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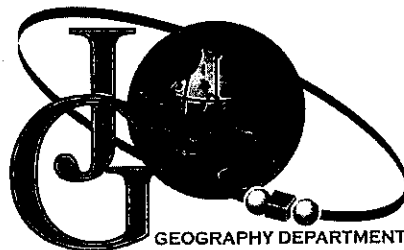
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SPATIAL ANALYSIS ON CAUSES OF FATAL ROAD ACCIDENTS IN BLACK SPOT AREA: A CASE STUDY IN THE NORTHEAST DISTRICT OF PENANG, MALAYSIA

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ABSTRACT

The main objective of this study is to analyze the spatial pattern and the main cause of fatal road accidents in the black spot area. This study used fatal road accident data in the Northeast District of Penang, Malaysia for the years 2011 and 2012. By applying Geographic Information System (GIS), Kernel Density Estimation (KDE) analysis was used to identify the black spot area of fatal road accidents. The total number of fatal road accidents in 2011 and 2012 was 90 and 88 respectively. The analysis shows that the highest fatal road accidents, which were 55 cases, were caused by skidding vehicles while the nethermost cause was the impinged side of the vehicles, mechanical, reversal and U laps, respectively with only 1 case for each factor. The major causes of fatal road accidents at the black spot area were due to the skidding vehicle, driver changing route, grazed vehicle, road users crossing roads and drivers using opposite routes. From the analysis, this study shows that each black spot area had different causes for the fatal road accident. Even though human attitude or drivers' behavior has been accepted as the main cause of fatal road accidents, however, there are also a few other causals for black spot area of fatal road accidents causal such as road physical factors, population density factors, economic and social activity factors. This is because the human attitude or behavior would be influenced by these causes which then stimulate the good or bad conduct of a driver. Therefore, the monitoring and prevention conducted to reduce the rate of fatal road accidents should take into account and stress more on the cause of the accident.

Keywords: Fatal road accident, factor, Geographic Information System (GIS), Kernel Density Estimation (KDE), pattern, road