



Time-Series Forecasting Model Evaluation for Clinical Outcomes in Regional Monitoring Networks, Kenya

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Abstract

The clinical outcomes in regional monitoring networks of Kenya have shown significant variability over time, necessitating robust forecasting models to predict future trends and inform healthcare policy. A comprehensive evaluation was conducted using data from multiple regions in Kenya. The study applied an ARIMA (AutoRegressive Integrated Moving Average) model to forecast future trends in healthcare metrics such as hospital admissions and mortality rates. The ARIMA model demonstrated a strong predictive power, with an R^2 value of 0.85 for the forecasting of hospital admission rates over a one-year period, indicating that 85% of the variation was explained by the model. This study confirms the effectiveness of the ARIMA model in forecasting clinical outcomes within regional monitoring networks and highlights its potential to support evidence-based healthcare decision-making. The findings suggest that further research should be conducted to validate these results across different regions and metrics, potentially leading to more effective resource allocation for health systems. time-series forecasting, ARIMA model, clinical outcomes, regional monitoring networks, Kenya The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, Geospatial, Time-series, Forecasting, Evaluation, Analytics, Monitoring*

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