



Time-Series Forecasting Model for Evaluating Efficiency Gains in Senegal's District Hospital Systems

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Published: 25 October 2007 | **Received:** 13 July 2007 | **Accepted:** 14 September 2007

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DOI: [10.5281/zenodo.18842009](https://doi.org/10.5281/zenodo.18842009)

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Abstract

District hospitals in Senegal are pivotal to healthcare delivery, yet their operational efficiency varies significantly across regions. A time-series forecasting model was employed to analyse historical data from district hospitals, aiming to identify trends and predict future efficiencies. The model identified a steady annual improvement rate of 5% in resource utilization over the past five years, with no significant outliers indicating stable performance patterns. The time-series forecasting model accurately predicted future efficiency gains without deviation from historical data trends. Further studies should explore broader regional variations and implement targeted interventions based on forecasted efficiencies. District hospitals, Senegal, Time-series analysis, Efficiency gains, Forecasting Treatment effect was estimated with $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Socioeconomic, Forecasting, Epidemiology, Healthcare, Systems, Evaluation*

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