



# Reliability Assessment of District Hospital Systems in Ghana Using Panel Data Analysis

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## Abstract

District hospitals in Ghana play a crucial role in healthcare delivery, yet their reliability remains under scrutiny. Panel data analysis was employed to evaluate the stability and efficiency of district hospitals over time. A fixed effects model was used to control for unobserved heterogeneity. The study found that around 70% of hospitals showed consistent improvement in service delivery, with significant reductions in waiting times and patient satisfaction scores improving by an average of 25%. Panel data analysis revealed the need for targeted interventions to enhance system reliability and improve patient outcomes. District health authorities should prioritise training programmes for healthcare professionals and investments in infrastructure to stabilise hospital operations. district hospitals, Ghana, panel data, reliability assessment, fixed effects model Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta^* p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, healthcare systems, panel analysis, econometrics, reliability assessment, governance, resource allocation*

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