

# Longitudinal Evaluation of Health Centre System Efficiency in Ethiopia

A Quasi-Experimental Analysis, 2000–2026

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## ABSTRACT

**Background:** Evaluating the efficiency of community-based health systems in low-resource settings remains methodologically challenging, particularly for capturing longitudinal effects of systemic interventions.

**Purpose and objectives:** This study aims to quantify longitudinal efficiency gains within a national community health centre system, employing a quasi-experimental design to isolate the impact of a major structural reform on service delivery metrics.

**Keywords:** Health systems research, Sub-Saharan Africa, Quasi-experimental design, Longitudinal study, Primary health care, Operational efficiency

### Article Highlights

- A novel longitudinal framework for causal inference in health system efficiency evaluations.
- Quasi-experimental design isolates impact of structural reform on service delivery.
- Methodology robustly captures dynamic effects of systemic change over time.
- Findings support phased roll-outs of major reforms to facilitate rigorous evaluation.

### Methodological Note

Controlled interrupted time-series analysis with panel data using a generalized estimating equations model to attribute causality in a complex, real-world setting.

*This study offers a replicable model for evaluating systemic health interventions in low-resource contexts.*

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