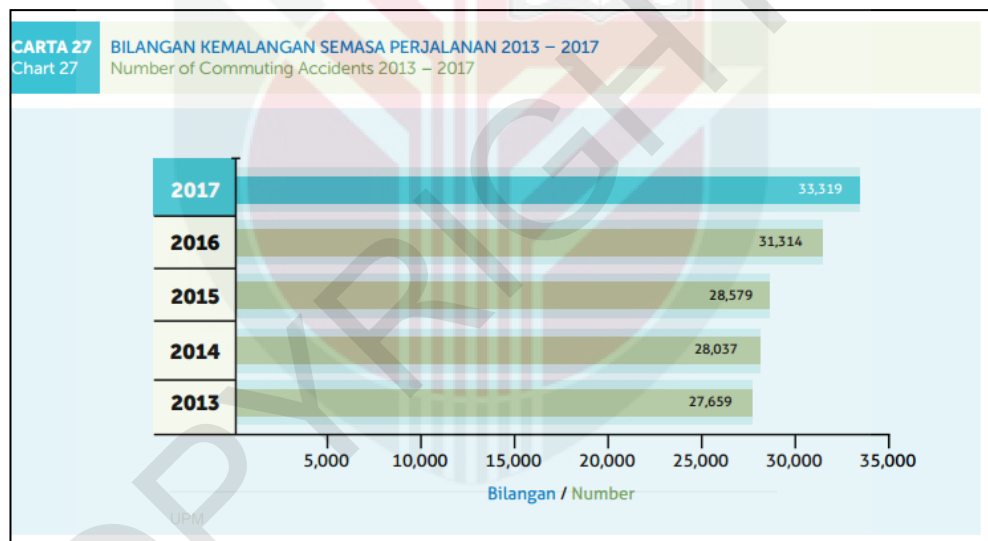
#### 2.1 Work-Related Commuting Accident

Commuting accidents are defined as an accident that takes place between a worker's workplace to his residence, from the workplace to other locations and the route between worker's homes to his workplace (Nasir Selamat & Surienty, 2017). In 2017, there are 69,980 accident cases reported by the Social Security Organization (SOCSO) and showed a 5.05% increment compared to the year 2016 (refer Figure 2.1). About 47.61% of the accident cases were from work-related commuting accidents (SOCSO, 2018). The commuting accidents reflected a 6.40% increment from 31,314 incidents in 2016 to 33,319 incidents in 2017 (refer Figure 2.2).

| <b>JADUAL 18</b><br><b>Table 18</b> <b>BILANGAN KEMALANGAN DILAPORKAN 2016 – 2017</b><br><b>Number of Accidents Reported 2016 – 2017</b> |               |               |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| <b>Kemalangan Dilaporkan / Accidents Reported</b>                                                                                        | <b>2016</b>   | <b>2017</b>   |
| Kemalangan Perusahaan Dilaporkan / Industrial Accidents Reported                                                                         | 35,304        | 36,661        |
| Kemalangan Semasa Perjalanan / Commuting Accidents                                                                                       | 31,314        | 33,319        |
| <b>Jumlah Bilangan Kemalangan Dilaporkan / Total Number of Accidents Reported</b>                                                        | <b>66,618</b> | <b>69,980</b> |

(Adapted from SOCSO. (2018). 2017 Annual Report. In *SOCSO 2017 Annual Report*.)

**Figure 2.2: Number of Accidents Reported 2016-2017 (SOCSO, 2018)**

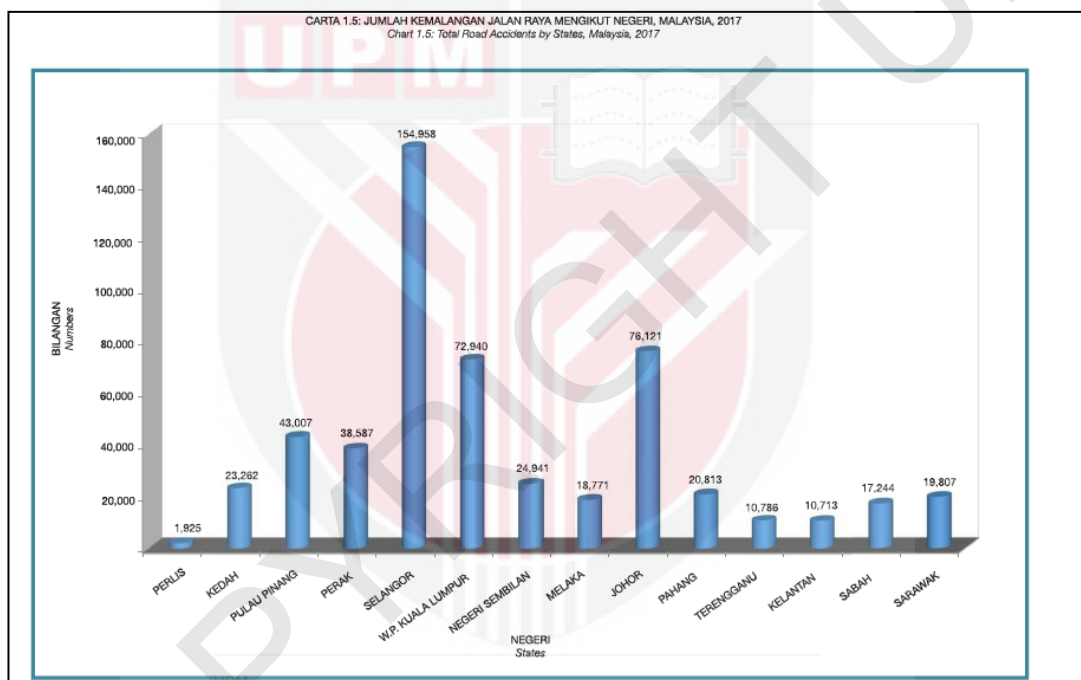


(Adapted from SOCSO. (2018). 2017 Annual Report. In *SOCSO 2017 Annual Report*.)

**Figure 2.1: Number of Commuting Accidents 2013-2017 (SOCSO, 2018)**

Based on Figure 2.3, Selangor has the highest total road crashes (154,958 cases) in Malaysia. On the other hand, Figure 2.4 also showed that motorcycle ranked as a second higher motor vehicle that involves road crashes with total 108, 221 cases which contribute to 13.49% of total road crashes in Malaysia in 2017 (Ministry of Transport, 2017). The data showed that Selangor has highest cases of road crashes and motorcycle

was the second highest motor vehicle that involved in road crashes in Malaysia. Pedestrians, bicyclists, and bikers have higher vulnerability and higher possibility of involved in road crashes (WHO, 2018). Other than that, previous study has reported that age group, purpose of riding, riding distance, and riding speed were to have an impact and influence on accident location (Jamaluddin et al., 2015). However, the risk of an accidents may be influenced by other problems like road environment, traffic condition and type of road.



(Adapted from Ministry of Transport. (2017). *Transport Statistic 2017.pdf*.)

**Figure 2.3: Total Road Accidents by State, Malaysia, 2017 (Ministry of Transport, 2017).**

JADUAL 1.17: JUMLAH KENDERAAN YANG TERLIBAT DALAM KEMALANGAN JALAN RAYA MENGIKUT JENIS KENDERAAN, MALAYSIA, 2008-2017  
Table 1.17: Total Motor Vehicles Involved in Road Accidents by Type of Vehicle, Malaysia, 2008-2017

| TAHUN<br>Year | MOTOSIKAL<br>Motorcycle | MOTOKAR<br>Motorcar | VAN<br>Van | BAS<br>Bus | LORI<br>Lorry | PEMACU 4 RODA<br>Four Wheel Drive | TEKSI<br>Taxi | BASIKAL<br>Bicycle | LAIN-LAIN<br>Others | JUMLAH<br>Total |
|---------------|-------------------------|---------------------|------------|------------|---------------|-----------------------------------|---------------|--------------------|---------------------|-----------------|
| 2008          | 111,819                 | 435,665             | 20,392     | 9,356      | 48,250        | 22,793                            | 8,769         | 2,463              | 11,571              | 671,078         |
| 2009          | 113,962                 | 472,307             | 19,220     | 9,380      | 46,724        | 23,581                            | 8,669         | 2,486              | 9,294               | 705,623         |
| 2010          | 120,156                 | 511,861             | 18,788     | 9,580      | 50,438        | 25,777                            | 9,899         | 2,178              | 11,756              | 760,433         |
| 2011          | 129,017                 | 546,702             | 17,916     | 9,986      | 53,078        | 30,828                            | 11,197        | 2,033              | 16,394              | 817,151         |
| 2012          | 130,080                 | 655,813             | 15,143     | 10,617     | 42,158        | 32,891                            | 11,680        | 1,310              | 21,540              | 921,232         |
| 2013          | 121,700                 | 632,602             | 17,148     | 10,123     | 39,276        | 52,512                            | 11,651        | 1,370              | 15,441              | 901,823         |
| 2014          | 125,712                 | 617,578             | 15,041     | 9,193      | 37,481        | 41,464                            | 10,856        | 1,275              | 27,743              | 886,343         |
| 2015          | 123,408                 | 625,758             | 14,565     | 8,804      | 34,942        | 46,163                            | 9,591         | 1,119              | 29,924              | 894,274         |
| 2016          | 135,181                 | 670,935             | 14,470     | 9,462      | 35,064        | 48,907                            | 8,399         | 1,318              | 36,833              | 960,569         |
| 2017          | 108,221                 | 564,491             | 13,347     | 7,258      | 34,747        | 44,297                            | 5,328         | 787                | 24,047              | 802,523         |

SUMBER: JABATAN SIASATAN DAN PENGUATKUASAAN TRAFIK, POLIS DIRAJA MALAYSIA (PDRM)  
Source: Traffic Investigation and Enforcement Department, Bukit Aman

(Adapted from Ministry of Transport. (2017). *Transport Statistic 2017.pdf*.)

**Figure 2.4: Total Road Accidents by State, Malaysia, 2017 (Ministry of Transport, 2017).**

## 2.2 Social Security Organization (SOCSO)

In 1971, the Social Security Organization (SOCSO) was established under the Malaysian Ministry of Human Resources (SOCSO, 2018). The responsibility of the SOCSO agency in Malaysia is to handle and control social security protection to human capital (Jamil & Fong Wei, 2015). There are two main legislations ruled SOCSO's managements, the Employees' Social Security (General) Regulations 1971 and the Employees' Social Security Act 1969 (Jamil & Fong Wei, 2015).

SOCSO has provided two types of schemes, the Employment Injury Insurance Scheme and Invalidity Pension Scheme (SOCSO, 2018). The Employment Injury Insurance Scheme offers a protection to the workers if they injured in the workplace including commuting accidents and work-related diseases. Furthermore, the Invalidity Pension Scheme always offered protection to employees in opposition to invalidity or death (Jamil & Fong Wei, 2015).

According to SOCSO 2017 Annual Report (2018), there is a 7.59% increment in the amount of registered employers and active workers compared to a year before. There also an increment of the benefits paid by RM324, 658 million, 11.04% annual increment from the previous year with 33,319 cases reported in 2017. The commuting accidents reported in 2017 has the highest rate of commuting accidents per 10,000 employees compared to the year 2013 until 2017. This showed an increasing pattern in commuting accidents cases.

| PENYATA PRESTASI KEWANGAN BAGI TAHUN BERAKHIR 31 DISEMBER 2017 (samb)                                        |                      |                          |                          |
|--------------------------------------------------------------------------------------------------------------|----------------------|--------------------------|--------------------------|
| STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED 31 DECEMBER 2017 (cont'd)                              |                      |                          |                          |
|                                                                                                              | <b>Nota<br/>Note</b> | <b>2017<br/>(RM'000)</b> | <b>2016<br/>(RM'000)</b> |
| <b>Belanja / Expenses</b>                                                                                    |                      |                          |                          |
| Tuntutan Dan Faedah Bersih<br>Net Claims And Benefits                                                        | 20                   | (3,264,867)              | (2,940,209)              |
| Belanja Berkaitan Faedah<br>Benefits Related Expenses                                                        | 21                   | (27,313)                 | (35,913)                 |
| Belanja Operasi<br>Operating Expenses                                                                        | 22                   | (569,888)                | (633,315)                |
| Catatan Semula / (Kerugian Penjejasan) Aset Kewangan<br>Writeback / (Impairment Losses) For Financial Assets | 23                   | 2,427                    | (36,639)                 |
| <b>Jumlah Belanja / Total Expenses</b>                                                                       |                      | <b>(3,859,641)</b>       | <b>(3,646,076)</b>       |
| <b>Lebihan Bagi Tahun / Surplus For The Year</b>                                                             |                      | <b>1,094,750</b>         | <b>829,015</b>           |

(Adapted from SOCSO. (2018). 2017 Annual Report. In SOCSO 2017 Annual Report.)

**Figure 2.5: Total Expenditure in 2016-2017**

| JADUAL 3 KEKERAPAN RELATIF KEMALANGAN DILAPORKAN, 2013 – 2017                                                        |        |        |        |        |        |
|----------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|
| Table 3 Relative Frequency of Accidents Reported, 2013 - 2017                                                        |        |        |        |        |        |
| Item                                                                                                                 | 2013   | 2014   | 2015   | 2016   | 2017   |
| Bilangan kemalangan dilaporkan<br>Number of accidents reported                                                       | 63,557 | 63,331 | 62,837 | 66,618 | 69,980 |
| Bilangan kemalangan semasa perjalanan <sup>1</sup> dilaporkan<br>Number of commuting <sup>1</sup> accidents reported | 27,659 | 28,037 | 28,579 | 31,314 | 33,319 |
| Bilangan kemalangan perusahaan <sup>2</sup> dilaporkan<br>Number of industrial <sup>2</sup> accidents reported       | 35,898 | 35,294 | 34,258 | 35,304 | 36,661 |
| Kadar kemalangan (per 10,000 pekerja)<br>Accident rate (per 10,000 employees)                                        | 104    | 102    | 99     | 101    | 103    |
| Kadar kemalangan perjalanan (per 10,000 pekerja)<br>Commuting accident rate (per 10,000 employees)                   | 45     | 45     | 45     | 47     | 49     |
| Kadar kemalangan perusahaan (per 10,000 pekerja)<br>Industrial accident rate (per 10,000 employees)                  | 59     | 57     | 54     | 54     | 54     |

Nota / Notes:

<sup>1</sup> Merujuk kepada kemalangan perjalanan termasuk pergi dan balik dari / ke tempat kerja, waktu rehat yang dibenarkan serta lain-lain kemalangan yang berkaitan pekerjaan / Refers to commuting accidents including from / to place of work, any authorised recess and other work related accidents.

<sup>2</sup> Merujuk kepada kemalangan di tempat pekerjaan termasuk kes penyakit khidmat / Refers to accidents occurred at the workplace including occupational diseases.

(Adapted from SOCSO. (2018). 2017 Annual Report. In SOCSO 2017 Annual Report.)

**Figure 2.6: Relative Frequency of Accidents Reported, 2013-2017 (SOCSO, 2018)**

### 2.3 Contributing Factors in Commuting Accidents

Three main factors contributing to road crashes which are human factors (e.g., rider behaviour), environmental factors (e.g., road) and machine factors (e.g., motorcycle) (Elliott, Baughan, & Sexton, 2007). A motorcyclist is one of the important elements in motorcycle riding. Human behaviour can be categorized as one of the components under human factors. According to Harith and Mahmud (2018), motorcyclist's behaviour arisen as a leading factor that contributes to road crashes. In the previous study by Sultan et al. (2016), the findings showed that human behaviour factors were the highest contributors towards motorcycle crashes in Malaysia, followed by the road and vehicle and finally the environmental factors.

Machine factors or motorcycle can be characterized into nine sub-categories; type of motorcycle, capacity of motorcycle engine, use of headlight, availability of side mirror, overloading, main colour, minor colour, occupancy and existence of youngster. The sub-categories above are the motorcycle characteristics that will lead to risk riding behaviour, for example, speeding which may increase the crash risk (Abdul Manan et al., 2017). Motorcycle characteristics can also contribute to the risk of crash involvement, for instance, other vehicle usually have difficulty to notice and avoid from hitting the motorcycle because of its small structure (Khairul Amri Kamarudin et al., 2018).

Besides, a motorcycle has a lack of stability and easily overturns accidentally while braking, accelerating or slippery road conditions which can cause the motorcycle wheel to fail to maintain its adhesions on the road (Zainudin, Salleh, & Eng, 2011). In 2015, the motorcycle has contributed to 45.98% of the total motor vehicle in Malaysia (Road Traffic Department, 2015). The motorcyclist exposed directly to the environment because of the interior design structure of the motorcycle, therefore, the motorcyclist high risk in accident casualties (Zainal Abidin et al., 2018).

Weather, road, and traffic condition can be classified as environmental factors which can cause road traffic accidents. Rainy day can affect the accident occurred which increase in wet weather road condition (Khairul Amri Kamarudin et al., 2018). However, the crash risk reduced as the people tend to be more careful riding on a rainy day, and most of the motorcycle rider will stop their journey until the rain stops (Abdul Manan et al., 2017). For environmental factors like road conditions, the roads should be constructed according to their function. In the case of rural areas, the motorcyclist has higher crash risk and has a high possibility of being killed or injured (Md Isa et al., 2011).

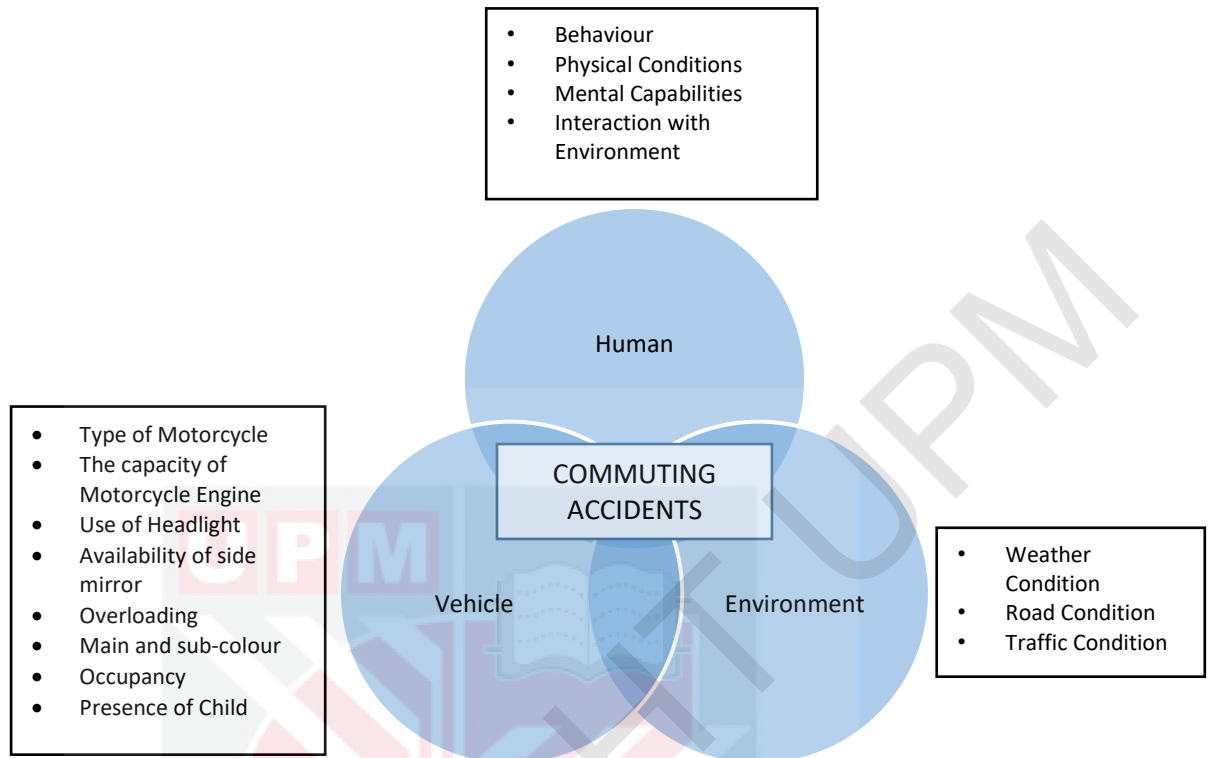


**Figure 2.7: Contributing Factors of Commuting Accidents**

## 2.4 Young Motorcyclists

Road crashes involve motorcycle especially young motorcyclists are increasing rapidly and one of the major concerns in Malaysia. Most of the road crashes involved young motorcyclists. This is because most of the young motorcyclists not sensitive to the traffic errors and safety violations that they do and the effect of the risk-taking behaviour (Yuen et al., 2015). According to Ibrahim et al. (2012), in their study, they found out that most of the young motorcyclists in Klang Valley have experienced riding a motorcycle without a license and usually rode a motorcycle without using a helmet.

Young motorcyclist usually associated with risk riding behaviour because of lack of experience and probably do not have a proper lesson and training. Risk riding behaviours and road accidents always associated with age, gender and riding experience (Azman et al., 2017; Md Nor & Abdullah, 2014). Young male motorcyclists are more likely to involve in road crash compared to young female motorcyclists. The statistic showed that there are above 50 % of the motorcyclists involved in fatal road crashes are aged below 29 and half of the riders are between aged 20 to 29 (MIROS, 2011). According to the Global Status Report on Road Safety 2018, road crash was the principal cause of fatality among young population, aged 5 to 29 years old.

In this study, the respondent will be university students since most university students are young adults. After graduating, most of the students will proceed with their career paths and entering the working environment. Before that, this study will determine the risk riding behaviours of young motorcyclists among university students to tackle the problems related to commuting accidents.

## **2.5 Risk Riding Behaviours**

Human behaviour play biggest role in road accidents and the most difficult component to control. Road accidents are the prominent factors that caused fatal in young population that aged between 5 to 29 years old (WHO, 2018). The male motorcyclist has a higher tendency to involve in risky riding behaviour compared to female motorcyclists (Md Nor & Abdullah, 2014; Yuen et al., 2015; Md Isa et al., 2011). On the other hand, Ibrahim et al. (2012) also mentioned in their study that male motorcyclist and young adult is the major group that has high risk riding behaviour.

Motorcyclist that always performs unsafe and reckless riding has a higher tendency for risky riding behaviour. Other than that, immature skills and lack of experience may lead to high accident rate among young riders (Wong, Chung, & Huang, 2010). According to Zainudin et al. (2011), motorcyclists have a higher tendency to ride the motorcycle at risk which more prone to be involved in road crashes. Other than that, young population and male subgroups has higher tendency to engage in risk-taking and reckless riding behaviours (Falco et al., 2013). When the unsafe riding, speeding or any risk riding behaviours become a habit, it will be difficult to change unless the person wants to change by himself or herself (Mohammed Zalat & SA, 2018).

Among few tools to measure risk riding behaviour of motorcyclist are Structural Equation Model (Abdullah et al., 2018), MECHROM (Abdul Manan et al., 2017), Explanatory-latent Intermediate-dependent Framework (Wong et al., 2010), Questionnaire of Risk Perception on Two-Wheels (Q-Per<sub>2</sub>) (Falco et al., 2013) and Motorcycle Rider Behaviour Questionnaire (Elliott et al., 2007; Azman et al., 2017; Motevalian et al., 2011). However, this study will use the Motorcycle Rider Behaviour Questionnaire as a tool.

## **2.6 Motorcycle Rider Behaviour Questionnaires (MRBQ)**

Motorcycle Rider Behaviour Questionnaire (MRBQ) is one of the tools to measure the risk riding behaviour of a motorcyclist. Elliot et. al (2007) developed a questionnaire to identify the association between errors and violations towards motorcyclist crash risk in the United Kingdom and called as Motorcycle Rider Behaviour Questionnaire (MRBQ). The Motorcycle Rider Behaviour Questionnaires (MRBQ) was adapted from Driving behaviour Questionnaires (DBQ) which was developed by Reason et. al (1990). The purpose of developing the MRBQ was to measure the riding behaviour of motorcyclist and to analyse what types of riding behaviour that can predict the motorcyclist's crash risk (Elliott et al., 2007).

Originally, there were 43 MRBQ items used to measure the frequency of motorcyclist riding behaviour and used a six-point Likert scale to assess how frequent the riding behaviour – never, hardly ever, occasionally, quite often, frequently and nearly all the time. The original elements in MRBQ consisted of five factors which are traffic errors, control errors, speed violations, the performance of stunts and the use of safety equipment (Elliott et al., 2007). According to Elliot et. al (2007), from the five factors, traffic errors showed a significant factor in predicting the motorcyclist's crash risk. Besides, there also other factors included in the MRBQ, demographic information (e.g., age and sex), riding experience, mileage, and crash information (Elliott et al., 2007).

According to Azman et al. (2017), the Malaysian version of MRBQ was adapted from (Elliott et al., 2007) and a Persian version of MRBQ (Motevalian et al., 2011). The questionnaire was translated to Malay language and verified for psychometric properties. There are five elements in the Malaysian version for MRBQ; safety violations, speeding, traffic errors, safety equipment and precautions (Azman et al., 2017). Based on the Malaysian version for MRBQ there were 59 items used to measure the frequency of motorcyclist riding behaviour and used a six-point Likert scale to assess how frequent the riding behaviour – never, hardly ever, occasionally, quite often, frequently and nearly all the time. In previous study stated that, safety violation showed a higher frequency of reported behaviour among motorcyclists in Klang Valley (Nuur Sakinah et al., in press). Azman et al. (2017) reported in their study, speeding was the most frequently reported behaviour among the young motorcyclist.

## 2.7 Sustainable Development Goals (SDGs)

According to SOCSO (2018), the total number of accidents reported was 72,631 cases, of which 48 percent or 35,195 cases were commuting accidents and 666 deaths was reported. There also 76.9% of commuting accidents involved motorcyclists including the pillion passengers. SOCSO (2018) also reported that approximately RM600 million to RM800 million compensation payouts by SOCSO were related to deaths caused by commuting accidents. This data showed that the numbers is keep on rising and the awareness about the problem is still low.

The members of United Nations have adopted Sustainable Development Goals (SDGs) in year 2015 with 17 goals to achieve social, economy, and environmental sustainability by 2030. This study will also help to achieve Sustainable Development Goals (SDG) and targets especially *“Goal 3: Ensure healthy lives and promote well-being for all at all ages, Target 3.6 by 2030, halve the number of global deaths and injuries from road traffic accidents”*. The indicator for this target will be death rate cause by road traffic accidents. According to Ministry of Health (2019), road crash the leading cause of fatality among people aged between 15 to 40 years old and ranked as 4<sup>th</sup> principal causes of death in Malaysia in year 2018. Other than that, Goal 11 of the SDGs *“Make cities and human settlements inclusive, safe, resilient and sustainable”* under the Target 11.2 *“By 2030, provide access to safe, affordable, accessible and sustainable transport system for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations women, children, persons with disabilities and older persons”*.

Nevertheless, there are many efforts that have been done by the government to tackle this problem. There are several guidelines and codes of practice regarding safe commuting that have been developed by agencies like Ministry of Health (MOH), Department of Occupational Safety and Health (DOSH), Standard and Industrial Research Institute of Malaysia (SIRIM), and Malaysia Institute of Road Safety Research (MIROS). In the year 2008, MOH has issued “Guidelines for the Prevention of Accidents at Workplace”. After that, the “Occupational Safety and Health Industry Code of Practise for Road Transport Activities” was published by DOSH under the Ministry of Human Resources in the year 2010 as one of the initiatives to curb the problems. On the other hand, Standard and Industrial Research Institute of Malaysia (SIRIM) has produced a standard which is SIRIM 4: 2014: Good Practices in Implementing Commuting Safety Management and was introduced in the year 2014. Thereafter, MIROS has introduced “Guideline of Safe Driver and Rider Performance Evaluation: Focusing on Cognitive and Psychomotor Components” in the year 2017. Unfortunately, the commuting accidents is kept on rising regarding the number of existing guidelines. Thus, the awareness level among the people, the implementation and enforcement of the existing program is still questionable.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Study Design**

This is a cross-sectional study designed to determine risk riding behaviours of young motorcyclists among students in Universiti Putra Malaysia, Serdang, Selangor by using the Motorcycle Rider Behaviour Questionnaires (MRBQ).

#### **3.2 Study Location**

This study has conducted at Universiti Putra Malaysia (UPM). This location selected because there is still lack of study on the risk riding behaviours of young motorcyclists among universities students.

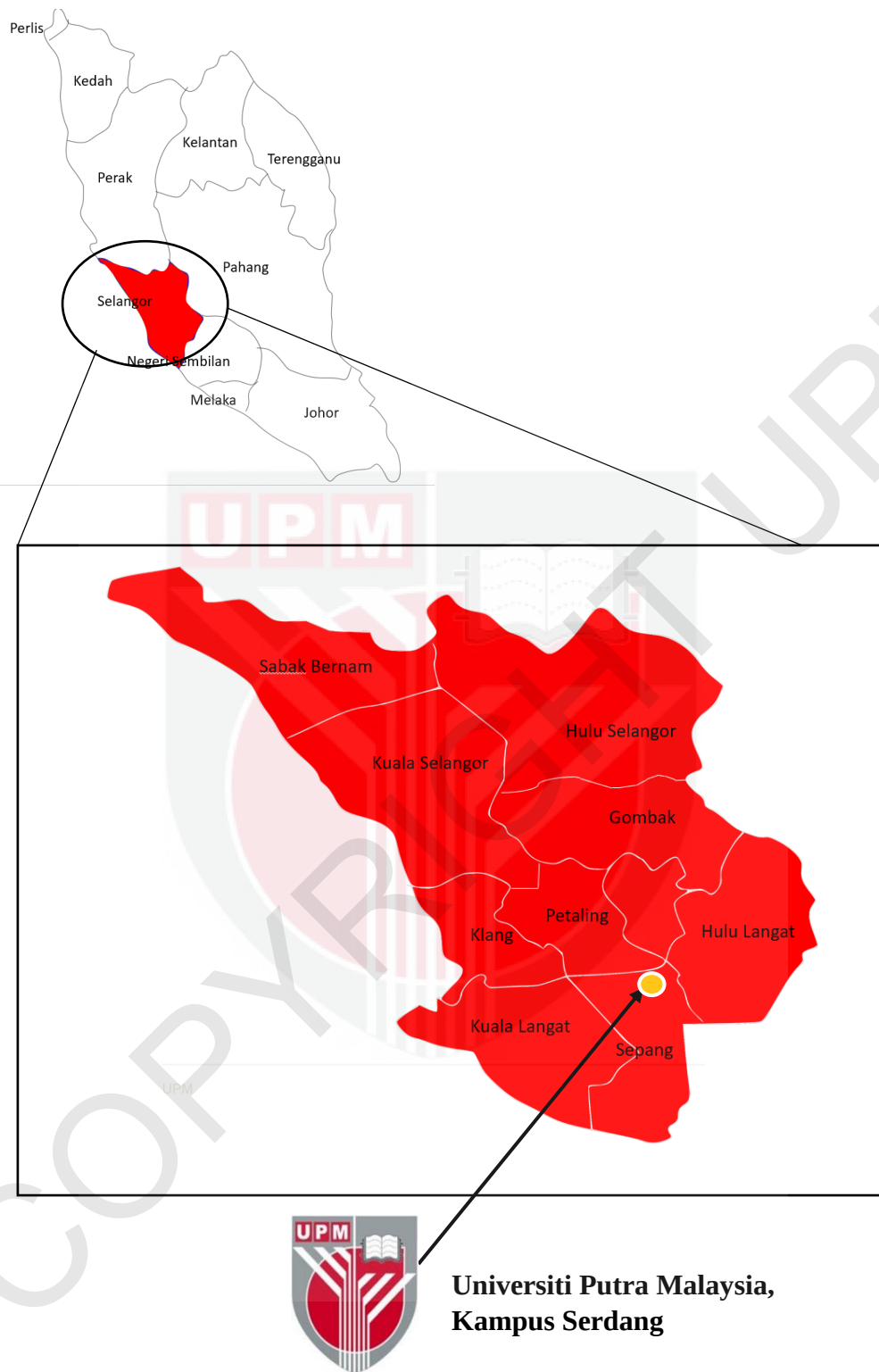


**Figure 3.1: Study Location**

### **3.3 Study Population**

The UPM students which consists of male and female age of 18 to 29 years old with different background and race from various faculties was selected randomly as study population.

### **3.4 Sampling**

#### **3.4.1 Sampling Frame**

The sampling frame was referred on the name list of registered motorcycle's sticker in Universiti Putra Malaysia, Serdang, Selangor. The name list was obtained from the Bahagian Keselamatan Universiti (BKU), Univeristi Putra Malaysia.

#### **3.4.2 Inclusion criteria**

The sampling unit met the inclusion criteria which are UPM students, Malaysian citizen and age 18 to 29 years old with one-year experience of riding a motorcycle.

### **3.4.3 Exclusion criteria**

The exclusion criteria are foreign students, exchange students, mobility students and part-time students (PJJ) or any students of UPM beyond the age of 29 or less than one-year experience of riding a motorcycle.

### **3.4.4 Sampling method**

This study applied Simple Random Sampling Method. In this sampling method, the name list was obtained from Bahagian Keselamatan Universiti, UPM. Based on the sample size of the population, the respondents were randomly selected using fishbowl method or random number generator. The respondents were selected solely based on research requirements and elements who do not suffice the purpose are kept out of the sample. The respondents also needed to comply with all the inclusion criteria which are UPM students, Malaysian citizens, aged 18 to 29 years old and have experience riding motorcycle. Thus, the total number of respondents that comply with all criteria was obtained.

### 3.4.5 Sample size

The sample size calculation in determining the number of respondents was chosen using the formula from Lemeshow et al. (1990) for group comparison. The formula for calculating sample size was shown below.

$$n = \frac{\left( Z_{1-\alpha/2} \sqrt{2\bar{P}(1-\bar{P})} + Z_{1-\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)} \right)^2}{(P_1 - P_2)^2}$$

Where,

$Z_{1-\alpha/2}$  = Standard error associated with confidential interval, 95% CI = 1.96

$Z_{1-\beta}$  = Standard error associated with power, 84.2% of power = 0.842

$P_1$  = estimated proportion (larger)

$P_2$  = estimated proportion (smaller)

Where,

$Z_{1-\alpha/2}$  = Standard error associated with confidential interval, 95% CI = 1.96

$Z_{1-\beta}$  = Standard error associated with power, 84.2% of power = 0.842

$P_1$  = estimated proportion = 87.8% (Md Isa et al., 2011)

$P_2$  = estimated proportion = 12.2% (Md Isa et al., 2011)

$$\begin{aligned} &= \frac{\left( 1.96 \sqrt{2(0.500)(1-0.500)} + 0.842 \sqrt{0.878(1-0.878) + 0.122(1-0.122)} \right)^2}{(0.878 - 0.122)^2} \\ &= 60 \end{aligned}$$

=60 respondents each comparative group which are male students and female

Students

Based on the formula, 60 respondents were needed for each comparative group. The number of respondents were increased by 20% for the strength of analysis of the study and to consider on non-responsive respondents, missing data and errors. Therefore, the total number of samples that were included in this study is 144 respondents.



### 3.4.6 Sampling Flow Chart

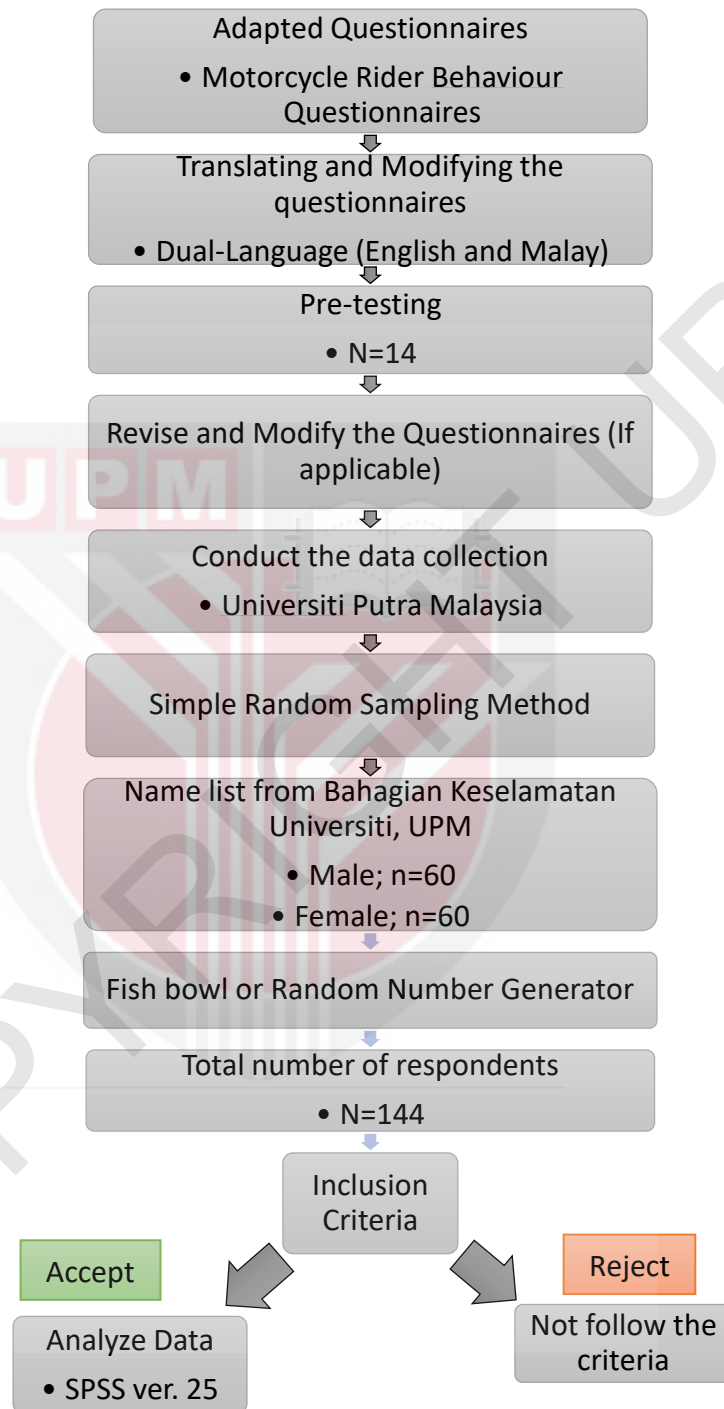


Figure 3.2: Sampling Flow Chart

### 3.5 Study Instrumentation and Data Collection

#### 3.5.1 Questionnaires

The questionnaires that was used for the risk riding behaviours were adopted from the Malaysian version of the Motorcycle Riding Behaviour Questionnaire (MRBQ). This self-reported research uses Motorcycle Riding Behaviour Questionnaire (MRBQ) as an instrument to study riding behaviour among motorcyclists in Klang Valley. The MRBQ includes questions on traffic errors, speed violations, stunts, safety equipment, and control errors. Besides, information regarding respondent demographic details, riding experience, summons details, crash involvement of respondents and injuries sustained in crashes were also asked. Principal components analysis on the Malaysian version of the MRBQ showed five-factor solutions, safety violations, traffic errors, speeding, safety equipment, and precaution.

**Table 3.1: Items of the MRBQ according to factors.**

| Variables            | Question                                                                                                                       |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Traffic Error</b> | Fail to notice that pedestrians are crossing when turning into a side street from a main road                                  |
|                      | Not notice someone stepping out from behind a parked vehicle until it is nearly too late                                       |
|                      | Not notice a pedestrian waiting to cross at a zebra crossing, or a pelican crossing that has just turned red                   |
|                      | Pull out on to a main road in front of a vehicle that you had not noticed, or whose speed you have misjudged                   |
|                      | Miss “Give Way” signs and narrowly avoid colliding with traffic having the right of way                                        |
|                      | Fail to notice or anticipate that another vehicle might pull out in front of you and have difficulty stopping                  |
|                      | Queuing to turn left on a main road, you pay such close attention to the main traffic that you nearly hit the vehicle in front |

|                          |                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Traffic Error</b>     | Distracted or pre-occupied, you belatedly realise that the vehicle in front has slowed and you have to brake hard to avoid a collision. |
|                          | Attempt to overtake someone that you had not noticed to be signalling a right turn                                                      |
|                          | When riding at the same speed as other traffic, you find it difficult to stop in time when a traffic light has turned against you       |
|                          | Run wide when going round a corner                                                                                                      |
|                          | Find that you have difficulty controlling the bike when riding at speed (e.g. steering wobble)                                          |
|                          | Skid on a wet road or manhole cover                                                                                                     |
| <b>Speeding</b>          | Have trouble with your visor or goggles fogging up                                                                                      |
|                          | Driver deliberately annoys you or puts you at risk                                                                                      |
|                          | Ride so close to the vehicle in front that it would be difficult to stop in an emergency                                                |
|                          | Race away from traffic lights with the intention of beating the driver/rider next to you                                                |
|                          | Ride between two lanes of fast-moving traffic                                                                                           |
| <b>Safety Violations</b> | Ride so fast into a corner that you scare yourself                                                                                      |
|                          | Ride above the speed limit in the motorcycle lane                                                                                       |
|                          | Ride so fast into a corner that you feel like you might lose control                                                                    |
|                          | Exceed the speed limit on a country/rural road                                                                                          |
|                          | Disregard the speed limit late at night or in the early hours of the morning                                                            |
|                          | Exceed the speed limit on a highway                                                                                                     |
|                          | Exceed the speed limit on a residential area                                                                                            |
|                          | Open up the throttle and just 'go for it' on country roads                                                                              |
|                          | Get involved in unofficial 'races' with other riders or drivers                                                                         |
|                          | Attempt to do, or actually do, a wheelie                                                                                                |
|                          | Pull away too quickly and your front wheel comes off the road                                                                           |
|                          | Intentionally do a wheel spin                                                                                                           |
|                          | Unintentionally do a wheel spin                                                                                                         |
|                          | Ride when you suspect you might be over the legal limit for alcohol or under the influence of drugs                                     |
|                          | Cross a junction while the traffic light is red                                                                                         |
|                          | Ride in the opposite direction of the traffic flow/roadway                                                                              |
|                          | Ride on the sidewalk                                                                                                                    |
|                          | Talk on a mobile phone while riding.                                                                                                    |
|                          | Type text messages on a mobile phone while riding                                                                                       |
|                          | Read text messages on a mobile phone while riding                                                                                       |
|                          | I brought more than one passenger                                                                                                       |
|                          | Ride without wearing a helmet for a short trip (example: residential area))                                                             |
|                          | Wear a helmet without the chinstrap                                                                                                     |
|                          | Try or done a "stoppie" action (sudden stop until the rear wheel is lifted)                                                             |
|                          | Try or done superman action                                                                                                             |

|                         |                                                                        |
|-------------------------|------------------------------------------------------------------------|
| <b>Safety Equipment</b> | Wear riding boots?                                                     |
|                         | Wear protective trousers (leather or non-leather)?                     |
|                         | Wear a protective jacket (leather or non-leather)?                     |
|                         | Wear body armor (elbow pads, shoulder pads, knee pads, etc.)           |
|                         | Wear no protective clothing?                                           |
|                         | Wear gloves?                                                           |
|                         | Wear a leather one-piece suit?                                         |
| <b>Precautions</b>      | Wear bright/fluorescent clothing?                                      |
|                         | Wear bright/fluorescent strips/patches on your clothing                |
|                         | Use dipped headlights on your bike                                     |
|                         | Brake or throttle-back when going round a corner or bend               |
|                         | Change gear when going round a corner or bend                          |
|                         | Use a motorcycle lane when provided                                    |
|                         | Give signal when turning right at the intersection                     |
|                         | Give signal when changing lanes on the highway                         |
|                         | Give signal when changing lanes on a commercial road (not the highway) |

### **3.6 Quality Control**

#### **3.6.1 Pre-Test Questionnaires**

An adapted questionnaire was used to determine the sociodemographic background and the riding behaviour of the motorcyclist. The form used in a dual language which is in Malay and English version so that the respondents can easily understand the question given. Pre-testing of the adapted questionnaire was conducted to 10% of the study sample size that has similar characteristics to the study participants to ensure the validity and reliability of data obtained from the study. The value obtained for Cronbach's alpha was 0.872.

#### **3.7 Statistical Analysis**

The data obtained from this study was analysed by using the version 25 of SPSS. The data was tested depending on the objectives that had been listed as each objective use different kind of test to analyse the data.

**Table 3.2: Data Analysis**

| <b>Objectives</b>                                                                                                                                            | <b>Tests</b>         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>To study the socio-demographic factors among UPM students.</b>                                                                                            | Descriptive analysis |
| <b>To determine the road crash involvement of young motorcyclists among UPM students.</b>                                                                    | Descriptive analysis |
| <b>To determine the MRBQ rating (safety violation, traffic error, speeding, safety equipment, and precaution) of young motorcyclists among UPM students.</b> | Descriptive analysis |
| <b>To compare the crash involvement of young motorcyclists between male and female students.</b>                                                             | Chi-square           |
| <b>To compare the MRBQ factors (safety violation, traffic error, speeding, safety equipment, and precaution) between male and female motorcyclists.</b>      | Mann Whitney U-test  |
| <b>To identify the significant road accident predictors of young motorcyclists among UPM students.</b>                                                       | Logistic Regression  |

### **3.8 Ethical Consideration**

The human subject's approvals were obtained from the university's Ethics Committee of Research involving Human Subjects, Universiti Putra Malaysia before starting the data collection of this study. Each of the respondents has given a consent form to read and sign before beginning the study. The consent form states that the participation of the respondent in this study is voluntary without any force from other parties. It also stated in the form the purpose of the study, steps they need to undergo in this study, the benefits, and possible risks of the study. Participants are also free to ask any questions regarding this study.

### **3.9 Honorarium and Incentives to Respondents**

Each respondent received some snacks as a token of appreciation for their efforts. The researcher appreciates and thanks to the respondents who willingly and sincerely giving the information and time during the study.

## CHAPTER 4

### RESULT

#### 4.1 Sociodemographic Characteristic and Riding Background of UPM Students

A total of 200 respondents have participated in this study. After the screening process 184 respondents were included in this study. The respondents in this study was voluntary based, and the total of male respondents was 94, and the female respondents was 94. The table 4.1 shows the sociodemographic background of the respondents for the gender, age, race, education, license, age obtain license and age of riding.

The age of the respondents was chosen between 18 to 29 years old and the result shown an average of  $21.80 \pm 1.308$ . Most of the respondents were Malay with a total of 94.6%. However, only 2.2%, 2.2% and 1.1% of the respondents were Chinese, Indian, and Others, respectively. About 98.9% and 1.1% of the respondents were undergraduate students and postgraduate students, respectively. The respondents were comprised of several different type of license. Most of the respondents have B2 license (87%), B full license (3.3%), B1 license (1.6%), and the least were L license (1.1%). Only 7.1% of the respondents have no license. Almost 77.8% of the respondents obtained their license at age 16 to 18 and the result of age obtain license shown an average of  $16.30 \pm 4.716$ . Among the respondents, only 13.6% and 1.6% obtained their license at age 19 to 21 and 22 to 24 respectively. For age of riding, the result shown an average of  $11.57 \pm 5.736$  and only 17.4% of respondents never ride unlicensed.

| Variables                 | Frequency<br>(N=184) | %    | Mean±SD     |
|---------------------------|----------------------|------|-------------|
| <b>Gender</b>             |                      |      |             |
| Male                      | 92                   | 50   |             |
| Female                    | 92                   | 50   |             |
| <b>Age</b>                |                      |      | 21.80±1.308 |
| 20 - 22                   | 135                  | 73.4 |             |
| 23 - 25                   | 47                   | 25.5 |             |
| 26 - 27                   | 2                    | 10   |             |
| <b>Race</b>               |                      |      |             |
| Malay                     | 174                  | 94.6 |             |
| Chinese                   | 4                    | 2.2  |             |
| Indian                    | 4                    | 2.2  |             |
| Others                    | 2                    | 1.11 |             |
| <b>Education</b>          |                      |      |             |
| Undergraduate             | 182                  | 98.9 |             |
| Postgraduate              | 2                    | 1.1  |             |
| <b>License</b>            |                      |      |             |
| B                         | 6                    | 3.3  |             |
| B1                        | 3                    | 1.6  |             |
| B2                        | 160                  | 87.0 |             |
| L                         | 2                    | 1.1  |             |
| No license                | 13                   | 7.1  |             |
| <b>Age obtain license</b> |                      |      | 16.30±4.716 |
| 16-18                     | 143                  | 77.8 |             |
| 19-21                     | 25                   | 13.6 |             |
| 22-24                     | 3                    | 1.6  |             |
| No license                | 13                   | 7.1  |             |
| <b>Age of riding</b>      |                      |      | 11.57±5.736 |
| 10-12                     | 49                   | 26.6 |             |
| 13-15                     | 64                   | 34.8 |             |
| 16-18                     | 36                   | 19.5 |             |
| 19-21                     | 2                    | 1.1  |             |
| 22-24                     | 1                    | 0.5  |             |
| Never ride unlicensed     | 32                   | 17.4 |             |

Table 4.2 shows the riding background of the respondents; the main purpose of riding motorcycle, the riding hours, traffic condition, charged for traffic violation, usage of signal light and the reason not to use signal light. In a total of 184 respondents, 70.1% of the respondents' main purpose of riding motorcycle were go back or forth to classes and the rest 11.4% and 18.5% were for recreational or convoy and others, respectively. Based on the table below, the riding hours among the respondents were daily (65.2%), weekly (21.2%) and Others (13.6%). The result showed that the reported traffic condition during riding motorcycle were uncertain (42.9%), smooth (28.3%), very smooth (21.7%), congested (6.0%) and the least reported was standstill (1.1%). For traffic violation, only 19.6% of respondents reported has been charged for traffic violation and the rest 80.4% of respondents never been charged for traffic violation.

The usage of signal was ranked between 1 to 6 point of scale (Never, Hardly Ever, Occasionally, Quite Often, Frequently and Nearly all the time). Most of the respondents reported they used the signal light Nearly all the time (38.0%) and followed by Frequently (30.4%), Quite often (16.3%), Occasionally (9.2%), Hardly ever (3.7%) and Never (2.7%). The reason not to use signal light at junction among respondents were included in the study. The study revealed that 50.5% of the respondents were forgot to give signal at junction and followed by Lazy (12.5%), Others (7.6%), Unimportant (6.0%), Not necessary (2.7%), Do not have time to give signal (1.1%), and Others motorcyclist not giving signal (1.1%). Only 18.5% of respondents do not have any reason not to use signal light at junction.

**Table 4.2: The background of the respondents who involved in the study (N=184)**

| <b>Variables</b>                      | <b>Frequency<br/>(N=184)</b> | <b>%</b> |
|---------------------------------------|------------------------------|----------|
| <b>Main Purpose of Riding</b>         |                              |          |
| Go back/forth to classes              | 129                          | 70.1     |
| Recreational/Convoy                   | 21                           | 11.4     |
| Others                                | 34                           | 18.5     |
| <b>Riding Hours</b>                   |                              |          |
| Daily                                 | 120                          | 65.2     |
| Weekly                                | 39                           | 21.2     |
| Others                                | 25                           | 13.6     |
| <b>Traffic Condition</b>              |                              |          |
| Uncertain                             | 79                           | 42.9     |
| Congested                             | 11                           | 6.0      |
| Standstill                            | 2                            | 1.1      |
| Smooth                                | 52                           | 28.3     |
| Very Smooth                           | 40                           | 21.7     |
| <b>Charged for Traffic Violation</b>  |                              |          |
| Yes                                   | 36                           | 19.6     |
| No                                    | 148                          | 80.4     |
| <b>Signal light usage</b>             |                              |          |
| Never                                 | 5                            | 2.7      |
| Hardly ever                           | 6                            | 3.3      |
| Occasionally                          | 17                           | 9.2      |
| Quite often                           | 30                           | 16.3     |
| Frequently                            | 56                           | 30.4     |
| Nearly all the time                   | 70                           | 38.0     |
| <b>Reason not to use signal light</b> |                              |          |
| Lazy                                  | 23                           | 12.5     |
| Do not have time to give signal       | 2                            | 1.1      |
| Forgot                                | 93                           | 50.5     |
| Not necessary                         | 5                            | 2.7      |
| Unimportant                           | 11                           | 6.0      |
| Others motorcyclist not giving signal | 2                            | 1.1      |
| Others                                | 14                           | 7.6      |
| None                                  | 34                           | 18.5     |

## 4.2 The MRBQ rating

The mean MRBQ rating of respondents who involved in this study are shown in Table 4.3 and Figure 4.1. The MRBQ rating is between 1 to 6 point of scale (Never, Hardly Ever, Occasionally, Quite Often, Frequently and Nearly all the time). The results of this study revealed that the Precaution ( $3.74 \pm 0.835$ ) has the highest mean of MRBQ rating, followed by Traffic Errors ( $2.91 \pm 0.523$ ), Speeding ( $2.23 \pm 0.251$ ), and Safety Violation ( $2.23 \pm 0.251$ ). Meanwhile, the lowest mean of MRBQ rating is recorded by the Safety Equipment ( $1.82 \pm 0.552$ ).

**Table 4.3: The descriptive statistic of MRBQ rating of the respondents who involved in the study (N=184)**

| Variables         | Mean±SD          |
|-------------------|------------------|
| Traffic Errors    | $2.91 \pm 0.523$ |
| Speeding          | $2.23 \pm 0.251$ |
| Safety Violations | $2.03 \pm 0.621$ |
| Safety Equipment  | $1.82 \pm 0.552$ |
| Precautions       | $3.74 \pm 0.835$ |

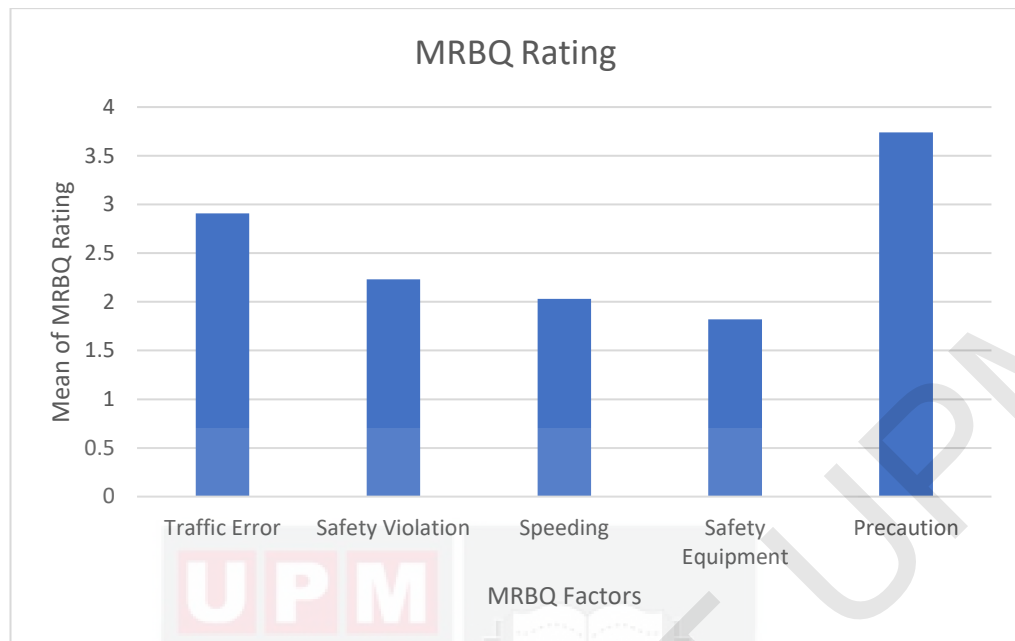


**Figure 4.1: Mean of MRBQ rating of the respondents who involved in the study (N=184)**

Table 4.4 showed the frequency of reported MRBQ factors among UPM young motorcyclist. Speeding factors showed a highest frequency of reported MRBQ followed by Traffic Error, Precaution, Safety Equipment. Meanwhile, the lowest frequency of reported MRBQ is recorded by Safety Violation.

**Table 4.4: The frequency of reported MRBQ factors of the respondents (N=184)**

| MRBQ Factors             | Frequency (%) |           |
|--------------------------|---------------|-----------|
|                          | Yes           | No        |
| <b>Traffic Error</b>     | 107 (58.2)    | 77 (41.8) |
| <b>Speeding</b>          | 112 (60.9)    | 72 (39.1) |
| <b>Safety Violations</b> | 87 (47.2)     | 97 (52.7) |
| <b>Safety Equipment</b>  | 99 (53.8)     | 85 (46.2) |
| <b>Precautions</b>       | 102 (55.4)    | 82 (44.6) |

### 4.3 The Crash Involvement of The Respondents

Table 4.5 presents crash involvement of the 184 respondents who involved in the study. A total of 31% shows never involved in near-miss crashes, 37.5% of respondents involved in near miss crashes 1 to 2 times, followed by 3 to 5 times (22.8%), 6 to 10 times (3.3%) and more than 10 times (5.4%). Contrast with road crashes involvement, there are 69.6% of respondent never involved in road crashes and the rest 30.4% involved in road accident 1 to 2 times (26.6%), 3 to 5 times (3.3%) and 6 to 10 times (0.5%) respectively.

**Table 4.5: The crash involvement of the respondents who involved in the study (N=184)**

| Variables                | Frequency<br>(N=184) | %    |
|--------------------------|----------------------|------|
| <b>Near-miss crashes</b> |                      |      |
| Never                    | 57                   | 31.0 |
| 1 to 2 times             | 69                   | 37.5 |
| 3 to 5 times             | 42                   | 22.8 |
| 6 to 10 times            | 6                    | 3.3  |
| >10 times                | 10                   | 5.4  |
| <b>Road Crashes</b>      |                      |      |
| Never                    | 128                  | 69.6 |
| 1 to 2 times             | 49                   | 26.6 |
| 3 to 5 times             | 6                    | 3.3  |
| 6 to 10 times            | 1                    | 0.5  |
| >10 times                | 0                    | 0    |

The crash involvement of the respondents based on gender are present in Table 4.6. The results of this study revealed that 82.6% of the male respondents involved in near-miss crashes and only 17.4% never involved in near-miss crashes. For the female respondents, about 55.4% has been involved in near miss crashes while other 44.6% never been involved in near-miss crashes. Besides, only 38% of male and 18% of female respondents have been involved in road crashes in the past 12 months. While the other 54% of male and 74% of female respondents never involved in road crashes in the past 12 months.

**Table 4.6: The crash involvement of the respondents based on gender (N=184)**

| Variables                | Frequency (%)<br>(N=184) |                  |
|--------------------------|--------------------------|------------------|
|                          | Male<br>(n=92)           | Female<br>(n=92) |
| <b>Near-miss crashes</b> |                          |                  |
| Yes                      | 76 (82.6)                | 51 (55.4)        |
| No                       | 16 (17.4)                | 41 (44.6)        |
| <b>Road Crashes</b>      |                          |                  |
| Yes                      | 38 (41.3)                | 18 (19.6)        |
| No                       | 54 (58.7)                | 74 (80.4)        |

Table 4.7 has shown the result for comparison of crash involvement of the respondents between gender. The result showed that there is significant difference for road accidents ( $\chi^2 = 10.268$ ,  $p = 0.001$ ) and near-miss accidents ( $\chi^2 = 15.886$ ,  $p = 0.001$ ) between male and female respondents. The result also showed that male respondents have higher crash involvement in both road accidents and near-miss accidents compared to female respondents.

**Table 4.7: The comparison of crash involvement between gender among UPM students**

| Variables                           | Study groups   |                  | OR    | 95% CI        | $\chi^2$ | p-value |
|-------------------------------------|----------------|------------------|-------|---------------|----------|---------|
|                                     | N=184          |                  |       |               |          |         |
|                                     | Male<br>(n=92) | Female<br>(n=92) |       |               |          |         |
| Road Crashes                        |                |                  |       |               |          |         |
| Yes                                 | 38             | 18               | 2.893 | (1.493-5.606) | 10.268   | 0.001** |
| No                                  | 54             | 74               |       |               |          |         |
| Near-miss Crashes                   |                |                  |       |               |          |         |
| Yes                                 | 76             | 51               | 3.819 | (1.938-7.522) | 15.886   | 0.001** |
| No                                  | 16             | 41               |       |               |          |         |
| **Significant at p < 0.001<br>N=184 |                |                  |       |               |          |         |

#### 4.4 Comparison of MRBQ Factors Between Gender

Table 4.8 has shown the result of comparison of MRBQ factors between gender. Mann Whitney-U test was performed since data distribution is not normal to determine if there is a significant difference of MRBQ factors between male and female respondents. Based on table 4.7, the result shown that there is significant difference for Traffic error ( $p = 0.009$ ), Speeding ( $p = 0.001$ ), Safety violations ( $p = 0.001$ ), and Safety equipment ( $p = 0.003$ ) between gender in this study.

**Table 4.8: The comparison of MRBQ factors between male and female respondents**

| Variables         | Median (IQR) |               | z      | p value        |
|-------------------|--------------|---------------|--------|----------------|
|                   | Male (n=92)  | Female (n=92) |        |                |
| Traffic Errors    | 37.00 (12)   | 33.00 (14)    | -2.627 | <b>0.009*</b>  |
| Speeding          | 11.50 (7)    | 10.00 (5)     | -3.682 | <b>0.001**</b> |
| Safety Violations | 50.00 (18)   | 38.00 (12)    | -6.068 | <b>0.001**</b> |
| Safety Equipment  | 14.00 (9)    | 13.00 (5)     | -2.989 | <b>0.003*</b>  |
| Precautions       | 30.00 (12)   | 31.00 (12)    | -0.374 | 0.708          |

\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.001$

N=184

#### 4.5 Significance Crash Risk Predictors Among UPM Young Motorcyclists.

Table 4.9 has shown the association between the MRBQ factors with the road crash among UPM motorcyclists. The result showed that Speeding ( $\chi^2 = 3.977, p = 0.046$ ), Safety Violation ( $\chi^2 = 6.778, p = 0.009$ ) and Precaution ( $\chi^2 = 7.479, p = 0.006$ ) have significant association with road crash. From the result, it concludes that majority of young motorcyclists that have precaution were not involved with road crash. Further analysis was conducted to determine the main predictors of road crash among UPM young motorcyclists.

**Table 4.9: The association of MRBQ factors with road crash among UPM young motorcyclists.**

| MRBQ Factors             | Road Crash |    | OR<br>(95% CI)  | $\chi^2$ | p-value       |
|--------------------------|------------|----|-----------------|----------|---------------|
|                          | Yes        | No |                 |          |               |
| <b>Traffic Error</b>     |            |    |                 | 1.039    | 0.308         |
| Yes                      | 33         | 65 | 1.391           |          |               |
| No                       | 23         | 63 | (0.737 - 2.625) |          |               |
| <b>Speeding</b>          |            |    |                 | 3.977    | <b>0.046*</b> |
| Yes                      | 33         | 55 | 1.904           |          |               |
| No                       | 23         | 73 | (1.007 - 3.601) |          |               |
| <b>Safety Violations</b> |            |    |                 | 6.778    | <b>0.009*</b> |
| Yes                      | 40         | 65 | 2.423           |          |               |
| No                       | 16         | 63 | (1.233 - 4.761) |          |               |
| <b>Safety Equipment</b>  |            |    |                 | 1.546    | 0.214         |
| Yes                      | 34         | 65 | 1.498           |          |               |
| No                       | 22         | 63 | (0.791 - 2.836) |          |               |
| <b>Precautions</b>       |            |    |                 | 7.479    | <b>0.006*</b> |
| Yes                      | 21         | 76 | 0.411           |          |               |
| No                       | 35         | 52 | (0.215 - 0.783) |          |               |

\*Significant at  $p < 0.05$

Table 4.10 has shown the significance crash risk predictors among UPM students. Logistic Regression has been performed for all MRBQ factors, (Traffic Error, Speeding, Safety Violation, Safety Equipment and Precaution). Based on table 4.8, the result has shown that Safety Violation factors (OR = 2.724, 95 % CI = 1.170 – 6.342) and Precaution (OR = 0.329, 95% CI = 0.164 – 0.658) have significant difference with road crash.

**Table 4.10: Logistic regression of the significant predictors of road crash among young motorcyclists**

| MRBQ Factors     | OR    | 95% CI |       | p-value |
|------------------|-------|--------|-------|---------|
|                  |       | Lower  | Upper |         |
| Safety Violation | 2.724 | 1.170  | 6.342 | 0.020*  |
| Precaution       | 0.329 | 0.164  | 0.658 | 0.002*  |

**\*Significant at  $p < 0.05$**

Young motorcyclists who have safety violation above the average was 2.724 times (95% CI = 1.170 - 6.342) more likely exposed to road accident. However, young motorcyclists who have precaution above the average was 0.329 times (95% CI = 0.164 - 0.658) less likely exposed to road accident.

## **CHAPTER 5**

### **DISCUSSION**

This study aimed to identify risk riding behaviours of young motorcyclist among students in UPM. All objectives of this study were obtained by determining the respondent's background, and the MRBQ rating.

#### **5.1 Sociodemographic Characteristic and Riding Background of UPM Students**

A total of 184 students were involved as respondents and 50% of the respondents was male and female respectively. The students' age was in the range from 18 – 29 years old and most of them were Malay, followed by Indian, Chinese and Others. The mean age of the student was 21.8 years old. The age from the previous study conducted among young motorcyclist in Klang Valley was between 16 to 25 years old which most of them were Malay and more than half of respondents was male (Azman et al., 2017). According to Md Nor & Abdullah (2014), risk-taking behaviours and road crashes always associated with age, gender and riding experience.

MIROS (2011) also reported that, based on statistic, above 50 % of the motorcycle riders involved in fatal road crashes are aged below 29 and half of the riders are between aged 20 to 29. In this study, only 7.1% of the students has no license but there about 82.6% of the students have ridden motorcycle without a license. The result

shown that average age of the students obtained their license was at 16 years old. However, the average age of riding motorcycle was around 11 years old. Based on the result, most of the students start to ride a motorcycle at early age and without a license. From a previous study, they also found out that most of the young motorcyclists in Klang Valley rode a motorcycle without a license (Ibrahim et al., 2012). According to Road Transport Act 1987 under section 26, riding motorcycle without a license is considered as traffic law violation and may be fined not less than RM300 or more than RM2000 or imprisoned for a term not exceeding three months or both. Therefore, this study also found that most of the respondents have experienced traffic law violation.

The result has found out that most of the UPM students riding a motorcycle as a transportation to go back or forth to classes. Only few of the students rode the motorcycle for recreational or convoy purposes. There also more than half of UPM students used a motorcycle as their daily transportation. The result shown that the most of UPM students reported the traffic condition during riding motorcycle were uncertain, followed by smooth, very smooth, congested and the least reported was standstill. Based on the result, the traffic condition can be uncertain, either smooth or congested depends on the time of the students go or forth to the classes.

For traffic violation, only few of the UPM students reported has been charged for traffic violation and most of the UPM students never been charged for traffic violation. However, the result is only based on police recorded traffic violation, not for the most of time. Most of the respondents reported they used the signal light Nearly all the time and followed by Frequently, Quite often, Occasionally, Hardly ever and

Never. The reason not to use signal light at junction among respondents were included in the study. The study revealed that more than half of the UPM students were Forgot to give signal at junction and followed by Lazy , Others, Unimportant, Not necessary, Do not have time to give signal, and Others motorcyclist not giving signal. Only few of the UPM students do not have any reason not to use signal light at junction.

## 5.2 The MRBQ Rating

The purpose of developing the MRBQ was to measure the risk riding behaviour of motorcyclists and to analyse what types of behaviour which can predict the motorcycle rider's crash risk (Elliott et al., 2007). There are five elements in the Malaysian version for MRBQ; safety violations, speeding, traffic errors, safety equipment and precautions (Azman et al., 2017). Based on the MRBQ factors, safety violation, speeding and traffic error were the undesirable or negative behaviours in road safety perspective, and for the safety equipment and precautions were considered as positive behaviours.

Based on the result, the Precaution factors has the highest mean of MRBQ rating followed by Traffic Errors, Speeding, Safety Violation, and the lowest mean of MRBQ rating is Safety Equipment. Previous study showed Speeding has the highest mean, however, they do not include Precaution and Safety equipment factors (Azman et. al, 2017)

For example, the question from Precaution factor that have the highest mean was “Give signal when changing lanes on the highway”. The result shown that average of students always give signal when changing lanes during riding a motorcycle on the highway. This is one of positive behaviours in road safety point of view.

Focusing next on Safety Equipment, the question that score the highest mean in this factor was “Wear bright/fluorescent clothing?”. It was clear that average of students always wears a bright colour clothing during riding a motorcycle for safety purposes. This is also one of positive behaviours in motorcycle safety riding perspectives. In the other words, the use of safety equipment is to comply with the rule also one of initiative to protect and prevent the motorcyclists from any harm or possibly road crashes.

Next in the Speeding factors, the question with highest mean was “Ride above the speed limit in the motorcycle lane”. The result shown that average of the students has experienced on riding motorcycle above the speed limit on the motorcycle lane. Consistent with previous study, Azman et al. (2017) also stated in their study that most of young motorcyclists in Klang Valley reported that they always exceed the speed limit on a motorway.

Other than that, for Safety Violation factors, the highest mean was “Ride without wearing a helmet for a short trip” and for Traffic Error factors, the highest mean was “Have trouble with your visor or goggles fogging up”. Again, the result indicated that average of students have experienced on riding motorcycle without wearing a helmet

for a short trip (ex: At the residential area) and always have trouble with visor or goggles fogging up during riding a motorcycle. Most of the young motorcyclists not sensitive to the traffic errors and safety violations that they do and the effect of the risk-taking behaviour (Yuen et al., 2015). When the unsafe riding, speeding or any risk riding behaviours become a habit, it will be difficult to change unless the person wants to change by himself or herself.

On top of that, this study also showed that Speeding has higher frequency of reported behaviour compared to other factors. Similar with a previous study, Azman et al. (2017) also reported that Speeding factors also showed a higher frequency of reported behaviour among young motorcycle riders in Klang Valley (Azman et al., 2017). However, in the other previous study showed a different result which Safety Violation was the highest frequency of reported behaviour among motorcyclists in Klang Valley (Ibrahim et al., in press).

### **5.3 The Crash Involvement of UPM Students**

There are two types of crash involvement being studied in this study. The first one was near-miss crashes that have been involved by the respondents within 3 months. The other types of crash involvement were road crashes that have been involved by the respondents within 12 months. The percentage of involvement of respondents in near-miss crashes was higher compare to road accidents. Similar with previous study, the result showed highest involvement in near miss crash compared to road crash (Stephens et. al, 2017; Azman et. al, 2017).

Based on the result, male students have a higher frequency to involve either in near-miss accidents or road accidents compared with female students. In a previous study done by Azman et. al (2017), young male motorcyclists also more prone to be involved in road accidents compared to a young female motorcycle rider. The result also showed that there was a significant difference in road accidents and near-miss accidents between male and female respondents. The result also showed that male respondents have higher crash involvement compared to female respondents. The male motorcyclist has a higher tendency to involve in risk-taking behaviour compared to female motorcyclists which eventually lead to road traffic accidents (Md Isa et al., 2011; Md Nor & Abdullah, 2014; Yuen et al., 2015)

In road traffic accidents there are three main factors involved such as, human, environment, and machine element (Elliott, Baughan, & Sexton, 2007). Human factors are the most difficult factors to controlled. One of the main components in human factors is human behaviour. In the previous study by Sultan et al. (2016), the findings showed that human behaviour factors were the highest contributors towards motorcycle crashes in Malaysia, followed by the road and vehicle and finally the environmental factors. Young motorcyclists with unsafe riding have a higher tendency for risky riding behaviour (Zalat et. al, 2018). Other than that, immature skills and lack of experience may lead to a high accident rate among young riders (Wong et al., 2010). According to Zainudin et al. (2011), motorcycle riders have a higher tendency to ride the motorcycle at risk which more prone to be involved in road accidents.

#### 5.4 Comparison of MRBQ Factors between Gender

In this study, the MRBQ factors was compared between two groups which is male students and female students. Based on the result in Table 4.6, there were four out of five factors shown a significant difference between both genders. The factors were Traffic Error, Speeding, Safety Violation and Safety Equipment. From the results, male and female students shown a significantly differences in negative factors of MRBQ (Traffic Error, Speeding and Safety Violation) and positive factor of MRBQ (Safety Equipment).

The result has revealed that the level of Traffic Error, Safety Violation, Speeding and Safety Equipment between the genders were different in road safety perspectives. Sakashita (2013) has reported in his study that Speeding, Stunts and Protective gear were the MRBQ factors that shown a significant difference and intercorrelate with gender. Ibrahim et al. (2012) also mentioned in their study that male motorcyclists and young adult is the major group that has high risk-taking riding behaviour.

In this study, the Precaution factors did not show any significant difference between male and female students. Based on that, both genders might have same level of precaution in road safety perspectives. This factor is one of positive behaviours which mean both gender practice same precaution behaviours during riding a motorcycle. For example, like already been stated above, an average of the students always giving signal when changing lanes in the highway. According to Zainudin et al. (2011), the person who ride a motorcycle at risk have higher tendency to be

involved in road accidents. Therefore, practicing a positive behaviour can help to reduce the road accidents and casualty cause by the accidents.

### **5.5 Significance Crash Risk Predictors among UPM Students**

This study has revealed that Safety Violation, Speeding and Precaution have significant association with road crash among UPM young motorcyclists. From the result, it concludes that majority of young motorcyclists that have precaution were not involved with road crash. Consistent with other previous study, a logistic regression analysis was conducted to determine the significant predictors of road crash among UPM young motorcyclists.

On top of that, the result found that Safety Violation and Precaution have significant difference with the road crash. Based on the result, young motorcyclists who have safety violation above the average was 2.724 times more likely exposed to road accident. However, young motorcyclists who have precaution above the average was 0.329 times less likely exposed to road accident. Despite that, Azman et. al (2017) also reported in their study, Traffic Error was the significant predictor of crash involvement and 1.381 times more likely to involve in road crash. On top of that, previous study by Sakashita (2013) reported the errors and speed violations as the significant predictors for near-miss accidents and road accidents.

Moreover, in the study conducted by Elliot et. al (2007), Traffic Error has shown as the significant predictor of road crash liability and motorcyclists who rated more frequent committing traffic errors had a higher road crash liability than those who rated committing traffic errors less frequent. Different studies showed different result. This is because of different in terms of study population, age group, study location etc. Thus, this study showed a specific result for a specific population.

Therefore, according to the results, each of significant predictors need to be tackled down for road safety interventions therefore the road crashes and casualty could be reduced. For example, safety violation and precaution factor can be combined to find the best interventions that will focus on reducing the undesirable riding behaviours. Certainly, factors such as age group, gender, safety violation and precaution were found to have an impact and influence toward the crash risk. The best road safety interventions for young adults are improving the riding skills by training programs such as how to choose the right speed selection, to control the speed and traffic error, and to manage the hazard perception.

## CHAPTER 6

### CONCLUSION AND RECOMMENDATION

#### 6.1 Conclusion

In conclusion, a cross sectional study was conducted at Universiti Putra Malaysia, Serdang, Selangor which involved 184 respondents (92 male students, 92 female students). It is aimed to determine the risk riding behaviours of young motorcyclists among students in UPM. These are a few findings in this study:

- The respondents were all UPM students age ranged (18 to 29 years old). Most of them were Malay and have experienced of riding any motorcycle more than a year. The Precaution factor has the highest mean of MRBQ rating followed by Traffic Error, Speeding, Safety Violation, and the lowest mean of MRBQ rating was Safety Equipment.
- The prevalence of the students involved in road crashes was 30.4% and the rest 69.6% of students never involved in road accidents.
- The Chi-Square showed a significant different for the crash involvement between both genders.
- This study showed that Traffic Error, Speeding, Safety Violation and Safety Equipment have significant difference between male and female students.
- The Safety Violation, Speeding and Precaution have significant association with road crash.

- Moreover, the result showed that Safety Violation and Precaution factor were the road crashes significant predictors among UPM young motorcyclists.
- Young motorcyclists who have safety violation above the average was 2.724 times more likely exposed to road crash, however, young motorcyclists who have precaution above the average was 0.329 times less likely exposed to road crash.
- Factors such as age group, gender, safety violation and precaution were found to have an impact and influence toward the crash risk.

This study also provides baseline data It will be useful for the prevention and intervention programs to be developed by road safety related organization such as MIROS. This program will reduce and minimize the risk of road traffic accidents among young motorcycle riders It is hope that these trained young motorcyclists will develop into safe riders in the future. In the long term, it has the potential to reduce the commuting accidents among the workers in the future.

## 6.2 Study Limitation

In this study, there were some limitations that can improvise from this study. First, since the study used questionnaire-based tools, the validity of the outcome cannot be proved clinically and precise. There are lots of factors that may influence the respondents to rate the questionnaires. Other than that, there were a lot of item in the questionnaires and the researcher also cannot control and observe each of respondent every time they answer the questions. The respondents tend to ignore some of questions and rate the questions without thinking. There are several possibilities for the result to show inconsistency.

This study also has a limitation in term of reference since the actual journal that used to produce the Malaysian version of MRBQ has not been published yet. This study was only based on the questionnaires from MIROS and other previous study from other country. The target sample size was not fulfilled due to COVID 19 and the Movement Control Order (MCO) that have been announced by Prime Minister of Malaysia. However, this study manages to obtain the minimum amount of sample size which is more than 120 respondents.

### 6.3 Recommendation

#### I. Further Research

For the socio-demographic data, it is recommended to have a larger number of samples of the respondents to get better results and to make the samples more representative. A cohort study can be done by using the result from this study as the baseline data to get a continuous measurement of the risk riding behaviours of students and to see whether the risk riding behaviours reduced or not.

Other than that, it is also recommended to conduct this study in various groups of population in Malaysia. Thus, baseline data can be generated based on the MRBQ factors that are significant to create several intervention programs (e.g. Motorcycle Safety Riding) for a specific population.

#### II. Intervention and Training Program

Intervention program for Motorcycle Safety Riding should be conducted among the UPM students to raise awareness and understanding on Motorcycle Road Safety. MRBQ factors such as Safety Violation and Precaution, which are the significant predictors of road accidents among UPM students, should be explained during the program. The other MRBQ factors also should be emphasized in the program. Training module or safe operation procedure (SOP) for motorcycle safety riding also can be improvised by including examples of risk riding behaviours as awareness.

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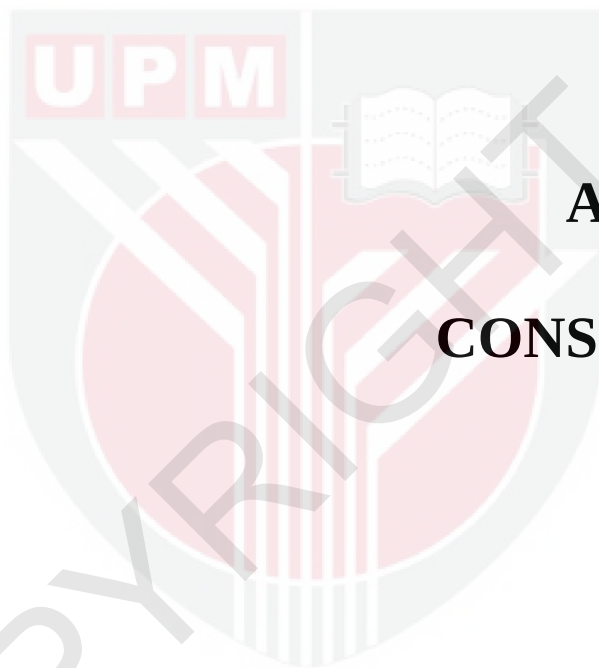
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## **APPENDIX 1**

### **CONSENT FORM**



## **FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM**

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

### **1. STUDY TITLE :**

Risk Riding Behaviour of Young Motorcyclists among Students in Universiti Putra Malaysia, Serdang, Selangor.

### **2. INTRODUCTION:**

Road accidents involving young motorcycle rider are at the most concern in Malaysia. Motorcycle rider in Malaysia has a higher vulnerability towards risk and also has a higher possibility of involved in road accidents. Most people choose motorcycles as their mode of transportation because of the cost-benefit in terms of petrol, easy to handle and also stress-free. Therefore, the majority of young people used a motorcycle as their daily transportation to move from one place to another. This study will specifically focus on the group aged between 18 to 29 years old by using the Malaysian version of the Motorcycle Riding Behaviour Questionnaire (MRBQ) as the instrument to determine the risk riding behaviours of young motorcyclists among students in Univeristi Putra Malaysia, Serdang, Selangor.

### **3. WHAT WILL YOU HAVE TO DO?**

First of all, you have to sign the consent form to show that you are interested to participate in this study. Then, you need to read all the information given and understand every instruction and information stated in the consent form. You required to answer all the questions in this questionnaire. The questionnaire consists of section A: Respondent Background Information, section B: Motorcyclist Behaviour. The duration expected for a participant to answer this questionnaire is about 15 minutes.

### **4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?**

Participants who should not participate in this study are Foreign students, exchange students, mobility students and part-time students (PJJ) or any students of UPM beyond the age of 29 and have experience of riding motorcycle less than one year.

**5. WHAT WILL BE THE BENEFITS OF THE STUDY:**

**(a) TO YOU AS THE SUBJECT?**

This study will provide the subject knowledge about the level of risk riding behaviour during riding a motorcycle whether the subject is a risk rider or not.

**(b) TO THE INVESTIGATOR?**

This study will help the investigator to determine the risk riding behaviour of motorcyclists among Universiti Putra Malaysia students. This data can be used as baseline data for future research related to the risk riding behaviour of the motorcyclist

**6. WHAT ARE THE POSSIBLE RISKS?**

There is no possible risk available in this study.

**7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?**

All information obtained from this study will be kept confidential and will only be used for this study.

**8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?**

If you have any questions and curiosity about this study, you may contact the supervisor of this study, Dr Karmegam Karupiah at 03 8947 2513 or [megam@upm.edu.my](mailto:megam@upm.edu.my) or the investigator of this study, Noor Sakinah binti Ahmad at 012-5495844 or [kinahahmad96@gmail.com](mailto:kinahahmad96@gmail.com).

*Please initial here if you have read and understood the contents of this page\_\_\_\_\_*

## 9. CONSENT

I ..... Identity Card No. ....  
address.....  
.....hereby voluntarily agree to take part in  
the research stated above \*(clinical /drug trial/video recording/ focus group/interview-based/  
questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible  
adverse  
effects and complications (as written in the Respondent's Information Sheet). I understand  
that I have the right to withdraw from this research at any time without giving any reason  
whatsoever. I also understand that this study is confidential and all information provided with  
regard to my identity will remain private and confidential.

I\* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me  
be used in any form of publication or presentation (if applicable)

\* delete where necessary

Signature ..... Signature .....  
(Respondent) (Witness)

Date : ..... Name : .....  
I/C No. : .....

I confirm that I have explained to the respondent the nature and purpose of the above-  
mentioned research.

Date ..... Signature .....  
(Researcher)



## **APPENDIX 2**

### **QUESTIONNAIRE**



## QUESTIONNAIRE FORM

### BORANG KAJI SELIDIK

**RISK RIDING BEHAVIOURS OF YOUNG MOTORCYCLE RIDER  
AMONG UNIVERISTY STUDENTS IN UNIVERSITI PUTRA MALAYSIA,  
SERDANG, SELANGOR.**

*TINGKAHLAKU MENUNGGANG BERISIKO PENUNGGANG MOTORSIKAL  
DIKALANGAN PELAJAR UNIVERSITI DI UNIVERSITI PUTRA MALAYSIA,  
SERDANG, SELANGOR.*

ID NO./No. ID : .....

DATE/Tarikh : .....

#### QUESTIONS INSTRUCTIONS:

*Arahan soalan:*

**1. THIS QUESTIONNAIRE FORM CONSISTS OF SEVERAL SECTIONS: -**

*Borang soal selidik ini terdiri daripada beberapa bahagian: -*

**PART A : RESPONDENT BACKGROUND INFORMATION**

*Bahagian A : Maklumat latar belakang responden*

**PART B : MOTORCYCLIST BEHAVIOUR**

*Bahagian B : Tingkah Laku Penunggang Motosikal*

**2. YOU REQUIRED TO ANSWER ALL QUESTIONS IN THIS QUESTIONNAIRE.**

*Anda dikehendaki menjawab semua soalan dalam soal selidik ini.*

**3. PLEASE MARK THE ANSWER IN THE PROVIDED ANSWER SECTION.**

*Sila tandakan jawapan di bahagian yang telah disediakan.*

**4. THE QUESTIONNAIRE SHOULD BE RETURNED TO THE RESEARCHER AFTER COMPLETING ALL THE QUESTIONS.**

*Borang soal selidik hendaklah dikembalikan kepada penyelidik selepas menjawab semua soalan.*

**PART A : RESPONDENT BACKGROUND INFORMATION**

**BAHAGIAN A: LATAR BELAKANG RESPONDEN**

A1 **AGE** :   **YEAR OLD**/tahun  
*Umur*

A2 **GENDER** ☐ **MALE** ☐ **FEMALE**  
*Jantina* *Lelaki* *Perempuan*

A3 **RACE** ☐ **MALAY** ☐ **INDIAN**  
*Bangsa* *Melayu* *India*  
☐ **CHINESE** ☐ **OTHERS:**  
*Cina* *Lain-lain:*

A4 **STATUS** ☐ **SINGLE** ☐ **OTHERS:**  
*Status* *Bujang* *Lain-lain:*

☐ **MARRIED**  
*Berkahwin*

A5 **EDUCATION** ☐ **FOUNDATION** ☐ **POSTGRADUATE**  
*Pendidikan* *Asasi* *Pascasiswazah*

☐ **UNDERGRADUATE**  
*Siswazah*

A6 **FACULTY AND COURSES**  
*Fakulti dan kos*

**FACULTY:**.....  
.....  
*Fakulti:*.....  
.....

**COURSE:**.....  
.....  
*Kos:*.....  
.....

A7 **FINANCIAL ASSISTANCE** ☐ **JPA** ☐ **ZAKAT**  
*Bantuan kewangan* *JPA* *Zakat*

☐ **PTPTN** ☐ **OTHERS:**  
*PTPTN* *Lain-lain:*

☐ **STATE GOVERNMENT** .....  
**LOANS** ...  
*Pinjaman Kerajaan Negeri*

**A8 WHAT KIND OF LICENSE DO YOU HAVE NOW? PLEASE INDICATE AT WHICH AGE YOU OBTAIN THE LICENSE AND WHEN YOU START RIDING. (EXAMPLE: OBTAIN LICENSE AT AGE 16 AND STARTED RIDING AT AGE 14)**  
 Apakah jenis lesen yang anda miliki sekarang? Sila nyatakan umur anda mendapatkan lesen tersebut dan bila mula menunggang. (contoh: ambil lesen pada umur 16 tahun dan telah mula menunggang pada umur 14 tahun)

|    | <b>TYPE OF LICENSE</b><br><i>Jenis Lesen</i>                                           | <b>(v/x)</b> | <b>AGE OBTAIN THE LICENSE?</b><br><i>Umur mengambil lesen?</i> | <b>AGE RIDING UNLICENSED?</b><br><i>Umur mula menunggang tanpa lesen?</i> |
|----|----------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------|---------------------------------------------------------------------------|
| a. | <b>B (MOTORCYCLE MORE THAN 500 CC)</b><br><i>B (Motosikal melebihi 500 cc)</i>         |              |                                                                |                                                                           |
| b. | <b>B1 (MOTORCYCLE LESS THAN 500 CC)</b><br><i>B1 (Motosikal tidak melebihi 500 cc)</i> |              |                                                                |                                                                           |
| c. | <b>B2 (MOTORCYCLE LESS THAN 250 CC)</b><br><i>B2 (Motosikal tidak melebihi 250 cc)</i> |              |                                                                |                                                                           |
| d. | <b>P</b><br><i>P</i>                                                                   |              |                                                                |                                                                           |
| e. | <b>L</b><br><i>L</i>                                                                   |              |                                                                |                                                                           |

**A9 HOW MANY MOTORCYCLES DO YOU HAVE? ..... UNIT (PLEASE LIST THE MOTORCYCLE BASED ON FREQUENCY OF USE)**  
 Berapakah bilangan motosikal yang anda miliki? ..... buah (sila senaraikan motosikal tersebut di bawah berdasarkan kekerapan penggunaan)

| <b>MOTORCYCLE CHARACTERISTICS</b><br><i>Ciri motosikal</i> | <b>MOTORCYCLE 1 (MOST FREQUENT)</b><br><i>Motosikal 1 (paling kerap)</i> | <b>MOTORCYCLE 2 (FREQUENT)</b><br><i>Motosikal 2 (kerap)</i> | <b>MOTORCYCLE 3 (RARELY)</b><br><i>Motosikal 3 (kadang-kadang)</i> |
|------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------|
| <b>BRAND</b><br><i>Jenama</i>                              |                                                                          |                                                              |                                                                    |
| <b>MODEL</b><br><i>Model</i>                               |                                                                          |                                                              |                                                                    |
| <b>MANUFACTURE YEAR</b><br><i>Tahun buatan</i>             |                                                                          |                                                              |                                                                    |
| <b>PURCHASE YEAR</b><br><i>Tahun dibeli</i>                |                                                                          |                                                              |                                                                    |
| <b>NEW/USED?</b><br><i>Baru/terpakai?</i>                  |                                                                          |                                                              |                                                                    |
| <b>POWER (CC)</b><br><i>Kuasa (cc)</i>                     |                                                                          |                                                              |                                                                    |
| <b>ODOMETER (LATEST)</b><br><i>Odomoter (terkini)</i>      |                                                                          |                                                              |                                                                    |

A10 **WHAT IS THE ESTIMATED NUMBER OF HOURS YOU RIDE A MOTORCYCLE IN A WEEK? .....HOURS**  
*Berapa anggaran jumlah jam anda menunggang motosikal dalam seminggu? ..... jam*

A11 **WHAT IS THE ESTIMATED AMOUNT OF DISTANCE YOU RIDE A MOTORCYCLE IN A WEEK? ..... KM**  
*Berapa anggaran jumlah jarak anda menunggang motosikal dalam seminggu? ..... km*

A12 **WHAT IS YOUR MAIN PURPOSE FOR RIDING A MOTORCYCLE? (PLEASE SELECT ONLY ONE [1])**  
*Apakah tujuan utama anda menunggang motosikal? (sila pilih satu [1] sahaja)*  
☐ **GO BACK AND FORTH TO CLASSES** ☐ **RECREATIONAL / CONVOY** ☐ **OTHER:**  
*Pergi & balik kelas Rekreasi/konvoi Lain-lain:*

A13 **WHAT IS YOUR MAIN VEHICLE FOR CLASSES OR DAILY USAGE? (TICK/FILL IN THE MOST APPROPRIATE CONTENT FOR THE FOLLOWING STATEMENT)**  
*Apakah kenderaan utama anda ke kelas atau kegunaan harian? (tanda/isi yang paling tepat bagi pernyataan berikut)*

☐ **PUBLIC TRANSPORT** ☐ **MOTORCYCLE ONLY** ☐ **OTHER**  
*Pengangkutan awam Motosikal sahaja Lain-lain:*  
☐ **CAR ONLY** ☐ **CAR OR MOTORCYCLE**  
*Kereta sahaja Kereta atau motosikal*

A14 **RIDING HOURS INFORMATION** ☐ **DAILY** ☐ **WEEKLY** ☐ **OTHERS:**  
*Maklumat waktu menunggang Harian Mingguan Lain-lain:*

A15 **ESTIMATED DISTANCE (FROM HOME TO UNIVERSITY): ..... KM**  
*Anggaran jarak (dari rumah ke universiti) : ..... km*

A16 **ESTIMATED TIME (FROM HOME TO UNIVERSITY): ..... MINUTES**  
*Anggaran masa (dari rumah ke univerisiti) : ..... minit*

A17 **HOW MANY STOPS/COMMITMENTS BEFORE GOING TO UNIVERSITY/CLASSES?**  
*Bilangan persinggahan tetap/komitmen sebelum ke universiti/kelas?*

**(EXAMPLE: PRINTING NOTES AT OLD FLAT): .....TIMES**  
*(contoh: Mencetak bahan pembelajaran di Flat Ikan) : ..... kali*

A18 **TRAFFIC CONDITION BACK AND FORTH FROM UNIVERSITY:**  
*Tahap trafik pergi/balik dari universiti :*

☐ **UNCERTAIN** ☐ **STANDSTILL** ☐ **VERY SMOOTH**  
*Tidak menentu Sangat sesak Sangat lancar*  
☐ **CONGESTED** ☐ **SMOOTH**  
*Sesak Lancar*

- A19 **HAVE YOU EVER BEEN CHARGED FOR A TRAFFIC VIOLATION WHILE RIDING A MOTORCYCLE OVER THE LAST 3 YEARS?**  
 Pernahkah anda disaman disebabkan kesalahan trafik semasa menunggang motosikal sepanjang **tempoh 3 tahun** kebelakangan ini?  
☐ **NO (GO TO QUESTION A22)** ☐ **YES (GO TO QUESTION A20)**  
 Tidak (terus ke soalan A22) Ya (sila ke soalan A20)
- A20 **IF YES, HOW MANY TIME YOU BEEN CHARGED? ..... TIMES**  
 Sekiranya **YA**, berapa kali anda pernah disaman? ..... kali
- A21 **PLEASE SPECIFY THE TRAFFIC VIOLATION? (CAN TICK MORE THAN ONE (1) OPTION)**  
 Sila nyatakan kesalahan trafik tersebut? (boleh tanda lebih dari satu (1) pilihan)  
☐ **SPEEDING** ☐ **TRAFFIC LIGHT VIOLATION** ☐ **OTHERS**  
 Tidak patuh had laju Langgar lampu merah Lain-lain:  
☐ **NOT WEARING HELMET** ☐ **USING MOBILE PHONE** .....  
 Tidak pakai helmet Guna telefon bimbit
- A22 **AS A MOTORCYCLE RIDER, HOW MANY TIMES HAVE YOU BEEN INVOLVED IN A NEAR-MISS ACCIDENT IN THE PAST 12 MONTHS?**  
 Sebagai penunggang motosikal, berapa kali anda **pernah hampir terlibat** dalam kemalangan jalan raya sepanjang **tempoh 12 bulan** yang lalu?  
☐ **NEVER** ☐ **3 TO 5 TIMES** ☐ **MORE THAN 10 TIMES**  
 Tidak pernah 3 ke 5 kali Lebih 10 kali  
☐ **1 TO 2 TIMES** ☐ **6 TO 10 TIMES**  
 1 ke 2 kali 6 ke 10 kali  
**PLEASE STATE THE EXACT TIMES (If possible):**  
 Sila nyatakan bilangan sebenar (Jika boleh):  
 .....
- A23 **AS A MOTORCYCLIST, HOW MANY TIMES HAVE YOU BEEN INVOLVED IN ROAD ACCIDENTS IN THE LAST 12 MONTHS?**  
 Sebagai penunggang motosikal, berapa kali anda **pernah terlibat** dalam kemalangan jalan raya sepanjang **12 bulan** yang lalu?  
☐ **NEVER** ☐ **3 TO 5 TIMES** ☐ **MORE THAN 10 TIMES**  
 Tidak pernah 3 ke 5 kali Lebih 10 kali  
☐ **1 TO 2 TIMES** ☐ **6 TO 10 TIMES**  
 1 ke 2 kali 6 ke 10 kali  
**PLEASE STATE THE EXACT TIMES (If possible):**  
 Sila nyatakan bilangan sebenar (Jika boleh):  
 .....

A24 **AS A MOTORCYCLIST, HOW OFTEN DO YOU USE A TRAFFIC LIGHT WHEN CHANGING LANES OR TURNING AT INTERSECTIONS?**

Sebagai penunggang motosikal, berapa kerap anda menggunakan lampu isyarat semasa menukar laluan atau membelok di persimpangan?

- |                                                                                                         |                                                                                                                |                                                                                                                 |
|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> <b>NEVER (GO TO QUESTION A25)</b><br><i>Tidak pernah (terus ke soalan A25)</i> | <input type="checkbox"/> <b>HARDLY EVER (GO TO QUESTION A25)</b><br><i>Sangat jarang (terus ke soalan A25)</i> | <input type="checkbox"/> <b>OCCASIONALLY (GO TO QUESTION A25)</b><br><i>Kadang-kadang (terus ke soalan A25)</i> |
| <input type="checkbox"/> <b>QUITE OFTEN</b><br><i>Agak kerap</i>                                        | <input type="checkbox"/> <b>FREQUENTLY</b><br><i>Sangat kerap</i>                                              | <input type="checkbox"/> <b>NEARLY ALL THE TIME</b><br><i>Hampir setiap masa</i>                                |

A25 **WHY DON'T YOU USE THE TRAFFIC LIGHT OFTEN WHEN CHANGING LANES OR TURNING AT INTERSECTIONS? (CAN TICK MORE THAN ONE (1) OPTION)**

Kenapa anda kurang kerap menggunakan lampu isyarat semasa menukar laluan atau membelok di persimpangan? (boleh tanda lebih dari satu (1) pilihan)

- |                                                                                                           |                                                                                                                           |                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> <b>LAZY</b><br><i>Malas</i>                                                      | <input type="checkbox"/> <b>FORGET</b><br><i>Terlupa</i>                                                                  | <input type="checkbox"/> <b>NOT IMPORTANT</b><br><i>Tidak penting</i>                                                          |
| <input type="checkbox"/> <b>DON'T HAVE TIME TO GIVE SIGNAL</b><br><i>Tiada masa untuk memberi isyarat</i> | <input type="checkbox"/> <b>NO NEED BECAUSE ALWAYS CHANGING LANES</b><br><i>Tidak perlu, kerana selalu menukar laluan</i> | <input type="checkbox"/> <b>OTHER MOTORCYCLIST /DRIVER NOT GIVING SIGNAL</b><br><i>Pemandu lain tidak memberi isyarat juga</i> |
| <input type="checkbox"/> <b>OTHERS (PLEASE SPECIFY):</b><br><i>Lain-lain (sila nyatakan):</i> _____       |                                                                                                                           |                                                                                                                                |

## PART B: MOTORCYCLIST BEHAVIOUR

### BAHAGIAN B: TINGKAH LAKU PENUNGGANG MOTOSIKAL

**AS A MOTORCYCLE RIDER, HOW OFTEN HAVE YOU DONE THE FOLLOWING ACTIVITIES OVER THE PAST 12 MONTHS?**

**PLEASE CIRCLE YOUR ANSWER USING A SCALE OF 1 TO 6 AS FOLLOWS:**

Sebagai penunggang motosikal, berapa kerap anda melakukan perbuatan berikut **sepanjang 12 bulan yang lalu?**  
Sila **BULATKAN** jawapan anda dengan menggunakan **skala 1 hingga 6** seperti di bawah:

| 1                     | 2                            | 3                             | 4                         | 5                          | 6                                         |
|-----------------------|------------------------------|-------------------------------|---------------------------|----------------------------|-------------------------------------------|
| NEVER<br>Tidak pernah | HARDLY EVER<br>Sangat Jarang | OCCASIONALLY<br>Kadang-kadang | QUITE OFTEN<br>Agak kerap | FREQUENTLY<br>Sangat kerap | NEARLY ALL THE TIME<br>Hampir setiap masa |

|    |                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| B1 | <b>Fail to notice that pedestrians are crossing when turning into a side street from a main road</b><br><i>Gagal untuk menyedari pejalan kaki yang menyeberangi jalan ketika saya membelok untuk masuk ke jalan sampingan dari jalan utama</i>                                                                                       | 1 | 2 | 3 | 4 | 5 | 6 |
| B2 | <b>Not notice someone stepping out from behind a parked vehicle until it is nearly too late</b><br><i>Tidak menyedari pejalan kaki yang keluar dari belakang kenderaan yang sedang parkir sehingga saya hampir melanggar pejalan kaki tersebut</i>                                                                                   | 1 | 2 | 3 | 4 | 5 | 6 |
| B3 | <b>Not notice a pedestrian waiting to cross at a zebra crossing, or a pelican crossing that has just turned red</b><br><i>Tidak menyedari pejalan kaki yang sedang menunggu untuk melintas di lintasan zebra, atau di tempat lampu isyarat yang baru bertukar merah</i>                                                              | 1 | 2 | 3 | 4 | 5 | 6 |
| B4 | <b>Pull out on to a main road in front of a vehicle that you had not noticed, or whose speed you have misjudged</b><br><i>Keluar ke jalan utama tanpa menyedari kehadiran kenderaan lain di jalan tersebut, atau salah menganggar kelajuan kenderaan tersebut</i>                                                                    | 1 | 2 | 3 | 4 | 5 | 6 |
| B5 | <b>Miss "Give Way" signs and narrowly avoid colliding with traffic having the right of way</b><br><i>Terlepas pandang papan tanda "Beri laluan" dan hampir melanggar kenderaan yang mempunyai hak laluan</i>                                                                                                                         | 1 | 2 | 3 | 4 | 5 | 6 |
| B6 | <b>Fail to notice or anticipate that another vehicle might pull out in front of you and have difficulty stopping</b><br><i>Gagal untuk menyedari atau menjangka kenderaan lain mungkin memasuki laluan di hadapan anda dan anda menghadapi kesukaran untuk berhenti</i>                                                              | 1 | 2 | 3 | 4 | 5 | 6 |
| B7 | <b>Queuing to turn left on a main road, you pay such close attention to the main traffic that you nearly hit the vehicle in front</b><br><i>Ketika menunggu untuk membelok ke kiri untuk memasuki jalan utama, anda terlalu fokus kepada trafik di jalan utama tersebut sehingga anda hampir melanggar kenderaan di hadapan anda</i> | 1 | 2 | 3 | 4 | 5 | 6 |

|     |                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   |   |   |   |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| B8  | <b>Distracted or pre-occupied, you belatedly realise that the vehicle in front has slowed and you have to brake hard to avoid a collision.</b><br><i>Bila anda terganggu atau terleka, anda terlambat untuk menyedari bahawa kenderaan di hadapan anda telah memperlambatkan kelajuannya dan anda terpaksa menekan brek dengan kuat untuk mengelak dari berlakunya pelanggaran</i> | 1 | 2 | 3 | 4 | 5 | 6 |
| B9  | <b>Attempt to overtake someone that you had not noticed to be signalling a right turn</b><br><i>Secara tidak sedar, anda cuba untuk memotong kenderaan yang telah memberi lampu isyarat ke kanan</i>                                                                                                                                                                               | 1 | 2 | 3 | 4 | 5 | 6 |
| B10 | <b>When riding at the same speed as other traffic, you find it difficult to stop in time when a traffic light has turned against you</b><br><i>Ketika menunggang pada kelajuan yang sama seperti kenderaan lain, anda menghadapi kesukaran untuk berhenti ketika lampu isyarat bertukar</i>                                                                                        | 1 | 2 | 3 | 4 | 5 | 6 |
| B11 | <b>Ride so close to the vehicle in front that it would be difficult to stop in an emergency</b><br><i>Menunggang sangat rapat dengan kenderaan di hadapan sehingga anda menghadapi kesukaran untuk berhenti jika berlaku kecemasan</i>                                                                                                                                             | 1 | 2 | 3 | 4 | 5 | 6 |
| B12 | <b>Run wide when going round a corner</b><br><i>Mengambil banyak ruang ketika melalui selekoh</i>                                                                                                                                                                                                                                                                                  | 1 | 2 | 3 | 4 | 5 | 6 |
| B13 | <b>Ride so fast into a corner that you feel like you might lose control</b><br><i>Menunggang dengan sangat laju di selekoh sehingga anda hampir hilang kawalan</i>                                                                                                                                                                                                                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B14 | <b>Exceed the speed limit on a country/rural road</b><br><i>Melebihi had laju yang ditetapkan di jalan perkampungan/luar bandar</i>                                                                                                                                                                                                                                                | 1 | 2 | 3 | 4 | 5 | 6 |
| B15 | <b>Disregard the speed limit late at night or in the early hours of the morning</b><br><i>Tidak mengendahkan had laju yang ditetapkan ketika menunggang pada waktu tengah malam atau awal pagi</i>                                                                                                                                                                                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B16 | <b>Exceed the speed limit on a highway</b><br><i>Melebihi had laju yang ditetapkan di lebuh raya</i>                                                                                                                                                                                                                                                                               | 1 | 2 | 3 | 4 | 5 | 6 |
| B17 | <b>Exceed the speed limit on a residential area</b><br><i>Melebihi had laju yang ditetapkan di kawasan perumahan</i>                                                                                                                                                                                                                                                               | 1 | 2 | 3 | 4 | 5 | 6 |
| B18 | <b>Race away from traffic lights with the intention of beating the driver/rider next to you</b><br><i>Memecut dengan laju ke hadapan daripada lampu isyarat dengan niat untuk mengalahkan pemandu/penunggang lain di sebelah anda</i>                                                                                                                                              | 1 | 2 | 3 | 4 | 5 | 6 |
| B19 | <b>Open up the throttle and just 'go for it' on country roads</b><br><i>Buka pendikit (throttle) dan "pandu sesuka hati" di jalan perkampungan</i>                                                                                                                                                                                                                                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B20 | <b>Ride between two lanes of fast moving traffic</b><br><i>Menunggang di antara dua lorong semasa trafik sedang bergerak pantas</i>                                                                                                                                                                                                                                                | 1 | 2 | 3 | 4 | 5 | 6 |

**PART B: MOTORCYCLIST BEHAVIOUR****BAHAGIAN B: TINGKAH LAKU PENUNGGANG MOTOSIKAL**

**AS A MOTORCYCLE RIDER, HOW OFTEN HAVE YOU DONE THE FOLLOWING ACTIVITIES OVER THE PAST 12 MONTHS?**

**PLEASE CIRCLE YOUR ANSWER USING THE SCALE OF 1 TO 6 AS FOLLOWS:**

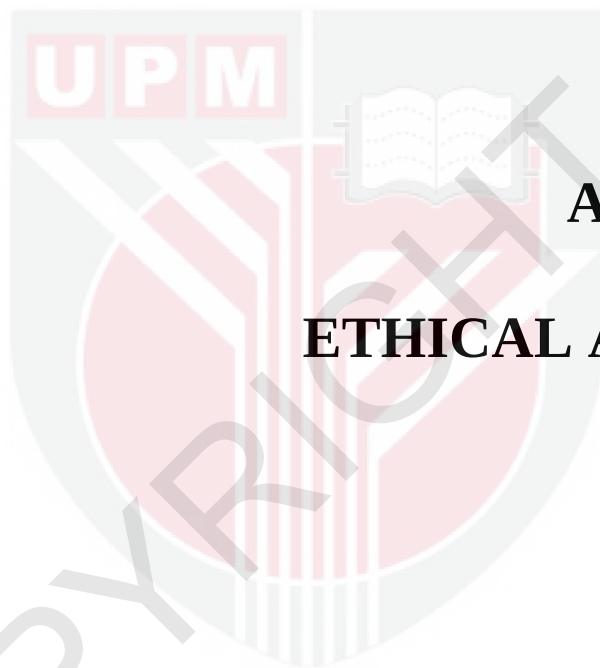
Sebagai penunggang motosikal, berapa kerap anda melakukan perbuatan berikut **sepanjang 12 bulan yang lalu?**  
Sila bulatkan jawapan anda dengan menggunakan **skala 1 hingga 6** seperti di bawah:

| 1                            | 2                                   | 3                                    | 4                                | 5                                 | 6                                                |
|------------------------------|-------------------------------------|--------------------------------------|----------------------------------|-----------------------------------|--------------------------------------------------|
| <b>NEVER</b><br>Tidak pernah | <b>HARDLY EVER</b><br>Sangat Jarang | <b>OCCASIONALLY</b><br>Kadang-kadang | <b>QUITE OFTEN</b><br>Agak kerap | <b>FREQUENTLY</b><br>Sangat kerap | <b>NEARLY ALL THE TIME</b><br>Hampir setiap masa |

|     |                                                                                                                                                             |   |   |   |   |   |   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| B21 | <b>Get involved in unofficial 'races' with other riders or drivers</b><br>Terlibat di dalam perlumbaan tidak rasmi dengan penunggang atau pemandu yang lain | 1 | 2 | 3 | 4 | 5 | 6 |
| B22 | <b>Ride so fast into a corner that you scare yourself</b><br>Memandu sangat laju di selekoh sehingga menakuti diri sendiri                                  | 1 | 2 | 3 | 4 | 5 | 6 |
| B23 | <b>Attempt to do, or actually do, a wheelie</b><br>Mencuba atau melakukan aksi mengangkat roda motosikal ( <i>wheelie</i> )                                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B24 | <b>Pull away too quickly and your front wheel comes off the road</b><br>Bergerak terlalu cepat sehingga tayar depan motosikal anda terangkat                | 1 | 2 | 3 | 4 | 5 | 6 |
| B25 | <b>Intentionally do a wheel spin</b><br>Melakukan putaran roda ( <i>wheel spin</i> ) dengan sengaja                                                         | 1 | 2 | 3 | 4 | 5 | 6 |
| B26 | <b>Unintentionally do a wheel spin</b><br>Melakukan putaran roda ( <i>wheel spin</i> ) secara tidak sengaja                                                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B27 | <b>Wear riding boots?</b><br>Memakai kasut khas motosikal                                                                                                   | 1 | 2 | 3 | 4 | 5 | 6 |
| B28 | <b>Wear protective trousers (leather or non-leather)?</b><br>Memakai seluar khas motosikal ( <i>protective trousers</i> )                                   | 1 | 2 | 3 | 4 | 5 | 6 |
| B29 | <b>Wear a protective jacket (leather or non-leather)?</b><br>Memakai jaket khas motosikal ( <i>protective jacket</i> )                                      | 1 | 2 | 3 | 4 | 5 | 6 |
| B30 | <b>Wear body armor (elbow pads, shoulder pads, knee pads, etc.)</b><br>Memakai peralatan perlindungan anggota badan (pad siku, pad bahu, pad lutut)         | 1 | 2 | 3 | 4 | 5 | 6 |
| B31 | <b>Wear no protective clothing?</b><br>Tidak memakai sebarang pakaian perlindungan                                                                          | 1 | 2 | 3 | 4 | 5 | 6 |
| B32 | <b>Wear gloves?</b><br>Memakai sarung tangan khas motosikal ( <i>gloves</i> )                                                                               | 1 | 2 | 3 | 4 | 5 | 6 |

|                                                                                                                                                       |                                                                                                                                                                                                                                                                  |                                                                                                                                                    |                                                                                                                                                                                                                        |                                                                                                                                                           |   |   |   |   |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| <br><b>Question B27<br/>(Shoes)</b><br><i>Soalan B27<br/>(kasut)</i> | <br><b>Question B28<br/>(Trousers)</b><br><i>Soalan B28 (seluar)</i>                                                                                                            | <br><b>Question B29<br/>(Jacket)</b><br><i>Soalan B29 (jaket)</i> | <br><b>Question B30<br/>(elbow pad,<br/>shoulder pad, knee<br/>pad)</b><br><i>Soalan B30 ( pad<br/>siku,pad bahu,pad<br/>lutut)</i> | <br><b>Question B32<br/>(gloves)</b><br><i>Soalan B32<br/>(gloves)</i> |   |   |   |   |   |
| B33                                                                                                                                                   | <b>Wear bright/fluorescent strips/patches on your clothing</b><br><i>Saya memakai tampalan yang berwarna terang (fluorescent strips/patches) di pakaian saya semasa menunggang</i>                                                                               |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B34                                                                                                                                                   | <b>Use dipped headlights on your bike</b><br><i>Saya memasang lampu motosikal pada siang hari</i>                                                                                                                                                                |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B35                                                                                                                                                   | <b>Brake or throttle-back when going round a corner or bend</b><br><i>Saya menekan brek atau melepaskan pendikit (throttle) ketika mengambil selekoh</i>                                                                                                         |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B36                                                                                                                                                   | <b>Change gear when going round a corner or bend</b><br><i>Saya menukar gear apabila mengambil selekoh</i>                                                                                                                                                       |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B37                                                                                                                                                   | <b>Find that you have difficulty controlling the bike when riding at speed (e.g. steering wobble)</b><br><i>Saya mendapati bahawa sukar untuk mengawal motosikal apabila menunggang dengan laju (contoh: alat kemudi motosikal bergegar)</i>                     |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B38                                                                                                                                                   | <b>Skid on a wet road or manhole cover</b><br><i>Saya pernah tergelincir semasa menunggang di atas jalan raya yang basah atau semasa melalui penutup lurang (manhole)</i>                                                                                        |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B39                                                                                                                                                   | <b>Have trouble with your visor or goggles fogging up</b><br><i>Saya mengalami masalah visor atau gogal (goggle) yang berkabus</i>                                                                                                                               |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B40                                                                                                                                                   | <b>Driver deliberately annoys you or puts you at risk</b><br><i>Pemandu lain dengan sengaja menyakiti hati saya atau meletakkan saya dalam keadaan berisiko</i>                                                                                                  |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B41                                                                                                                                                   | <b>Ride when you suspect you might be over the legal limit for alcohol or under the influence of drugs</b><br><i>Masih menunggang motosikal meskipun saya syak yang saya mungkin melebihi had kandungan alkohol yang dibenarkan atau di bawah pengaruh dadah</i> |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B42                                                                                                                                                   | <b>Wear a leather one-piece suit?</b><br><i>Saya memakai sut kulit yang lengkap semasa menunggang</i>                                                                                                                                                            |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B43                                                                                                                                                   | <b>Wear bright/fluorescent clothing?</b><br><i>Saya memakai pakaian berwarna terang (atau fluorescent) semasa menunggang</i>                                                                                                                                     |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B44                                                                                                                                                   | <b>Cross a junction while the traffic light is red</b><br><i>Saya melintas simpang semasa lampu isyarat berwarna merah</i>                                                                                                                                       |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |
| B45                                                                                                                                                   | <b>Ride in the opposite direction of the traffic flow/road way</b><br><i>Saya menunggang secara melawan arus di lorong atau laluan yang bertentangan</i>                                                                                                         |                                                                                                                                                    |                                                                                                                                                                                                                        | 1                                                                                                                                                         | 2 | 3 | 4 | 5 | 6 |

|     |                                                                                                                                                                                                     |   |   |   |   |   |   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| B46 | <b>Ride on the sidewalk</b><br><i>Saya menunggang di atas laluan pejalan kaki</i>                                                                                                                   | 1 | 2 | 3 | 4 | 5 | 6 |
| B47 | <b>Talk on a mobile phone while riding.</b><br><i>Saya menggunakan telefon bimbit untuk bercakap dengan seseorang semasa menunggang</i>                                                             | 1 | 2 | 3 | 4 | 5 | 6 |
| B48 | <b>Type text messages on a mobile phone while riding</b><br><i>Saya menaip mesej di telefon bimbit semasa menunggang</i>                                                                            | 1 | 2 | 3 | 4 | 5 | 6 |
| B49 | <b>Read text messages on a mobile phone while riding</b><br><i>Saya membaca mesej di telefon bimbit semasa menunggang</i>                                                                           | 1 | 2 | 3 | 4 | 5 | 6 |
| B50 | <b>Brought more than one passenger</b><br><i>Saya membawa lebih dari seorang pembonceng</i>                                                                                                         | 1 | 2 | 3 | 4 | 5 | 6 |
| B51 | <b>Ride without wearing a helmet for a short trip (example: residential area)</b><br><i>Saya tidak memakai topi keledar untuk perjalanan yang dekat (contoh: kawasan perumahan)</i>                 | 1 | 2 | 3 | 4 | 5 | 6 |
| B52 | <b>Wear a helmet without the chinstrap</b><br><i>Saya memakai topi keledar tanpa mengikat talinya</i>                                                                                               | 1 | 2 | 3 | 4 | 5 | 6 |
| B53 | <b>Use a motorcycle lane when provided</b><br><i>Saya menggunakan lorong motosikal jika disediakan</i>                                                                                              | 1 | 2 | 3 | 4 | 5 | 6 |
| B54 | <b>Ride above the speed limit in the motorcycle lane</b><br><i>Saya menunggang melebihi had laju yang ditetapkan di lorong motosikal</i>                                                            | 1 | 2 | 3 | 4 | 5 | 6 |
| B55 | <b>Try or done a "stoppie" action (sudden stop until the rear wheel is lifted)</b><br><i>Saya pernah mencuba atau melakukan aksi "stoppie" (berhenti mengejut sehingga roda belakang terangkat)</i> | 1 | 2 | 3 | 4 | 5 | 6 |
| B56 | <b>Try or done superman action</b><br><i>Saya pernah mencuba atau melakukan aksi superman</i>                                                                                                       | 1 | 2 | 3 | 4 | 5 | 6 |
| B57 | <b>Give signal when turning right at the intersection</b><br><i>Saya memberi isyarat semasa membelok di persimpangan</i>                                                                            | 1 | 2 | 3 | 4 | 5 | 6 |
| B58 | <b>Give signal when changing lanes on the highway</b><br><i>Saya memberi isyarat semasa menukar laluan di lebuh raya</i>                                                                            | 1 | 2 | 3 | 4 | 5 | 6 |
| B59 | <b>Give signal when changing lanes on a commercial road (not the highway)</b><br><i>Saya memberi isyarat semasa menukar laluan di jalan biasa (bukan lebuh raya)</i>                                | 1 | 2 | 3 | 4 | 5 | 6 |



## **APPENDIX 3**

### **ETHICAL APPROVAL**