



Bayesian Hierarchical Model for Evaluating Cost-Effectiveness of Community Health Centres in Senegal,

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Published: 18 December 2011 | **Received:** 12 October 2011 | **Accepted:** 22 November 2011

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DOI: [10.5281/zenodo.18922425](https://doi.org/10.5281/zenodo.18922425)

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Abstract

This study aims to evaluate the cost-effectiveness of community health centers in Senegal by applying a Bayesian hierarchical model. A Bayesian hierarchical model will be employed to analyse cost-effectiveness data from community health centers in Senegal over two years. This model accounts for variability across different regions and health outcomes while estimating the marginal likelihood of observed costs relative to benefits. The analysis revealed that certain health centers showed a significant reduction in healthcare costs per patient visit, with an estimated

20 savings compared to standard care models. The results suggest that community health centers are cost – effective

$\text{logit}(\pi) = \beta_0 + \beta_i \text{top } X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian hierarchical model, cost-effectiveness analysis, econometrics, meta-analysis, observational study, randomized controlled trials*

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