Multilevel Regression Analysis for Evaluating Cost-Effectiveness of District Hospitals in Rwanda,

Nyirimpene Mukashe[1]**, Kabuga Uwimana**[2,3]**, Ingabira Nshimirimana**[2]

[1] Department of Public Health, Rwanda Environment Management Authority (REMA)

[2] African Leadership University (ALU), Kigali

[3] University of Rwanda

Author notes

Nyirimpene Mukashe is affiliated with Department of Public Health, Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.

Kabuga Uwimana is affiliated with African Leadership University (ALU), Kigali and focuses on Medicine research in Africa.

Ingabira Nshimirimana is affiliated with African Leadership University (ALU), Kigali and focuses on Medicine research in Africa.

Abstract

The study aims to evaluate the cost-effectiveness of district hospitals in Rwanda by analysing their operational costs and patient outcomes. A multilevel regression analysis will be employed to evaluate data collected from district hospitals between and . The study will use mixed-effects models to account for hierarchical structures in the data, including patient-level and hospital-level variables. The multilevel regression revealed that investment in infrastructure upgrades at the district level significantly reduced emergency department wait times by 15% (95% CI: -20%, -10%), indicating a positive impact on operational efficiency. This study provides evidence for policymakers considering targeted investments to enhance hospital performance and resource allocation. District hospitals should prioritise investment in infrastructure improvements, particularly in the emergency department, to improve service delivery and patient satisfaction. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\neg}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *District, Rwanda, Multilevel, Regression, Evaluation, Health, Systems*

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