

# USERS' PERCEPTION AND BEHAVIOUR AT JALAN TAPAH A10, PERAK

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## **DEDICATION**

This project is dedicated to my father Sheikh Ahmad Sheikh Long, who taught me that every path on this journey doesn't matter it is hard or easy just make sure to go through it.

It is also dedicated to my beloved mother Noraini Jaafar, who told me to try your best and never give up in any situation because Allah s.w.t is always there for us.

To my wife Intan Baiduri Ariffin and children's, that has been very understanding and fullest support from the start to the finish of this project report during countless hours.

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## ABSTRACT

Tapah Road A10 is one of the rural areas with the large population in Perak which is above 10,000 persons. A10 road is a major road and it has more than 26 minor road access that attach to the junction. The area has a rapid development build around the main road hence the traffic congestion. Furthermore, according on the accident report from Tapah Police Traffic, road accident at the study location was increased from 69 cases to 100 from 2015 until 2018. Therefore, this study was conducted to evaluate users' perception and behaviour at the junction. The data collection takes about one month and is done continuously every day. First, observation study at the junction was conducted, followed by survey distribution and spot speed study. The survey distribution and spot speed study were conducted at the junction during peak hour. 200 respondents were obtained in the questionnaire survey. Spot speed study was conducted at the junction using radar gun. It was found that most of the road users are not satisfied with the travelling experience at the junction. Gap analysis has shown that the gap between users' satisfaction and users' expectation is more than 50%. Most of road users travelled at a lower speed compared to their expectation level. This is supported by the results of spot speed analysis which show that mean speed, median speed, 85<sup>th</sup> percentile speed and pace have all below the 80 km/hr speed limit. In addition, 85<sup>th</sup> percentile speeds of them drive at 77.50 km/hr or below. Results of this study can be used to answer the question that always plagued by the residents of the area. This study has obtained the perception from the road users' point of view. It is recommended to obtain experts' point of view to compliment the findings, so that effective mitigation strategies could be implemented better.

## ABSTRAK

Jalan Tapah A10 adalah salah satu kawasan pedalaman dengan jumlah penduduk yang besar di Perak yang melebihi 10,000 orang. Jalan A10 adalah jalan utama dan ia mempunyai lebih daripada 26 akses jalan kecil yang bersambung di persimpangan. Kawasan ini mempunyai pembangunan pesat yang dibina bersebelahan jalan utama sehingga kesesakan lalu lintas berlaku. Tambahan pula, berdasarkan laporan kemalangan dari Trafik Polis Tapah, kemalangan jalan raya di lokasi kajian meningkat daripada 69 kes kepada 100 dari 2015 hingga 2018. Oleh itu, kajian ini dijalankan untuk menilai persepsi dan tingkah laku pengguna di persimpangan. Pengumpulan data mengambil masa kira-kira satu bulan dan dilakukan secara berterusan setiap hari. Pertama, kajian pemerhatian di persimpangan dijalankan, diikuti dengan pengedaran borang kaji-selidik dan kajian kelajuan setempat. Kajian pengedaran borang kaji-selidik dan kajian kelajuan setempat dijalankan di simpang semasa jam puncak. Seramai 200 responden telah diperolehi dalam tinjauan soal selidik. Kajian kelajuan setempat dilakukan di persimpangan menggunakan pistol radar. Didapati bahawa kebanyakan pengguna jalan raya tidak berpuas hati dengan pengalaman perjalanan di simpang itu. Analisis Gap digunakan untuk menunjukkan bahawa jurang antara kepuasan pengguna dan jangkaan pengguna lebih daripada 50%. Kebanyakan pengguna jalan raya mengembara pada kelajuan yang lebih rendah berbanding tahap jangkaan mereka. Ini disokong oleh hasil analisis kelajuan setempat yang menunjukkan bahawa kelajuan rata-rata, kelajuan median, kelajuan persentil ke-85 dan kadarnya berada di bawah had kelajuan 80 km / jam. Selain itu, kelajuan persentil 85 mereka memandu pada 77.50 km / jam atau lebih rendah. Keputusan kajian ini boleh digunakan untuk menjawab persoalan yang selalu dihadapi oleh penduduk di kawasan tersebut. Kajian ini telah mendapat persepsi dari sudut pandangan pengguna jalan raya. Adalah disyorkan untuk mendapatkan pandangan pakar untuk memuji penemuan, supaya strategi mitigasi yang berkesan dapat dilaksanakan dengan lebih baik

## TABLE OF CONTENTS

	<b>TITLE</b>	<b>PAGE</b>
	<b>DECLARATION</b>	<b>iii</b>
	<b>DEDICATION</b>	<b>iv</b>
	<b>ACKNOWLEDGEMENT</b>	<b>v</b>
	<b>ABSTRACT</b>	<b>vi</b>
	<b>ABSTRAK</b>	<b>vii</b>
	<b>TABLE OF CONTENTS</b>	<b>viii</b>
	<b>LIST OF TABLES</b>	<b>xii</b>
	<b>LIST OF FIGURES</b>	<b>xiii</b>
	<b>LIST OF ABBREVIATIONS</b>	<b>xvi</b>
	<b>LIST OF SYMBOLS</b>	<b>xvii</b>
	<b>LIST OF APPENDICES</b>	<b>xviii</b>
<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	Introduction	1
1.2	Problem Statement	4
1.3	Aim and Objectives	4
1.4	Scope of Study	5
1.6	Importance and Contribution of Study	5
<b>CHAPTER 2</b>	<b>LITERATURE REVIEW</b>	<b>7</b>
2.1	Introduction	7
2.2	Travel Demand	7
2.3	Traffic Congestion	9
2.4	Junction Performance	12
2.5	Users' Behaviour at Junction	13
2.5.1	Demographic	14
2.5.1.1	Peak-hour	14
2.5.1.2	Age	14

2.5.1.2	Gender	14
2.6	Speed Study	15
2.7	Mitigation Measure	20
2.7.1	Transportation measure	22
2.7.2	Financial Measure of New Department	23
2.8	Land Use	24
2.9	Stratified Sampling Method of Survey Distribution	24
2.10	Summary	25
<b>CHAPTER 3</b>	<b>RESEARCH METHODOLOGY</b>	<b>27</b>
3.1	Introduction	27
3.2	Site Description	29
3.3	Data Collection	30
3.3.1	Observation Method	30
3.3.2	Survey Method	31
3.3.2.1	Questionnaire	35
3.3.3	Spot Speed Study	38
3.4	Data Analysis	39
3.4.1	Observation Analysis	39
3.4.2	Survey Analysis	40
3.4.3	Gap Analysis	41
3.4.4	Spot Speed Study Analysis	41
3.5	Summary	43
<b>CHAPTER 4</b>	<b>FINDING AND DISCUSSION</b>	<b>45</b>
4.1	Introduction	45
4.2	Observation Result	45
4.2.1	Peak hour, 7.00 am – 9.00 am	46
4.3	Survey Analysis	47
4.3.1	Demographic Analysis	48
4.3.1.1	Age	48
4.3.1.2	Nationality	48
4.3.1.3	Purpose of using Junction	49

4.3.1.4	Reason of using Junction	49
4.3.1.5	Travel Frequency	50
4.3.2	User Satisfaction Analysis	51
4.3.2.1	User Satisfaction Timeliness Data Result	52
4.3.2.2	User Satisfaction Safety and Security data result	53
4.3.2.3	User Satisfaction Fuel Cost and Payment Data Result	53
4.3.2.4	User Satisfaction with Quality of Road Data Result	54
4.3.2.5	User Satisfaction with Speed Data Result	55
4.3.2.6	User Satisfaction with Speed Condition at Junction	56
4.3.2.7	User Satisfaction with Junction Condition and Equity Data Result	57
4.3.2.8	User Satisfaction with Junction Condition and Equity Data Result	58
4.3.3	Users' Expectation Analysis	59
4.3.4	Gap Analysis	65
4.3.5	Spot Speed Result	68
4.3.4.1	Speed Distribution (500 meters before the junction) North to South (1 <sup>st</sup> Peak Hour)	70
4.3.4.2	Stopping sight distance (500 meter before the junction) north to south (2 <sup>nd</sup> peak hour)	72
4.3.4.3	Stopping sight distance (500 meter after the junction) north to south (1 <sup>st</sup> peak hour)	74
4.3.4.4	Stopping sight distance (500 meter after the junction) north to south (2 <sup>nd</sup> peak hour)	76
4.3.4.5	Stopping sight distance (500 meter before the junction) south to north (1 <sup>st</sup> peak hour)	78
4.3.4.6	Stopping sight distance (500 meter before the junction) south to north (2 <sup>nd</sup> peak hour)	80
4.3.4.7	Stopping sight distance (500 meter after the junction) south to north (1 <sup>st</sup> peak hour)	82
4.3.4.8	Stopping sight distance (500 meter after the junction) south to north (2 <sup>nd</sup> peak hour)	84



4.4	Summary	86
<b>CHAPTER 5</b>	<b>CONCLUSION AND RECOMMENDATIONS</b>	<b>87</b>
5.1	Introduction	87
5.2	Conclusion	87
5.2.1	Objective 1: To find the level of users' satisfaction on existing junction performance	87
5.2.2	Objective 2: To identify users' expectation on junction performance.	87
5.2.3	Objective 3: To evaluate user behaviour at junction using spot speed study.	88
5.3	Recommendations	89
<b>REFERENCES</b>		<b>91</b>

## LIST OF TABLES

<b>TABLE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
Table 3.1	z-score based on the confident level	32
Table 3.2	The accuracy of validation data	33
Table 3.3	Sample size based on the population	34
Table 3.4	Validation number of questionnaires based on the population in Tapah	34
Table 3.5	Users' expectation with the junction with the average result	38
Table 4.1	Number of surveys being done at junction during first and second peak hours	47
Table 4.2	The age information of the junction users at the first and second peak hour	48
Table 4.3	Nationality data of respondents chosen at the first and second peak hour	49
Table 4.4	Numbers of user with different purpose of using junction at the first and second peak hour	49
Table 4.5	Number of the users with reason of using junction at the first and second peak hour	50
Table 4.6	Travel frequency using junction at the first and second peak hours	50
Table 4.7	Users' satisfaction on the junction with average result	51
Table 4.8	Users' expectation with the junction with the average result	60
Table 4.9	Percentage of gap between users' satisfaction and users' expectation average data	67
Table 4.10	Result (summarizes) Spot Speed for four locations	69

## LIST OF FIGURES

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
Figure 1.1	Vehicle Ownership Ratio in South Asia	2
Figure 3.1	Flow Chart of the Project	28
Figure 3.2	Site Location	29
Figure 3.3	Time to Conduct Users' Perception Survey	36
Figure 3.4	Spot Speed Radar Gun	39
Figure 3.5	Direction of the junction with the point of conflict	40
Figure 4.1	No. of vehicle during first peak hour	46
Figure 4.2	Number of vehicles passing through the junction at the second peak hour	47
Figure 4.3	Level of users' satisfaction against level of time taken while in junction.	52
Figure 4.4	Level of satisfaction on the safety in the car while on traffic jammed	53
Figure 4.5	Level of satisfaction on fuel cost	54
Figure 4.6	Level of satisfaction on the quality of road	55
Figure 4.7	Level of satisfaction on speed (ease to achieved local speed)	56
Figure 4.8	Level of satisfaction on speed condition	57
Figure 4.9	Level of satisfaction on junction condition and equity (if the other access attach the junction)	58
Figure 4.10	Level of satisfaction on junction condition and equity (level of suitability for disabled people to use the junction)	59
Figure 4.11	Users' expectation against level of time taken while in the junction	61
Figure 4.12	Users' expectation against parameter safe in the car while on the traffic jammed	61
Figure 4.13	Users' expectation against parameter fuel cost while in the junction and traffic jammed	62

Figure 4.14	Users' expectation against quality of road (road condition)	62
Figure 4.15	Users' expectation on the ease to achieve the local speed while in the junction	63
Figure 4.16	Users' expectation on speed	63
Figure 4.17	Users' expectation on condition of the junction if the other access attach to the junction	64
Figure 4.18	Users' expectation on the level of suitability for disabled people to use the junction	64
Figure 4.19	Level of users' expectation against speed	65
Figure 4.20	Level of users' satisfaction against speed	66
Figure 4.21	Level of users' satisfaction against user expectation	66
Figure 4.22	Frequency Histogram	70
Figure 4.23	Pace	70
Figure 4.24	Cumulative Percentage Vs Speed	71
Figure 4.25	Frequency Histogram	72
Figure 4.26	Pace	72
Figure 4.27	Cumulative Percentage Vs Spee	73
Figure 4.28	Frequency Histogram	74
Figure 4.29	Pace	74
Figure 4.30	Cumulative Percentage Vs Speed	75
Figure 4.31	Frequency Histogram	76
Figure 4.32	Pace	76
Figure 4.33	Cumulative Percentage Vs Speed	77
Figure 4.34	Frequency Histogram	78
Figure 4.35	Pace	78
Figure 4.36	Cumulative Percentage Vs Speed	79
Figure 4.37	Frequency Histogram	80
Figure 4.38	Pace	80
Figure 4.39	Cumulative Percentage Vs Speed	81
Figure 4.40	Frequency Histogram	82
Figure 4.41	Pace	82
Figure 4.42	Cumulative Percentage Vs Spee	83
Figure 4.43	Frequency Histogram	84



## LIST OF ABBREVIATIONS

a.m.	-	Ante Meridiem
Lab	-	Laboratory
NHTSA	-	National Highway Traffic Safety Administration
NPA	-	National Police Agency
NSW	-	New South Wales
p.m.	-	Post Meridiem
RoSPA	-	Royal Society for the Prevention of Accidents
RSP	-	Road Safety Plan
RTA	-	Road and Traffic Authority
TRL	-	Traffic Research Laboratory
Vs	-	Versus

## LIST OF SYMBOLS

C	-	Speed interval of the group
f	-	Frequency of observation in the particular class
$f_L$	-	Cumulative number of observations up to the lower limit of the
		class in which the median lies
$f_M$	-	Number of observations in the class in which the median lies
h	-	Hours
L	-	Lower limit of the class in which the median lies
n	-	Total number of observations
P	-	Percentage picking a choice, expressed as decimal
ss	-	Sample size
SS	-	Spot Speed
x	-	Mid – point of each class
Z	-	Z - Value
$\Sigma$	-	Total
%	-	Percentage

## LIST OF APPENDICES

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
Appendix A	Form Spot Speed 1	93
Appendix B	Form Spot Speed 2	94
Appendix C	Form Spot Speed 3	95
Appendix D	Questionnaire Form	96
Appendix E	Data Form 1 <sup>st</sup> Peak Hour (500 meter before junction)	97
Appendix F	Data Form 2 <sup>nd</sup> Peak Hour (500 meter after junction)	101
Appendix G	Data Form 1 <sup>st</sup> Peak Hour (500 meter before junction)	105
Appendix H	Data Form 2 <sup>nd</sup> Peak Hour (500 meter after junction)	109
Appendix I	Data Form 1 <sup>st</sup> Peak Hour (500 meter before junction)	113
Appendix J	Data Form 2 <sup>nd</sup> Peak Hour (500 meter after junction)	117
Appendix K	Data Form 1 <sup>st</sup> Peak Hour (500 meter before junction)	121
Appendix L	Data Form 2 <sup>nd</sup> Peak Hour (500 meter after junction)	125



# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

The rapid development of Malaysia increases the number of car and lead to the traffic congestion. The worst of the traffic flow is also affected by the development if the existing junction are failed to improve. Due to the increasing of vehicle number, road congestion and accidents are occurred especially during peak hour. Traffic congestion is a condition on road networks that occurs as use increases, and is characterized by slower speeds, longer trip times, and increased vehicular queuing. Junction plays an important role in the road network, where traffic flows in different direction converge.

It is common that, the more developed a country or city, the country's population shall move or migrate from the out skirts of the country to the main heart of the development. Which in kind transferred to the increase of population in that certain part of the country. With the rapid development of Malaysia, the population shall have their own way to find resources and living space to cater their need's and want's. As there are abundant of resources that are confined within a certain radius location. This bring more economy movement financially as the denser population in a certain location of the country or town, the more money moves around that particular location or space, there are more opportunity for businesses to grow and provide based on the needs of the population in that vicinity. As a standard representation, each of the individuals would have the need of moving around from point A to point B. Thus, increasing the number of vehicles such as cars, motorcycles and even public transport (busses). Based by The ASEAN Statistics Division (ASEANstats) website, in the year 2017, Malaysia ranked second as compared with other ASEAN countries with a close second at 897 vehicles for every 1,000

Malaysian. And in first place, Brunei has 971 vehicles for every 1,000 people in Brunei. This could be reflected that for every 10 persons in Malaysia, 9 of them have some sort of vehicle. As with that, it would have an increment number of car and lead to the traffic congestion as the population increases. The worst of the traffic flow is also affected by the development if the existing traffic junction are failed to improve. Because of the increased of vehicle number on the road, congestions and accidents could occur especially during peak hours of the day. Traffic congestion is a condition on road networks that occurs as use increases, and is characterized by slower speeds, longer trip times, and increased vehicular queuing. Junction plays an important role in the road network, where traffic flows in different direction converge.

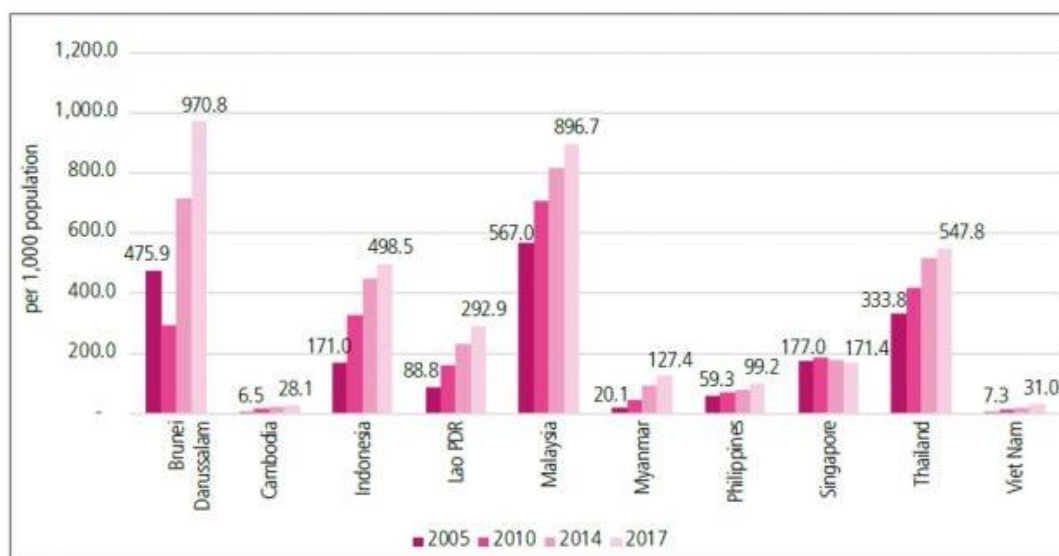


Figure 1.1 Vehicle Ownership Ratio in South East Asia year 2005, 2010, 2014, 2017 (Source: <https://paultan.org/2019/09/26/asean-vehicle-to-population-list-the-correct-facts/>)

There is various type of junctions such as at-grade junctions, signalised junction, unsignalised junction and roundabout. Different type of road intersect leads for a different type of intersection or junctions. A junction that is located in a very heavy traffic and surrounding big developments has different needs and wants in order to work properly and cater for the road users that passes by or use that particular road in their everyday lives. But, in this study, the analysis that would be done is regarding unsignalized junction. This type of junctions are typically used in

rural areas of which has lower driving speed and in the same time very low average traffic passing that particular same road junction as compared to the other types of junctions such as at-grade intersections, signalized intersections and roundabouts. The flow of that junction depends on the knowledge of the drivers and the information given or thought to them during their driving license acquisition by their driving instructor or trainer. The effectiveness of the junction really depends on the drivers or rider's capacity to manoeuvre their vehicle through that junction safely. An Intelligent Transport System may be majorly affected by the operation of an unsignalized junction that is located nearby. Typical solutions to resolve these types of issues are to upgrade the existing junction based on the increasing number of developments, the traffic flow and population area surrounding.

In Tapah, Perak, majority of the unsignalized junction is of the T-junction. Most of the 4-way unsignalized junctions are maintained to the same while the development increases. Too many problems appeared at these junctions such as traffic jams, very long streams of vehicles, hold ups and car crashes during the normal working of the junction. The evaluation of junction performance is practically measured using the survey by questionnaire answered by the user and is also based on speed testing at that junction itself. The critical gap is a major parameter that needs to analyse the junction performance. In Malaysia, the critical gap in which has been set for an unsignalized junction is proposed by Highway Capacity Manual. Therefore, a different critical gap is placed upon between each junction based on the design of the road, lane numbers, and locality conditions located near the junction. The efficiency of the performance at unsignalized junction is considered to become worst if the problem such as delay, queue does constantly occur. For this, the study of this junction is necessary in order to analyse the traffic networks and improve the junction performance in order to identify and solve the issues that may occur at that junction.

## **1.2 Problem Statement**

The studies essence is to identify and evaluate the junction's performance and its effectiveness. Tapah Road A10 is considered as one of the rural areas with the largest population in Perak which is above 10,000 persons and considered as the backbone of the trunk road connecting Ipoh and Kuala Lumpur. The location study of the junction is located at Jalan Tapah Road, A10 Perak which is a major road and it has more than 26 minor road access that attach to this junction. It also has a large of developments that are built surrounding around the main road. This new development is now causing of traffic congestion because the existing junction are not proper improved by the developers or the relevant authorities that approved the design in the first place. The building plots that were sold to buyers and business that has opened in that location has led to a very busy traffic flow in that vicinity. Furthermore, based by reports of the accident from the Tapah Police Traffic, the study location's road accidents report had an increment from 69 cases to 100 each year from the year 2015 until year 2018. Based on such issues, the junction performance study at Jalan Tapah is selected in order to analyse and understand the junction effectiveness derived from junction's user survey and based on speed testing being done at that same location. Thus, the existing junction's effectiveness could be identified if it is effective or not based in the survey and testing that had been done.

## **1.3 Aim and Objectives**

The aim of this study is to investigate user satisfaction and behaviour at junction. In order to achieve the aim, the following objectives are specified:

- a) To find the level of users' satisfaction on existing junction.
- b) To identify the users' expectation on junction
- c) To evaluate user behaviour at junction using spot speed study.

#### **1.4 Scope of Study**

- a) The study was conducted at Jalan Tapah, A10, Perak Darul Ridzuan.
- b) Survey data was collected within peak hour with 200 sample size.

#### **1.5 Study Expectation**

Number of development's and business is operating within the vicinity including the characteristic of junction users is the cause to affect the junction performance at Jalan Tapah A10. The responsibility of the developer also will give the solution for the traffic congestion. Hopefully, the result of the study will be known the existing performance of the junction according to the growth of developments surrounding around the area.

#### **1.6 Importance and Contribution of Study**

This study results of this study could be used to answer the question that Malaysian drivers always plagued upon. Especially, to all user the issues associated with the use of the junction. In addition, the results of this study can be used to help improve the quality of junction flow including safety features on the road. It is expected that the results of this study could be beneficial in finding gaps between users' perception and junction performance, therefore appropriate measures can be considered to improve the junction.

#### **1.7 Research Design**

The research design is one of the crucial elements for conducting this study. It relates to the goals and objectives that have been carried out. There are six levels to

implement the studies of junction performance assessment for road side development at Batang Padang Jalan Tapah, Perak Darul Ridzuan. There are a few step of studies planned:

- a) Identify the problem, the objectives and scope of the study
- b) Literature review
- c) Collection of data by questionnaire and spot speed study
- d) To analyse the data collected and make the discussion on data that has been analysed
- e) Make the conclusions and recommendations

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