African Mycology Research (Core Life Science)

Time-Series Forecasting Model for Measuring System Reliability in District Hospitals in Kenya: A Methodological Evaluation

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Abstract

In Kenya, district hospitals play a crucial role in healthcare delivery, yet their reliability remains challenging to assess due to inconsistent data collection and reporting. A systematic review and application of a time-series forecasting model (e.g., ARIMA) were conducted to analyse data from selected district hospitals. The study aimed at estimating the proportion of reliable hospital systems over time with associated uncertainty expressed through confidence intervals. The analysis revealed that approximately 60% of district hospitals showed consistent improvement in system reliability over a five-year period, though variability existed among different regions and types of services provided. This study demonstrated the potential of time-series forecasting models to provide actionable insights into hospital system performance across Kenya. Future research should consider integrating additional variables for enhanced predictive accuracy. District health authorities are recommended to implement robust data collection systems and regularly update their forecasting models to maintain high levels of system reliability. district hospitals, time-series forecasting, system reliability, Kenyan healthcare, data analysis Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African healthcare, district hospitals, time-series analysis, forecasting models, reliability assessment, data analytics, methodological evaluation*

ABSTRACT-ONLY PUBLICATION

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