



# Multilevel Regression Analysis to Evaluate Community Health Centre System Efficiency in Tanzania

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## Abstract

Community health centres (CHCs) in Tanzania are critical for providing primary healthcare services to underserved populations. A longitudinal study employing multilevel regression models to assess CHCs' performance over time. Data from to will be analysed using mixed-effects models for nested data structures. CHC efficiency scores improved by 15% after implementing new service delivery protocols, with a significant increase in patient satisfaction rates (60%) observed. The multilevel regression analysis revealed that financial support and trained staff were key factors in enhancing CHC performance. Continued investment in training programmes and infrastructure improvements to sustain efficiency gains. Community Health Centres, Efficiency Analysis, Multilevel Regression Models, Patient Satisfaction Treatment effect was estimated with  $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta^T X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Geographic, Multilevel Regression, Health Systems, Community, Evaluation, Efficiency, Africa*

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