AFRICAN FOOD SYSTEMS RESEARCH (INTERDISCIPLINARY - INCL AGRI/ENV)
Vol. 1 | No. 1 | 2014

A Meta-Analysis of Quasi-Experimental Designs for Measuring Efficiency Gains in Rwandan District Hospital Systems

Methodological Evaluation, 2000–2026

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Published: 02 September 2014 **Received:** 12 April 2014
Accepted: 07 August 2014 **DOI:** 10.5281/zenodo.18957333

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ABSTRACT

Background: Evaluating health system efficiency in low-resource settings is critical for policy, yet robust causal evidence is scarce. Quasi-experimental designs (QEDs) have been increasingly employed to assess efficiency gains from interventions in district-level hospital systems, but their methodological rigour and comparability have not been systematically appraised.

Purpose and objectives: This meta-analysis aims to methodologically evaluate the application of QEDs in measuring efficiency gains within district hospital systems, assessing design quality, common biases, and the consistency of effect estimates across studies.

Keywords: *Meta-analysis, Quasi-experimental designs, Health systems efficiency, Sub-Saharan Africa, District hospitals, Methodological evaluation, Rwanda*

Article Highlights

- Pooled effect size for efficiency gains was positive but exhibited high heterogeneity ($I^2 = 87\%$).
- Studies using propensity score matching with difference-in-differences produced more conservative estimates.
- Current application of quasi-experimental designs often overstates efficiency gains.
- The field requires more rigorous design implementation and

Core Recommendation

Future research should pre-register analysis plans, prioritise designs controlling for time-varying confounders, and utilise linked administrative data.

A systematic appraisal of methodological rigour in health systems efficiency research.

transparent reporting.	