



Cost-Effectiveness Analysis of Community Health Centre Systems in Rwanda Using Time-Series Forecasting Models

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Abstract

Community health centres (CHCs) in Rwanda have been pivotal in addressing healthcare access disparities, particularly in rural areas. However, their cost-effectiveness remains under scrutiny. The study employed a time-series forecasting model to analyse expenditure patterns and service outcomes over a five-year period, incorporating data from all CHCs across Rwanda. Over the analysis period, there was an average annual growth rate of 3.5% in CHC expenditures, indicating steady investment despite fluctuations. The time-series forecasting model demonstrated that while CHCs have seen cost increases, they also report significant reductions in patient wait times and improved health outcomes. Based on the findings, further investments should be targeted towards enhancing telemedicine capabilities to reduce travel costs for patients. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Rwanda, Geographic Medicine, Health Economics, Community Healthcare, Time-Series Analysis, Forecasting Models, Cost-Benefit Analysis

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