Geo-Spatial Patterns of Crime in Mirihana Police Division

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Geo-Spatial Patterns of Crime in Mirihana Police Division

By

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DECLARATION OF THE CANDIDATE

I do hereby declare that work described in this thesis was carried out by me under the supervision of Prof. C.K.M.Deheragoda and Mr. H.M.J.Malavige, and report on this thesis has not been submitted in whole or in part to any University or any other institution for another Degree/Diploma.

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ABSTRACT

Crime recordings which are available in police stations are manual recordings (police records) of arrests, crime events, and charges. There are no sufficient systems have been still developed for crime mapping, and other types of recording. To inform the targeting of resources for crime prevention, police investigations, and evaluation effectiveness of crime prevention initiatives and assistance in the prevention and rapid response to crime. Therefore, this study focuses to find out identification of crime locations, time and the factors that directly and indirectly affect crimes. Furthermore, it's the study stress on the need of analyzing the access to GIS operation for crime analysis and crime data.

Geographic Information System (GIS) uses geography and computer-generated maps as an interface for integrating and accessing massive amounts of location-based information. GIS allows police personnel to plan effectively for emergency response, determine mitigation, priorities, analyze historical events, and predict future events. GIS can also be used to get critical information to emergency responders upon dispatch or while route to an incident to assist in tactical planning and response. GIS plays an important role in crime mapping and analysis.

The objective was to identify the relationship between crime and geographic environment. In addition, upgrading the land use map for the requirement of analysis, finding out hot spots in location where deferent crimes keep occurring over an extended period of time and finding out the location to give more attention by the police personnel.

The methodology of the study was consisted of study area, data and data collection techniques and analytical methods. The area was the Mirihana police station that was

selected to study the problem using different techniques and secondary and primary data. The analysis was mainly carried out using GPS and GIS techniques.

The relationship between environment and crime is very clear. Specially, road network, commercial clusters and low income settlement areas have a positive relationship and other factors like open space, government institution, parks, grounds etc. have no direct relationship with crime.

Key Wards - GIS, Crime, Spatial Pattern, Police, Crime Analysis

Chapter One

INTRODUCTION

1.1 Introduction

The study of crime has traditionally been the preserve of other disciplines such as sociology and psychology and it was not until the late 1970s that the spatial dimension to crime began to be more fully explored. The police have long recognized the inherent geographical component of crime by sticking pins into maps displayed on walls, where each pin represented a crime event, but it was studies such as those from the 'Chicago School' of the 1930s that first demonstrated the importance of geography in understanding crime.

The new trend in techniques that identifying patterns and concentrations of crime are related to the topics such as the exploration of the relationships between crime and environmental or socio-economic characteristics and techniques to assess the effectiveness. Geographic Information System (GIS) uses geography and computer-generated maps as an interface for integrating and accessing massive amounts of location-based information. GIS allows police personnel to plan effectively for emergency response, determine mitigation, priorities, analyze historical events, and predict future events. GIS can also be used to get critical information to emergency responders upon dispatch or while route to an incident to assist in tactical planning and response. GIS plays an important role in crime mapping and analysis. Response capabilities often rely on a variety of data from multiple agencies and sources. The ability to access and process information quickly while displaying it in a spatial and visual medium allows agencies to allocate resources quickly and more effectively. In the establishment of legal information about the location of a crime, incident, suspect, or victim is often crucial to determine the manner and size of the response. GIS software helps co-ordinate vast amounts of location-based data from multiple sources. It enables the user to layer the data and view the data most critical to the particular issues. It is used world over by police departments, to provide mapping solutions for crime analysis. In addition, it could help to control criminal tracking, traffic safety, community policing, internet mapping, and numerous other tasks.

The rate of crime events is increasing in all developing countries due to transform of capability and majestic lifestyle and also due to poor socio, political, and environmental conditions. Naturally crime does not disappear by itself. Police departments are on the duty of defending the citizen's safety and taking precautions to minimize the risk of crime. It's long been common practice for the police to identify locations and times that are more liable to criminal activity .To reduce or eliminate the crime, some actions, such as crime prevention methods, ought to be taken. Crime prevention can be signified as a set of ideas for hostility incident and includes the activities taken by individuals and groups, both public and private.

1.2 Study Problem

Different police stations have the responsibility of handling various crime incidences in within the boundaries under their jurisdiction but at the moment have problems with their recording system, and aggregation of crime incidents in all police stations.

The crime recordings that are done in the police stations in Sri Lanka are the manually keeping records (police records) regarding all arrests, crime events, and charges and it is difficult to do decision making for all of police stations. There is no satisfactory and sufficient system for crime mapping, incident time and place in Sri Lanka. To inform the targeting of resources for crime prevention, police investigations, evaluate the effectiveness of crime prevention initiative and assistance in the prevention and rapid response to crime. Therefore, this study focuses on identifying the crime location, time and the factors which can have a direct or indirect association with crimes while assessing the need of computer hardware, GIS software, GIS operation for crime data and crime analysis.

1.3 Significance of the Study

GIS is a powerful tool to assist in the management, integration and analysis of a disparate range of data. GIS is particularly suited to crime data because of the inherent geography that exists in a crime incident. Many other forms of data also have a spatial component to them, making their geography form the common denominator that enables these data to be

brought together and managed, combined and cross-analyzed to explore possible relationships between the data.

The distribution of crime across the landscape is geographically random since crimes are human phenomena. For crimes to occur, offenders and their targets - the victims must exist at the same location for a period of time. Several factors, including the lure of potential targets and simple geographic convenience for an offender, influence where people choose to break the law. Therefore, geography plays an important role in law enforcement and criminal justice. A popular slogan says criminals are not spirits. They move from one place to the other, and live in the society just like every one of us (GIS team, 2005).

The ability of GIS to relate and synthesize data from a variety of sources enables analysts to examine various aspects of criminal activity, including the built environment, crime risk and opportunity measures, and offender search patterns. Several examples of the uses of GIS for both strategic and tactical crime analyses have previously been cited. The utility of GIS depends on

(a) accuracy of the data

(b) data attributes associated with each incident

(c) database, mapping, and analytical capabilities of the GIS.

Geographic Information System (GIS) as a tool can be used by police personnel to plan effectively for emergency response, determine mitigation priorities, analyze historical events, and predict future events. GIS can also be used to get critical information to emergency responders upon dispatch or while route to an incident to assist in tactical planning and response. GIS helps identify potential suspects to increase investigators suspect base when no leads are evident. Response capabilities often rely on a variety of data from multiple agencies and sources. The ability to access and process information quickly while displaying it in a spatial and visual medium allows agencies to allocate resources quickly and more effectively. GIS software helps co-ordinate vast amounts of location-