African Biodiversity Research (Environmental/Earth Science)

# Time-Series Forecasting Model for Clinical Outcomes in Senegalese Community Health Centres: A Methodological Evaluation

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## Abstract

Community health centers in Senegal play a crucial role in delivering healthcare services to underserved populations. However, there is a need for robust methods to evaluate and improve their performance. The approach involves collecting longitudinal data from multiple Senegalese community health centers over several years. A dynamic regression model with exogenous variables was employed for analysis. The forecasting model demonstrated a predictive accuracy of 85% in estimating future clinical outcomes, indicating significant potential for improving service planning and resource management. This study validates the efficacy of time-series forecasting as an analytical tool for evaluating health centre performance, offering valuable insights into operational improvements. The findings suggest that community health centers should integrate regular data collection and analysis practices to support informed decision-making. Community Health Centers, Senegal, Time-Series Forecasting, Clinical Outcomes, Performance Evaluation 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, Senegal, time-series analysis, predictive modelling, epidemiology, public health, clinical outcomes assessment*

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