Time-Series Forecasting Model for Evaluating Efficiency Gains in Community Health Centers in Kenya

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Abstract

Community health centers in Kenya have been instrumental in providing healthcare services to underserved populations. However, there is a need for systematic evaluation of their efficiency and operational improvements. The research utilizes a time-series forecasting model, specifically an autoregressive integrated moving average (ARIMA) model. Data on service utilization and operational costs were collected from multiple health centers. An ARIMA(1,1,1) model was identified as the best fit for predicting efficiency gains with a forecasted increase of 25% in cost-effectiveness over the next five years. The time-series forecasting model provides insights into future operational improvements and resource allocation strategies for community health centers. Implementing evidence-based policy recommendations derived from this study can enhance service delivery efficiency and sustainability. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\rightarrow}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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