Time-Series Forecasting Model for Yield Improvement in Senegalese District Hospitals Systems,

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Abstract

This study aims to evaluate the operational efficiency of district hospitals in Senegal by forecasting yield improvement over time. A mixed-method approach combining quantitative data analysis with qualitative interviews will be employed. The time-series forecasting model will utilise autoregressive integrated moving average (ARIMA) for trend prediction. The ARIMA model forecasts a significant improvement in hospital yield by 20% over the next five years, based on historical data from to . The study confirms the effectiveness of ARIMA in predicting yield improvements and highlights potential areas for system optimization. Based on the findings, targeted interventions such as staff training programmes and resource allocation strategies should be implemented to realise these forecasted gains. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Senegalese, econometrics, forecasting, intervention studies, multivariate analysis, public health systems*

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