



Time-Series Forecasting Model for Clinical Outcomes in Senegalese District Hospitals Systems: A Methodological Evaluation

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Abstract

District hospitals in Senegal are critical for healthcare delivery, particularly in underserved areas. However, their performance and potential improvements require robust evaluation methods. We employed a time-series forecasting model using historical data from selected district hospitals. The model was validated using cross-validation techniques and assessed for its predictive accuracy. Our analysis revealed that the proposed model accurately forecasted hospital readmission rates with an average error of $\pm 5\%$ over the study period. The time-series forecasting model demonstrated promising performance in predicting clinical outcomes at district hospitals in Senegal, offering a valuable tool for healthcare management and planning. Further research should be conducted to validate these findings across different regions and hospital types in Senegal. district hospitals, clinical outcomes, time-series forecasting, predictive analytics, Senegal Treatment effect was estimated with $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Senegal, district hospitals, time-series analysis, forecasting models, clinical outcomes, methodological evaluation*

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