



# Time-Series Forecasting Model Evaluation of Community Health Centre Systems in Uganda,

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## Abstract

Community health centers in Uganda have been pivotal in addressing healthcare needs at a grassroots level. However, there is a need to evaluate their operational efficiency and forecast future performance. A time-series analysis approach was employed, utilising data from to . The Box-Jenkins method was applied to identify patterns and forecast future trends using an ARIMA model. The forecasting models showed a significant improvement in predicting outpatient visits with a mean absolute error (MAE) of 5.3% from the baseline model, indicating enhanced accuracy in demand forecasting. The study validates the effectiveness of time-series forecasting techniques for evaluating and improving community health centre systems in Uganda. Based on the findings, recommendations are provided to enhance resource allocation and service delivery at community health centers. Community Health Centers, Time-Series Forecasting, Efficiency Gains, ARIMA Model Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi)=\text{beta}0+\beta^{-}pX_{i}$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, geographical, forecasting, econometrics, performance, intervention, regression*

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