



Multilevel Regression Analysis for Evaluating Cost-Effectiveness of Community Health Centers in Kenya: A Methodological Assessment

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Abstract

Community health centers in Kenya have been established to provide accessible healthcare services across various regions. However, their cost-effectiveness remains a subject of interest and debate. A multilevel regression model will be employed to analyse data from multiple levels, including individual patients' treatment outcomes and aggregated financial and operational metrics at the centre level. The model will incorporate robust standard errors to account for potential sources of uncertainty. The analysis revealed that factors such as geographical accessibility and patient health literacy significantly impact cost-effectiveness indicators like healthcare utilization and resource allocation efficiency. This study provides a methodological framework for assessing the economic viability of community health centers in Kenya, offering insights into how to optimise their operations for better service delivery. Based on the findings, targeted interventions aimed at improving patient engagement and infrastructure development are recommended to enhance the cost-effectiveness of these centers. Treatment effect was estimated with $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Multilevel Regression Analysis, Cost-Effectiveness Assessment, Community Health Centers, Hierarchical Modelling, Economic Evaluation, Geographic Information Systems, Public Health Economics

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