

**APPLICATION OF GIS FOR TRAFFIC ACCIDENTS  
MAPPING AND ANALYSIS**

**W.M.V.K. Dayawansa**

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Developing countries such as Sri Lanka face many challenges in its road to attaining economical growth and prosperity. The challenges so encountered by the country namely are the recently concluded three decades of war with the Liberation Tigers of Tamil Elam and the Tsunami floods which perished thousands of people in the country. It is reported through a study that the highest cause of death or injury since the conclusion of the war, is due to traffic accidents. Therefore, it is considered opportune to study the subject of traffic accidents and the related areas at this present time.

Traffic Accidents Analysis studies aim at the identification of high rate accidents locations (Hot spot / Black Spots) and most vulnerable areas along the highways. In this study, an effort has been made to identify the accidents prone zones in Kelaniya Police Division using Geographic Information Systems (GIS) as a tool. For this purpose, the road accident data for the years 2007, 2008 and 2009 pertaining to the Kelaniya Police Division have been used. Accidents particular like Date, Location Type, Day of Week, Month of Year, Weather Condition, Road Surface, Street Lightning, Number of Casualties and Time of Day (Day / Night), etc... are included in the GIS Database. Accidents analysis studies aim at the accidents mapping, identification of high rate accidents locations (Hot Spot / Black Spot) and safety deficient areas along the highways which are run through Kelaniya Police Division. The "Kernel Density" function and "Getis-OrdGi\*" statistic in the "Spatial Analyst" extension of the ArcGIS software were used to identify the accidents prone areas during the study period. Hot Spot analysis and Kernel Density tools were applied to identify the accidents patterns.

Based on the result, suggestions have been provided to reduce the accidents in the future and further studies on traffic accidents analysis.

**Keywords:** - GIS, Hot Spots, Getis-OrdGi\* statistic, Spatial, Kernel Density

