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Research Report

The Characteristics of School Student Riding Bicycle or Motorcycle to School



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MALAYSIAN INSTITUTE OF ROAD SAFETY RESEARCH

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- iv. Muhammad Shazwan Ab Ghani

Abstract

The increase in the number of road accidents among the school student raised a concern by parents, especially when children are out of their supervision. The risk of traffic crash between school students and vehicle is compounded if these schools are located near the main road where the high traffic flow can cause the student more prone to accidents. The aim of this study is to identify the characteristics of school students riding motorcycles and bicycles to school in terms of road type, school type, and area type. Besides, the use of bicycle and motorcycle safety gears among school students was also conducted. An observational study was conducted at fifteen (15) primary schools and twenty-eight (28) secondary schools. The list of schools was selected from secondary data provided by the Ministry of Education. Data collection for each school was conducted during morning session schools' end time around 12.30 p.m. to 2.30 p.m. A total of 3,280 students were observed. From the observation made, study shows that variables such as gender, different school type, road type, and area type gives different percentages of the number of students riding bicycles and motorcycles to school. In addition, studies found that school student not using the safety gears when riding bicycles and motorcycles. From the observation made, there are some conflicts occurred between students and other vehicles that may endanger the safety of students. In addition, there are some school students riding in danger even though they are still in the school vicinity. Even with the presence of traffic warden, school students are crossing the road with danger and not using the correct path. This does not only jeopardize the safety of motorcyclists but also the safety of other students and other road users.

1. Introduction

The increase in the number of roads crashes among the school student raised concern by parents, especially when children are out of their supervision. A total of 85% of the overall primary and secondary schools in Malaysia were found to be at high risk because the schoolchildren are exposed to road crashes (Utusan Malaysia, 2009). The risk increases for schools that are located near the main road which has high traffic volume.

School students are at risk of a crash with other vehicles when they are exposed to traffic. During school drop off and pick up times, the school's entrance is busy and there is usually a high level of vehicles, pedestrians and cyclists activities. This situation will be even busier for schools with two sessions. It is due to drop off and pick up times that occur simultaneously. A typical situation that occurs around schools such as excessive speeds, illegal parking, risky crossing behaviour, risky U-turns et cetera.

Various measures are taken by the government in reducing crash rate involving school student. Among them is the implementation of the Road Safety Education (RSE) program in primary schools within Malaysia. According to Mani et al. (2016), from the injury surveillance study, students who receive RSE intervention shows a declining trend in number of children involved in road crashes recorded for standard 2 and standard 4, as compared to students who did not receive the RSE intervention.

There are various types of mode of transport used by a school student to commute to school. Among them are school buses, parents' private vehicles, riding bicycles or motorcycles and some are walked to school. Parents should also play an important role in ensuring their children's safety. Road Transport Department stated that, from 117,000 school students who use a motorcycle as transport to school, about 80% of them do not have a valid license (The Sun Daily, 2016). In this case, parents need to make sure their child has a valid driving license in order to allow their children to ride motorcycles to school.

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According to a study done by Nasrudin and Md. Nor (2013) majority of parents used private vehicles to send their children to school were primarily influenced by the level of safety in terms of crime and traffic conditions. However, there is still school student riding bicycles and motorcycles as their transportation to school. Thus, this study focuses on the use of bicycles and motorcycles as a mode of transport of schoolchildren to commute to school.

1.1 Aims and Objectives of the Study

This study aims to identify the characteristics of school students riding motorcycles and bicycles to school. The objectives of this study are:

- i. To determine the school student characteristic that rides motorcycles and bicycles to school according to road type, school type, and school's location;
- ii. To examine the use of motorcycle and bicycles' safety gear among school student;
- iii. To identify the possible factor affecting school children who ride a motorcycle and bicycle to school.

1.2 Scope and Limitation of the Study

The scope of this study is focused on selected primary and secondary schools in Selangor. Secondary data from the Ministry of Education was used to identify the scope of the study. A total of sixty-two (62) schools with the various built environment have been included for analysis. For this study, the schools were selected based on area type, road type, and school type. Although the observation was made throughout sixty-two (62) schools, there were some schools there are some schools that did not have students riding bicycles or motorcycles as a mode of transport to school. To gather the exposure data, the observation was made during morning session school's end time between 12.30 p.m. to 2.30 p.m. The observation was made mainly on school student riding motorcycles and bicycles as modes of transport to school.

2. Literature Review

Cycling is one of the modes of transport used by school student for going to school. Other than that, there is secondary school student that riding motorcycle to commute to school. As is known, other than pedestrian, motorcyclist, and cyclist categorized as vulnerable road users (VRUs). VRUs are more exposed to the risk of road crashes. Riding motorcycle or bicycle may be a convenient alternative for school student to get to school, especially if their houses are near the school.

However, various factors need to be seen to ensure the safety of the school student. School student is still developing their perceptual and cognitive skills, which puts them at increased risk when using public roads. A study was done by Sandu (2015) in Romania indicate that distance from house, feeling of safety and comfort, weather condition and appropriate infrastructure are the factors influencing the school student to cycle to school.

The use of safety gears for motorcyclist and cyclists are important. The degree of injury may be reduced if they use safety gears, i.e. helmet and reflective jacket. A number of studies have documented the efficacy of at least some safety gear to reduce the incidence and/or severity of certain types of injuries among cyclist (Morrongiello & Major, 2002). For example, according to Handerson, M. (1996), bicycle helmet use decreases the risk of head injury by 85% and brain injury by 88%.

It is important to concern on safety helmet usage among school student especially in a rural area, whereby there is a lack of enforcement activity has been carried out. Even though, the respondents have good enough knowledge and attitude regarding the importance of safety helmet. However, when it's translated into their daily practices might be the other way around. It's can be concluded that adolescents are easily influenced by attitude and their surroundings either from the family or close friends (subjective norm) and other people (descriptive norm) in the intention to do something.

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Nevertheless, when it is translated into action, they are still under the influence of attitude, intention and the immediate influence of the family (subjective norm). Strictly on law enforcement of motorcycle helmet is needed to tackle the problem regarding the improper behaviour of wearing motorcycle safety helmet among the adolescent (Ahmed et al., 2013).

In Malaysia, there are some cases in which crashes involving school student who cycling to school died from serious head injuries. Road users need to know their responsibilities when they are on the roads. According to The Malay Mail (2017), motorcyclists need to wear brightly-colored clothes and ensure that their bikes' lights and brakes are functioning well.

3. Methodology

This study was conducted at selected primary and secondary schools in Selangor. Figure 1 shows the overall flow of this study.

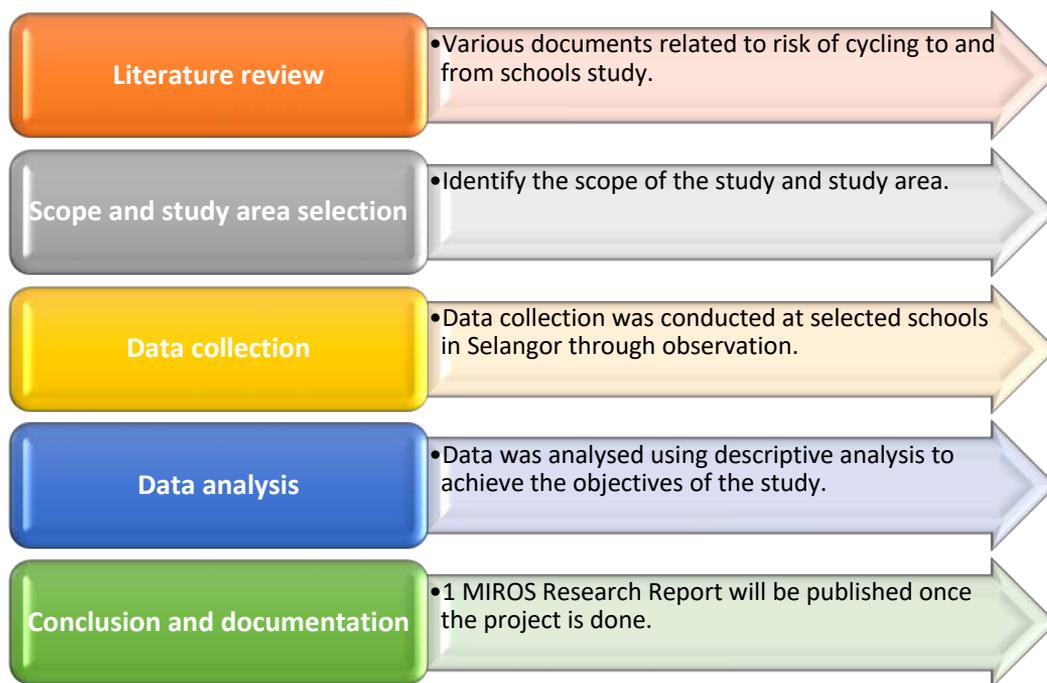


Figure 1 Study flow framework

The data collection period was from 25th April to 21st September 2017. The data collection was conducted at fifteen (15) primary schools and twenty-eight (28) secondary schools.

For this project, data collection involves school student riding motorcycles and bicycles to school. Therefore, there is a difference in the data collection process between primary

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and secondary schools. The following Figure 2 shows the data collection process conducted for primary and secondary schools.

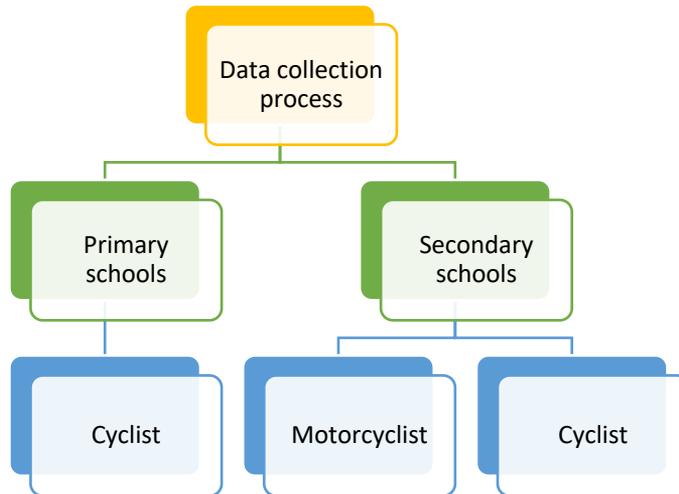


Figure 2 Data collection process for both primary and secondary schools

Data collection for each school was conducted by manual observation and digital video camera recording on school days during morning session school's end time between 12.00 p.m. to 2.00 p.m. Data about school student was gathered according to:

- i. Gender;
- ii. Conflict situation occurrence (with other motor vehicles);
- iii. The volume of motorcyclist/cyclist;
- iv. Crossing used/location;
- v. The use of motorcycle/bicycle protective gear; and
- vi. Motorcycle/Bicycle facilities provided at schools;

The observation was carried out at each exit point in the school. The number of exits at school varies from one school to another. The number of observers is depending on the situation and the number of school students per school. Figure 3 below shows the observation form used during data collection works.

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Borang Pengumpulan Data Basikal / Motorsikal (RE103126)

Sekolah: _____ Fasilitas: _____
 Tarikh: _____ Parkir Basikal: YA / TIDAK
 Enumerator: _____ Parkir Motorsikal: YA / TIDAK

Bil	Motorsikal	Pembonceng Motorsikal	Basikal	Jantina		Peralatan Keselamatan		Konflik
				L	P	Helmet	Safety Vest	
1								
2								
3								
4								
5								

Figure 3 Observation form for data collection works

The data collection activities were completed by 21st September 2017. After the completion of data collection at sites, data from observation form were then gathered and analysed according to the objectives of the study. The descriptive analysis was performed in order to obtain the distributions and profiles of the data. The results obtained were categorized according to the four (4) main criteria and the new findings were highlighted in the discussion. The four (4) main criteria are as follows:

- i. The characteristics of study locations;
- ii. The characteristics of school students riding motorcycles and bicycles to school;
- iii. The use of motorcycle and bicycle’s safety gear among school students; and
- iv. The possible factor affecting school students riding motorcycle and bicycle to school.

A few conclusions were made, and some recommendations were listed to improve the safety of school student while riding motorcycles or bicycles to schools. Suggestions on how to improve further study were also included at the end of this report.

4. Results and Discussions

This section discusses the results and findings of the study. This section is divided into four (4) subsections; 1) the characteristics of study locations; 2) the characteristics of school students riding motorcycles and bicycles to school; 3) the use of motorcycle and bicycles' safety gear among school students; and 4) the possible factor associated with riding motorcycles and bicycles to school.

4.1 The Characteristics of Study Locations

Data collection was carried out at sixty-two (62) selected primary and secondary schools in Selangor. Out of sixty-two (62) schools, there were only forty-three (43) schools that have school students riding bicycles and motorcycles to school. Table 1 below shows the characteristics of study locations. The schools were selected based on secondary data from the Ministry of Education Malaysia. The number of schools was divided into several characteristics which are school area, school type, and road type. It is divided by categories to see the relationship between the school's location and the risks faced by the school students.

Table 1 The characteristics of selected schools in Selangor

	Primary school		Secondary school		
	Urban	Rural	Urban	Rural	
Highway	1	3	Highway	3	4
Primary	2	1	Primary	5	5
Secondary	6	2	Secondary	6	5

4.2 The Characteristics of School Students Riding Motorcycles and Bicycles to School

A total of 3,280 school students were observed during the study. This is the total number of school student riding bicycles and motorcycles to schools including their pillion passengers from an observation made in primary and secondary schools. Figure 4 shows the percentage of the total number of school student from both primary and secondary schools from forty-three (43) schools.

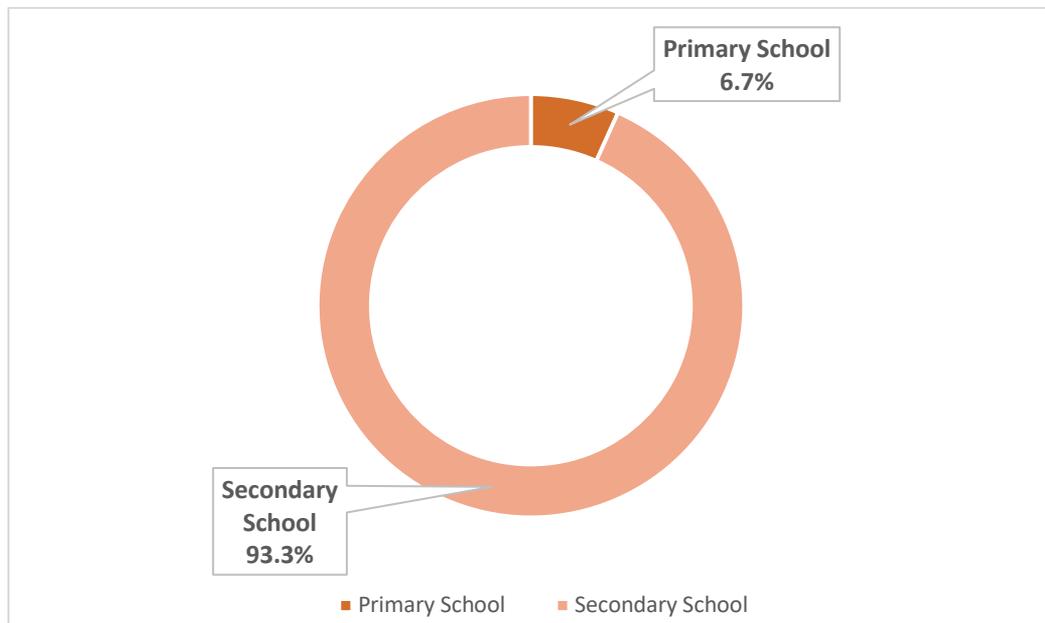


Figure 4 Percentage of the total number of school student from both primary and secondary schools

As shown in Figure 4, 93.3% (3,060) of school student was from secondary school and the remaining of 6.7% (220) of school student was from primary schools. The percentage of a secondary school student is higher as the number is the total number of school student riding bicycles and motorcycles. Meanwhile for primary school, the number only

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involves school student riding a bicycle to school. This is because there were no primary school student riding motorcycles to schools was observed.

4.2.1 Demographic Characteristics

Figure 5 shows the total number of primary and secondary school student by gender and by mode of transport used to commute to school. From the chart, it is shown that the number of male school student from primary and secondary schools riding bicycles and motorcycles to schools is higher as compared to female school student.

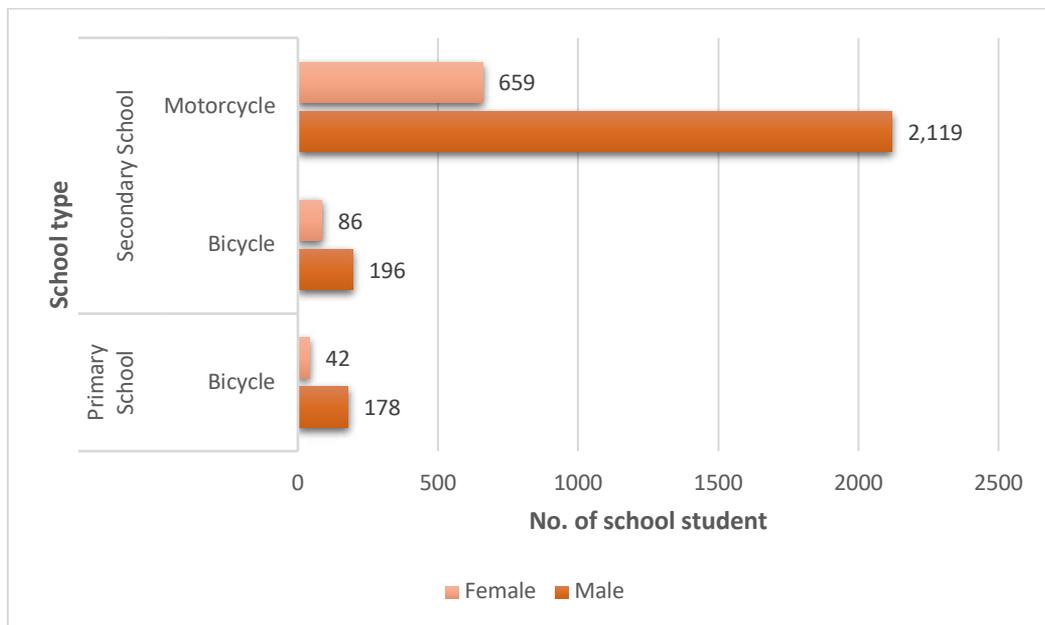


Figure 5 Number of primary and secondary school student by gender and by mode of transport used by them

For primary schools, 80.9% (178) male school student was riding a bicycle to schools followed by only 19.1% (42) of female school student. As of secondary schools, the pattern shown is almost the same. More male school student riding motorcycles to school which is about 76.3% (2,119) compared to 23.7% (659) female. For secondary

school student riding a bike to school, it is shown that male (69.8%) were higher than female (30.2%).

4.2.2 The Use of Bicycle and Motorcycle by Area Type and Road Type

The use of bicycles and motorcycles as a mode of transport to school may be influenced by the built environment around schools and school student's houses. A study was done by Nasrudin and Md. Nor (2013) indicates that despite the fact that the majority of parents were aware of the dangers of motor vehicles towards the environment and the positive effects of encouraging their children to walk and cycle to school, safety and security issues discouraged parents to support the use of sustainable transportation. As mentioned earlier, data collection for this study involves various built environment which is urban area and rural area. The road type also was categorized into three (3) categories namely i) highway (federal, state and arterial road); ii) primary road (main and collector road), and iii) secondary road (residential and local street). This categorization was made to identify whether the use of bicycles and motorcycles by school student is related to the type of area and type of road. Additionally, the school student exposure towards safety on the road may also vary by area type and type of road.

4.2.2.1 The Use of Bicycle and Motorcycle by Area Type

Figure 6 below shows the proportion of primary school student riding a bicycle by area type. As shown in that figure, the number of primary school student commuting to school by bicycle from urban area were higher (186) than primary school student from a rural area (34). Based on the observations carried out, for some schools located in rural areas, the use of school buses is less compared to urban areas. Other than that, the school student in the rural area was likely commuting to school by their parents' private vehicles.

The Characteristics of School Student Riding Bicycle or Motorcycle to School

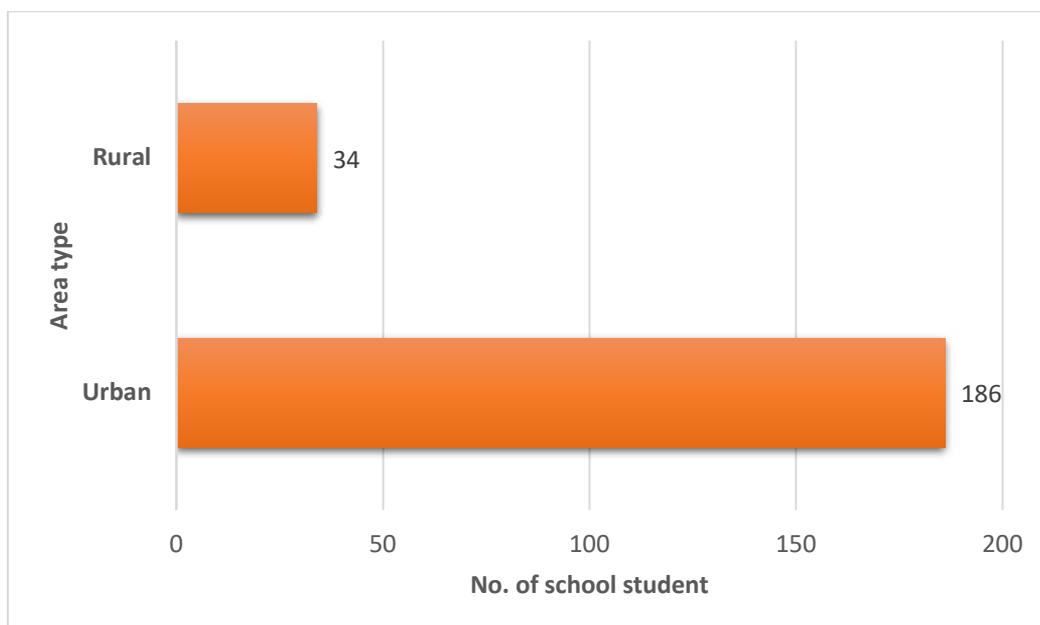


Figure 6 Proportion of primary school student riding a bicycle by area type

Figure 7 shows the number of secondary school student riding a bicycle and motorcycle by area type. For bicycle use to school, in contrast to primary school student, a secondary school student in rural areas are more likely to use bicycles than school student in urban areas. As many as 78% or 220 school students use bicycles to go to schools in urban areas compared to only 22% or 62 secondary school students in rural areas.

For the use of motorcycles to schools, the percentage of secondary school student from urban areas were slightly higher as compared to secondary school student in rural areas which is 54.6% (1,517) and 45.4% (1,261).

The Characteristics of School Student Riding Bicycle or Motorcycle to School

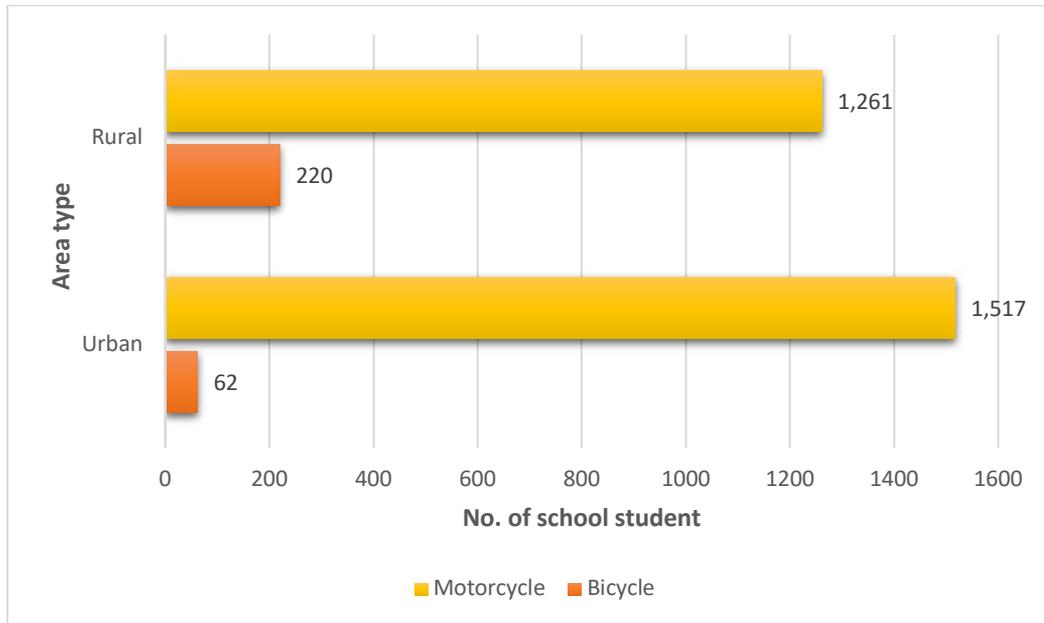


Figure 7 Proportion of secondary school student riding a bicycle and motorcycle by area type

4.2.2.2 The Use of Bicycle and Motorcycle by Road Type

As mentioned earlier, in this study the location of schools was categorized into three (3) road type categories namely:

- i. Highway (federal, state and arterial road);
- ii. Primary road (main and collector road); and
- iii. Secondary road (residential and local street).

This section describes the use of bicycles and motorcycles among school student by road categories in both rural and urban areas. Figure 8 shows the number of primary school student riding a bicycle to school by road type. As shown in Figure 8, it is indicating that number of school student from schools located at primary road was the highest (114), followed by 81 school students from school located at secondary road and 25 school students from school located at the highway.

The Characteristics of School Student Riding Bicycle or Motorcycle to School

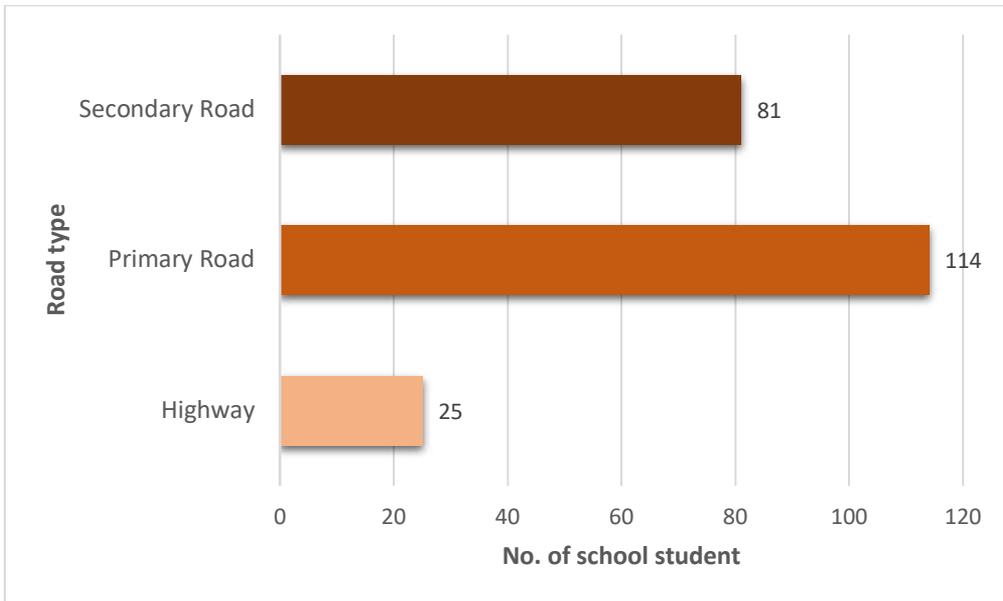


Figure 8 Proportion of primary school student riding a bicycle by road type

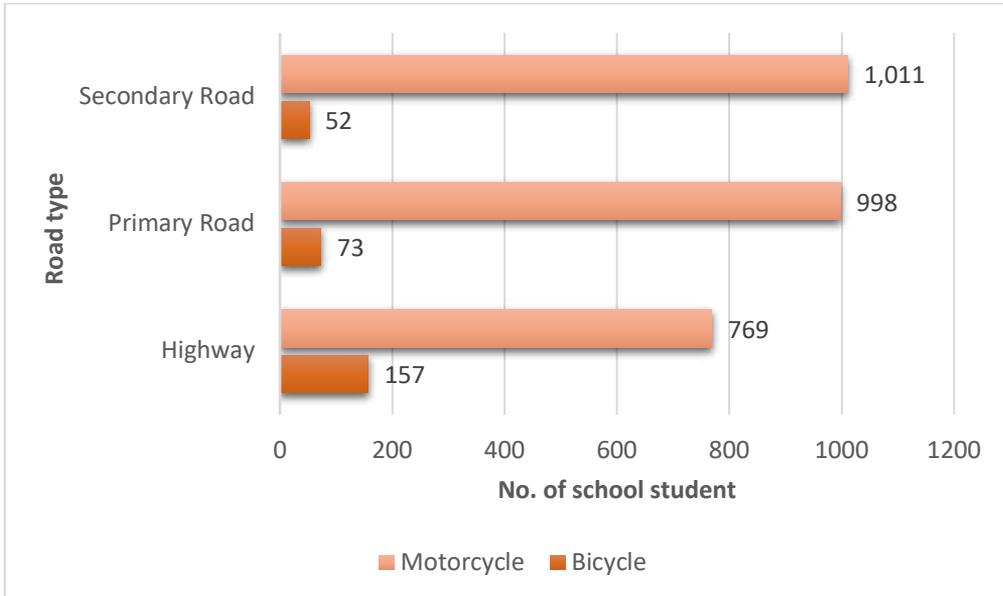


Figure 9 Proportion of secondary school student riding a bicycle and motorcycle by road type

The Characteristics of School Student Riding Bicycle or Motorcycle to School

Although school student at the secondary level, the use of bicycles and motorcycles among school student is still influenced by the location and distance between schools and their houses. Traffic conditions around the school area also play an important role in the selection of bicycles or motorcycles among school students.

Figure 9 shows the number of school students riding bicycles and motorcycles by road type. For motorcycles, 1,011 school students from schools located at the secondary road were the highest, followed by 998 school students from schools located at primary road and 769 school students from schools located at highway. In contrast to motorcycles, for bicycles, there are more school students riding bikes for schools located at highway, followed by primary road and secondary road.

4.3 The Use of Motorcycle and Bicycles' Safety Gear among School Students

The use of safety gears such as helmets while riding a bicycle or motorcycle is important to avoid serious injuries in the event of a crash. In the event of motorcycle crashes, most of the injuries are traumatic brain injuries (TBI), caused by the lack of rider head protection. A study was done by Toh Yen et al. (1999) about fatal injuries in Malaysian motorcyclist, in Klang Valley, 62.9% of a single cause of death were head injuries.

In addition, wearing reflective clothing such as safety vest is also important to facilitate the visibility of other road users about the presence of a motorcyclist or a cyclist especially during night time. Increased visibility of cyclists may reduce the number of crashes caused by drivers. This study revealed that one-hundred percent (100%) of the motorcyclists and cyclist (both riders and pillion passengers) do not wear reflective clothing while riding motorcycles to schools.

As of helmet use, observation found that no cyclists wearing helmets while riding a bicycle to school. Figure 10 shows the percentage of helmet use among school student riding motorcycles to school.

The Characteristics of School Student Riding Bicycle or Motorcycle to School

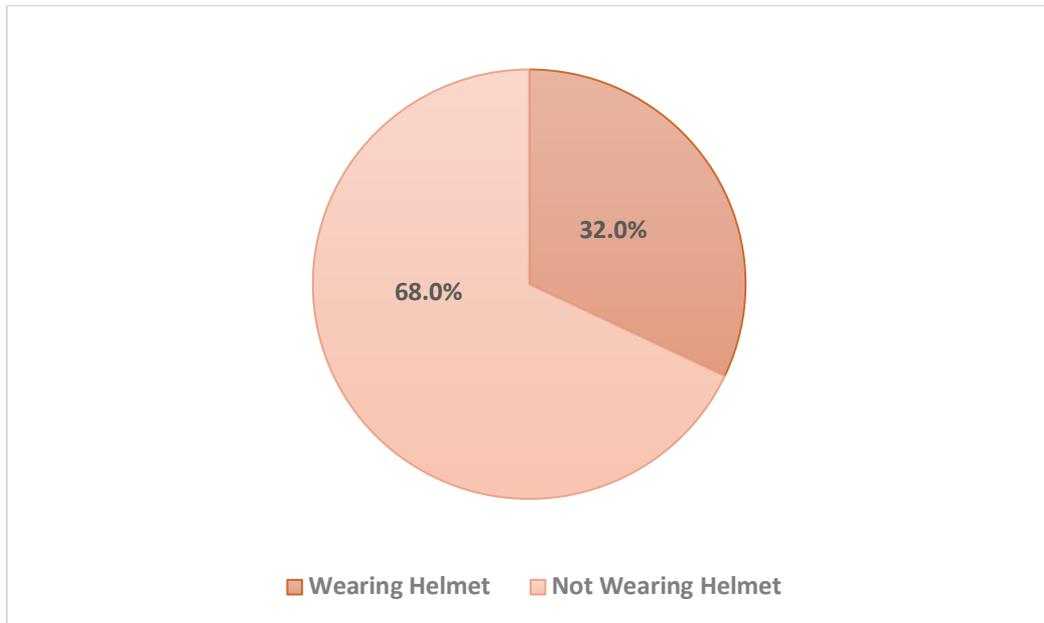


Figure 10 Percentage of helmet use rate among school student

The results of this study showed that out of 2,778 school students, 68% of them did not wear helmets while riding motorcycles to schools. Meanwhile, if viewed by area type (Figure 11), school students from rural schools have a higher percentage of school students who did not wear a helmet which is 74.5% compared to those in urban areas (62.5%). However, for both types of areas, the percentage of school students who did not wear helmets is much higher than those who wear helmets.

The Characteristics of School Student Riding Bicycle or Motorcycle to School

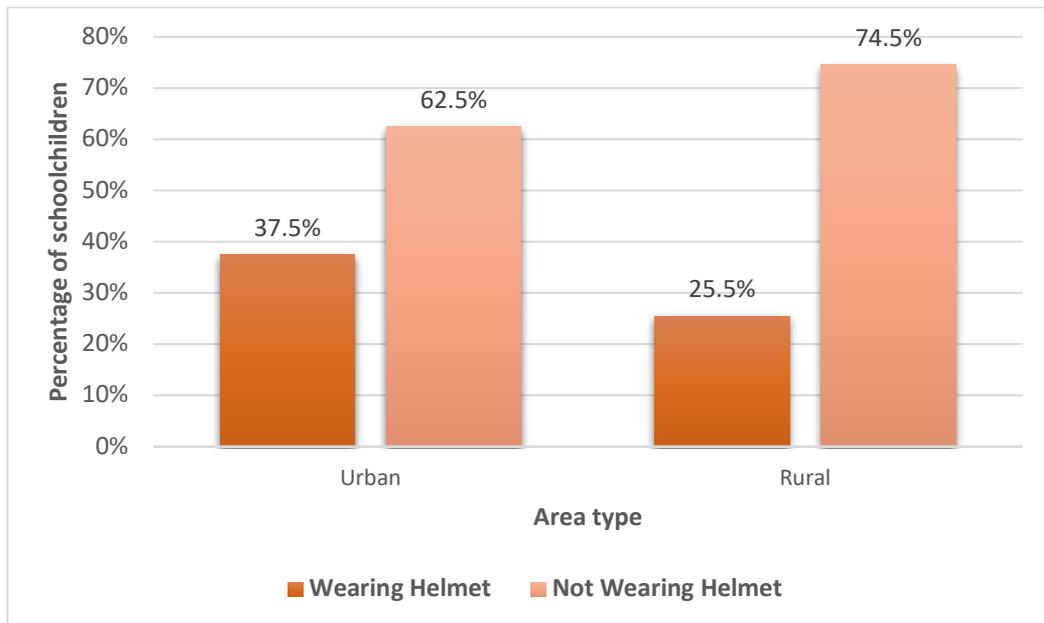


Figure 11 Percentage of helmet use among school student in an urban and rural area

4.4 The Possible Factor Affecting School Students Riding Motorcycle and Bicycle to School

This study also conducted to evaluate if there is a possible factor associated with the risk of the school student while riding motorcycles and bicycles to school. Attitudes of school student who are not concerned about safety while riding bicycle or motorcycle can be harmful to their safety. The use of safety gears during riding is very important as it reduces the exposure to them in case of accident happen. Throughout the observation, there were some conflicts recorded between school student and other vehicles that may endanger their safety. Among them are conflicts with other vehicles, pedestrians and there is also school student riding against the traffic flow. Table 2 shows the number of conflicts occurred to schoolchildren during observation.

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Table 2 Conflicts occurred to school student during riding bicycle and motorcycle to school

Type of conflict	Number of school student involved	Vehicle type
Conflict with other vehicles	13	Motorcycle
Conflict with pedestrian	1	Motorcycle

In addition, there is also a school student who ride motorcycles in danger even though they are still in front of the school area. Although there are schools that have traffic warden, through observations carried out, schoolchildren crossing the road with danger and not using the correct path. This does not only jeopardize the safety of motorcyclists but also the safety of other school student and other road users.

5. Discussions

The study analyses the characteristics of school student riding bicycles and motorcycles as their mode of transport to school. In addition, observations were conducted to examine the use of motorcycle and bicycles' safety gear among school student. Based on the outcomes from the observations, some conclusions can be made.

In conclusion, a total of 3,280 school students were observed during the data collection period. 93.3% of the school students were from secondary school and the rest were from primary school. With respect to demographic composition, for commuting to schools by bicycle and motorcycles, male school students indicate the higher number than female school students at both primary and secondary schools. Irrespective of school student's selection between bicycles and motorcycles at secondary schools, 90.8% of school student chooses to ride motorcycles instead of bicycles. Based on a study done by Ali et al. (2017), the students tend to agree that riding a motorcycle is riskier compared to other modes of transportations. However, several factors cause them to still choose motorcycles as their mode of transportation such as peer influence, family-based decision-making and the convenience factors that motorcycle has to offer.

When it comes to the use of bicycle and motorcycle by area type, primary schools in urban areas show a high percentage of school student riding bicycles to school as compared to school student from rural areas. For the use of motorcycles to school, the percentage of secondary school student from urban areas were slightly higher as compared to secondary school student in rural areas. On the other hand, the percentage of secondary school student riding bicycles to school from rural areas was higher than in urban areas.

Irrespective of bicycle and motorcycle usage by road type, for motorcycles, a school student from schools located at secondary road was the highest, followed by schools located at primary road and highway. In contrast to motorcycles, for bicycles, there is

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more school student riding bikes for schools located on the highway, followed by primary road and secondary road.

In terms of the usage of motorcycle and bicycle's safety gears, it was recorded that none of the cyclist and motorcyclist including their pillion wears reflective clothing. In addition, observation of the use of helmets among school students was also conducted. From the observation made, 68% or majority of the motorcyclist did not wear helmets. If compared to the differences between schools in urban and rural areas, the study found that the percentage of school student who did not wear helmets in rural area was higher than urban areas. For school student riding a bicycle, none of them wearing helmets. A study done by Ederer et al. (2016) stated that helmet use among children might increase with the programs such as school-based helmet use that combine helmet provision and road safety education. Programs like these can be implemented in schools to raise awareness of the importance of wearing a helmet when riding a motorcycle or bicycle.

6. Conclusions and Recommendations

This study was conducted to determine the characteristics of school student when riding bicycles and motorcycles as their mode of transport to school, to examine the usage of motorcycle and bicycles' safety gear among school student, as well as to identify the possible factor associated with the safety of school student while commuting to school by bicycles or motorcycles. A total of 3,280 school student from forty-three (43) both primary and secondary schools were observed. An observation was conducted during morning session school's end-time between 12:30 p.m. to 2:30 p.m. (may vary at each school). The following conclusions can be drawn from the study.

To begin with it, results show that variables such as gender, different school type, road type, and area type gives different percentages of the number of school student riding bicycles and motorcycles to school. For primary school, 80.9% of school student riding bicycle to school was represented by male school student. For secondary schools, male school student riding bicycle to school recorded higher percentage (69.8%) as compared to female school student. As well as school student riding motorcycles to school, the percentage of male school student is higher (76.3%) as compared to female (23.7%). The use of bicycles among primary school student in urban areas indicates higher percentage (78%) compared to only 22% for primary school student from rural areas. Therefore, school student age, school, and home locations and traffic conditions on home-school routes affect the choice of transport modes used by school student to commute to school.

In addition, studies have found that the use of safety gears while riding bicycles and motorcycles is not considered by a school student. It can be demonstrated that more than half of the school student riding motorcycles did not wear helmets. Similarly with school student riding a bicycle. None of the school student riding a bicycle wear helmet. This is probably due to the use of bicycle helmets not the usual practice of Malaysian society. Additionally, school student did not wear reflective clothing when riding bicycles

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and motorcycles. The use of reflective clothing is important so riders are more visible to other road users, especially in the early hours of the morning and late afternoon. In this regard, more advocacy programs should be organized by the school to raise the level of awareness among school student on road safety.

Factors such as the use of helmets, reflective clothing, safe way to ride bicycles and motorcycles and the proper use of the pathway may affect the safety of school student so that they are not exposed to road accidents. Otherwise, the attitude of other road users while driving at school area also plays an important role in ensuring the safety of school student. It is important to prevent conflict between school students riding motorcycle or bicycle with other road users.

There are several limitations to these findings. Observations made involving many school student at one time. Therefore, there is a possibility of the occurrence of an error made during the observations process by enumerators. Other than that, the results of this study only apply for selected schools based on this study location.

References

- Ali, A., Mohd Jawi, Z., Osman, S., Shariff, S., Suet Fin, L., & Shaw Voon, W. (2017). *Understanding the use of motorcycles among secondary school students*. Kajang: Malaysian Institute of Road Safety Research.
- Ederer, D. J., Van Bui, T., M Parker, E., R Roehler, D., Sidik, M., J. Florian, M., . . . F Ballesteros, M. (2016). Helmets for kids: Evaluation of a school-based helmet intervention in Cambodia. *Injury Prevention*, 52 – 58.
- Henderson. (1996). *The effectiveness of bicycle helmets – A review*. New South Wales: Motor Accident Authority of NSW.
- Mani, K. K., H., H., H, A., & T. H., L. (2016). Road safety education intervention for primary schools in Malaysia: Any reduction in traffic casualties? *Australasian Road Safety Conference*. Canberra.
- Morrongiello, B. A., & Major, K. (2002). Influence of safety gear on parental perceptions of injury risk and tolerance for children's risk taking. *Injury Prevention*, 27 – 31.
- Nasrudin, N., & Md. Nor, A. (2013). Travelling to school: Transportation selection by parents and awareness towards sustainable transportation. *Procedia Environmental Sciences*, 17, 392 – 400. Elsevier.
- Palamara, P., & Broughton, M. (2013). *An investigation of pedestrian crashes at traffic intersections in the Perth Central Business*. Perth: Curtin-Monash Accident Research Centre (C-MARC).
- Razzaghi, A., & Zolala, F. (2015). Exploring the pedestrian's behaviors in crossing the street based on gender. *Austin Journal of Emergency and Critical Care Medicine*.

The Characteristics of School Student Riding Bicycle or Motorcycle to School

Sandu, V. (2015). Cycling and walking to school. A case study for Brasov, Romania. *Journal of Environmental Research and Protection*, 8 – 12.

Sivasankar, S., Karmegam, K., Bahri, M., Naeini, H., & Kulanthayan, S. (2014). Safety system for child pillion riders of underbone motorcycles in Malaysia. *Traffic Injury Prevention*, 64 – 71.

The Malay Mail. (2016, September 22). Retrieved from The Malay Mail Online: [#9U3STdzw0EUxYfRr.97](http://www.themalaymailonline.com/projekmmo/berita/article/bonggol-depan-sekolah-inisiatif-elak-kemalangan-maut-kata-kamalanathan)

The Malay Mail. (2017, July 28). Retrieved from The Malay Mail online: <http://www.themalaymailonline.com/malaysia/article/police-statistics-motorcyclists-form-bulk-of-road-accident-fatalities#wWCc6UXtzlrEaKM4.97>

The Sun Daily. (2016, August 11). *Online news*. Retrieved from The Sun Daily web site: <https://www.thesundaily.my/archive/1932299-DSARCH386812>

Toh Yen, P., R. S., R., Abdul Aziz, A., Singh, H., Abdul Wahid, S., Hj. Mansor, A., & Othman, M. (1999). Fatal injuries in Malaysian motorcyclist. *International Medical Research Journal*, 115 – 119.

Utusan Malaysia. (2009, July 25). Retrieved from www.utusan.com.my: http://ww1.utusan.com.my/utusan/info.asp?y=2009&dt=0725&pub=Utusan_Malaysia&sec=Dalam_Negeri&pg=dn_34.htm



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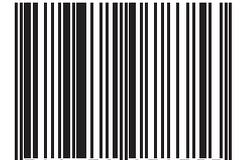
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