An evaluation of highway crash-prone areas: A case study on Pan Borneo Highway in the state of Sarawak

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Abstract. Road traffic crashes is one of the major causes of death that needs to be addressed globally. Many studies have been conducted to identify the contributing factors to traffic crashes and to determine the required preventive measures. This study evaluates the causes of 164 traffic crashes along a 10 kilometres section of Pan Borneo Highway Sarawak. The study investigated the main causes of traffic crashes within this section of road through multiple sources: based on expert on site evaluation, analysis of site incident report and police accident record. The finding reveals that most of the accidents (93%) occurs during the daytime, weather contributes a combined 69% and private car owners (80%) cause most of the traffic crashes. The study also indicates that the road condition is a significant factor to the occurrence of traffic crashes in that area contributing 64% of the total crashes.

1. Introduction

Road transportation system plays a major part on the development of socio-economic status in a country. The mobilisation of people or goods from their origin to destination depend on its accessibility. However, frequent travelling on road causes increasing of traffic crash. The World Health Organization reported in 2016 that road accident is eighth leading cause of death and it is expected to be the fifth cause of death in year 2030 worldwide [1-3]. In Malaysia, road traffic crash was ranked at fourth (4.6%), after Ischemic heart diseases (13.9%), Pneumonia (12.7%) and Cerebrovascular diseases (7.1%) for the causes of death according to government's statistic report in year 2017 [4]. An average of 6,150 deaths were reported yearly due to road traffic crashes from 2007 to 2018 in Malaysia [5], this has made it imperative to investigate the causes and to determine the required preventives measures [6-7]. The probable causes of traffic crash can be identified based on the crash patterns [8], according to Malaysia Institute of Road Safety Research (MIROS), the possible causes of road traffic crashes are but not limited to human careless (80.6%), unsafe road conditions (13.2%) and vehicle condition (6.2%) [5].

Jesna and Anjaneyulu [1] reported the uncertainty in the behaviour of drivers to the same situation, and the geometry of road is a significant factor in the cause of accident [1]. Dudziak et al [6] identify driver behaviour as a major factor in road accident [8]. The reliability of different drivers or vehicles when reaching an unsafe road condition will be different, and the failure in controlling the vehicle may cause the traffic crash. While human errors appear to be the major cause of traffic crash, poor road conditions could lead to traffic crashes. This article presents a case study finding based on an evaluation conducted at crash-prone areas along Km 421 to Km 431 (Jalan Betong / Sarikei / Meradong) of Pan Borneo Highway in the state of Sarawak. Pan Borneo Highway is a major route connecting major towns