Methodological Evaluation of District Hospitals Systems in Senegal: A Panel Data Estimation Approach to Measure Efficiency Gains

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of district hospitals systems in Senegal: panel-data estimation for measuring efficiency gains in Senegal. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of district hospitals systems in Senegal: panel-data estimation for measuring efficiency gains, Senegal, Africa, Medicine, protocol This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. 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 healthcare, district hospitals, econometrics, panel data analysis, efficiency measurement, resource allocation, health system evaluation*

ABSTRACT-ONLY PUBLICATION

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