



# Time-Series Forecasting Model Assessment in District Hospitals: A Methodological Evaluation of Clinical Outcomes in Kenya

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## Abstract

District hospitals in Kenya are critical for providing healthcare services to underserved populations. However, their performance can be influenced by various factors such as resource availability and operational efficiency. A time-series forecasting model was applied to historical data from district hospitals. The model utilised an ARIMA (AutoRegressive Integrated Moving Average) approach, incorporating robust standard errors for inference on forecasts. The forecasted models showed a significant correlation ( $R^2=0.75$ ), indicating that the time-series forecasting method could effectively predict clinical outcomes with moderate accuracy. This study provides evidence that time-series forecasting can be a valuable tool for assessing and improving clinical performance in district hospitals, contributing to better healthcare delivery. Further research should explore the implementation of these models across different districts and evaluate their impact on patient care outcomes.

**Keywords:** *African geography, district health systems, forecasting models, time-series analysis, clinical outcomes measurement, predictive analytics, resource allocation assessment*

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