



Methodological Evaluation of District Hospitals Systems in Nigeria Using Time-Series Forecasting for Cost-Effectiveness Analysis

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Abstract

Nigeria faces significant challenges in healthcare delivery, particularly at district level hospitals. The inefficiencies in these systems can lead to suboptimal patient outcomes and increased costs. A time-series forecasting model will be employed to predict future operational costs based on historical data. Robust standard errors will be used to quantify uncertainty in these predictions. The forecasted direction and proportion of hospital expenses over the next five years indicate a slight increase, necessitating strategic interventions to mitigate potential financial strain. This study provides insights into optimising district hospital systems by using time-series forecasting for cost-effectiveness analysis. District hospitals should consider implementing resource allocation strategies and improving efficiency metrics based on the findings of this study. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Healthcare Systems, Cost-Effectiveness, Time-Series Analysis, Forecasting Models, Evaluation Methods*

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