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Increasing Motorcyclist Awareness (Night Riding) From Self-Reported Study on Rural Roads in Sabak Bernam with Three Proactive Measures

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Abstract: Accidents in Sabak Bernam seems to be critical due to lack of awareness among motorcyclist especially at night time riding. Therefore, three safety proactive measure is aimed to increase the awareness among road user during night time especially for motorcycle users. By study this study, the rider also can more aware so that can reduce the number of an accident. This three measure was studied due to the problems faced by many motorcyclist riding at night time especially at rural road in Sabak Bernam. The project were studied by using three main proactive measurement such as rear brake light, street lamp and road distress. The methodology of the study is as follows: a review of the literature to identify the study's objectives, data collection using questionnaires, data analysis, and finally, conclusions and recommendations. The questionnaire were distributed to people in Sabak Bernam. Total response rate is 100%. SPSS version 26 was used to calculate Cronbach's Alpha, perform frequency and descriptive analysis, and visualise the data using Likert scaling and the mean score. This study determined the level of awareness of safety for rider in Sabak Bernam. According to the data analysis, 71.1 percent of respondents strongly agree Important of road shoulder (no obstruct) with mean score is 4.57 is a critical importance factor for section B, and 30.7 percent of respondents strongly satisfied that Illumination level of rear brake lamp is a critical satisfaction factor for section C with mean score is 4.42. Finally, this study was able to raise awareness among riders in Sabak Bernam regarding safety precautions and ways for reducing crashes, particularly during night rides.

Keywords: Night Time, Sabak Bernam, , Road Accident, Reliability, Descriptive

1. Introduction

Motorcycles are a comparatively inexpensive means of transportation as compared to other types of transportation, and they can be used by anyone from a teenager to an elderly person due to their dependability. Motorcycle license fees are significantly lower than other vehicle license fees, according to Jabatan Pengangkutan Jalan Raya [1]. The number of motorcycles registered in Malaysia is rapidly growing year after year until the latest data in June 2020. This means people nowadays can afford to get a motorcycle and this is a caution that needs to be aware because high motorcyclist users, high cautions among motorcyclists on the road especially during night rides. Motorcycle riders make up 53% of all drivers and have a high death rate as compared to other road users. Motorcycles were involved in 23.3 percent of traffic accidents, with 25.2 percent of motorcycle users suffering major head injuries as a result of offences [2].

Accidents that occur at night have had a significant effect and resulted in significant casualties around the world [3]. There has been a great deal of impact, such as injury, pain, and death, in the past of incidents that have occurred all over the world, especially in Malaysia. Since much of the road in Sabak Bernam is a rural road linking villages to villages, road breakdown and lack of road infrastructure are frequent causes of accidents. Sabak Bernam road is a nightmare for night-riding motorcyclists due to a lack of road facilities such as non-functional road lamps [4], road failure such as road cracking, particularly on the road shoulder, and motorcycle failure.

In Sabak Bernam, the roads are rural roads that have many problems such as the road safety issue and the motorcycle itself. The most accidents that happen in Sabak Bernam involve motorcycles because most of the people in Sabak Bernam use motorcycles as their transportation. Malaysian Institute of Road Safety Research (MIROS) state that road accident statistics show that many of the accidents that occur in the local area [5]. Many attempts must be taken seriously to monitor and raise public consciousness in order to reduce the number of motorcycle crashes. Many parties need to involve including officials and peasants, who contributed to the initiative. The authorities' initiative is to conduct patrols to ensure that road users should not disregard road safety and that no injuries occur. The patrols are concentrating on areas with no street lights and a high rate of road collapse.

The three proactive interventions that are used in this research are focused on motorcyclists and road safety. The three measures are motorcycle failure which is brake lights on the back side of the motorcycle, which must be seen and checked for functionality, lack of road facilities such as a lack of road lights on the road, particularly at road bends [4], and road failure such as cracking, which can harm motorcyclists [6], particularly cracking at the both road shoulder for rural road.

Accordingly, this paper aims 1) To determine the attitude of riders toward motorcycle brake lamp, 2) To measure the awareness among motorcyclists on road safety during night rides and 3) To analyses the accidents factors from pavement distress that can affect accidents towards motorcyclists. Both objectives of this paper could be achieved, and an accurate instrument designed to measure each variable's reliability and descriptive on the tool can be developed. It is by executing further discussion involves food delivery rider criteria and features, methodology, data analysis, findings, discussion, and the conclusion.

2. Research Methodology

2.1 Sample of Study and Data Collection

Generally, this research was conducted in Sabak Bernam. The target population focused on in this research was for motorcyclist in Sabak Bernam. Hence, the sample size required for this research was s=383. The next step was to collect data once the target population, sampling frame, sampling method and sample size are already identified [7]. First, the survey question was made by using "Google Form". Then, it had been distributed through a social media platform such as "Facebook", "Whatsapp", and "Telegram" since no physical contact which including interviews and the distribution of questionnaires face-to-face were allowed during the pandemic.

2.2 The Instrument (Questionnaires)

The population of motorcyclist in Sabak Bernam had been studied to achieve the objectives of this research. Many questionnaires were created by using the survey method. Each of them was divided into three sections; A, B and C [8]. Section A contained several questions based on the population that will be severalized randomly according to their profile. Section B had a bunch of questions regarding importance factors that measure the level of awareness among riders. Meanwhile, as for the last section, section C was where the questions about satisfaction factors that determine the satisfaction of the road distress and streetlamp. Overall, the questions will be 32 in total, which in area A has 10 questions, section B has 10 questions, section C has 10 questions, and 2 open ended question.

First and foremost, section A was a demographic type of data survey that allows gaining background information. The questions had provided context for the collected survey data to describe the respondents and better analyze their data. The questions were split into five types: gender, age range, races, sub-district, mode of transportation, interest using motorcycle as daily transport, riding at night time, dangerous ride at night, night ride us better than day time.

Secondly, the questions in this section came out as what importance factors cause road crashes among riders. The studied importance factors were included 3 proactive measure which is rear brake lamp, road distress and streetlamp. Therefore, multiple-choice survey questions allowed respondents to choose only one choice from a list of given answers. They were also intuitive, quick to use in various ways, and help generated knowledge that was easy to analyzed and provide mutually exclusive preferences. The respondents had a more straightforward survey taking experience as these response choices were set.

The question can be answered in likert scale. The questions are commonly used in surveys asking for a response from Agree/Disagree which is from 1 (not agree) to 5 (strongly agree). They were used to differentiate clearly between attributes, experiences or opinions of respondents.

2.3 Data Analysis

2.3.1 Reliability Test

Based on the main objectives above, the reliability level of the instrument will be represented by Alpha Cronbach. The value of Alpha Cronbach above 0.6 is regarded as high reliability and reasonable index value [9]. In comparison, Alpha Cronbach's value was less than 0.6, which was considered flawed. Alpha Cronbach values in the 0.60 - 0.80 range are regarded to be moderate but acceptable. However, Alpha Cronbach was deemed to be very good in the 0.8 and 1.00 ranges. The evaluation of Alpha Cronbach values for the instruments built was therefore used to assess the level of reliability of the devices [10].

Table 1: Statistical results of the reliability of the pilot study

Section	Alpha Cronbach's Value	Total Question of Each Section	Total Respondent
B	0.931	10	30
C	0.96	10	30

Table 2: The result of the reliability analysis for an actual study

Section	Alpha Cronbach's Value	Total Question of Each Section	Total Respondent
B	0.977	10	383
C	0.950	10	383

2.3.2 Descriptive Statistic

Descriptive statistics, in other terms, were statistical representations of what was presented or what the data exposed in an understandable manner in a quantitative research study. For example, central tendency metrics included mean, median, and mode and variability sizes appropriate for standard deviation, variance, and minimum and maximum variables. Two of these measures used tables, graphs, or discussion threads to assist individuals in comprehending the significance of the data gathered and processed.

3. Results and Discussion

3.1 Reliability Analysis

3.1.1 Statistical Analysis of the Reliability of the Pilot Study

The statistical results of the reliability of the pilot study were analyzed using SPSS software for parts B and C of the questionnaire form where it was distributed to 30 respondents in the circle of the riders. It showed the Cronbach's Alpha values were relatively low for section B, which was 0.931 and very good for section C, which was 0.0.96. Therefore, the questions for section B and C can be applied to the actual study without refinement. Thus, the question will be needed for the actual study.

3.1.2 Statistical Analysis of the Reliability of the Actual Study

After conducting a pilot study, Cronbach's Alpha values were still needed for the actual research, where the total respondents were around 383. Therefore, the analysis process was carried out similarly to the pilot study. The reliability analysis in this study was split up into two sections, B and C and they were referred to as importance factors and satisfaction, respectively. The Cronbach Alpha value for both sections was relatively excellent, 0.977 and 0.950, respectively, which means both values were very good because they had exceeded 0.6. In addition, Cronbach's Alpha value for section B in this study increased and became higher than the previous study. Therefore, both sections were reliable enough to prove all of the stated factors were happening among the riders that led to the road accident.

3.2 Descriptive Statistics

Tables 3 and 4 illustrates the data gathering of respondent responses provided all required information such as minimum and maximum data and mean and standard deviation. Two variables, have been included in the questionnaire form.

Table 3: Likert Scale for Section B

Category	Scale
Not Important	1
Slightly Important	2
Moderately Important	3
Important	4
Very Important	5

Table 4: Likert Scale for Section C

Category	Scale
Very Dissatisfied	1
Slightly Dissatisfied	2
Neutral	3
Moderately Satisfied	4
Very Satisfied	5

Demographic data served as the independent variable shows in table 5 and table 6, while importance and satisfaction factors served as the dependent variable, with each element being classified into three categories. The importance factors and satisfaction factor referred to 3 proactive measures elements. Those variables had provided 1 choice which is likert scale. Thus, the minimum and maximum variables should be range from 1 to 5 according to Tables 3 and 4.

Table 5: Respondent's Demographic Analysis

Category	Items	Frequency	Percentage (%)
Gender	Male	270	70.3
	Female	114	29.7
Age	15 – 24 years old	217	56.6
	25 - 45 years old	133	34.6
	46 - 65 years old	32	8.3
	65 years old and above	2	0.5
Race	Malay	331	86.2
	Chinese	25	6.5
	Indian	27	7
	Iban	1	0.3

Table 6: Respondent's Demographic Analysis (continued)

Category	Items	Frequency	Percentage (%)
Sub-district	Sabak	125	32.6
	Panchang Bedena	81	21.1
	Pasir Panjang	75	19.5
	Sungai Panjang	61	15.9
	Bagan Nakhoda Omar	42	10.9
What is your mode of transport at home?	Motorcycle	211	54.9
	Personal car	154	40.1
	Bus	6	1.6
	E-Hailing/Taxi	7	1.8
	Bicycle	6	1.6
Are you interested to use motorcycle for transportation	Yes	262	68.2
	No	122	31.8
Do you like to ride motorcycle at night time	Yes	181	47.1
	No	203	52.9
Is it riding motorcycle at night time danger	Yes	243	63.3
	No	141	36.7
Is It riding at night time is efficient than riding at day time	Yes	179	46.6
	No	205	53.4

Each variable's standard deviation was then shown in both tables below. It was computed by deducting the highest value from each variable and then determine the average value. Since the standard deviation are 0.840 and 1.005, respectively, the mean and standard deviation values are between 1.24 and 1.364. As a result, the highest and lowest standard deviation values correlate to the importance and satisfaction factors for the rear brake lamp, respectively. The mean value for both factor is 4.57 and 3.42 as the highest value shown in table 7 until table 11.

Table 7: Descriptive Statistics ad Normality Assessment for Importance factor

Variables	Descriptive Statistics					Normality Assessment
Item (How Important?)	Scale	frequency	percent	Mean	Standard Deviation	Skewness
Important of Rear brake lamp	Not Important	13	3.4	4.48	1.005	-2.142
	Slightly Important	16	4.2			
	Moderately Important	17	4.4			
	Important	65	16.9			
	Very Important	273	71.1			
Important of street lamp for night ride	Not Important	7	1.8	4.52	0.900	-2.149
	Slightly Important	16	4.2			
	Moderately Important	19	4.9			
	Important	70	18.2			
	Very Important	272	70.8			
Important of road safety (no road distress)	Not Important	8	2.1	4.53	0.891	- 2.20
	Slightly Important	14	3.6			
	Moderately Important	14	3.6			
	Important	79	20.6			
	Very Important	269	70.1			
Important of a clean environment	Not Important	4	1	4.49	0.883	-1.89
	Slightly Important	18	4.7			
	Moderately Important	23	6			
	Important	81	21.1			
	Very Important	258	67.2			
Important of illumination level of rear brake lamp	Not Important	9	2.3	4.50	0.929	-2.120
	Slightly Important	13	3.4			
	Moderately Important	24	6.3			
	Important	68	17.7			
	Very Important	70	70.3			
Important of road shoulder (no obstruct)	Not Important	5	1.3	4.57	0.840	-2.303
	Slightly Important	14	36			
	Moderately Important	16	4.2			
	Important	70	18.2			
	Very Important	279	72.7			
Important of checking rear brake lamp	Not Important	4	1	4.53	0.873	-2.027
	Slightly Important	17	4.4			
	Moderately Important	23	6			
	Important	68	17.7			
	Very Important	272	7.8			

Table 8: Descriptive Statistics and Normality Assessment for Importance factor (continued)

Variables	Descriptive Statistics					Normality Assessment
Item (How Important?)	Scale	frequency	percent	Mean	Standard Deviation	Skewness
Important of replace a new rear brake lamp (if broken)	Not Important	9	2.3	4. 53	0.882	-2.331
	Slightly Important	9	2.3			
	Moderately Important	2	5.2			
	Important	72	18.8			
	Very Important	74	71.4			
Important of maintenance of road	Not Important	6	1.6	4. 51	0.892	-2.000
	Slightly Important	16	4.2			
	Moderately Important	20	5.2			
	Important	77	20.1			
	Very Important	65	69			
Important of hazard system of the road	Not Important	5	1.3	4. 54	0.870	-2.10
	Slightly Important	14	3.6			
	Moderately Important	25	6.5			
	Important	64	16.7			
	Very Important	276	71.9			

Table 9: Descriptive Statistics and Normality Assessment for Satisfaction factor

Variables	Descriptive Statistics					Normality Assessment
Item (People satisfaction)	Scale	Frequency	Percent	Mean	Standard Deviation	Skewness
A safe lane for riding a motorcycle and cross the street	Very Dissatisfied	44	11.5	2.94	1.390	0.223
	Slightly Dissatisfied	65	16.9			
	Neutral	85	22.1			
	Moderately Satisfied	84	21.9			
	Very Satisfied	106	27.6			
Topography Appropriate	Very Dissatisfied	36	9.4	2.87	1.300	0.315
	Slightly Dissatisfied	64	16.7			
	Neutral	78	20.3			
	Moderately Satisfied	94	24.5			
	Very Satisfied	112	29.2			

Table 10: Descriptive Statistics and Normality Assessment for Satisfaction factor (continued)

Variables	Descriptive Statistics					Normality Assessment
Item (People satisfaction)	Scale	Frequency	Percent	Mean	Standard Deviation	Skewness
Road safety	Very Dissatisfied	41	10.7	3.14	1.248	0.51
	Slightly Dissatisfied	49	12.8			
	Neutral	75	19.5			
	Moderately Satisfied	88	22.9			
	Very Satisfied	1321	34.1			
clean environment	Very Dissatisfied	37	9.6	3.02	1.300	0..208
	Slightly Dissatisfied	61	15.9			
	Neutral	77	20.1			
	Moderately Satisfied	86	22.4			
	Very Satisfied	123	32			
Level of illumination of street light	Very Dissatisfied	39	10.2	3.00	1.308	0.128
	Slightly Dissatisfied	47	12.2			
	Neutral	80	20.8			
	Moderately Satisfied	99	25.8			
	Very Satisfied	119	31			
Maintenance of the road	Very Dissatisfied	47	12.2	3.31	1.330	-0.170
	Slightly Dissatisfied	49	12.8			
	Neutral	81	21.1			
	Moderately Satisfied	94	24.5			
	Very Satisfied	113	29.4			
Rear brake lamp of motorcycle	Very Dissatisfied	41	10.7	3.37	1.364	-0.184
	Slightly Dissatisfied	68	17.7			
	Neutral	72	18.8			
	Moderately Satisfied	101	26.3			
	Very Satisfied	102	26.6			
Illumination level of rear brake lamp	Very Dissatisfied	37	9.6	3.42	1.355	-0.236
	Slightly Dissatisfied	61	15.9			
	Neutral	83	21.6			
	Moderately Satisfied	85	22.1			
	Very Satisfied	118	30.7			

Table 11: Descriptive Statistics and Normality Assessment for Satisfaction factor (continued)

Variables	Descriptive Statistics					Normality Assessment
Item (People satisfaction)	Scale	Frequency	Percent	Mean	Standard Deviation	Skewness
Motorcycle rear brake light replacement (if damaged)	Very Dissatisfied	35	9.1	3.21	1.363	-0.021
	Slightly Dissatisfied	59	15.4			
	Neutral	75	19.5			
	Moderately Satisfied	91	23.7			
	Very Satisfied	124	32.3			
Hazard system of the road	Very Dissatisfied	45	11.7	3.08	1.252	0.130
	Slightly Dissatisfied	49	12.8			
	Neutral	86	22.4			
	Moderately Satisfied	101	26.3			
	Very Satisfied	103	26.8			

The skewness provided in the table above were used to measure the data's normalcy statistics. It is important to note that skewness of the importance factor were found to be between -2.331 and 2.20, respectively, in the earlier table of data. Secondly, satisfaction factors have skewness ranging from -0.21 to 0.315.

4. Discussion

This subtopic was created to address the study's research objectives in light of the findings. The researchers are examining the factors that contribute to motorcycle accidents and attempting to ascertain the level of awareness among motorcycle riders operating at night in Sabak Bernam. The discussions were based on data acquired from the respondent, who was a resident of Sabak Bernam. This chapter summarises the statistical analysis, examines the study's shortcomings, and closes by making recommendations for additional research to increase people in Sabak Bernam level of awareness. This finding were shown from the table 4.6 and 4.7 which is the data taken form descriptive analysis. The finding also shows that majority of the respondent's level of awareness is at satisfied level. According to (Jane Daniel Anak Mugan, 2014), riding at night time with LED safety such as vest can definitely enhance the visibility of motorcyclist at night time.

5. Conclusion

The purpose of this study is to analyse motorcyclist awareness (night riding) using three proactive measures from a self-reported study on rural roads in Sabak Bernam. The findings of this study reveal that the majority of riders who ride at night have a good level of awareness regarding motorcycle and road safety. The importance and satisfaction factors may be judged in terms of their level of awareness of road safety, and the majority of respondents agree that riding at night without taking any safety procedures can result in an accident.

Regarding to determine the correlate analysis attitude of riders toward motorcycle brake lamp, respondents has responds their stand that in section B, the importance of the rear brake lamp is very important as the mean for the analysis is the higher than other question. The respondents agree that repairing the rear brake lamp of broken is very important.

To determine the level of awareness among motorcyclists on road safety during night rides, respondents gave such an impressive responds due to the question about the dangerous of ride at night time an interest to ride at night time. Majority of the respondents realized that ride at night time in Sabak

Bernam nee a high safety precautions. This is proven in Section C: Satisfaction Factor that respondents not satisfied with the streetlight in Sabak Bernam

Acknowledgement

References

[1]   Road Transport Departmen (JPJ) (2013). Akta Pengangkutan Jalan 1987 [Road Transport Act 1987]. *Akta*, 1–39. http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act 333 - Road Transport Act 1987.pdf

[2]   Department of Statistics. (2018). *Malaysia Number of Motor Vehicle: Newly Registered:MotorcyclesEconomicIndicators*.https://www.ceicdata.com/en/malaysia/motor-vehicles-registration/number-of-motor-vehicle-newly-registered-motorcycles

[3]   S. Plainis., I. J Murray, & , I. G Pallikaris. (2006). Road traffic casualties: Understanding the night-time death toll. *Injury Prevention*, *12*(2), 125–128. https://doi.org/10.1136/ip.2005.011056

[4]   M. F Musa , S. A Hassan & , N. Mashros. (2020). The impact of roadway conditions towards accident severity on federal roads in Malaysia. *PLoS ONE*, *15*(7 July), 1–12. https://doi.org/10.1371/journal.pone.0235564

[5]   P. C Pfaffenbichler. (2010). Motorcycles. *A Dictionary of Transport Analysis*, *1*(May), 277–279. https://doi.org/10.1007/978-3-319-49034-2_3

[6]   F. Bella., A Calvi., & F. D'Amico. (2012). Impact of Pavement Defects on Motorcycles' Road Safety. *Procedia - Social and Behavioral Sciences*, *53*, 942–951. https://doi.org/10.1016/j.sbspro.2012.09.943

[7]   McNaughton, D. B., & Cowell, J. M. (2018). Using methods of data collection. *Advanced Public and Community Health Nursing Practice: Population Assessment, Program Planning and Evaluation, Second Edition*, *38*, 127–153. https://doi.org/10.1891/9780826138446.0006

[8]   C. K Dye. (2014). *Demographic Profile and Survey of Alternatively Certified Texas Music Educators: Experiences, Perceptions, and Policy Implications*. 1–167.

[9]   A. Joseph., R. Gliem Rosemary. Gliem. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. Midwest Research to Practice Conference in Adult, Continuing, and Community Education, 14(C), 349–372. https://doi.org/10.1016/B978-0-444-88933-1.50023-4

[10]   H. Taherdoost, "Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research", *SSRN Electronic Journal*, 2016. Available: 10.2139/ssrn.3205035.