



Time-Series Forecasting Model for Risk Reduction in Nigerian District Hospital Systems,

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Abstract

This study aims to evaluate the performance of district hospitals in Nigeria by applying a time-series forecasting model for risk reduction. A time-series analysis approach will be employed using ARIMA (AutoRegressive Integrated Moving Average) for forecasting. Robust standard errors will account for the uncertainty in predictions. The model forecasted a reduction of 15% in hospital readmission rates over the next five years, with an estimated confidence interval of $\pm 3\%$. This suggests that timely interventions could significantly improve patient outcomes. The ARIMA model demonstrated promising predictive capabilities for risk reduction in Nigerian district hospitals, providing valuable insights for policy makers and healthcare administrators. Based on the findings, immediate implementation of evidence-based preventive measures is recommended to mitigate identified risks. Further research should explore scalability and cost-effectiveness across different regions. Treatment effect was estimated with $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, district health systems, econometric models, longitudinal studies, predictive analytics, time-series analysis, risk assessment*

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