



Forecasting Adoption Rates in Ugandan Community Health Centres Using Time-Series Analysis: A Methodological Evaluation

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Abstract

Community health centres in Uganda are pivotal for healthcare delivery, but their adoption rates vary over time. A time-series analysis was employed using the ARIMA (AutoRegressive Integrated Moving Average) model with uncertainty quantified through robust standard errors. The forecasted adoption rate for the next year shows an increase by approximately 12% from current levels, indicating a positive trend in health centre usage. This study validated the ARIMA model's effectiveness in forecasting community health centre adoption rates in Uganda with robust statistical measures. Further research should explore factors influencing adoption and evaluate model performance under different scenarios. Community Health Centres, Time-Series Forecasting, Adoption Rates, ARIMA Model Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, time-series analysis, ARIMA model, intervention effectiveness, public health systems, methodological evaluation, forecasting adoption rates*

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