



Methodological Evaluation of Community Health Centres Systems in Uganda Using Time-Series Forecasting Models

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Abstract

Community health centers (CHCs) in Uganda play a crucial role in healthcare delivery, particularly in rural and underserved areas. However, their efficiency and effectiveness have not been systematically evaluated, leading to potential gaps in service provision. Data from ten randomly selected CHCs were analysed using ARIMA (AutoRegressive Integrated Moving Average) model for forecasting. Robust standard errors were used to account for the uncertainty in predictions. A significant trend was observed in monthly patient visits, with a 10% increase in consultations over the last year, indicating potential growth areas requiring strategic planning. The time-series models have demonstrated their efficacy in forecasting CHC performance and resource allocation needs, providing insights for sustainable service expansion without compromising quality of care. Based on the findings, it is recommended that CHCs implement targeted interventions to address identified inefficiencies and enhance patient flow management strategies. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Networks, SocialCare, SystemicAnalysis, Forecasting, GrowthMetrics*

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