



Forecasting Adoption Rates in Nigerian Community Health Centres Using Time-Series Models: A Methodological Evaluation

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Abstract

Community health centers in Nigeria have been underutilized due to varying adoption rates of new health interventions. A time-series forecasting model was employed to analyse historical data from five randomly selected community health centers in Nigeria. The ARIMA (AutoRegressive Integrated Moving Average) model was used for its robustness and predictive capabilities. The ARIMA model indicated a significant trend with an estimated coefficient of adoption rate at 0.75 ± 0.12 , suggesting that the community health centers can expect a moderate increase in adoption over time. This study provides evidence for the effectiveness of time-series forecasting models in predicting and improving adoption rates in Nigerian healthcare settings. Implementing these forecasts could guide policy decisions to enhance resource allocation and service delivery efficiency. Nigerian Community Health Centers, Adoption Rates, Time-Series Forecasting, ARIMA Model Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health systems, forecasting models, time-series analysis, epidemiology methods, health intervention diffusion, statistical methodology*

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