Replicating Urban Crime Hotspots Models Using Big Data Analytics in Lagos, Nigeria

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Abstract

Urban crime hotspots in Lagos, Nigeria have been studied extensively but often with varying methodologies and data sources. The study utilised a combination of open-source GIS software for spatial analysis and machine learning algorithms, including random forest for model training. The dataset comprised anonymized crime reports from the Lagos Police Service over three years. Random forest models achieved an accuracy rate of 82% in identifying hotspots with a standard deviation of ±5%. This finding suggests that big data analytics can effectively predict urban crime patterns. The replication study confirms and expands upon existing literature on urban crime hotspots, providing a robust method for future research and policy development. Further studies should explore the impact of socio-economic factors as additional explanatory variables in crime hotspot models. Urban Crime Hotspots, Big Data Analytics, Lagos, Nigeria, Random Forest Model Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumi ell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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