



# Methodological Evaluation of District Hospitals Systems in Ghana Using Time-Series Forecasting Models for Risk Reduction Analysis

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### Abstract

District hospitals in Ghana are critical for health care delivery, but their operational efficiency can be improved through better resource management and risk reduction strategies. A comprehensive literature review was conducted, focusing on existing studies that assess the operational efficiency of district hospitals. The study employs time-series forecasting models such as ARIMA (Autoregressive Integrated Moving Average) to predict future trends and reduce risks associated with hospital operations. The analysis revealed a significant upward trend in patient wait times at district hospitals, suggesting an urgent need for interventions to mitigate these delays. This review underscores the importance of adopting advanced analytical tools like ARIMA models to forecast operational challenges and implement preventive measures. District hospital managers should integrate time-series forecasting into their strategic planning processes to enhance service delivery and patient satisfaction. district hospitals, Ghana, time-series forecasting, risk reduction, ARIMA 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, African, forecasting, model, time-series, data-mining, hospital-management

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