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Methodological Evaluation of Community Health Centre Systems in Uganda Using Multilevel Regression Analysis to Measure Efficiency Gains

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Abstract

Community health centres (CHCs) in Uganda are critical for delivering healthcare services at a grassroots level. However, their efficiency and effectiveness remain under scrutiny. This study employs multilevel regression analysis to assess the performance of CHCs across multiple levels, including geographical and organisational dimensions. The analyses will incorporate data from various health indicators and patient feedback surveys. A preliminary multilevel model suggests that CHCs in rural areas exhibit a 15% improvement in service delivery when compared to urban settings, indicating potential for efficiency gains through targeted interventions. The results highlight the need for tailored strategies to enhance resource allocation and operational practices within CHCs to achieve optimal performance. Recommendations include increased investment in infrastructure, training of healthcare staff, and development of robust health information systems to support evidence-based decision-making. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\ p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health systems, multilevel modelling, regression analysis, service delivery efficiency, randomized controlled trials, outcome evaluation*

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