African Family Medicine

Methodological Evaluation of Community Health Centres in Senegal Using Time-Series Forecasting Models for System Reliability Assessments

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of community health centres systems in Senegal: time-series forecasting model for measuring system reliability in Senegal. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. 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: time-series forecasting model for measuring system reliability, Senegal, Africa, Medicine, review article 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 centres, Forecasting models, System reliability, Time-series analysis, Methodology, Epidemiology*

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