



# Time-Series Forecasting Model Evaluation at Community Health Centres in Senegal,

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**Published:** 23 March 2001 | **Received:** 24 October 2000 | **Accepted:** 14 February 2001

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**DOI:** [10.5281/zenodo.18733284](https://doi.org/10.5281/zenodo.18733284)

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## Abstract

This study aims to evaluate a time-series forecasting model at community health centers in Senegal. A mixed-methods design was employed, integrating quantitative data from existing records and qualitative insights from interviews with health centre staff. The study utilised a Box-Jenkins ARIMA model for forecasting clinical outcome trends over time. The analysis revealed significant seasonal variations in patient admissions rates across different seasons, indicating the need for dynamic resource allocation strategies by healthcare centers. This study provides empirical evidence supporting the use of time-series models for monitoring and predicting clinical outcomes in community health settings, particularly highlighting the importance of seasonal adjustments in forecasting accuracy. Health authorities are advised to incorporate periodic reviews into their operational plans to ensure timely interventions based on forecasted trends. Furthermore, ongoing research is recommended to explore additional factors influencing patient admissions. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, health economics, econometrics, forecasting, qualitative assessment, longitudinal studies, community-based intervention*

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