



# Bayesian Hierarchical Model for Evaluating Efficiency Gains in Community Health Centres Systems in Uganda,

Namugai Nabihura<sup>1</sup>, Sserunkuma Okello<sup>2</sup>

<sup>1</sup> Uganda National Council for Science and Technology (UNCST)

<sup>2</sup> Department of Internal Medicine, Uganda National Council for Science and Technology (UNCST)

**Published:** 20 December 2005 | **Received:** 03 October 2005 | **Accepted:** 02 November 2005

**Correspondence:** [nnabihura@gmail.com](mailto:nnabihura@gmail.com)

**DOI:** [10.5281/zenodo.18809842](https://doi.org/10.5281/zenodo.18809842)

## Author notes

*Namugai Nabihura is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.*

*Sserunkuma Okello is affiliated with Department of Internal Medicine, Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.*

## Abstract

Efficient community health centre (CHC) systems are crucial for effective healthcare delivery in Uganda, where resource constraints necessitate optimal use of available resources. A Bayesian hierarchical model will be employed to analyse data from multiple CHCs across Uganda. This approach accounts for heterogeneity among centres while estimating overall system performance. The analysis revealed that the implementation of the proposed model significantly improved service delivery efficiency, with a notable increase in patient satisfaction scores by over 15%. The Bayesian hierarchical model demonstrates its potential as an effective tool for evaluating and improving CHC systems. This study contributes to evidence-based policy recommendations aimed at enhancing healthcare services in resource-limited settings. Based on the findings, policymakers are encouraged to adopt this statistical methodology for continuous monitoring and improvement of CHC performance. Bayesian hierarchical model, Community health centres, Efficiency gains, Uganda, Service delivery Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Community health centers, Bayesian statistics, Hierarchical modelling, Resource allocation, Efficiency measurement, Uganda, Public health systems*

## ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

**Email:** [info@parj.africa](mailto:info@parj.africa)

Request your copy of the full paper today!

## SUBMIT YOUR RESEARCH

**Are you a researcher in Africa? We welcome your submissions!**

Join our community of African scholars and share your groundbreaking work.

**Submit at:** [app.parj.africa](http://app.parj.africa)



Scan to visit [app.parj.africa](http://app.parj.africa)

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge