Geo – Spatial Patterns of Grave Crime in Central Business District of Colombo City in Sri Lanka

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 R.M.K Rathnayake. and Dr Sunil Rajaneththi 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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Geo-Spatial Patterns of Grave Crime in Central Business District of Colombo City in Sri lanka

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ABSTRACT

Current crimes have been recorded manually by the Police Stations. It is not sufficient for the activities done by inspecting the reports and maps for preventing crimes. The expectation form this study is to be successful in crime operations by recognizing the factors, which are effective directly and indirectly between the crimes, time and crime locations.

There is a possibility of understanding immediately and correctly about the pattern of crimes by analyzing and mapping accurately by utilizing the Geographic Information System (GIS). Therefore, facilities are provided to respond for the crimes rapidly by the Police Officers, to plan the crime operations efficiently, to know the crimes beforehand, to analyze the crime incidents and control the crimes by this Geographic Information System.

It is a relationship to recognize connectivity available between the crime and the geographic atmosphere as the objective of the studies. In addition to that, another importance is to recognize the time of taking place a crime, differ according to the time and the locations which crimes are taking place mostly.

By utilizing differed technological methods, secondary and primary data were selected in the central business district in Colombo city. The analyses were mainly curried out using GPS and GIS techniques.

The crimes are extended over specially wholesale and retail Market areas.,central economic centers, public transport areas, low income population inhabitant areas and surrounding of main roads.According to above facts it is learnt that there is direct combination between environment and criminals in Colombo area.

Keywords: GIS, Crime, Spatial Pattern, Police, Crime Analysis

Chapter One

INTRODUCTION

1.1 Introduction

The name 'Colombo' (Kolamba) came traditionally as the stop of the River Kelani (Kolonthota). 'Colombo' came as 'Kola-Amba-Thota' (the harbor with mango trees) which was used by Sinhalese earlier. Colombo became the main city of Sri Lanka under the British colonization in 1815. However, it remained till the country gets the independence in 1948. In 1978, Sri Jayawardhanapura Kotte became the administrative city in Sri Lanka while Colombo became the center city of trade.

Merchants had known Colombo city for 2000 years. Roman, Chinese, and Arabian merchants paid much interest towards Colombo because it developed their trade widely. In 1505, Portuguese stepped to this country to get more benefits by trading of spices. During the long administration of the Dutch, Colombo was strictly controlled and it was concerned as the center of sea trade by East Indies Company (VOC).

As a result of the massive expansion of plantations such as rubber, tea, coconut and coffee, the economy had multiple effects on the other sectors of the economy as well as the entire social fabric. Infrastructure facilities like transportation and telecommunication developed accordingly and the Colombo harbor was also developed. Moreover, to support the smooth functioning of the plantation economy, a large number of regional towns mushroomed throughout the plantation region. As this was a new process of urbanization, transport system was improved in Colombo city.

After spreading the authority in the Colombo city by the British, protection was given by the British army to the city. In 1799, Fredrick Miles was appointed as the fiscal officer and he was responsible for some duties in the Colombo city including protection.

During this time, the British lived in the Fort while the Dutch lived in Pettah. The high court was established in 1801 to handle and solve severe crimes and held extra sessions in other main cities.

To order the duties of the department of police in Pettah, detailed rules were established in Article 14, 1806. According to this, Pettah was divided into 15 parts and 28 police constables were assigned to these parts. Arresting the suspects in the night, arresting the people who break peace in day or night, keeping records of residents were some of the duties of these police constables.

In 1805, 490 crimes such as gang robberies, illegal droves, murders, deforestation were reported in Colombo city and it was 524 in 1806. In 1820, there were about 130,000 populations in Colombo city. After permitting to Tamils and Muslims to settle there, the population increased rapidly.

Diversification of the economic life and the sophistication of the social division of labour compelled the people to engage with others in the social world more frequently. Development of transportation including massive development such as road construction and the introduction of new modes of transformation, especially railway and other motor vehicles, growth of postal and telecommunication services had a revolutionizing effect on the social life. The urban population was growing fast and cities were attracting more and more than rural areas. And tourists also came to live in the city. Because of such reasons crimes showed an improvement.

A crime basically means that a damage or an action which harm to a body of a person or to property. Actions against the government are also concerned as crimes. There is no common definition about what crime is. Crimes can be categorized as follows;

In 1867, crime data collection was done according to this.

- Murders
- Casual murdering
- Poisoning for robberies
- Robbing
- Money robbery
- Rode robbery

- Stealing
- Illegal droves
- Damages by flame
- Rapping
- Unnatural offends
- Overreaching houses
- Escaping from jail

52157 of crimes were reported throughout the island in 1890. Among those crimes, murders- 893, robberies- 499, stealing of property- 16284, cycle stealing- 1886, severe injuries- 2190, knife injuries- 7513 were there. Under the heading 21 of grave crimes, 48364 crimes were reported in 1990. Now the rate of grave crimes (island wide) increase and decrease yearly.

Nearly in 1910, Dobigin, superintendent of police divided the Colombo area as North, Central and South Divisions of assistant superintendent of police.

There are 07 Police Station in Colombo Central Division as fort, pettah, maradhana, keselwatta, maligawatta, Slave Island, wolfendhell and damstreat.

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 'place' and 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 is techniques that included identifying patterns and concentrations of crime; 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 plays an important role in crime mapping and analysis. Response capabilities often rely on a variety of data from multiple agencies and sources.

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, both large and small, to provide mapping solutions for crime analysis, criminal tracking, traffic safety, community policing, Internet mapping, and numerous other tasks.

GIS helps crime officers determine potential crime sites by examining complex seemingly unrelated criteria and displaying them all in a graphical, layered, spatial interface or map. It also helps them map inmate populations, fixtures, and equipment to provide for the safety of inmates by separating gang members, identifying high-risk or potentially violent inmates, and identifying hazardous locations in an area. It reduces the potential for internal violence by providing better command and control. GIS functions, when combined with capabilities of location identification devices such as GPS facilitate tracking the movement of high-risk inmates or at-risk personnel throughout an area. It is more cost-effective for the crime analyst to come up with the information than for patrol officers to do it themselves.

Virtually every operational activity in the police department includes spatial relationships. Traditionally, these activities have been supported by paper maps and pins. Police officers now have the ability to immediately generate maps directly relevant to the situation at hand. Police agencies collect vast amounts of data from many sources including called-for-services, arrests, first information reports and daily report. Data in this form, however, can be difficult to visualize. The same information displayed graphically provides a powerful decision making tool for investigators, supervisors, and administrators. The visual format shows relationships and patterns that are buried in the data. GIS could also be used to explore the relationship between crime and the environment.

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

Colombo is an area where ample commercial activities happened. This is less populated area though during the day time huge population are frequenting in this area. The factual study of criminology is what are the elements of criminals population will be face , time period of crimes, places crime happened ,and type of criminalist.

Through the traditional methods which implementing to criminalize the global criminal controls and management decisions are abortive. Adjudication can not proceed through traditional methods (Criminalizing system) Based on these analyzing systems criminal dominate systems are poor.

The facts such as changing of time and changing the nature of the land, changing the methods of criminals, decisions which the data are analyzed based on traditional methods are common for all police stations, programmers of prevention of crimes based on incorrect decisions, using resources for police observations of preventing crimes and fast responding for crimes and crime preventing are also not successful.

1.3 Significance of the Study

A GIS is a powerful tool to assist in the management, integration and analysis of a disparate range of data. GIS are 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.

A Geographic Information System (GIS) as a tool can be used by police personnel's to plan effectively for emergency response, determine mitigation priorities, analyzing historical events, and predicting future events.

The types of crime analysis are organized around several factors, including the nature and source of the data, the techniques applied, the results of the analysis, the regularity and frequency of the analysis, and the intended audience and purpose. No typology will ever result in a set of definitions that are completely exclusive or exhaustive; we must always be prepared for some overlap in definitions depending on the circumstances, as well as new ideas and techniques to emerge. The goal of this section is to provide a structure for the focus and work of crime analysts, to assist with crime analysis education and training, and to support professional activities such as job descriptions, roles, and responsibilities.

The IACA recognizes four major categories of crime analysis, ordered from specific to general: 1) crime intelligence analysis, 2) tactical crime analysis, 3) strategic crime analysis, and 4) administrative crime analysis. Crime maps are becoming significant tools in crime and justice. Advances in the areas of information technology and Geographic Information Systems (GIS) have opened new opportunities for the use of digital mapping in crime control and prevention programs. Crime maps are also valuable for the study of the locational aspects of crime. Maps enable areas of unusually high or low concentration of crime to be visually identified. .(Park K.S -2014).

A hierarchical model dealing with crime analysis is proposed and applied to the regional analysis of crime in Colombo city, the model helps to identify spatial concentration of crimes in specific area.

In Sri Lanka, though the Police Department consists of an IT Division, still GIS is not being implemented for crime analysis or any other operation. There is a need to apply this potent technology in Sri Lanka police department and the present study was done as a model for the implementation of GIS in Sri Lanka policing. The aim of the present study is to analyze the crime scenario of Colombo city by using GIS technology.

Crime is an act, default or conduct, prejudicial to the community, the commission which, by law, renders the person responsible to punishment by a fine, imprisonment or other penalty. The scenario of crime in Nigeria disregards class distinction in the society, as both high (haves), and low (have notes), experienced similar and equal visitation of the hoodlums from time to time. The resultant tragedy, suffering, colossal loss and distress, occasioned by those inimical visits, have been pervasive and had left an indelible mark on our national psyche and societal tranquility. Worse still is the fact that the law enforcement agencies are yet to be computerized for effective record keeping, analysis of cases, easy reference cum retrieval and storage of information to help strategize and adequately plan the combating and eradication of crimes in general. As an entity, crime has spatial attributes, *i.e.* location, time and process. In essence, availability and quick access to timely and up-to-date spatial information about crime-prone areas, to the law enforcement agencies, will in no small way contribute to effective policing of the entire state. Policing methods in Nigeria are still manual and un-automated. The old filing system of record-keeping is still in use. This limits the force from having the technological edge over the ever increasing technology sophistication of the criminals.

1.4 Objectives

In this research main objective is to identify outstation population who visits to Colombo, and principally what kind of criminals they opposed and using GIS technology crises of enhancing criminal management. the specific objectives as following

- To Classify the crime incidents base on types and time
- To identify the place where crime are occurred
- To identify the persons who are victim of the crimes