



Methodological Evaluation of District Hospitals Systems in Kenya Using Panel Data Estimation for Efficiency Gains,

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Abstract

District hospitals in Kenya play a crucial role in healthcare delivery, but their operational efficiency varies widely. Understanding these variations is essential for policymakers aiming to improve service quality and resource allocation. A comprehensive search of academic databases was conducted using keywords related to district hospitals and efficiency studies. Studies published between and were selected for a rigorous methodological analysis, including critical appraisal of the study designs and statistical methods employed. Panel data estimation techniques such as stochastic frontier analysis (SFA) have been predominantly used to assess efficiency gains in district hospitals. However, there is variability in how these models are applied across studies, with some accounting for only a fraction of observed inefficiencies. This review highlights the need for more consistent application and interpretation of panel data estimation methods in evaluating district hospital systems to ensure reliable and comparable results. Policymakers should encourage the adoption of standardised methodologies using robust statistical tools, such as SFA with appropriate control variables, to enhance the accuracy and comparability of efficiency assessments across different districts. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, District Hospitals, Panel Data, Efficiency Measurement, Methodology, Econometrics, Health Systems Reform

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