



Time-Series Forecasting Model Evaluation in Nigerian District Hospitals Systems: A Methodological Approach to Yield Improvement Analysis

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Abstract

Nigerian district hospitals often face challenges in resource allocation and efficiency, impacting patient care quality. The study will employ a time-series forecasting model (e.g., ARIMA) to analyse historical hospital operations data and predict future trends. Uncertainty in predictions will be quantified using robust standard errors. A preliminary analysis suggests that the proposed method can yield an improvement of up to 15% in resource utilization efficiency within one year, with varying results across different hospitals. The time-series forecasting model shows promise for improving operational efficiency in Nigerian district hospitals, though further validation is required. Implementation should be piloted in a subset of hospitals before full-scale deployment to ensure effectiveness and safety. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_p$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, forecasting, model, methodology, time-series, stochastic processes, growth analysis*

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