



Multilevel Regression Analysis to Evaluate and Measure Cost-Effectiveness of Community Health Centre Systems in Senegal 2013

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Published: 10 October 2013 | **Received:** 07 May 2013 | **Accepted:** 29 August 2013

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DOI: [10.5281/zenodo.18988002](https://doi.org/10.5281/zenodo.18988002)

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Abstract

Community health centres in Senegal have been established to improve access to healthcare services, particularly for underserved populations. However, their cost-effectiveness remains uncertain. A multilevel regression model was employed to analyse data from multiple sources including healthcare records, financial reports, and survey responses. The model accounts for both individual patient outcomes and contextual factors at the regional level. The multilevel regression analysis revealed significant variations in cost-effectiveness across regions, with some health centres demonstrating higher efficiency ratios despite lower initial investments. This study provides insights into the optimal allocation of resources within Senegalese community health systems based on their regional performance metrics. Investment strategies should prioritise regions identified as having higher cost-effectiveness to maximise public health outcomes. Community Health Centres, Cost-Effectiveness Analysis, Multilevel Regression Models, Senegal Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health centres, cost-effectiveness analysis, multilevel regression, nested sampling, statistical methods, theoretical frameworks*

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