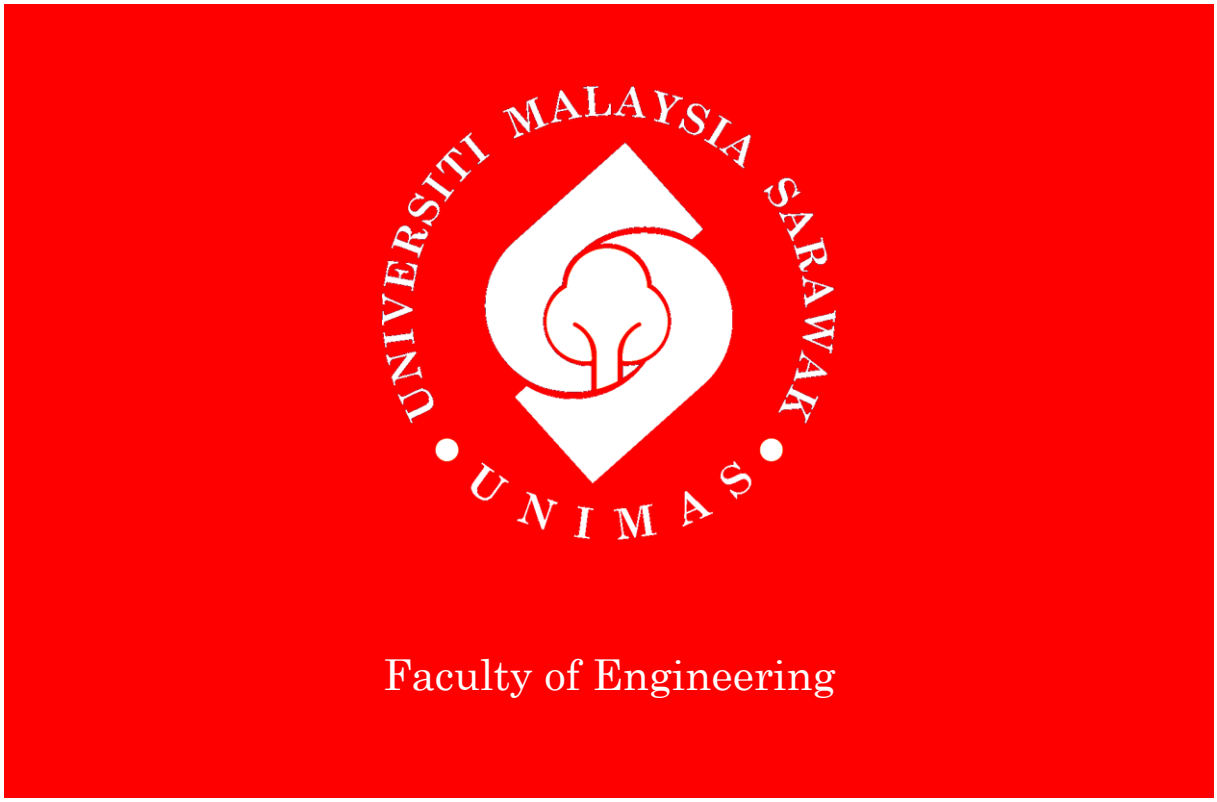

ANALYSIS OF SPOT SPEED STUDIES AT KUCHING OUTER RING ROAD, KOTA SAMARAHAN: A CASE STUDY

NURRIZZUWANNI BINTI HAIRUDDIN

45932

Bachelor of Engineering (Hons)

Civil Engineering

2017/2018

UNIVERSITI MALAYSIA SARAWAK

Grade: _____

Please tick (√)	
Final Year Project Report	√
Masters	
PhD	

DECLARATION OF ORIGINAL WORK

This declaration is made on the ……..day of……..2018.

Student's Declaration:

I **NURRIZZUWANNI BINTI HAIRUDDIN 45932 from FACULTY OF ENGNEERING** hereby declare that the work entitled **ANALYSIS OF SPOT SPEED STUDIES AT KUCHING OUTER RING ROAD, KOTA SAMARAHAN ; A CASE STUDY** is my original work. I have not copied from any other students' work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

_____ _____

Date submitted NURRIZZUWANNI BT HAIRUDDIN (45932)

Supervisor's Declaration:

I **ZAMRI BIN BUJANG** hereby certifies that the work entitled **ANALYSIS OF SPOT SPEED STUDIES AT KUCHING OUTER RING ROAD, KOTA SAMARAHAN ; A CASE STUDY** prepared by the above named student, and was submitted to the Faculty of Engineering as a partial fulfillment for the conferment of **BACHELOR OF ENGINEERING WITH HONOURS (CIVIL ENGINEERING),** and the aforementioned work, to the best of my knowledge, is the said student's work.

Received for examination by: _____ Date:_____

(ZAMRI BIN BUJANG)

I declare that Project/Thesis is classified as (Please tick (√)):

☐	**CONFIDENTIAL**	(Contains confidential information under the Official Secret Act 1972)
☐	**RESTRICTED**	(Contains restricted information as specified by the organization where research was done)
√	**OPEN ACCESS**	

Validation of Project/Thesis

I therefore duly affirmed with free consent and willingness declare that this said Project/Thesis shall be placed officially in the Centre for Academic Information Services with the abiding interest and rights as follows:

- This Project/Thesis is the sole legal property of Universiti Malaysia Sarawak (UNIMAS).
- The Centre for Academic Information Services has the lawful right to make copies for the purpose of academic and research only and not for other purpose.
- The Centre for Academic Information Services has the lawful right to digitalise the content for the Local Content Database.
- The Centre for Academic Information Services has the lawful right to make copies of the Project/Thesis for academic exchange between Higher Learning Institute.
- No dispute or any claim shall arise from the student itself neither third party on this Project/Thesis once it becomes the sole property of UNIMAS.
- This Project/Thesis or any material, data and information related to it shall not be distributed, published or disclosed to any party by the student except with UNIMAS permission.

Student signature _____ Supervisor signature: _____

(Date:) (Date:)

Notes: ***** If the Project/Thesis is **CONFIDENTIAL** or **RESTRICTED**, please attach together as annexure a letter from the organisation with the period and reasons of confidentiality and restriction.

[The instrument is duly prepared by The Centre for Academic Information Services]

ANALYSIS OF SPOT SPEED STUDIES AT KUCHING OUTER RING ROAD, KOTA SAMARAHAN; A CASE STUDY.

NURRIZZUWANNI BINTI HAIRUDDIN

A dissertation submitted in partial fulfillment

of the requirement for the degree of

Bachelor of Engineering with Honours

(Civil Engineering)

Faculty of Engineering

Universiti Malaysia Sarawak

2018

DETERMINING THE ADEQUACY OF A POSTED SPEED LIMIT

NURRIZZUWANNI BINTI HAIRUDDIN

This project is submitted to the Faculty of Engineering, Universiti Malaysia Sarawak in partial fulfilment od the requirements for the degree of Bachelor of Engineering with Honors (Civil Engineering) 2018

ACKNOWLEDGEMENT

I would like to express my state of euphoria and fulfilment by thanking all the parties that were involved to complete this final year project research. Without these people, my work would've been incomplete. Thank you so much, to those who have made it possible.

My sincerest gratitude goes to my supervisor, Mr. Zamri Bin Bujang for making this project research possible for me with the unlimited care and precious guidance, directing me to the path of success.

I would like to express my heartfelt gratitude to Nelly Aivivian, for being the most supportive friend and a great company to climb the ladder of success along in this very journey.

Dedication to my mother, thank you for your endless support and devotions that leads me to the road of success and being the reason for what I become today, to my sister for being such a great inspiration and role model, to my aunt who never stop cheering for victories and encourages me when I am downhearted.

ABSTRACT

Speed limit is the speed value enforced by the authority to regulate speed of vehicle on the road. Every carriageway has posting speed limit which is usually conveyed by a traffic signage to inform drivers the maximum speed limit allowed to travel on the carriageway. Posted speed limit is one of the most important speed limits that also indicate the maximum safe speed that can be applied on a carriageway when conditions are favorable. This case study is carried out to determine the adequacy of the current posted speed limit set at the Kuching Outer Ring Road, Kota Samarahan, with the value of 80km/h for both directions. Radar method is used for data collection and IBM SPSS Statistics 23 is used for data analysis. There are approximately 25% vehicles of the overall traffic study did not compliance with the posted speed limit and vehicle with the highest 85^{th} percentile speed for the studied road is passenger cars, with the value of 86km/h and 83 km/h for direction from Serian to Kota Samarahan and Kota Samarahan to Serian respectively. This shows this roadway has the need to change the current posted speed limit, increase law enforcement and also encourage public awareness on speeding dangers. Those are some possible mitigation for speeding.

ABSTRAK

Had laju ialah nilai laju yang dikuatkuasakan oleh pihak berkuasa untuk mengawal kelajuan kenderaan di jalan raya. Setiap jalan mempunyai batas kelajuan yang biasanya disampaikan pada papan tanda di lalu lintas untuk memaklumkan hsd kelajuan maksimum yang dibenarkan untuk melakukan perjalanan di jalan raya. Had kelajuan yang diisytiharkan adalah salah satu had laju yang paling penting, menunjukkan kelajuan selamat maksimum yang boleh digunakan di jalan berdasarkan syarat-syarat yang tertentu. Penyelidikan ini dijalankan untuk menentukan kecukupan had laju yang ditetapkan pada Jalan Lingkaran Luar Kuching, Kota Samarahan, dengan nilai 80km / j untuk kedua-dua arah. Kaedah radar digunakan untuk pengumpulan data dan Statistik SPSS IBM digunakan untuk analisis data. Terdapat kira-kira 25% kenderaan yang tidak mematuhi had laju dan kenderaan yang mencatatkan kelajuan persentil ke-85 tertinggi bagi jalan yang dikaji ialah kereta penumpang, dengan nilai 86km / j dan 83 km / j untuk arah dari Serian ke Kota Samarahan dan Kota Samarahan ke Serian masing-masing. Ini menunjukkan jalan ini mempunyai keperluan untuk mengubah had lajunya, meningkatkan penguatkuasaan undang-undang dan juga menggalakkan kesedaran orang ramai tentang bahaya memandu lebih dari had laju. Itu adalah beberapa mitigasi yang boleh dilakukan untuk kawal had laju.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF EQUATIONS

CHAPTER 1

INTRODUCTION

TITLE

Analysis of Spot Speed Studies at Kuching Outer Ring Road, Kota Samarahan: A Case Study.

1.1 Background

(Smith, 2002) stated that speed is one of the most profound consideration in traffic study because it relates to safety, time, accessibility and finances. Taking spot speed studies as an example, it is usually done to determine the speed distribution of traffic at a specific location by obtaining the basic speed data. The data distribution by vehicles will be defining as the rate of movement the vehicle in terms of kilometres per hour. Later, the data collected are used to obtain the speed percentiles values which aid every speed-related choice. Moreover, according to (Robertson, 1994), there are a few spot speed studies safety applications such as making an observation and obtaining the current traffic operations, retrieving any roadway questions related to case studies, conduct evaluation of the traffic control devices, traffic program, traffic operational changes as well as monitoring traffic speed trends by analysing the current speed studies.

According to (World Health Organization, 2004) speed is considered the main factor that causes traffic injuries which impacts road crashes and fatal injuries. This is mainly due to the people that drive exceeding speed limits. Inappropriate or invalid speed limits play a huge traffic role as it governs for a very high proportion of morality and mobility resulting in road accidents. Thus, it is essential to make sure speed limit at a certain location is legal in order to prevent fatal accidents from happening, reduce the impact of accident occurrences and also lessening the severity injuries that might affect the victims of crashes.

Based on the (Road Transport Department, 2015) accident report, the number of vehicles in Malaysia increases every year from year 2006-2015. *Table 1.1* shows the road accidents that occur by state from the year 2006 to 2015 in Malaysia. In Sarawak, the highest number of road accidents occurred in year 2012 which contributed 4% of the total number of road accidents in Malaysia. Besides, road accidents in Sarawak have increased 17% by year 2015 by means of comparison between year 2006 and 2015.

***Table 1.1* Road Accidents by State in Malaysia (2006-2015)**

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Perlis	1,160	1,364	1,417	1,633	1,548	1,791	1,881	1,895	1,888	1,861
Kedah	15,505	16,172	16,520	17,701	17,996	19,699	19,935	20,228	20,159	22,016
Penang	32,576	33,881	34,049	33,719	34,306	37,158	37,581	39,408	38,747	39,856
Perak	27,432	29,203	30,539	32,327	32,072	33,506	34,714	39,361	35,131	36,736
Selangor	92,632	99,157	100,380	107,429	115,565	128,876	129,106	135,024	137,809	140,957
K.Lumpur	46,254	49,454	48,671	51,942	53,493	58,795	61,872	64,527	63,535	64,664
N. Sembilan	15,197	16,079	17,362	18,369	19,407	21,157	22,146	23,066	23,748	22,939
Melaka	10,707	11,720	12,105	13,275	14,110	14,720	15,195	16,083	16,375	17,069
Johor	43,757	46,584	48,667	51,474	55,381	59,501	62,316	64,600	64,473	67,112
Pahang	13,242	13,982	15,629	17,068	17,315	19,001	20,554	20,130	19,071	19,635
Terengganu	7,098	8,155	8,814	10,118	10,106	10,684	10,861	9,748	10,326	9,960
Kelantan	7,337	8,116	8,8,42	9,549	9,707	9,603	9,968	10,996	9,383	10,381
Sarawak	14,808	15,196	15,488	16,655	17,253	17,964	18,578	17,438	17,858	17,290
Sabah	13,550	14,256	14,588	15,798	16,192	16,585	17,446	18,700	17,693	19,130
Total	341,252	363,319	373,071	397,330	414,421	449,040	462,423	477,204	476,196	489,606

Source; Road Transport Department

Table 1.2 and *Table 1.3* shows the total registered vehicles and the vehicles that were involved in accidents, based on different types of vehicles in Malaysia annually for the past 10 years. Based on *Table 1.2*, the citizens of Malaysia vehicles registration for every type of vehicles shows increasing patterns except for busses which drops by year 2013. *Table 1.3* also shows similar pattern of increment as being compared to *Table 1.2*. The studies showed the total accident occurred increases with the increase in total registered vehicles. The percentage of increase for motorcycle, passenger cars and good vehicles increased by 62%, 71% and 43% respectively by means of comparison between year 2006 and 2015. The highest total number of accident happened is in year 2012 with the total of 919,232 vehicles and its 12% of the overall accidents that occurs in the 10 years period.

Table 1.2 **Total Registered Vehicles by Type of Vehicles in Malaysia by the End of Year Annually (2006-2015)**

Year	Motorcycle	Passenger Cars	Busses	Taxies	Hire and Drive Cars	Good Vehicles	Other Vehicles	Total
2006	7,458,128	6,941,996	59,991	70,409	11,638	836,579	411,911	15,790,652
2007	7,943,364	7,419,643	62,308	72,374	12,368	871,234	432,652	16,813,943
2008	8,487,451	7,966,525	64,050	90,474	15,446	909,243	454,158	17,987,347
2009	8,905,854	8,461,334	66,201	78,841	16,579	936,222	471,941	18,936,972
2010	9,368,454	9,017,613	68,666	83,712	18,300	966,177	493,451	20,016,373
2011	9,947,189	9,675,397	71,628	89,815	19,194	997,649	515,867	21,316,739
2012	10,544,578	10,294,024	73,227	92,815	19,296	1,032,004	539,849	22,595,793
2013	10,926,125	10,355,037	62,182	98,513	53,775	1,112,480	861,154	23,469,266
2014	11,629,265	11,199,910	65,044	105,689	58,945	1,159,872	882,467	25,101,192
2015	12,094,790	11,871,696	66,999	108,149	63,885	1,197,987	898,446	26,301,952

Source; Road Transport Department

Table 1.3 **Total Vehicles Involved in Road Accidents Annually (2006-2015)**

Year	Motorcycle	Passenger Cars	Busses	Taxies	Four Wheel Drive	Good Vehicles		Other Vehicles	Total
						Lorries	Vans		
2006	104,106	411,444	9,700	7,751	20,885	44,676	20,428	12,226	631,216
2007	111,765	426,941	10,285	8,809	21,823	47,696	21,109	14,909	663,337
2008	111,819	435,665	9,356	8,769	22,793	48,250	20,392	11,571	668,615
2009	113,962	472,307	9,380	8,669	23,581	46,274	19,220	9,294	702,687
2010	120,156	511,861	9,580	9,889	25,777	50,438	18,788	11,756	758,245
2011	129,017	546,702	9,986	11,197	30,828	53,078	17,916	16,394	815,118
2012	130,080	655,813	10,617	11,680	35,867	53,774	16,604	4,797	919,232
2013	121,700	632,602	10,123	11,651	52,512	39,276	17,148	15,441	900,453
2014	125,700	617,578	9,913	19,856	41,464	37,481	15,041	27,743	894,776
2015	123,408	625,758	8,804	10,856	46,163	34,942	14,565	29,924	894,420

Source; Road Transport Department