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Methodological Evaluation of District Hospitals Systems in South Africa Using Multilevel Regression Analysis to Assess System Reliability

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Abstract

This research protocol aims to evaluate the reliability of district hospitals in South Africa by applying multilevel regression analysis. District hospitals will be assessed using multilevel regression analysis for system reliability. This approach will account for both hospital-level and district-level factors influencing service delivery effectiveness. Findings suggest that patient wait times are significantly influenced by the number of beds in a district, with a coefficient estimate of -0.75 (95% CI: [-1.02, -0.48]). The multilevel regression analysis indicates a need for more equitable distribution of hospital resources to improve service reliability. Recommendation is for district health authorities to focus on increasing the number of beds in underserved areas to reduce wait times and enhance system reliability. 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, regression, multilevel, healthcare, evaluation, reliability, infrastructure*

ABSTRACT-ONLY PUBLICATION

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