PEDESTRIAN PERCEPTION TOWARDS SIGNALIZED CROSSING

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Thesis submitted in fulfilment of requirements for the award of the degree of Bachelor of Civil Engineering

Faculty of Civil Engineering & Earth Resources

UNIVERSITI MALAYSIA PAHANG

JUNE 2016

SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Civil Engineering.

Signature :……

Name of supervisor : PUTU MANDIARTHA

Date : 30 June 2016

STUDENT'S DECLARATION

I declare that this thesis entitled — Pedestrian perception towards signalized crossing is the result of my own research except as cited in references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :……

Name : Ahmad Farhan Bin Ahmad Nazri

Date : 30 June 2016

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ABSTRACT

Walking involve interaction between the local environment in a way that is not possible through motor transport. Good, well maintained and safe pedestrian facilities that are comfortable to be used by the pedestrians could encourage people to travel by walking. Different travel purpose usually influences the pedestrian perception towards the existing pedestrian facilities. This paper presents the findings of pedestrian perception towards signalized crosswalk. A questionnaire survey was carried out in order to assess the pedestrian travel purpose and pedestrians' perception of the signalized crosswalk. The survey also investigated pedestrian perceptions of safety, level of understanding, behaviour and other factors that influence levels of compliance at signalized crosswalk. A mix land-use area within the city of Kuantan that consists of shopping mall, public transport service, business centre and education centre were chosen as the study area. This study found that safety of the crossing is the most important factor to pedestrian regardless of their travel purpose. Whereas, aesthetic and amenities are important factor for pedestrians that used the crossing for shopping or leisure purposes and transit commuters. In conclusion, most of the pedestrian satisfied with the existing crossing facilities condition but in different aspect based on the pedestrian’s purposes.

ABSTRAK

Berjalan melibatkan hubungan antara persekitaran setempat dalam cara yang tidak mustahil melalui kenderaan bermotor. Kemudahan pejalan kaki yang berada dalam keadaan baik dan selamat untuk digunakan oleh pejalan kaki boleh menggalakkan orang untuk berjalan. Tujuan destinasi yang berlainan kebiasaannya mempengaruhi persepsi pejalan kaki terhadap kemudahan pejalan kaki sedia ada. Kertas kerja ini membentangkan hasil kajian persepsi pejalan kaki terhadap lintasan berlampu isyarat. Soal selidik dijalankan untuk mengetahui tujuan dan persepsi berkaitan lintasan berlampu isyarat. Soal selidik ini juga menyiasat persepsi pejalan kaki mengenai keselamatan, tahap kefahaman, tingkah laku dan faktor lain yang mempengaruhi tahap pematuhan di lintasan berlampu isyarat. Kawasan campuran di Bandar Kuantan yang terdiri dari pusat membeli belah, kemudahan pengangkutan awam, pusat perniagaan dan pusat pendidikan dipilih sebagai kawasan kajian. Estetik dan kumadahan adalah faktor yang penting bagi pejalan kaki yang menggunakan lintasan untuk tujuan membeli belah, peranginan dan kemudahan transit. Kesimpulannya, kebanyakkan pejalan kaki berpuas hati dengan keadaan kemudahan lintasan pejalan kaki yang sedia ada tapi dalam aspek yang berbeza bergantung pada tujuan mereka.

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CHAPTER 1

INTRODUCTION

1.1 Background of study

Road accidents were the third highest cause of death among Malaysians after heart diseases and cancer (Men's Health, 2006). Malaysia road accident statistics reported that 25 of every 100,000 Malaysians died in year 2003 alone (PDRM, 2004). Accident involving motorcyclists is the highest among all road users. This is followed by car drivers including passengers, and pedestrians. Pedestrians form an integral part of the urban transportation system and probably will remain as one of the most important mode of transport in the urban environment. Moving on foot will continue to be the feeder mode between any particular trip origin and final destination. Very short trip lengths within the urban environment would be more appropriate by walking as compared to taking a taxi or a bus so long as the facilities are being provided. Provisions of adequate and safe pedestrian facilities in the urban setting would arguably encourage more people to walk, thus increasing the pedestrian traffic. The pedestrian is often the most vulnerable of all transportation system users, and frequently the most overlooked. Accidents between pedestrians and vehicles are examined in terms of minimizing conflict between the two modes, not necessarily maximizing access for either. Despite this growing literature which highlights the impact interventions into the traffic environment on pedestrian behaviour, there is still a lack of knowledge surrounding the relationships between traffic conditions and pedestrian behaviour that

determine the extent of the barrier effects experience by pedestrians (Hine and Russell, 1993). In Malaysia, how a street or *jalan* accommodates social activities and functions is central to its role in echancing the image of the city and its identity (Shamsuddin and Sulaiman, 2002).

1.2 Problem statements

Sidewalks are important parts of a "Complete Street", a national initiative to plan, design, build, and maintain a street for all users, and not just for motor vehicles. An improvement on conditions for pedestrians along existing roads have wide ranging impacts on pedestrians safety in general including public transportation services, children walk to school, people walk for local trips, and perhaps most importantly whether people walk for general health. In addition, walking is in many instances not a choice, except for people with disability, does not own or have use of a motor vehicle, or is too young or otherwise unable to drive. Some of the state agencies just built sidewalks that were too narrow, built right adjacent to a busy road with no buffer, or were cluttered with a host of obstacles such as utility poles, fire hydrants, traffic signal poles, irrigation structures, utility boxes, and other barriers making them undesirable for use for ambulatory pedestrians and often not usable by those pedestrians in wheelchairs. The absence of sidewalks forces pedestrians to walk in the roadway and often causes pedestrians to cross at less than desirable locations, leading to a higher pedestrian crash risk. Furthermore, lack of understanding between pedestrian and motorist also one of the problem. 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. So the purpose of this study is to study pedestrians' behaviour and pedestrian facilities quality.

1.3 Research objective

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

I. To study user behaviour's and perception's towards signalized pedestrians facilities.
II. To obtain information about pedestrian's needs for the characteristics of pedestrian quality.

1.4 Scope of works

The study is focused on the area with the signalized pedestrian crossing in Kuantan. The respondent involved will be the pedestrian using the facilities. The number of respondent is 50. Number of respondents was divided by 2 areas. The respondents were interviewed and observed by researcher.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses and explores some techniques in estimating pedestrian's compliance behaviour which is a novel approach to this research. This design of this research is based on those techniques as well as benefited from intensive discussions of those; as deliberated below.

Considerable research has been undertaken in the very recent years addressing the problem of pedestrian crossing behaviour (Hamed, 2001; Sisiopiku and Akin, 2003; Zeeduk and Kelly, 2003; Keegan and O'Mahony, 2003; Ahuja, 2007). Beyond the pedestrian crossing behavioural problem, studies on pedestrian perceptions and attitudes towards facilities for pedestrians are reported in the literature. Among the recent studies are by (Hine, 1996), (Hine and Russell, 1996) and (Russell and Hine, 1996) that published the impact of traffic on behaviour and perceptions of safety by pedestrians. Another study that linked, reported the attitudes of pedestrians in Beijing, China, towards the sufficiency of crossing facilities with the willingness of pedestrians to use them (Tanaboriboon and Jing, 1994). The study compared signalised intersection pedestrian crossings to overpass and underpass counterparts and concluded that users preferred the signalised crossings to the overpass or underpass crossings.

Another research reported that the levels of compliance with pedestrian signals at two study locations were 70% and 57% (Rouphail, 1984) performed a user compliance and preference study on marked stand-alone crossings in downtown Columbus, Ohio. The preference study indicated that users perceived the un-signalised marked stand-alone crossings to be unsafe. However, the same crossings were rated highest with respect to crossing convenience. Pedestrian crossing compliance rates at the signalised and un-signalised stand-alone crossings were about 85%.

Similar crossing compliance studies were carried out in Europe. Pedestrian push buttons at signalised crossings are commonly used to regulate pedestrian crossing demand and to decrease conflicts between pedestrians crossing and vehicles passing through designated crossings; hence, to
increase safety. Pedestrians are supposed to register their demand manually by activating the push-button when they wish to cross a street in a conflict-free phase; however, they frequently do not do so (Carsten et al., 1998).

Davies (1992) observed pedestrian compliance with the pushbutton installed at signalised crossings in the UK and presented that more than half of the pedestrians did not activate the push button to cross. The compliance with the device was 49% in a small town, while in London the rate was 27%. In another location in Toulouse, push button compliance was as low as 18% (Levelt, 1992). Jacobs, Sayer, and Downing (1981) compared road user behaviour at traffic signals, uncontrolled pedestrian crossings and priority junctions in a number of cities in developing countries with similar observations in Great Britain.

Ahuja et al (2007) made a comparison study between two cities (Birmingham, UK and San Francisco, USA) to identify any differences in pedestrian behaviour and

perceptions around signalised traffic intersections. Sisiopiku and Akin (2003) present findings from an observational study of pedestrian behaviour at various urban crosswalks and a pedestrian user survey which sought pedestrian perceptions of various pedestrian facilities in a divided urban boulevard located next to a large university campus, Michigan State University. It was found that un-signalised stand-alone crossings were preferred by pedestrians (83% reported a preference to cross) and also showed high crossing compliance rate of pedestrians (71.2%).

Besides previous studies covering general pedestrian crossing behaviour, some studies focused on the crossing behaviour of particular. Bernhoft (2003) carried out a risk perception and behaviour study of elderly pedestrians in Denmark. The analysis indicates that the elderly observe and comply with pedestrian crossings, signalised intersections and cycle paths significantly more than do other groups. They are more likely to feel that it is dangerous to cross the road where these facilities are missing. Furthermore, elderly pedestrians find the presence of a sidewalk very important on their route whereas the control group more often chooses the fastest route.

Zeedyk and Kelly (2003) intended to observe unobtrusively the behaviours of adult-child pairs as they crossed at pedestrian crossings with signal control. Results showed that the adults observed provided reasonably good models of pedestrian behaviour, but that they rarely treated the crossing events as an opportunity to teach children explicitly about road safety. The only gender difference to emerge revealed that adults were more likely to hold girls' hands than boys' hands. No differences were observed in relation to the (estimated) age of child.

In summary, through the literature review the following influential factors which can affect pedestrian compliance with pedestrian signals are revealed:

- Infrastructure of the pedestrian crossing facilities (physical layout; such as refuge island and guard rail)
- Age
- Crossing status (unaccompanied or accompanied): if crossing with children or with heavy luggage, pedestrian may show different crossing behaviour
- Travel purpose (destination): shopping, home-to-work, school
- Traffic conditions
- Wait time for “Green”

All these factors were considered in the research design of study to understand pedestrian crossing behaviour at signalised pedestrian crossings.

2.2 Pedestrian behavioural level

Pedestrian behaviour has been categorized into three different levels namely strategic, tactical, and operational levels (Hoogendoorn *et al.* 2002; Daamen 2004). An overview of these levels of behaviour is given in Figure 1.

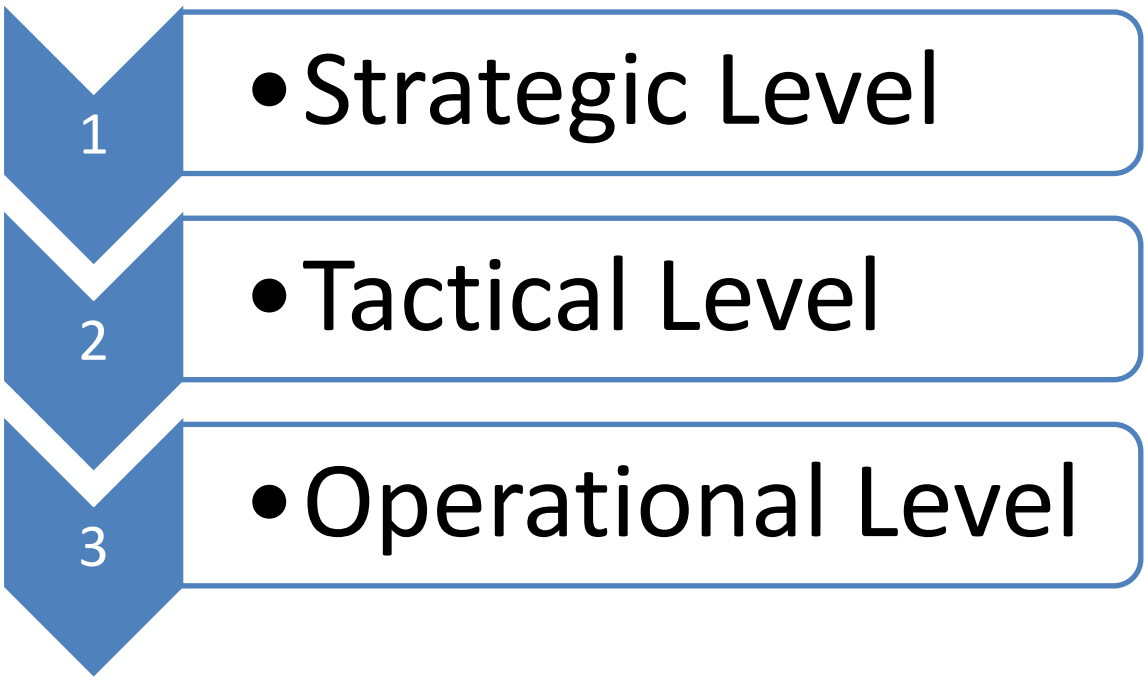

Figure 2.1 : Pedestrian behaviour levels

At the strategic level, long-term decisions are made. Pedestrians decide on the activities they intend to do. These activities can be either mandatory or optional such as buying a cup of coffee. Generally, decision process related to before-trip period takes place at this level. Short-term decisions are made at tactical level, taking into account the goals set at strategic level and based on the information about the network and existing routes and conditions. These decisions include the performance order of activities selected at strategic level and activity scheduling, activity area choice, and route choice between the origin and the intermediate or final destination of pedestrian. The decision making process at this level is affected by two categories of external and internal factors. Internal or personal factors include pedestrian characteristics such as age, gender, attitude, trip purpose, and time-pressure. External factors include, among others, infrastructure and environmental conditions, presence of obstacles, timetables, as well as macroscopic characteristics of traffic flow such as average speed and congestion. At the operational level, the instantaneous decisions are made, in accordance with the objectives set at tactical level. Decisions at this level describe pedestrian walking behaviour including pedestrian's acceleration behaviour (*i.e.,* walk fast or slow), direction change behaviour, reactions to slow pedestrians or obstacles, deciding if wait or perform activities, and avoiding collisions. Interaction of pedestrians with each other plays an essential role at this level (Schadschneider *et al.* 2009; Daamen 2004; Hoogendoorn & Bovy 2001; Sahaleh *et al.* 2012).

It is usually assumed that strategic and tactical decisions are exogenous to the pedestrian simulation. Information from other areas such as sociology and psychology is needed to investigate the decision making process at these levels. However, in the literature exists only a few sources on activity choice set generation, activity scheduling, and activity location choice in urban areas (*e.g.,* Timmermans *et al.* 1992; Borgers & Timmermans. 1986). Nevertheless, a vast literature exists on route choice behaviour. Many studies

have been focused on this important step of pedestrian behaviour *modelling*. Network and route characteristics such as the number of available routes, walking distance, route attractiveness, route straightness, crowd density, safety, surface condition, air and noise pollution, and the distance to obstacles, together with personal characteristics such as pedestrian's decision making style, age, and gender, as well as trip characteristics like the purpose of the trip are factors affecting route choice behaviour (Daamen 2004). Walking distance and walking time are the parameters being identified to greatly affect pedestrian route choice behaviour. Most route choice set generation approaches are on the basis of shortest or quickest path algorithms. Pedestrian route choice models are usually constituted of different types of discrete choice models and are based on random utility maximization theory. Borgers & Timmermans (1986); Hughes (2000); Hoffmann (2000); Hoogendoorn & Bovy (2004); Cheung & Lam (1998); and Daamen (2005), among others, have studied passenger route choice behaviour.

Strategic and tactical levels are considered exogenous to the model discussed in this thesis. Therefore, these levels of pedestrian behaviour are not discussed any further in the remainder of this thesis. The decisions made by pedestrian in order to arrive at the walking facility, as well as pedestrian arrival patterns, pedestrian route choice, and etc. have not been considered and are assumed known a priori.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The study was carried out in Kuantan. Kuantan is selected due to its high population and corresponding pedestrian activities and high capacity of pedestrian crossing. A total of two study locations were selected within the study area to represent one types of crosswalk: signalised crosswalk. However, the selected sites are not similar in terms of traffic volume and numbers of lane. For this study, the signalised crosswalk is defined as a crosswalk with provision for pedestrian crossing by assigning the right of way using traffic device, such as signal timing.

A total of 50 samples were collected both at signalised crosswalk during daytime and night time. The samples are further broken down into various age categories such as, children (4-11 years old), teen (12-18 years old), adult (22-60 years old), elderly (61 years old and above). For each of the category, samples are taken with consideration given on equalities of gender. For age group, children are classified as pedestrian with age less than 12 years old. This range of age is recognised by United Nations Children's Fund (UNICEF) as teenager or children. While pedestrian with age more than 61 years old is classified as elderly or senior citizen, and this is the retirement age for Malaysian.

The data was collected through the use of data acquisition form, which consisted of two parts, namely as general information and pedestrian characteristics. In the general information part, some information such as environmental factors, traffic conditions, study location layout and some contributing factors were gathered. Whereas, in the second part, pedestrians crossing speed correspond to the pedestrian characteristics, such as gender and age will reported.

Observations are the second method to complete this study. Pedestrian's behaviour was observed. During the observation, the researcher stand near the study area and recorded the activities, the people involved, their locations and their postures. Three observations will conduct during the daytime.

3.2 Survey approach

In order to collect a comprehensive set of data the study was do into one part; Part I a programme of face-to face interviews. Part I, the main part of the study, concentrated on non-compliance such as pedestrian behaviour during "red" or "blackout/flashing green" phases. For the "Pedestrian Green" signal phase the survey measured the incidence of: pedestrians crossing within the designated crossing area, running across the intersection and walking diagonally across the intersection.

The face-to-face interviews investigated perceptions and reasons behind compliance and non-compliance and also trade-offs between crossing scenarios and the perception of safety using a stated preference game. The last section of the main survey also recorded respondent's actual behaviour and their observed profile.

The face-to-face survey form is contained in Appendix 1. The questions investigated various elements of behaviour: first of all, questions about actual pedestrian crossing behaviour were presented to respondents, including “where did they cross?” and “did they observe pedestrian signals?”. Some attitudinal questions were also asked, such as perceived maximum waiting time and attitudes to different pedestrian signal sequences.

3.3 Study area

The area was focused on the highest rate of pedestrians involve in Kuantan.

Figure 3.1 : Maps of site area

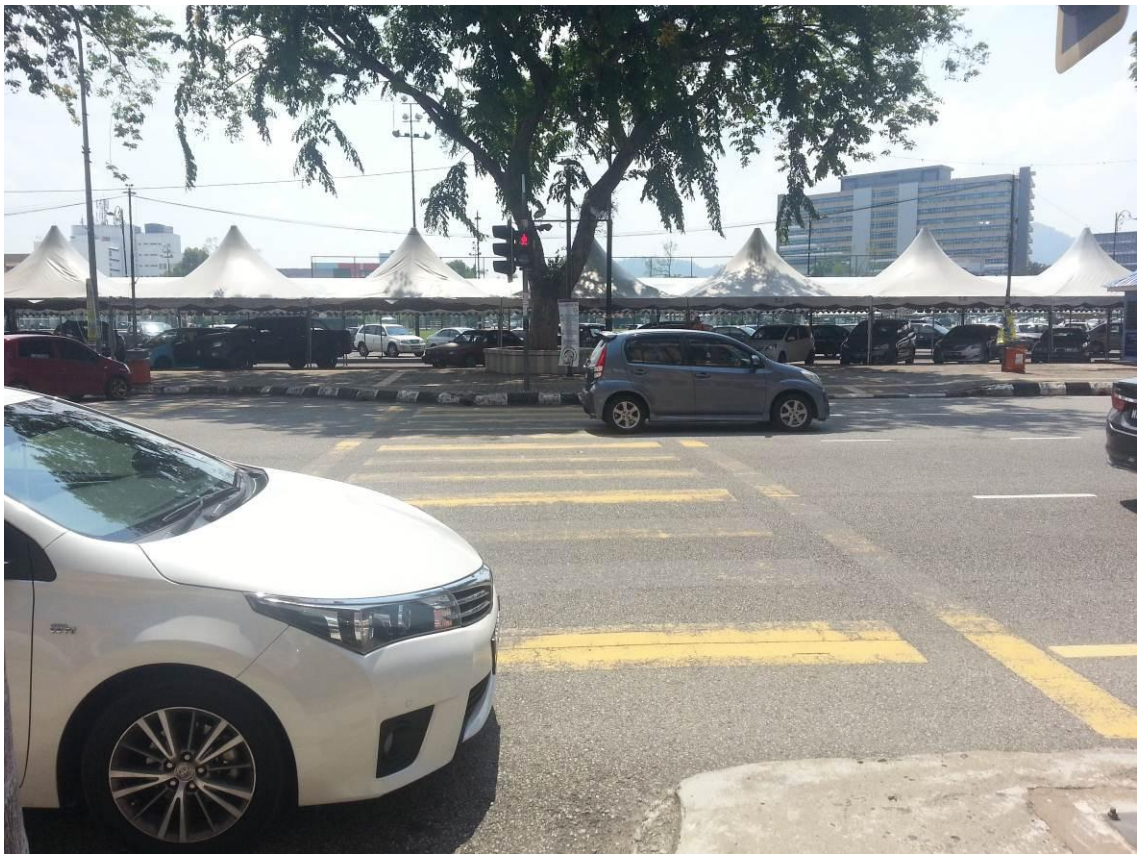

Figure 3.2: Signalized crossing at Jalan Mahkota

Figure 3.3: Signalized crossing at Jalan Bukit Sekilau

3.4 Flow chart methodology

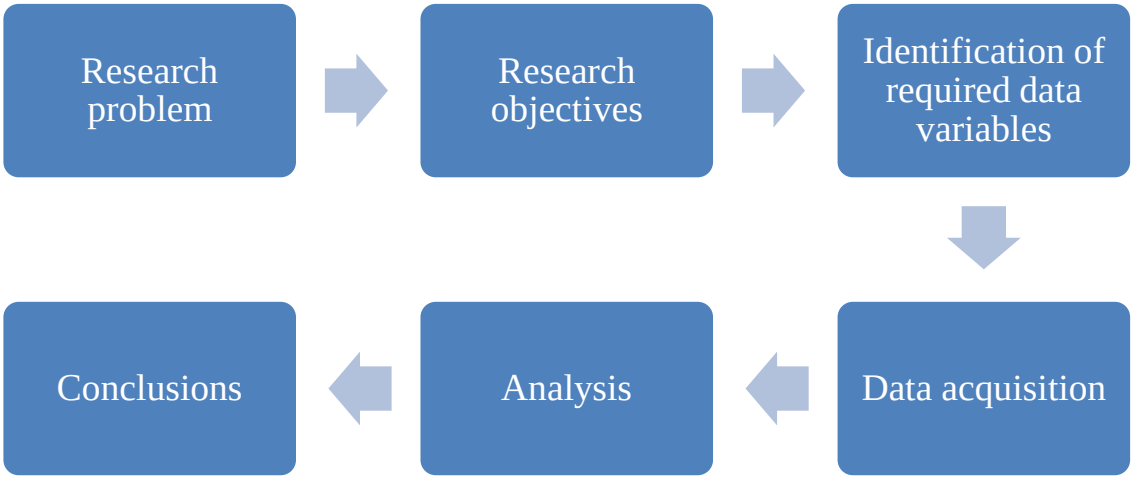

Figure 3.4 : Methodology chart

CHAPTER 4

RESULT AND DISCUSSION

4.1 Introduction

The questionnaire gives information on the pedestrian perception towards crossing facilities. The accent is placed on subjective safety and feelings of comfort. Comprehension can increase with experience and with publicity. Questions are asked about these aspects.

As previously discussed, two questionnaires were held:

#1. Signalized crosswalk at Jalan Mahkota

#2. Signalized crosswalk at Jalan Bukit Sekilau

4.2 Composition of sample

Table 4.1 presents the composition of the two samples, broken down by age, gender, and race. More women were interviewed.

Crossing	Signalized (#1)		Signalized (#2)	
	N	%	N	%
All	25	100	25	100
Age				
<20	4	16	4	16
20-29	14	56	10	40
30-39	4	16	9	36
40-49	3	12	2	8
50-59	0	0	0	0
60>	0	0	0	0
Race				
Malay	20	80	13	52
Chinese	2	8	10	40
India	3	12	2	8
Gender				
Male	6	24	4	16
Female	19	76	21	84

Table 4.1: Composition of sample

4.3 Purpose of journey

For signalized crossing #1, 28% of the pedestrians said they were having a lunch (See Table). 'Work' (24%), 'Shopping' (20%), ‘Personal matter’ (16%), ‘Business matter’ (8%) and ‘Home’ (4%). For signalized crossing #2, 28% of the pedestrians said they were shopping. 16% for home. 12% for work, health appointment and personal matter. For other 20% are for other main categories.

Crossing	Signalized #1		Signalized #2	
	N	%	N	%
All	25	100	25	100
Home	1	4	4	16
Work	6	24	3	12
Business	5	20	2	8
Education	0	0	7	28
Shopping	5	20	7	28
Food	7	28	2	8
Health	0	0	3	12
Personal matter	4	16	3	12
Total	**25**	**100**	**25**	**100**

Table 4.2: Purpose of journey

4.4 Crossing behaviour

Generally, all respondents in signalized crossing, they were all observe and wait the pedestrian light turn to green before crossed. This shows people still take safety as a first priority in life. For signalized crossing #1, 56% said they press the button and wait for the green light. 44% said they did not press the button because of someone else had done it first. Same goes to the signalized crossing's respondents #2.

Crossing	Signalized #1		Signalized #2	
	N	%	N	%
All	25	100	25	100
Crossing behavior in general				
Observe the light before cross	25	100	25	100
Did not observe the light	0	0	0	0
Unsure	0	0	0	0
Press button normally				
Yes, and wait for the green light	14	56	22	88
Yes, and did not wait the green light	0	0	0	0
No, someone else has done it	11	44	3	12
No	0	0	0	0

Table 4.3: Crossing behaviour

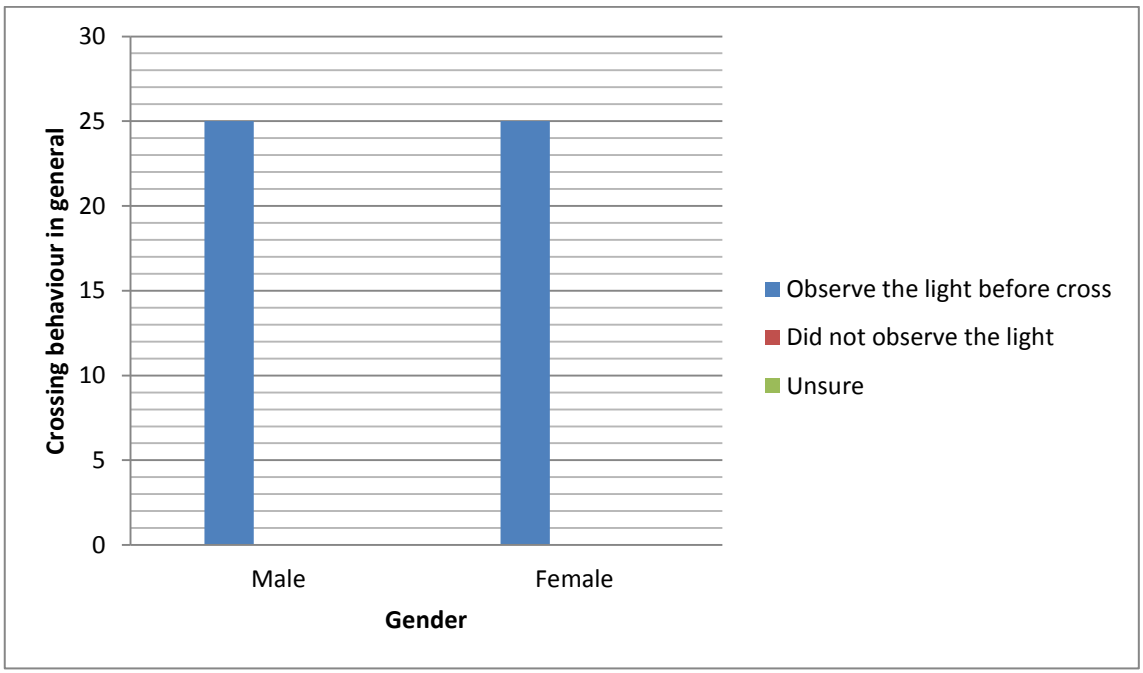

Figure 4.1: Crossing behaviour in general related to gender

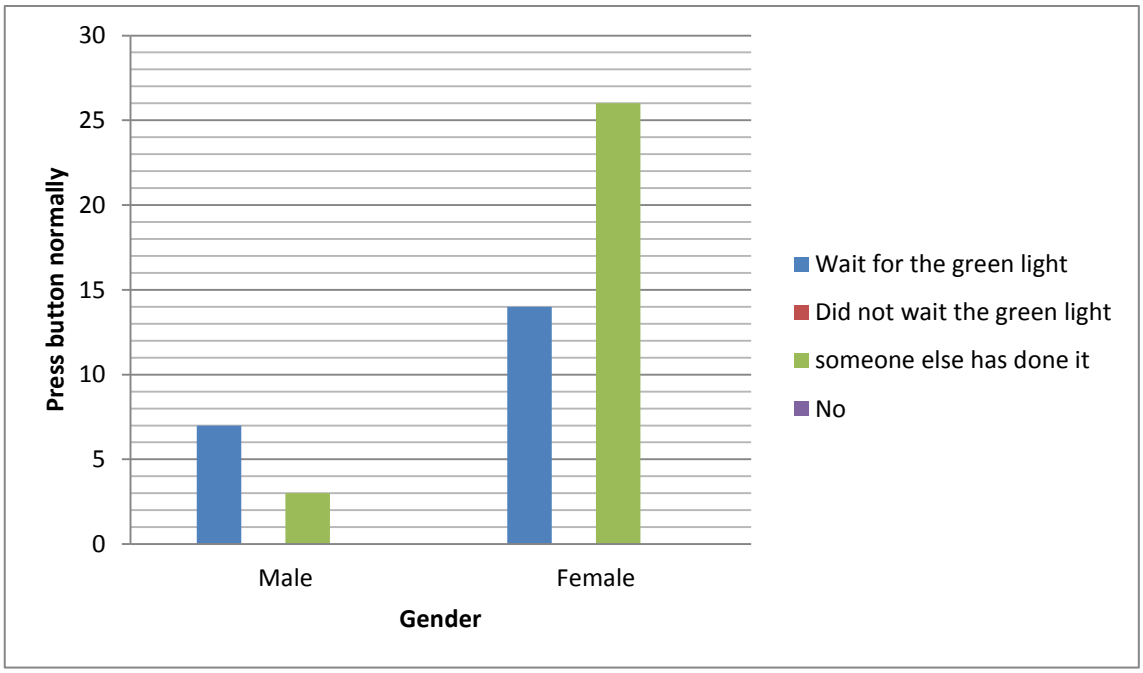

Figure 4.2: Press button normally related to gender

Figure 4.1 shows all respondent still beware about safety. No matter what gender they are. This is because; they observe the light at pedestrian light before crossing. Figure 4.2 shows both gender only do 2 options before crossing. They press the button and wait for the green light to crossing.

4.5 Reasons

Questions were asked on reasons they crossing on the signalized crosswalk.

Crossing	Signalized #1		Signalized #2	
	N	%	N	%
All	25	100	25	100
<u>Felt safe</u>				
Not agree	1	4	5	20
Not sure	0	0	0	0
Agree	24	96	20	80
<u>I tend to obey the rule</u>				
Not agree	0	0	0	0
Not sure	0	0	0	0
Agree	25	100	25	100
<u>I bring children</u>				
Not agree	5	20	4	16
Not sure	0	0	0	0
Agree	20	80	21	84
<u>I bring luggage/big bag/trolley</u>				
Not agree	2	8	25	100
Not sure	0	0	0	0
Agree	23	92	0	0

Table 4.4: Reasons of pedestrian choosing signalized crossing

Figure 4.3 : Reasons related to gender

Figure 4.4 : Reasons related to gender

4.6 Information and understanding of pedestrian

Every people that have been interviewed have knowledge about pedestrian facilities. This means the facilities is easy to understand. This shows that 100% of respondent understand the pedestrian signal (See Table 4.5). 72% of the respondent agreed that the time to crossing the road are enough. From the responses to the question on maximum waiting time, there appears to be a higher percentage of people who perceive the waiting time to be 10 to 15 second (See Table 4.5).

	N	%
All	50	100
Are the pedestrian signals easy to understand?		
Yes	50	100
No	0	0
Unsure	0	0
Is the time to crossing enough?		
Yes	36	72
No	6	12
Unsure	8	16
Are the pedestrian signals in the right place?		
Yes	45	90
No	3	6
Unsure	2	4
Maximum waiting time for pedestrian to crossing(s)?		
5	11	22
10	14	28
15	14	28
20	11	22
Other pedestrian facilities that needed to make the environment safer?		
Pedestrian island	41	82
Pedestrian barrier	46	92
Diagonal crossing	13	26

Table 4.5: Information and understanding of pedestrian

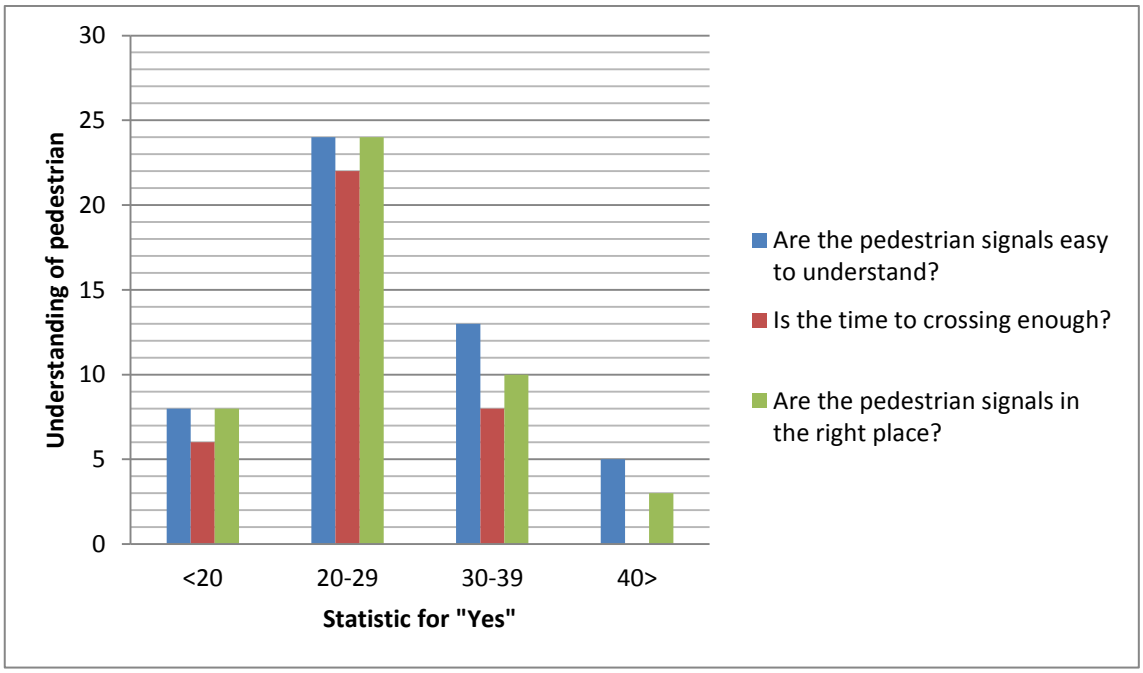

Figure 4.5 : Understanding of pedestrian

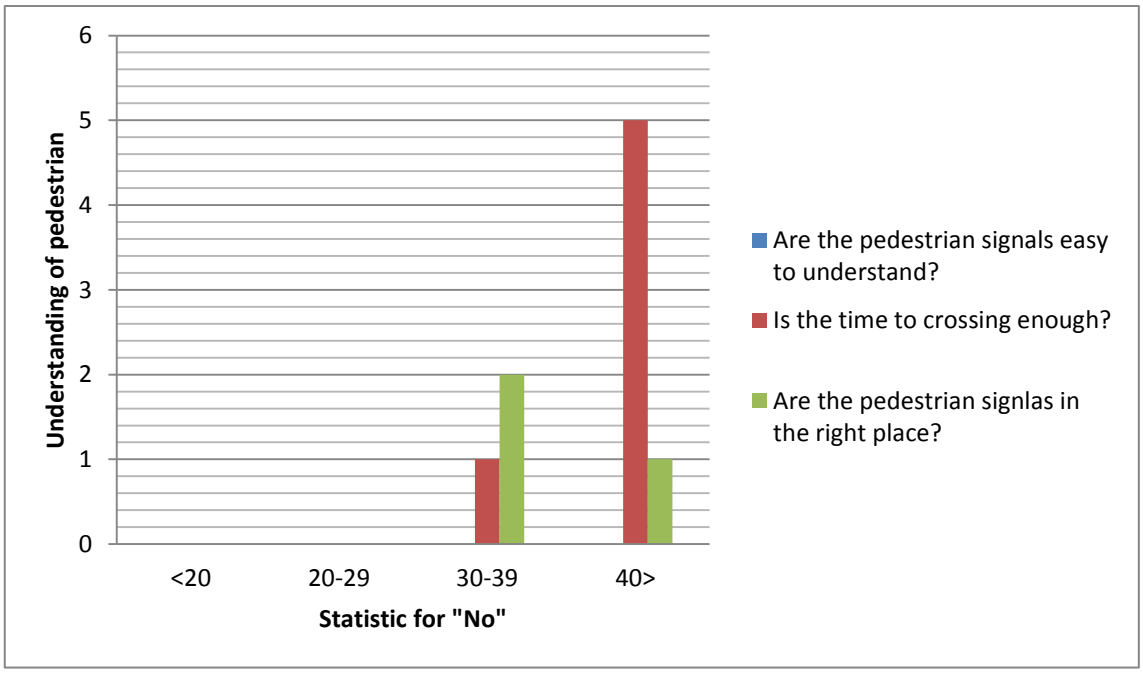

Figure 4.6 : Understanding of pedestrian

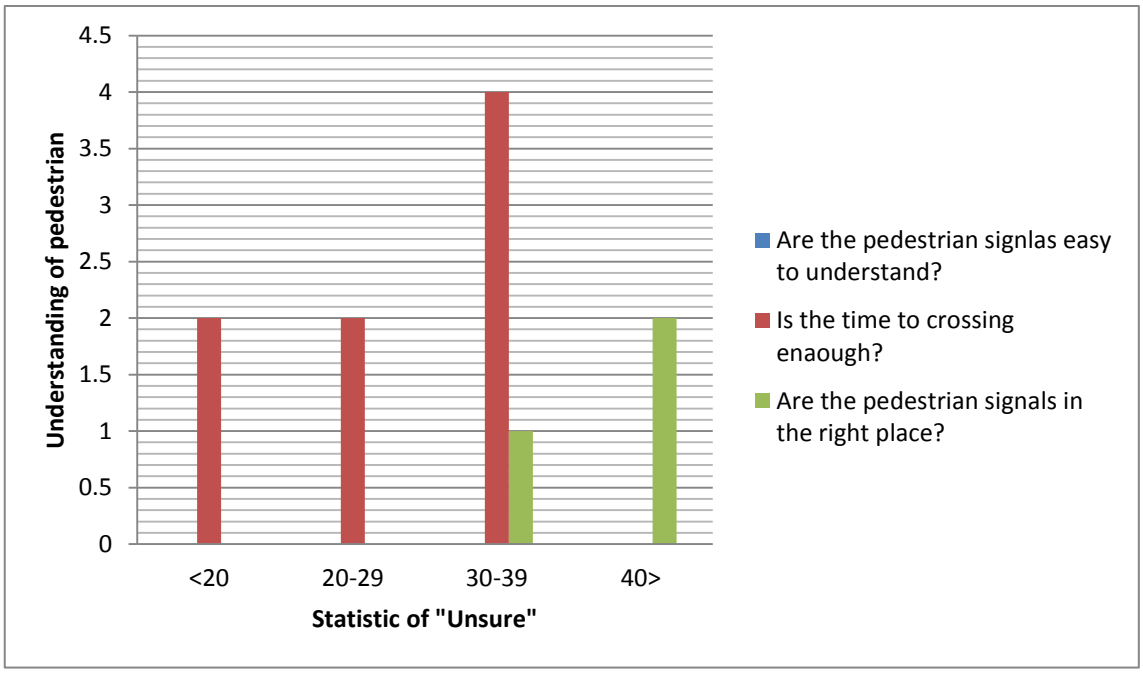

Figure 4.7 : Understanding of pedestrian

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

An in-depth understanding of pedestrian crossing behaviour was the main focus of this study. The patterns of crossing behaviour investigated throughout this study include pedestrian observational behaviour, compliant behaviour with traffic rules and gap-acceptance. This study was conducted at Kuantan, Pahang. The selected pedestrian crossings are located at signalised crossing. Behavioural data were collected by means of two techniques: image taping and survey. This chapter presents the main conclusions from the analysis of the results presented in Chapter 4.

5.2 Race

Race was found as a non-contributing variable in influencing the pedestrian behaviour. There is no relationship amongst race and pedestrian behaviour. Maybe, most Malaysian has comparative way of life here and they act and practice very close conduct while on street. This might be the motivation behind why there is no relationship between race and person behaviour.

5.3 Age

There is a noteworthy distinction as far as age and person on foot understanding. Discoveries show that elderly person on foot, with age more noteworthy than 40 years of age, are liable to walk slower. This clarifies why person on foot mishap primarily includes elderly walker. Lacking time to cross securely may prompt street mischance including elderly person on foot and the roadway configuration ought to consider this. Comparable discoveries were likewise bolstered by Tanaboriboon et al. (1986); Tanaboriboon and Guyano (1991); Morrall et al. (1991); Bowman and Vecellio (1994); Knoblauch et al. (1996); Oxley et al. (1997) and Tarawneh (2001).

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APPENDIX A1

BAHAGIAN A : LATAR BELAKANG RESPODEN

Arahan : Tandakan (√) pada petak yang disediakan.

Jantina :

Lelaki	
Perempuan	

Umur :

≤ 20 Tahun	
20-29 Tahun	
30-39 Tahun	
40-49 Tahun	
50-59 Tahun	
≥ 60 Tahun	

Bangsa :

Melayu	
Cina	
India	
Lain - lain	

Nyatakan jika lain – lain :

BAHAGIAN B :

TINGKAH LAKU DAN PERSEPSI RESPONDEN TERHADAP KEMUDAHAN LALU LINTAS

Arahan : Tandakan (√) pada petak yang disediakan.

S1. Dimanakah destinasi anda (Tujuan perjalanan)

Rumah		Makan	
Tempat kerja		Rekreasi	
Urusan perniagaan		Urusan kesihatan	
Pendidikan		Urusan peribadi	
Membeli belah		Lain - lain	

Nyatakan jika lain- lain :

S2. Adakah anda biasa berjalan di sekitar kawasan ini?

	Ya		Tidak		Kurang pasti

S3. Adakah anda perhati keadaan (warna) lampu pejalan kaki ketika anda hendak melintas jalan?

	Ya		Tidak		Kurang pasti

S4. Adakah anda menekan butang lampu pejalan kaki sebelum melintas?

Ya. Saya menekan dan menunggu sehingga lampu merah bertukar hijau.	
Ya. Saya menekan dan terus melintas tanpa menunggu lampu merah bertukar hijau.	
Tidak. Orang lain yang menekan.	
Tidak.	

Arahan : Tandakan (√) pada petak yang disediakan. Skala di bawah ialah rujukan kepada aras persetujuan tersebut.

Tidak Setuju	Kurang Pasti	Setuju
1	2	3

S5. Sila pilih sebab yang membuatkan anda menyeberangi lintasan pejalan kaki di kawasan yang ditetapkan. (Tanda satu kotak bagi setiap kenyataan)

Kenyataan	1	2	3
Saya berasa selamat			
Saya cenderung mematuhi peraturan lintasan pejalan kaki			
Saya membawa anak kecil			
Saya membawa bagasi/beg besar/troli			

BAHAGIAN C : MAKLUMAT TENTANG KEPERLUAN PENGGUNA PEJALAN KAKI

Arahan : Tandakan (√) pada petak yang disediakan.

S6. Adakah isyarat lalu lintas pejalan kaki mudah difahami?

	Ya		Tidak		Kurang pasti

S7. Adakah masa untuk melintas mencukupi?

	Ya		Tidak		Kurang pasti

S8. Pada pendapat anda, adakah anda rasa isyarat pejalan kaki disediakan di tempat yang sesuai?

	Ya		Tidak		Kurang pasti

S9. Berapakah masa menunggu yang maksimum (saat) bagi pejalan kaki untuk melintas dari pandangan anda?

S10. Pada pendapat anda, apakah kemudahan yang diperlukan untuk menjadikan persekitaran pejalan kaki lebih selamat? (Boleh tanda lebih dari satu)

Pulau pejalan kaki	
Penggunaan hadangan	
Lintasan pepenjuru	

SEKIAN, JUTAAN TERIMA KASIH ATAS KERJASAMA YANG TELAH DIBERIKAN DALAM MENJALANKAN KAJIAN INI