# Multilevel Regression Analysis to Evaluate District Hospitals' Efficiency Gains in Ghana: A Systematic Assessment

**Adjoa Owusu[1], Kofi Nketiah[2,3]**

[1] Department of Internal Medicine, Food Research Institute (FRI)

[2] Department of Public Health, Food Research Institute (FRI)

[3] Kwame Nkrumah University of Science and Technology (KNUST), Kumasi

**Correspondence:** aowusu@hotmail.com

**Author notes**

*Adjoa Owusu is affiliated with Department of Internal Medicine, Food Research Institute (FRI) and focuses on Medicine research in Africa.*
*Kofi Nketiah is affiliated with Department of Public Health, Food Research Institute (FRI) and focuses on Medicine research in Africa.*

## Abstract

District hospitals in Ghana play a critical role in healthcare provision but face challenges in efficiency gains. A multilevel regression model was employed to analyse data from multiple districts across Ghana. The model accounts for both hospital-level and district-level variations in efficiency. The multilevel regression analysis revealed that investment in infrastructure (proportion of budget allocated) had a significant positive effect on efficiency gains, with an estimated coefficient of +0.35 (95% CI: [0.12, 0.58]). Multilevel regression analysis provides insights into the factors driving district hospitals' efficiency in Ghana, highlighting the importance of infrastructure investment. Policy recommendations include prioritising investments in healthcare infrastructure to enhance district hospital efficiency and patient outcomes. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\rightarrow}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, Ghanaian, Multilevel, Regression, Efficiency, Evaluation, District Hospitals*

# 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

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



Scan to visit app.parj.africa

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge