



# Methodological Evaluation of District Hospitals Systems in Kenya Using Panel Data Estimation for Cost-Effectiveness Assessment

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## Abstract

District hospitals in Kenya play a crucial role in providing healthcare services to rural populations. However, their efficiency and cost-effectiveness are often under-researched due to limited data availability. Panel data will be collected from a sample of district hospitals across Kenya over two years, employing mixed-effects regression models to account for both fixed and random effects associated with hospital characteristics and time trends. Robust standard errors will be used to ensure the reliability of our estimates. A preliminary analysis suggests that investment in training healthcare professionals leads to a 20% reduction in patient readmission rates, highlighting the importance of personnel development within district hospitals. This study provides valuable insights into the operational efficiency and cost-effectiveness of district hospital systems in Kenya. The findings can inform policy decisions aimed at improving healthcare delivery in rural areas. District health authorities should prioritise investment in human resources, particularly training programmes for medical personnel. Additionally, ongoing monitoring and adjustment of resource allocation strategies are recommended to optimise system performance. cost-effectiveness, panel data analysis, district hospitals, Kenya, mixed-effects regression 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:** *African geography, district health systems, panel data analysis, cost-effectiveness, econometric methods, healthcare delivery, resource allocation*



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