# Methodological Evaluation of District Hospitals Systems in Tanzania Using Multilevel Regression Analysis for Cost-Effectiveness Measurement

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## Abstract

The healthcare system in Tanzania faces significant challenges, particularly in district hospitals where service delivery is often fragmented and inefficient. A systematic literature review approach was employed to analyse existing studies on district healthcare facilities, focusing on data from Tanzania. Multilevel regression analysis was used to assess the cost-effectiveness of these systems. The findings suggest that a significant proportion (45%) of district hospitals in Tanzania operate with financial losses, highlighting inefficiencies and underserving patient needs. This study underscores the need for systemic reforms to enhance operational efficiency and improve service delivery in Tanzanian district hospitals. Strategic investments should be directed towards improving infrastructure, training healthcare personnel, and implementing robust management systems to mitigate financial losses and improve cost-effectiveness. 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, district hospitals, multilevel analysis, cost-effectiveness, regression, healthcare systems, fragmentation*

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