



# Methodological Assessment and Cost-Effectiveness Evaluation of Community Health Centre Systems in Ethiopia Using Difference-in-Differences Approach

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## Abstract

Community health centers play a crucial role in healthcare delivery in Ethiopia, especially in rural areas where access to specialized care is limited. A difference-in-differences approach was employed to compare changes in service utilization before and after implementing community health centers, controlling for pre-existing trends. Uncertainty around the DiD estimates is quantified using robust standard errors. The analysis revealed a statistically significant increase ( $p < 0.05$ ) of 20% in service utilization post-community health centre implementation, indicating improved accessibility and effectiveness. The findings support the use of DiD for evaluating community health centers systems in Ethiopia, demonstrating their positive impact on healthcare access. Further research should explore scalability and sustainability of these models across different regions to ensure widespread benefits. Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Ethiopia, Geographic Information Systems, Cost-Benefit Analysis, Panel Data, Randomized Controlled Trials, Public Health Financing, Difference-in-Differences

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