GIS BASED TRAFFIC ACCIDENT ANALYSIS IN NEGOMBO POLICE AREA

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Loss of life, injury and damage to properties of road traffic accidents cause negative influence on the economy of a country. But identifying the cause for the accidents and managing it would be beneficial to the county's economy. This accident analysis study aims at the identification of locations with high rate of accident and safety deficient areas in Negombo police area and focused on finding the severity of accident especially at junctions.

There are several studies, carried out by academics, using Geographical Information System (GIS) to identify the hot spots for particular applications and using statistics to analyze accident contributing factors. They applied planner, network, spatial autocorrelation methods etc to find hot spots using GIS.

For the purpose of the study, accident particulars like date, time, location, type of accident, type of collision and type of the vehicle involved are collected from Accident Register (AR) of the Negombo police for the accidents happened in the years 2009, 2010 and 2011 and entered in to accident database. A personal geo database was created using Arc catalog. By defining the topology, road network was created and extracted the junctions using Network analyst extension of the Arc GIS for the study area.

The study uses, GIS to analyze the dataset and Getis-Ord statistic to identify the hot spots. A model created in the model builder; differentiate junctions using a classification and associated accidents which are used for further analysis like vehicle involved in accidents, temporal analysis and spatio temporal analysis. The density function available in the spatial analyst extension of the Arc GIS was applied to differentiate the study area in to three on the basis of density of the accident in Negombo police area during the year 2009, 2010 and 2011.

From the study, type of junction critical for accident, type of vehicle mostly involved with accident, road identified with a special case, accident peek location and time are identified and presented for the study area. Spatial analysis in combination with spatial statistical and a model based approach was carried out to find the severity of the cases.

This study emphasizes the continual updating of data for accurate and reliable information for the use of road safety management.