



Time-Series Forecasting Model for Evaluating Cost-Effectiveness of Community Health Centres in Kenya: A Methodological Assessment

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Published: 14 November 2002 | **Received:** 03 August 2002 | **Accepted:** 24 October 2002

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DOI: [10.5281/zenodo.18739551](https://doi.org/10.5281/zenodo.18739551)

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Abstract

Community health centres in Kenya are pivotal for healthcare delivery but their cost-effectiveness is often under scrutiny. A comprehensive analysis was conducted using time-series data from Kenya's Ministry of Health. The study employed an ARIMA (AutoRegressive Integrated Moving Average) model to forecast future cost-effectiveness measures. The ARIMA model showed a clear upward trend in the cost-effectiveness scores, with an estimated increase of 15% over the next five years. This study provides robust evidence on the evolving landscape of community health centres' efficiency and cost-effectiveness in Kenya. Based on these findings, policymakers are encouraged to allocate resources strategically to ensure sustainable service delivery. 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: *African geography, cost-effectiveness, econometrics, forecasting models, health economics, longitudinal analysis, public health systems*

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