



Time-Series Forecasting Model Evaluation for Cost-Effectiveness of Community Health Centres in Ethiopia

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Abstract

Community health centres in Ethiopia have been established to improve access to healthcare services among underserved populations. However, evaluating their cost-effectiveness over time remains a challenge. A time-series forecasting model was applied to historical data collected from Ethiopia's community health centres between and . The model considered variables such as patient volume, service delivery costs, and resource allocation. The forecasted cost-effectiveness index showed a significant positive trend over the study period, indicating an improvement in healthcare efficiency with increased patient volumes. This research provides evidence of the effectiveness of community health centres in terms of cost-efficiency. The model's predictive accuracy is robust and can be applied to future evaluations. Further studies should explore the long-term sustainability and scalability of these models across different regions and timeframes, with a focus on resource allocation strategies. Community Health Centres, Cost-Effectiveness, Time-Series Forecasting, Ethiopia Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, community health centers, cost-effectiveness analysis, forecasting models, geographic information systems, healthcare economics, time-series analysis

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