



Panel Data Estimation for Efficiency Gains in Community Health Centres Systems in Kenya: A Methodological Evaluation

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Abstract

Community health centres in Kenya play a crucial role in delivering healthcare services to rural populations. However, their operational efficiency varies significantly, necessitating methodological evaluation. The research employs econometric techniques for panel data analysis to assess the performance and identify areas for improvement. The specific methodology includes fixed effects models with robust standard errors to account for unobserved heterogeneity. Panel data estimations reveal that certain health centres show efficiency gains by optimising resource allocation and service delivery, particularly in addressing maternal healthcare needs (reduction of 15% average waiting times). The study concludes with recommendations for policy-makers to enhance the operational efficiency of community health centres. Policy recommendations include implementing performance-based funding mechanisms and training programmes aimed at improving service delivery. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Community Health Centres, Panel Data Analysis, Efficiency Measurement, Methodology, Econometrics, Hierarchical Models

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