



Methodological Evaluation of Community Health Centre Systems in Rwanda: Panel Data Estimation for Clinical Outcomes Assessment

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Abstract

Community health centers (CHCs) play a pivotal role in healthcare delivery in Rwanda, particularly in underserved rural areas. A mixed-methods approach combining quantitative econometric techniques was employed. Specifically, a random effects model was used to estimate the impact of CHC services on health indicators. Panel-data estimates revealed that patients treated at CHCs had a 15% lower mortality rate compared to non-treated groups ($p < 0.05$). The study provides robust evidence supporting the efficacy of community health centers in improving clinical outcomes, with significant implications for healthcare policy and resource allocation. Expanding CHC networks and enhancing their operational efficiency are recommended to further improve access and quality of care. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta' X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Rwanda, Community Health Centers, Panel Data, Econometrics, Outcome Assessment, Quantitative Methods, Geographic Information Systems

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