African Media Theory and Research

Time-Series Forecasting Model for Clinical Outcomes in Rwandan District Hospitals: A Methodological Evaluation

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Abstract

Clinical outcomes in Rwandan district hospitals have shown variability over time, necessitating a methodological evaluation of forecasting models to predict and manage these outcomes. A longitudinal study employing an autoregressive integrated moving average (ARIMA) model was conducted to forecast clinical outcomes. The model's parameters were estimated using historical data from the past five years of hospital records. The ARIMA model demonstrated a predictive accuracy with a mean absolute error (MAE) of 12.5% in forecasting monthly patient readmission rates, indicating moderate precision and reliability. While the ARIMA model showed promise in forecasting clinical outcomes, further validation is required to ensure its generalizability across different hospital settings and conditions. Future research should incorporate additional variables such as socioeconomic status and healthcare infrastructure into the model for enhanced predictive performance. Clinical Outcomes, Time-Series Forecasting, ARIMA Model, Rwandan District Hospitals Treatment effect was estimated with $text{ logit }(\pi)=beta 0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Time-series, Forecasting, Evaluation, Integration, Analytics*

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