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Methodological Assessment of Community Health Centre Systems in Ethiopia Using Panel Data for Efficiency Analysis,

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of community health centres systems in Ethiopia: panel-data estimation for measuring efficiency gains in Ethiopia. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of community health centres systems in Ethiopia: panel-data estimation for measuring efficiency gains, Ethiopia, Africa, Medicine, brief report This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Community Health Centres, Panel Data, Efficiency Analysis, Spatial Econometrics, Health Systems Strengthening, Regression Discontinuity Design*