

PERPUSTAKAAN UMP



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**EXPLORATION ON THE PEDESTRIAN BEHAVIOUR IN KUANTAN**

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## ABSTRACT

Pedestrian behaviour study is important. This because they are one of the most vulnerable road user compare to other road users. The aim of the research is to study the pedestrian behaviour based on the finding to improve the pedestrian safety. The behaviour of the pedestrian is studied and analysed trough interview on the pedestrian. And also trough observation on the pedestrian at the studied location. The relationship between the variable (behaviour and background) is being analysed using contingency table and also associated statistical analysis. The majority of the pedestrian interviewed do not trust towards driver and also believe that drivers had careless attitude toward pedestrian. In the study site, there is still have pedestrian that no check the traffic before crossing. The study shows that either the pedestrian is a driver or non-driver brings effects towards their crossing behaviour. We also found that age above 45 (older pedestrian) had the higher percentage in crossing problems compare other group of age. Finally, some recommendation and suggestion are provided.

## ABSTRAK

Kajian tingkah laku pejalan kaki adalah penting. Ini kerana mereka adalah salah satu pengguna jalan raya yang paling lemah berbanding dengan pengguna jalan raya yang lain. Tujuan kajian ini adalah untuk mengkaji tingkah laku pejalan kaki berdasarkan untuk meningkatkan keselamatan pejalan kaki. Kelakuan pejalan kaki itu dikaji dan dianalisis dengan mewawancara pejalan kaki dan juga melalui pemerhatian tingkah laku pejalan kaki di lokasi yang dikaji. Hubungan antara pembolehubah (tingkah laku dan latar belakang) dianalisis menggunakan jadual kontingensi dan juga analisis statistik yang berkaitan. Majoriti pejalan kaki yang ditemuramah tidak mempercayai pemandu dan juga percaya bahawa pemandu mempunyai sikap cuai terhadap pejalan kaki. Dalam kajian, masih terdapat pejalan kaki yang masih tidak memeriksa keadaan lalu lintas sebelum melintas. Kajian ini menunjukkan bahawa sama ada pejalan kaki tersebut adalah pemandu atau bukan pemandu membawa kesan terhadap tingkah laku lintasan mereka. Turut juga didapati bahawa umur atas dari 45 (pejalan kaki y lebih tua) mempunyai peratusan yang lebih tinggi dalam menghadapi masalah ketika melintas jika dibandingkan dengan kumpulan umur yang lain. Akhir sekali, beberapa kesimpulan dan cadangan disediakan.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND OF STUDY**

Generally, pedestrian is one of the road users other than cyclist and motorist. Pedestrian is very vulnerable road users. Every year, there are lots of deaths involved due to an accident between pedestrian and other road users such as vehicles. For an example, the number of causality for pedestrian in Malaysia (2010) includes 626 fatalities, 516 series injured and 1019 light injuries (Royal Malaysia Police, 2010). As a short conclusion, the accident is happen between two road users which is pedestrian and motorist. So, the parties involved in this study will be pedestrian and motorist. The accident probability between those road users are occurs regardless day or night. Many studies have been done to study the case. The cause of the accident between them (pedestrian and motorist) is because the motorist behavior and attitude actually. For an example, when a pedestrian want to cross the zebra line, most of the drivers will not stopping their vehicle to let the pedestrian pass through even the pedestrian are half of their way as the case study concluded. (Nik Ibtishamiah, I., Mohamed Rehan, K., Farhan Ahmad, K. 2008, p. 122)

## **1.2 PROBLEM STATEMENTS**

As we know, pedestrian priority on the road is always ignored by other users such as motorist. This is maybe because those users (motorist) are in time or in busy condition. As the consequence, it may lead to incident which can bring trouble from the light injuries to death. For the real problem here is, both of the user (pedestrian and motorist) are actually lack in understanding each other.

For the motorist, it is maybe difficult to see the presence of the pedestrian and also unable to predict them. While for the pedestrian, they may be difficult to have a motorist that is willing to stop for them. Although the zebra cross have been provided, there are still some pedestrian crossing the road without using it. There is maybe because of some factor such hurry in time, the location of the zebra line is far from them and also maybe there is another reason. So the purpose of this study is to study their behavior.

## **1.3 RESEARCH OBJECTIVE**

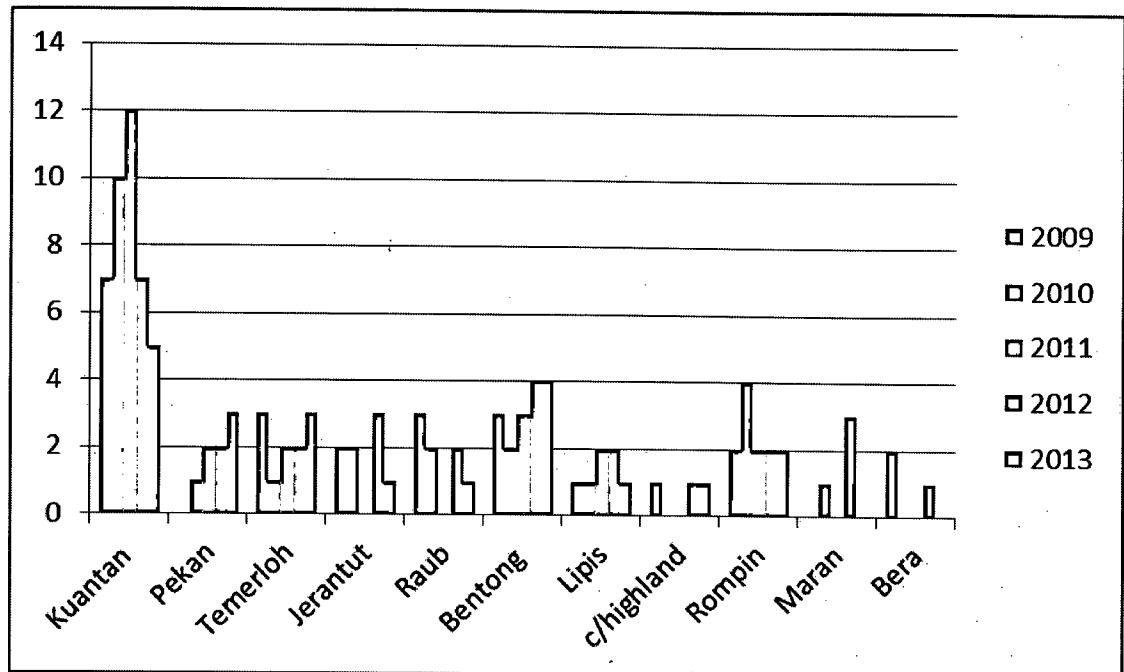
The objectives of the study that need to be achieved are as follow:

- i) To study the pedestrian behavior at the location with highest rate of pedestrian accident in Kuantan.
- ii) To study the relationship between the pedestrian's socioeconomic background with their behavior.

## **1.4 SCOPE OF STUDY**

The study is focused on the area with the higher rates of accidents in Pahang. The respondent involved will be the pedestrian. The number of respondent is 200. In order to identify the area with higher rates of accident in Pahang, the statistic about the accident involving the pedestrian is gained from the police department.

Below is the statistic about the fatal accident that occurs in Pahang for five years (2009-2013). The data is gained from Ibu Pejabat Polis Kontinjen Pahang, IPK.



**Figure 1.0:** Fatal accident occurs in Pahang for five years.

Source: Ibu Pejabat Polis Kontinjen Pahang, (2014)

Based on the graph above, the period of the data is five years which is from 2009 until 2013. This is the latest statistic about the fatal accident that involving pedestrian in Pahang, which are Kuantan, Pekan, Temerloh, Jerantut, Raub, Bentong, Lipis, Cameron Highland, Rompin, Maran and Bera. As what we can see, the data is compared between two variables which are area and also the time (year) of the accident occurs.

Here clearly we can see that Kuantan hold the records as the higher number of accident occurs. For all of the five years, the highest number of accident is 12 which occur in 2011 and the lowest number of accident is 5 which are occurs on 2013. As five (5) is the lowest, this number of accident already higher than other places which are maximum is only about four (4) such as Bentong and Rompin. Therefore, the study is conducted at Kuantan city. For gained the specific study location in the city, the statistic about the accident occurs involving pedestrian are also gained from Ibu Pejabatn Polis Kontinjen Pahang, (IPK).

## **1.5 SIGNIFICANT STUDY**

This study also conducted to maximize the awareness about road safety in our country. By this research, we will gain data about the pedestrian behavior by observation as well as their socioeconomic background. Using the data, we will analyze the data and identify the problem so that we can provide the solution.

For the study conducted, there an expected where the data on pedestrian behavior will be related with their socioeconomic background. By the way, for the conclusion and discussion, it also has been briefly discussed on the end of the chapter 5

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 ROAD USERS**

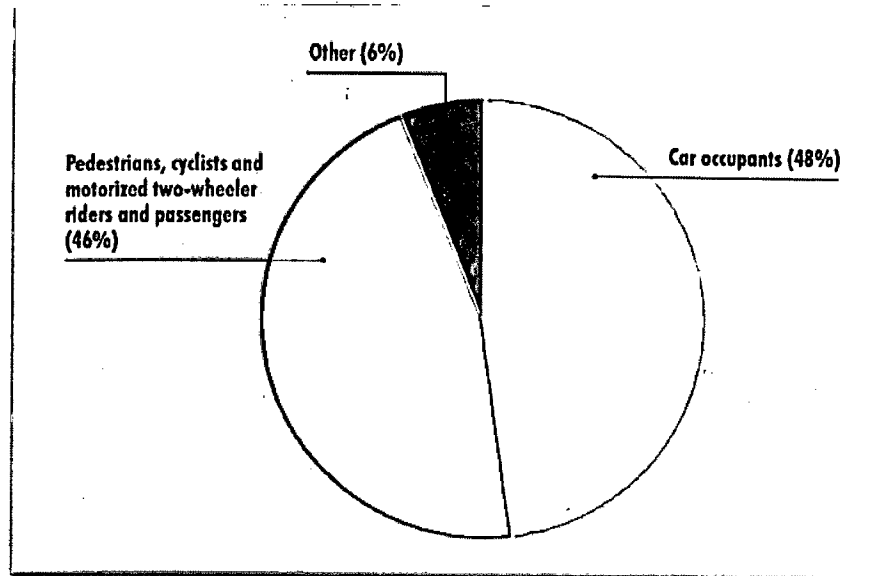
Road users can be defined as anyone that are using the road as their way to be from one place to another places. Road users are consist of pedestrian, cyclist, motorist and others transportation drivers (Collins dictionary, 2014). Pedestrian and cyclist are classified as the vulnerable road users (WHO, 2011). For the motored vehicle, they are consists of two type. First are public transportation and the other one is private vehicle. Two examples for the public transportation is bus and taxi while for the private vehicle is car, van, motorcycle and so on.

There is lots of accident occur on the road now day. An accident can happen among and also between the road users. Just imagine how big the probability of a road accident can occur with an increasing number of the road user year by year.

##### **2.1.1 Vulnerable Road Users**

Vulnerable road users are the type of road users which are with the high risk of being injured or killed in a road traffic crash. For the particular example here is the pedestrian, cyclist and two-wheeler user are the right example of the vulnerable road user. Usually, this vulnerable road user are at greater risk compare to vehicle occupants and always bear the greatest burden of injury when those two type of road user collides. Based

on World Health Organization (2011), there is an article that state “nearly half of those dying on the world’s roads are vulnerable road users”.



**Figure 2.0:** Percentage of fatal road users on the road around the world.

Source: World Health Organization (2011)

From the chart above, we can clearly see the study show that the vulnerable road user is about 46%. Children, elderly, and disabled people are particular vulnerable, as their physical and mental skills are either not fully developed or they are especially fragile. Children and older people are often overrepresented in traffic fatalities, especially as vulnerable road users.

According to the World Health Organization (WHO, 2011), in road traffic, risk is a function of four elements: exposure, the probability of a crash, the probability of injury and the outcome of the injury. To compare with the other type of road users, those vulnerable road users is actually more exposed to injury as we can see that they are not protected by anything unlike motorist which is protected by a vehicle shell (Global road safety partnership,2014).

Poor people in low income countries are believed that they more exposed to the road crashes risk. Because of the poverty, they always face financial stress. In addition, they often cannot pay additional and unexpected medical and funeral costs and the loss of a victim's or career's income when they were injured. As an example, In Bangladesh a study showed that among the Bangladesh poor peoples which a few of the victims were the head of the household, rather they were adult children who were the main income providers (Global road safety partnership,2014). Thus they were also more likely to have both elderly and young family dependents. Meanwhile, in Bangalore situated in India the majority of poor households reported at least one person having to give up working or studying to care for the injured. Non-poor households were in many cases tipped into poverty as a result of a road injury of death.

## 2.2 PADESTRIANS

Nowadays, behavior of pedestrians is often not straightforward travel from one place to another. Reasons for walking can be divided into three categories: journeys to work or school etc., exercise or leisure. When people are walking, they usually choose the shortest route and do not want to spend any extra time on the trip. They obey the rules when they think it is sensible and necessary (Global road safety partnership, 2014). Taking the shortest route can mean that they do not use underpasses or pedestrian crossings. They may not obey traffic lights, if waiting for the green light seems to take too long. Pedestrians on familiar routes tend to pay less attention to traffic than when walking in unknown surroundings (Global transport knowledge practice, 2013). Children may play and can also suddenly rush into the street.

As the fact nowadays, young pedestrians are the road users with greatest risk on the road compare other group of ages in the most developing countries (Global road safety partnership, 2014). This might be due to low motorization levels in developing counters with walking trips likely to dominate travel patterns.in the traditional transport planning and road design, it seem likely to focus more in providing the motor vehicles.

Low-income countries have also been found, in general, to have a higher percentage of child pedestrian deaths, largely explained by the population age distribution and

increased exposure for that age group. According to WHO estimates for 2002, 15% of global road fatalities were children (0-14) of which 97% occurred in low-income and middle-income countries (World health organization, 2014). Older pedestrians are also associated with a very high rate of road injury and death. This is mainly due to the increased physical frailty of the elderly (Phillips, 2013). The United Nations estimates that between 6% and 10% of people in developing countries is disabled. Accurate data on disability is scarce, but it is obvious that the transport system in most developing countries is not friendly to pedestrians, let alone disabled people (Global road safety partnership, 2013).

### 2.3 MOTORISTS

Motorist by the definition of oxford (2011) dictionaries is described as the driver of a car. As what we already know, motorist is also one of the road users. Motorists are divided into several categories which are motorcycle, motorcar, multi-purpose vehicle (MPV), van and lorry. The vehicle are some own by them self and other are not. Commonly vehicle that is used as private vehicle is motorcycles, car and MPV.

To run the vehicle legally on the road, the users need to have two things which are driving license and also road tax. During taking the driving license, one need to learn, know and practice all the law applied on the road. In order to gain the license, people need to pass few exams and test which has been stated by Jabatan Pengangkutan Jalan Malaysia (JPJ, 2014). Generally, the test are computer test (knowledge on law basically) and also driving test which checked by JPJ's officer it self

However, there is also same problem here is their behavior. Even they are learned about the law on the road, they still act (behave) differ than what have been thought. And of course it will bring lot of affect as well as impact on the crossing street experience where pedestrian will become major of the victim. In a website of Pedestrian and Bicycle Information Center which is funded by the U.S. Department of Transportation Federal Highway Administration, they have stated few factors influence motorist behavior and also vehicle speed (Nabors, Goughnour, Thomas, DeSantis, & Michael Sawyer, 2012). Those few factors are;

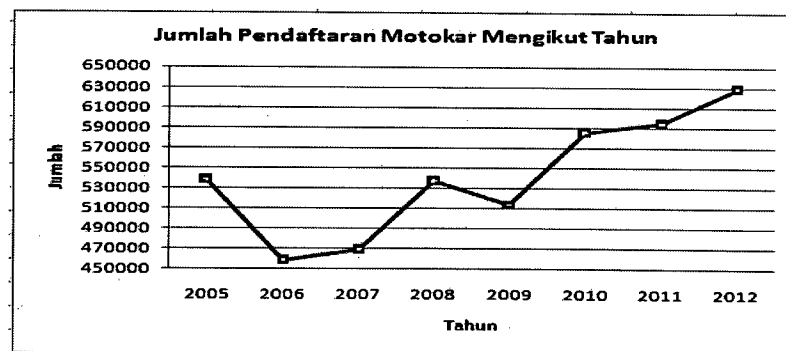


- weather
- number of pedestrian

In case of weather, Malaysia only got few type of weather which is sun, rain and also storm. In the sunny condition, as a country that is located on the equator (khatulistiwa) clearly we can feel the heat of the sun in the noon. During the condition, the motorist will fell very uncomfortable as well as their sight very glare. Just imagine as yourself in that condition, clearly we can know that the sunny (hot) day are affecting the motorist behavior. This is also same for the case of rainy and storm. Behavior of the motorist is affected by the weather.

As the second factor influencing driver and motorist behavior on the street, number of pedestrian can be most factors for any area or places in a city. Generally, less people walking will make motorist less aware on the likelihood of a pedestrian crossing the street. In other word, the higher number of pedestrian, the higher awareness of the motorist towards pedestrian will be. Even it safer for pedestrian as their number increase, there will be negative impact on the road traffic while the speed of the vehicle decreased. This clearly can be seen on the peak hour. During the peak hour, the problem will be worst as the intensity of vehicle also increased.

Now day, the numbers of the motorist is increased by year. Here is the statistic about the motorist registration from year 2005 until 2012.



**Figure 2.1:** Number of motorist registration by year in Malaysia.

Source: Jabata Pengakutan Jalanraya (2013)

This statistic is taken from Official Portals of Road Transport Department Malaysia (2013). From the statistic above, clearly we can see here that the number of the motorist is decrease in the year of 2006 and 2009. While the number of motorist (vehicle registered) are clearly seen increase drastically starting from 2009 until to 2012. The more the number of the vehicle, the more probability for the accident on the road to be occurs.

## 2.4 ROAD ACCIDENT

Road accident is one of the factors that bring economic losses for our country, Malaysia including fatal accidents in. According to Research Institute Malaysia Road Safety Research (Miros, 2008), Malaysia has lost RM708 billion a year causes by road accidents.

Our Miros director-general Prof Dr Ahmad Farhan Mohd Sadullah (Miros, 2008), said one of the main causes of fatal accidents on the road is attitude of the human itself. Victims of road accident usually consist of children. They may consist of pedestrians, passenger car, bus or pillion. Road accidents can result in multiple injuries. In Malaysia, the rider and the pillion rider is most consumers are suffering from injuries and death.

The director said, according to Bukit Aman statistics, from January to November 2010, a total of 5,753 fatal accidents are recorded. The cause of the fatal accidents among others is due to crash itself (1,587 cases), eating street (856), or are trying to change the path (774), neglects to point out and sign the slip road junction (585), closely follow the vehicle ahead (337), did not see the vehicle or object and the beast before (556), against the flow of traffic (161), make a U-turn (220) and do not follow traffic signals (106). Among the factors, we can see most of them are really caused by human factors. To talk about attitude, it was something that is really hard to change or to be controlled. So, to contribute in reducing the road accidents occurred in our country, we also need to focus on the other causes of the accidents other that attitude. This will be discussed under road safety sub-topic.

Our Head of Road Safety Unit of the Ministry of Communications, Awang Haji Abdul Karim Joharri (2013) stated that the causes of accidents due to many factor including environment, road infrastructure, and vehicle itself and also the attitude of the driver. Here

we can see another factors of road accident other than driver attitude is environment, road infrastructure and vehicle itself.

Other thesis done in University Utara Malaysia, UUM have stated that the causes contributing to road accidents is focused on three main factor which is human, vehicle and road environment (Abdul Hanan, King, & Lewis,2013). Most of the developed country such as Britain, Germany, Japan and Australia has taken an innovative approach to billing in focusing on these three factors. According to the Federal Highway Administration (FHWA, 1994), United States had conducted the study on the implementation of the road safety management system in Japan, Australia and New Zealand. As the result, they had found that road safety audit is effective in improving thee road safety in these countries that are doing it.

So by doing this thesis we hope we there will be further study on this case in order to made our country a place that safe to be placed. In this, we need to reduce the road accident by studying their causes other than human attitude so that it could be reduced and prevented.

## **2.5 ROAD SAFETY**

Road safety is something that is usually determined by the road user's opinion. Those who are using the road can determine to consider either the road is safe or not safe to be used. Government has big responsibility toward the people which are also the road users. The government has to make sure that the road condition is always safe to be used. If the road user has found that the road is not safe to be used, the government needs to take an appropriate and serious action to solve the problem towards the safety of the road.

### **2.5.1 Responsibility**

One can affect another. This means that everything we do have an influence towards others either living or non-living things. In the aspect of road safety, all people need to take full responsibilities in order to maintain a safe condition and environment especially in road safety itself

“A safe and responsible driver has responsibility which makes him a good citizen. Driving is a learned skill acquired with much practice. It is also more important to drive with due regards for safety and convenience of other road users. Driving entails concentration, calmness, and with consideration and respect for others. And at the same time, a driver should ensure proper and total control of his vehicle at all times. That means a driver must not allow anything to take their attention from the road, therefore good anticipation and concentration will help to prevent these usual incidents becoming accidents on our roads. The safety of others depends on you when you are on the wheel” (Akande, A.T. 2010)

Each one of us is actually a road user. The only difference is how frequently we used the road and also what is the medium we used on the road. This is the one of the factored that can affect our level of safety on the road. Therefore, as a driver, they should ensure a proper total control his/hers vehicles at all times.

## **CHAPTER 3**

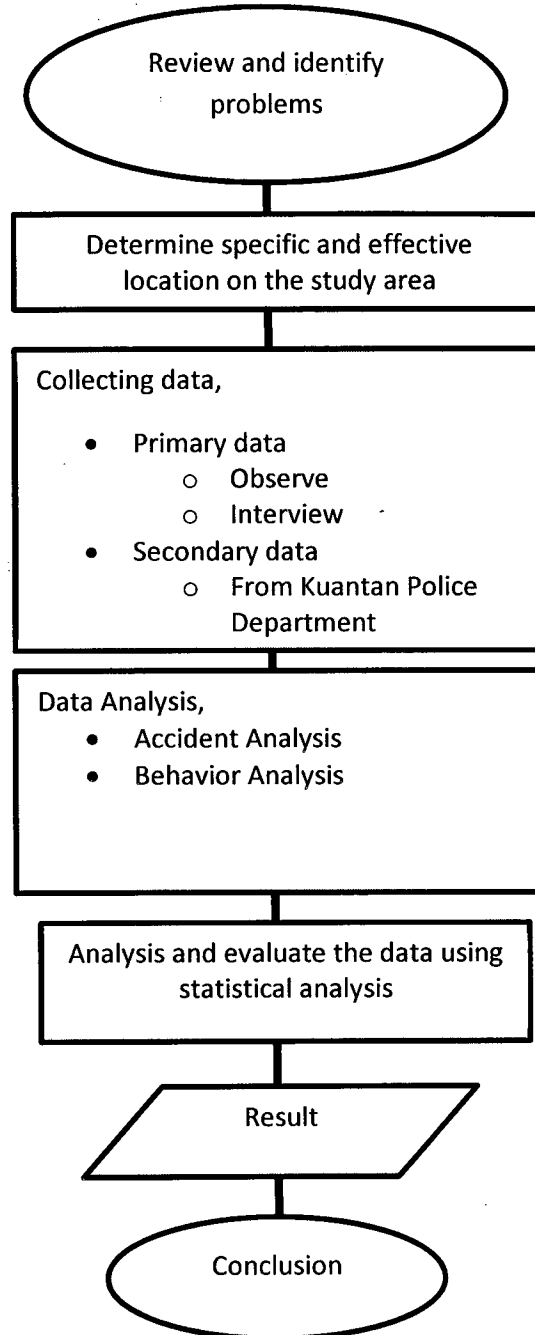
### **STUDY METHODOLOGY**

#### **3.1 INTRODUCTION**

Methodology is the systematic method applied in the field of the study. It is also about choices of what is the information and data to be gathered. Research methodology is very important in order to achieve the objectives of the studies. The data for the research study will be collected and analyze by following steps to ensure results and data collected from the respondents are accurate and reach the target at the desired objectives importance of methodology are also very important in getting a brief and concise way in a data. So, the data were collected and analyzed in four steps as follows:

- Step 1: Collecting traffic accident data for the study area from Kuantan Police Department.
- Step 2: Determine the location for the study site.
- Step 3: Conducting Pedestrian behavior survey at the study site.
- Step 4: Discussing and analysis of the data involving pedestrian based on the finding from the data collection.

### 3.2 FLOW CHART METHODOLOGY



**Figure 3.0:** Flow Chart

Based on the flow chart above, there are four steps that author had divides. The four tranches and each of the description are closely related to the manner of delivery results of this study. Data analyze obtained is very important to ensure that the results will get in the end is true and accurate.

### **3.3 IDENTIFYING PROBLEM**

Nowadays we can see lots of the accident occurred on the road have brought pedestrian as the major death. Pedestrian is one of the road users other than cyclist and motorist. Pedestrian is very vulnerable road users. Every year, there are lots of deaths involved due to an accident between pedestrian and other road users such as vehicles. For an example, the number of causality for pedestrian in Malaysia (2010) includes 626 fatalities, 516 series injured and 1019 light injuries (Royal Malaysia Police, 2010). The study actually should be done on both pedestrians and also drivers.

However, it is very difficult and complicated to do the study on motorist behavior because lots of scientific instrument and analysis involved. So, this why the study is conducted only towards the pedestrian behaviors. The accident probability for pedestrian as road users are occurs regardless day or night and many studies have been done to study the case.

Clearly we can see that in developed country, the level of research for pedestrian and vehicular behavior is quite advanced but in ASIAN country like Malaysia our self, the study is still in preliminary stages.

### **3.4 THE STUDY AREA**

Kuantan city, Pahang are choose to be the area of the study as Kuantan is also known as one of bustling city. In order to find the specific area for the study, the data about accident that occurred in Kuantan is obtaining specifically from the Police Traffic Department. The data obtained is as below.

**Table 3.1: Traffic Accident Data from Kuantan Police Department**

Location of the Accident/Route	2009	2010	2011	2012	2013
Hadapan Nissan	1	0	0	1	0
The Store	1	0	0	1	0
Giant Kuantan	0	1	0	1	0
Pasar Eng Hong	0	0	1	2	0
Balai Polis Traffic	1	0	0	1	0
Sek. Men. Seri Damai	1	0	0	0	1
Sek. Ren. Saint Thomas	1	0	0	0	0
Sek. Men. Paya Besar	1	0	0	0	0
Jalan Gambut	0	1	0	0	0
Jalan Tun Ismail	0	1	1	1	0
Padang Kamunting	1	0	0	0	2
Padang Lalang	0	1	0	0	0
Kg. Kubur Beserah	0	1	0	1	0
Taman Tas	0	1	1	0	1
Batu 6	0	0	2	1	0
Sungai Isap	0	0	2	1	0
Kg. Jawa	0	0	1	0	1

Source: Kuantan Police Department

For the next step, the data need to be organized systematically. The data then are presented or visualized in graph in order to make the analysis easier. From the graph, we can conclude the location with the highest number of accident involves pedestrian and motorist. Next, we will use this location as the area of study.