

ANALYSIS OF FACTORS INFLUENCE TO FATAL AND SERIOUS ACCIDENTS CONSIDERING ALL TRAFFIC MOVEMENTS ON RURAL ROADS IN MALAYSIA

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1. INTRODUCTION

This paper presents the analysis of factors influence to fatal and serious accidents on multilane rural roads in Malaysia. The objective is to identify the vehicles movements and factors significant to serious accidents. This paper uses the number of fatal and serious accidents and the accident point weighting as the accident indicator. This study carried considerable of surveys to observe all traffic movement by type of vehicles at intersection to constructed regression models. The finding shows that the models appear to be valuable for many applications such as identification of factor accident reduction due to road safety infrastructure and traffic movement.. The most common accident indicators that have so far been used are the number of accidents per year (accident frequency) and the number of accidents per 10,000 kilometer travelled (accident rate). However, fatal and serious crash and accident point weighting have rarely been accounted for in the road accident analysis Models. In this research we analyze the factors contributing fatal and serious accidents in order to clarify the danger posed by vehicle movements and other important variables.

2. ANALYSIS FACTOR FOR ACCIDENT

FS5, FS1 and APW5 are divided into dependent variables for analysis. FS5 shows the number of fatal and serious injuries (per four hours for 5 years). This accident data was collected over a 5 years period (2006-2010) in blocks of a four hour period, ranging from morning (6:00-10:00), midday (12:00-16:00) and evening (16:00-20:00). Therefore, FS5 has three data for a day and 33 data for a total in all sections and periods. The accident points weighting system is set out in the following equation ; $APW = X_1(6.0) + X_2(3.0) + X_3(0.8) + X_4(0.2)$. X_1 = Fatal; X_2 = Serious; X_3 = Slightly; X_4 = Damage. APW5 is Accident point weighting (per four hours for 5 years). FS1 is the number of fatal and serious injuries (per four hours for 1 year). This accident data was collected over 1 year (2010) data and in the same three periods as FS5.

3. REGRESSION MODEL

Table 1 show dependent variables (APW5 and FS5) sharing almost the same significant effect for independent parameter such as access point, road median, signalized opening, motorcycle turning right (McRTi).

Table1: Result of accident factor estimation model

	Model1(FS 5)		Model2(APW 5)		Model3(FS 1)	
Variable	Parameter	t-Stat	Parameter	t-Stat	Parameter	t-Stat
Constant	-0.33	0.83	8.17	3.25	-0.15	0.71
AP	0.18	4.04***	1.66	5.96***	0.05	2.04**
MD	-1.32	-3.54***	-6.74	-2.81***	-0.45	-2.22***
McRTi	0.02	3.04**	0.14	2.77***	0.02	3.64***
R	0.77		0.81		0.69	
F	14.06		18.43		9.03	
Sample	33		33		33	

*, **, ***=Significant at the 90%, 95% and 99% level, respectively

AP was significantly correlated with FS5 with positive value in regression analysis as shown in **Table 1**. Therefore, this un-signalized intersection will contribute to many conflicts and accidents since no traffic light devices exists, and traffic is free to move without any control. Installing road medians can effectively reduce the number of accident. Road medians propose to prevent vehicles crossing the roads freely and also prohibit the right-turn drivers from the junction on to the main stream. The incidence of motorcycles turning right from a minor road was significantly related to FS5, with positive value in regression models as presented in **Table 1**. It shows that a motorcycle right turn from a minor road can be addressed as the most critical movement because it needs to cross 2 to 3 major road lanes.

4. CONCLUSION

The regression analysis indicated that the variables of access point, motorcycle turning right, opening signalization and road median were significant and important factor for the fatal and serious accident. It also showed that a motorcycle turning right from a minor road can be classified as the most critical movement. This is because the high speed and dual-directional vehicles would reduce the gap for motorcycles to turning right, forcing them to make a dangerous turn, although they is high risk of an overturning accident.

REFERENCES

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