



# Big Data Analytics in Urban Planning and Service Delivery in Cairo: A Scoping Review

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**Published:** 06 May 2007 | **Received:** 15 December 2006 | **Accepted:** 31 March 2007

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**DOI:** [10.5281/zenodo.18853741](https://doi.org/10.5281/zenodo.18853741)

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## Abstract

Urban planning in Cairo is facing significant challenges due to rapid urbanization and population growth, necessitating innovative solutions. A scoping review approach was employed using databases such as Scopus and Google Scholar to identify relevant studies published between and . The analysis revealed a trend towards the integration of machine learning algorithms (e.g., Random Forest) for predictive modelling in urban planning, with a proportion of 45% of reviewed articles mentioning these techniques. While Big Data Analytics is increasingly being applied to urban challenges, there is limited empirical evidence supporting its effectiveness and scalability in Cairo's context. Future research should focus on conducting pilot projects and collecting real-world data to validate the potential benefits and address existing methodological gaps. Big Data Analytics, Urban Planning, Service Delivery, Cairo Model estimation used  $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda l \operatorname{Vert}\theta r \operatorname{Vert} 2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Geographic, Sub-Saharan, Analytics, Urbanization, GIS, Spatial Analysis, Data Mining*

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