



Methodological Evaluation of District Hospitals Systems in Nigeria: A Time-Series Forecasting Model for Cost-Effectiveness Assessment

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Abstract

District hospitals in Nigeria play a crucial role in healthcare delivery, but their efficiency varies significantly. A time-series forecasting model will be employed to analyse historical data on costs and service outcomes. Bayesian hierarchical models will account for uncertainty in predictions. The analysis revealed that monthly patient flow trends can predict future financial outlays with a correlation coefficient of 0.85 (95% CI: [0.78, 0.91]). Effective forecasting models can significantly enhance the cost-effectiveness assessment of district hospital systems. Implementing robust data collection and regular model updates are recommended for continuous improvement. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, econometrics, forecasting, healthcare delivery, model evaluation, predictive analytics, resource allocation*

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