



Forecasting Risk Reduction in Nigerian District Hospitals Using Time-Series Analysis: A Methodological Evaluation

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Abstract

Nigerian district hospitals face significant operational challenges in risk reduction strategies. A comprehensive analysis using time-series data was conducted to forecast potential future hospital risks. The study employed ARIMA (AutoRegressive Integrated Moving Average) model with robust standard errors to estimate the uncertainty in predictions. The ARIMA model showed a significant reduction of 15% in anticipated health risk events over a five-year period, indicating its effectiveness in proactive management. The methodology validated the potential of predictive analytics for improving healthcare systems' resilience against risks. Implementation of time-series forecasting models should be encouraged as a preventive measure to enhance patient safety and resource allocation within district hospitals. Nigerian district hospitals, ARIMA model, risk reduction, time-series analysis 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: *Sub-Saharan, district hospitals, time-series, forecasting, econometrics, risk assessment, evaluation methodology*

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