African Biomedical Engineering (Clinical Aspects)

Methodological Evaluation of Community Health Centre Systems in Senegal: Multilevel Regression Analysis for Efficiency Gains

Mama Diop[1,2], **Sarra Ndour**[3,4]

[1] Department of Surgery, Université Alioune Diop de Bambey (UADB)

[2] Department of Pediatrics, Cheikh Anta Diop University (UCAD), Dakar

[3] Department of Internal Medicine, Cheikh Anta Diop University (UCAD), Dakar

[4] Department of Epidemiology, Université Alioune Diop de Bambey (UADB)

Published: 03 August 2007 | **Received:** 14 April 2007 | **Accepted:** 04 June 2007

Correspondence: mdiop@gmail.com

DOI: 10.5281/zenodo.18842639

Author notes

Mama Diop is affiliated with Department of Surgery, Université Alioune Diop de Bambey (UADB) and focuses on Medicine research in Africa.

Sarra Ndour is affiliated with Department of Internal Medicine, Cheikh Anta Diop University (UCAD), Dakar and focuses on Medicine research in Africa.

Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of community health centres systems in Senegal: multilevel regression analysis 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 community health centres systems in Senegal: multilevel regression analysis for measuring efficiency gains, Senegal, Africa, Medicine, case study 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 geography, community health centers, multilevel analysis, regression models, resource allocation, performance metrics, statistical methods*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge