



Time-Series Forecasting Model Evaluation of Community Health Centre Systems in Tanzania: A Methodological Approach

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Abstract

Community health centres in Tanzania have been identified as critical for improving access to healthcare services, particularly in rural and underserved areas. A time-series forecasting model was applied to historical data from community health centres, focusing on key clinical indicators such as patient admissions and treatment success rates. Robust standard errors were used to account for uncertainty in the estimated parameters. The forecasted outcomes show a 15% improvement in patient recovery times compared to actual observed times, indicating the model's potential for enhancing resource allocation and service management. This study demonstrates the utility of time-series forecasting models in evaluating community health centre performance. The findings suggest that further research is warranted to validate these results across different geographic regions. Further studies should consider incorporating additional variables, such as socioeconomic factors and healthcare provider training levels, to refine the model's predictive accuracy. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Spatio-temporal, Validation, Forecasting, Model, Evaluation*

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