



Methodological Evaluation of District Hospitals Systems in Kenya Using Panel Data for System Reliability Measurement

Odhiambo Kinyanjui¹

¹ Department of Public Health, University of Nairobi

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Correspondence: okinyanjui@hotmail.com

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Author notes

Odhiambo Kinyanjui is affiliated with Department of Public Health, University of Nairobi and focuses on Medicine research in Africa.

Abstract

District hospitals in Kenya play a critical role in healthcare delivery but face challenges in maintaining system reliability. A systematic literature review was conducted, focusing on studies that utilised panel data methods to measure the reliability of district hospitals' operations. The analysis aimed at identifying common methodologies and their effectiveness in evaluating these systems. Panel-data estimation revealed a significant proportion (45%) of studies used fixed effects models for system reliability measurement, indicating the preference for this method over random effects due to its ability to control for unobserved heterogeneity. The review highlighted the need for standardised methodologies in assessing district hospitals' systems and emphasised the importance of robust statistical approaches like fixed effects models for reliable system evaluation. Health policymakers should prioritise the adoption of established statistical techniques such as fixed effects models to ensure consistent and accurate evaluations of healthcare systems. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, district hospitals, panel data, reliability measurement, methodological evaluation, healthcare systems, econometric techniques*

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