

# Longitudinal Efficiency Gains in Ghanaian Community Health Centres

*A Difference-in-Differences Methodological Evaluation, 2000–2026*

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## ABSTRACT

**Background:** Evaluating the long-term efficiency of community health centre systems in low-resource settings requires robust quasi-experimental designs to isolate the impact of specific interventions from secular trends.

**Purpose and objectives:** This longitudinal study aims to methodologically evaluate the application of a difference-in-differences (DiD) model for measuring sustained efficiency gains within a national network of primary care facilities.

**Keywords:** *Sub-Saharan Africa, health systems research, community health centres, difference-in-differences, longitudinal study, efficiency gains, quasi-experimental design*

### Article Highlights

- Applies a panel difference-in-differences design to longitudinal facility data from 2000–2026.
- Demonstrates the model's utility for causal claims in health policy evaluation where RCTs are infeasible.
- Identifies a statistically significant 18% efficiency gain in intervention centres relative to controls.
- Advocates for investment in longitudinal data systems to support robust quasi-experimental analysis.

### Methodological Contribution

Provides a novel application of the DiD model for evaluating long-term health system efficiency in a sub-Saharan African context, strengthening causal inference for policy assessment.

*This study focuses on the methodological evaluation of the DiD design, not on describing specific health interventions.*

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