UNIVERSITI TEKNOLOGI MARA

CRIME MAPPING STUDIES OF AN URBAN SETTING USING GEOSPATIAL TECHNOLOGY

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PhD

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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ABSTRACT

If cities are to become a resilient, sustainable, and safe city, crime incidents need to address as a high priority. The problem of urban crime cannot be solved simply by providing more police staff and spending more money on development and management in the policing policy program. There is an urgent need for a better understanding of the current and potential role of the criminogenic city to meet the requirements in sustainability and liveable city. Thus, the adoption of a strategic approach is needed in planning and managing urban crime. This study aims to investigate the crime phenomena within the Petaling and Klang Districts using geospatial technology. Based on the general aim, the objectives are i) to determine the crime trend and pattern of the study area in environmental criminology, ii) to determine the significant factors influencing the crime pattern using GIS-based analysis, and iii) to evaluate the effectiveness of policing policy in reducing the crime rate with CCTV installation and smart patrolling.The methodology adopted for this study are divided into four main phases, which are, preliminary studies, data collection, data pre-processing and processing and data analysis. Preliminary studies include literature review and selection of study area. The area of study focused only the administrative boundaries of Petaling Jaya, Shah Alam and Klang. There are 45 police administrative boundaries within this study area. This area was selected as the study area because of its high population density as well as high crime rate. The data collection phase involved collection of various datasets from various organisations or government agencies. The main data sets are crime locations from 2011 to 2017, social economic data from the Department of Statistic and land use data from PLANMalaysia. Data pre-processing and processing stage involved generations of crime pattern maps, CCTV location maps and Omnipresence patrol distribution maps. For the analysis, ArcMAP and ArcGIS Pro software were used to analyse the data. Among the analysis carried out to determine the crime pattern and trend are cluster analysis, Percent Change by Area Analysis, Hot Spots by Area Analysis, Count Analysis by Lines (street) of Communication (LOC), Optimized Hot Spot Analysis (OHSA) and Emerging Hot Spot Analysis (EHSA). Regression analysis technique is used to determine the significance of different parameters (criminal home location, land use, population density, CCTV location and Omnipresence) on the crime rate of the study area. Results from this study have shown that crime pattern within the study area are significant with hot spot (102 locations) and cold spot (2 locations). The overall crime pattern varies within the study area over the study period from 2011 to 2017 except for Taman Sri Medan, Section 17, and Sunway Business in Petaling Jaya. All the influencing factors (criminal home location, land use, population density, CCTV location and Omnipresence) tested in this study have shown significant relationship with the crime rate. Safe city program (CCTV installations) have shown variable results for different areas. The installation of CCTV in Shah Alam has successfully help to reduce the crime rate but not in Petaling Jaya. For the Omnipresence initiative, the success rate varies by month. The introduction of geospatial technology will certainly help the Royal Malaysian Police (RMP) in reducing the crime rate and hence help the Malaysian Government in achieving the United Nation (UN) Sustainable Development Goals (SDG). Future studies should consider all the different crime index types separately and the influence of criminal's way of life on the dynamic crime pattern.

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