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Time-Series Forecasting Model Evaluation in Rural Senegalese Clinics Systems,

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of rural clinics systems in Senegal: time-series forecasting model for measuring clinical outcomes in Senegal. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. 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 rural clinics systems in Senegal: time-series forecasting model for measuring clinical outcomes, Senegal, Africa, Medicine, intervention 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: *Sub-Saharan, Rural Health, Time-Series Analysis, Forecasting Models, Evaluation Metrics, Clinical Outcomes, Geographic Information Systems*