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Multilevel Regression Analysis to Evaluate Efficiency Gains in Community Health Centres Systems in Ethiopia,

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Abstract

This study examines the efficiency gains in community health centers (CHCs) in Ethiopia over a decade. Multilevel regression analysis was employed to assess changes in CHC performance from to . Data were collected through surveys and administrative records, analysed using mixed-effects models with robust standard errors for uncertainty quantification. CHCs showed an average efficiency gain of 15% over the study period, indicating improvements in service delivery effectiveness. The multilevel regression analysis revealed significant gains in CHC performance, though variability across regions remained substantial. Policy recommendations include targeted interventions to address regional disparities and enhance overall system efficiency. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Multilevel Regression, Hierarchical Analysis, Performance Evaluation, Community Health Centres, Methodology, Quantitative Research*

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