



Multilevel Regression Analysis for Evaluating Cost-Effectiveness of District Hospital Systems in Kenya

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Abstract

The study aims to evaluate the cost-effectiveness of district hospital systems in Kenya. A multilevel linear regression model was employed, accounting for both unit (district hospitals) and cluster-level effects. Uncertainty in estimates is addressed using robust standard errors. The analysis revealed that district hospital investments were associated with a 7% decrease in mortality rates among patients. Multilevel regression models provide valuable insights into the cost-effectiveness of healthcare systems, particularly highlighting their impact on patient outcomes. Further research should focus on replicating these findings across different geographic regions and over longer timeframes to validate consistency. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, multilevel, regression, cost-effectiveness, district hospitals, African, health economics*

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