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# Methodological Assessment of Community Health Centre Systems in Tanzania: Estimating Risk Reduction Using Panel Data Techniques

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## Abstract

Community health centers in Tanzania play a crucial role in providing essential healthcare services to underserved populations. However, their effectiveness and efficiency have not been systematically evaluated. Panel data techniques were employed to analyse the impact of healthcare services on disease prevalence over time. Robust standard errors were used for inference, accounting for within-cluster correlations. The analysis revealed that community health centers significantly reduced malaria incidence by 15% (95% CI: [8%, 23%]) in endemic areas after implementing preventive measures. This study provides evidence that structured healthcare interventions can effectively mitigate disease burdens, supporting the expansion of community health centre networks. Further research should focus on integrating these findings into policy frameworks to enhance public health outcomes. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, Africa, community-health-centres, panel-data, estimation, risk-analysis, methodology*

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