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Deciphering Property Crime Through OLS Regression: A Demographic Study

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Received: 9 October 2024 | **Revised:** 17 December 2024 | **Accepted:** 11 January 2025

Funding: This study was supported by the Fundamental Research Grant Scheme (FRGS) (FRGS/1/2020/SS0/UNIMAS/01/1).

Keywords: Kuala Lumpur | ordinary least squares (OLS) regression analysis | population study | property crime | Putrajaya

ABSTRACT

This study explores the correlation between property crime and demographic factors in Kuala Lumpur and Putrajaya using spatial autocorrelation (SA) and ordinary least squares (OLS) regression from 2015 to 2020. The 2016 SA analysis shows a significant increase in Moran's I index (0.012905), with a positive z-score of 2.020088 and a *p* value of 0.043374, indicating spatial clustering of crime. The study examines how factors like total population, household areas, residential areas, male populations and female populations influence number of property crime cases, revealing varying relationships year by year. By highlighting fluctuations in *R*-squared and *F*-statistic values, this research challenges static crime models, advocating for adaptable, data-driven strategies in crime prevention. These findings emphasize the importance of continuous policy adjustments to address the evolving socio-economic dynamics of urban areas.

1 | Introduction

Cities are widely recognized for their facilities, enhanced employment opportunities and improved living conditions. However, rapid urbanization in developing countries has brought about several critical issues, with crime and security being among the most pressing concerns. Urban areas, often described as engines of economic growth, centres of diversity and drivers of change (Elis and Liu 2018), are also spaces where urban dwellers live, work and interact within confined physical environments. Unfortunately, these same environments can foster criminal activity, instilling fear in residents. Over recent decades, crime has emerged as a universal phenomenon, transcending cultural,

age, class, gender and gender identity boundaries. Ensuring safety and security in urban areas is crucial for maintaining stability and sustainability. The concept of urban 'livability' and 'quality of life' has increasingly been linked to personal safety and security, with crime prevention serving as a key benchmark for assessing a city's quality of life (Abubakar Ghani 2017).

In Malaysia, crime remains a significant issue despite initiatives to address it. According to PEMANDU (2014), crime rates have shown a steady decline since the implementation of a government transformation programme in the early 2010s. Notably, the crime index decreased by 15%, 11% and 7.6% in 2010, 2011 and 2012, respectively (p.108). However, many crimes

All authors agree to be accountable for all aspects of the work.

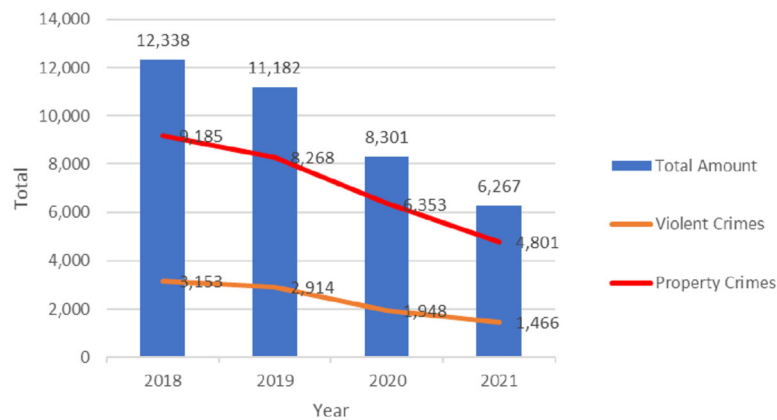


FIGURE 1 | Selected public safety statistics for property and violent crimes in Kuala Lumpur Federal Territory (KLFT) and Putrajaya Federal Territory (PFT). *Source:* Jabatan Perangkaan Malaysia (2022a) and Jabatan Perangkaan Malaysia (2022b). [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

remain unreported, contributing to what the Malaysian Crime Prevention and Suppression Department (MCPSD) identifies as ‘dark figures’ (Hew et al. 2020). Despite these reductions, property crime—encompassing offenses such as burglary, theft and vandalism—continues to pose challenges in urban areas, particularly in Kuala Lumpur Federal Territory (KLFT) and Putrajaya Federal Territory (PFT).

This study employs ordinary least squares (OLS) regression to examine the factors contributing to property crime in KLFT and PFT. The analysis addresses spatial non-stationarity in crime patterns, acknowledging significant variations in crime rates across different areas within these cities (Chiew, Amerudin, and Yusof 2020; Mohit and Hannan 2012). The insights derived are expected to assist policymakers and law enforcement agencies in crafting targeted strategies to mitigate property crime and enhance public safety. The findings will enrich existing literature on urban crime, particularly in Malaysia, and serve as a foundation for further criminological and urban studies (Heo, Moon, and Han 2014; Mohamad Ali, Tarmidi, and Mat Nor 2020). Nationally, the property and violent crime index for 2021 recorded a 19.3% decrease, with cases dropping from 65,623 in 2020 to 52,974 in 2021 (Jabatan Perangkaan Malaysia 2022a). Similar trends have been observed in KLFT and PFT, as illustrated in Figure 1. Despite these declines, addressing crime dynamics in these regions remains critical.

Globally, demographic factors are known to significantly influence crime rates (Lafree 2018; Smith and Zahn 1999). Characteristics such as population density and gender distribution profoundly impact urban crime dynamics, as evidenced across various international contexts. However, the effectiveness of initiatives by authorities to address these issues remains insufficiently examined (Mohd Hakim et al. 2019, Mohd Hakim et al. 2022; Sidhu 2005). Previous studies, such as those by Jubit et al. (2024), Masron et al. (2021), and Nordin et al. (2020), have explored crime patterns in metropolitan areas like Kuching, Sarawak and George Town, Penang Island, employing methods like the Hot Spot Getis Gi* approach to analyse burglary patterns. However, these studies often neglect the relationship between demographic characteristics and property crime, underscoring the novelty and significance of the current research in addressing this gap.

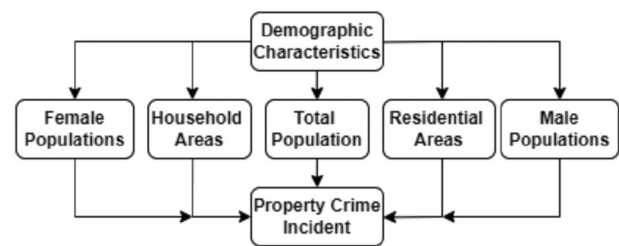


FIGURE 2 | Conceptual framework.

This study focuses on exploring the relationship between demographic dynamics and urban property crime in KLFT and PFT over a 6-year period Ahmad et al. (2024a) and Ahmad et al. (2024b). Key demographic variables such as total population, household counts, residential areas and gender distribution will be analysed to assess their impact on property crime. Understanding these patterns is essential for crime prevention and public safety. Moreover, the study emphasizes collaboration among law enforcement, social services and economic sectors in fostering safer communities (Azmy et al. 2020; Chiew, Amerudin, and Yusof 2020). Demographic factors such as residential area, gender, household size and population density provide crucial insights into the social dynamics influencing property crime. For instance, higher population densities may create more opportunities for crime by increasing the availability of targets. Each variable offers unique perspectives on the determinants of property crime, contributing to a comprehensive understanding of urban safety. Figure 2 shows conceptual framework for this research that explains relationships between demographic characteristics and property crime incidents.

2 | Literature Review

The academic discourse on crime frequently intersects with various local factors, predominantly demographic and socio-economic conditions. Numerous studies underscore the correlation between crime and elements such as unemployment, urban poverty and social inequality (Abdul Lasi and Yunusi 2020; Baharom and Habibullah 2009; Fougère, Kramarz, and Pouget 2009; Hale 1998; Mohd Hakim et al. 2022; Newburn 2016;