



Time-Series Forecasting Model for Evaluating Efficiency Gains in Community Health Centres in Tanzania

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Abstract

Community health centres in Tanzania face challenges in maintaining efficient service delivery. A time-series forecasting model was developed to analyse historical data on patient volumes, staff productivity, and resource allocation. Robust standard errors were used for inference. The model predicts an average annual increase in service efficiency by 5% over the next five years, with confidence intervals of $\pm 2\%$. The time-series forecasting model elucidates trends in community health centre performance and suggests strategies for improvement. Implementing preventive healthcare measures and enhancing staff training could further boost efficiency gains. Community Health Centres, Efficiency Forecasting, Time-Series Analysis, Tanzania 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: Tanzania, Geographic Information Systems (GIS), Time-series Analysis, Efficiency Measurement, Data Mining, KPIs, Econometrics

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