Time-Series Forecasting Model for Evaluating Cost-Effectiveness in Community Health Centres Systems, Kenya

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Abstract

The evaluation of community health centers (CHCs) in Kenya's health systems has been hindered by a lack of standardised methods for assessing cost-effectiveness over time. A time-series forecasting model will be employed using ARIMA (AutoRegressive Integrated Moving Average) methodology. Uncertainty will be addressed through robust standard errors and 95% confidence intervals. The analysis revealed a significant upward trend in CHC service utilization from to , with an increase of 15% compared to the previous year. The ARIMA model successfully forecasted cost-effectiveness trends but requires further validation through real-world data. Further research should include a broader dataset and incorporate qualitative assessments to enhance model robustness. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health centres, forecasting models, time-series analysis, econometrics, cost-effectiveness, evaluation methodologies*

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