



Multilevel Regression Analysis to Evaluate District Hospitals' Efficiency in Nigeria: A Methodological Assessment

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Abstract

District hospitals in Nigeria play a crucial role in healthcare delivery, yet their efficiency remains underexplored. The research employs multilevel regression analysis on data from multiple districts to measure hospital performance, accounting for both within- and hospital variations. Findings indicate a significant improvement ($p < 0.01$) in efficiency scores when considering contextual factors such as district size and population density. The multilevel regression model effectively captures the complexity of hospital performance, providing actionable insights for policy makers. Policy recommendations include targeted investment in infrastructure and human resources to enhance efficiency gains across districts. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Nigerian, multilevel, regression, healthcare, evaluation, outcomes, models

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