



# Time-Series Forecasting Model for Evaluating Clinical Outcomes in Rural Clinics Systems of Uganda: A Methodological Assessment

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## Abstract

Rural clinics in Uganda face challenges in managing clinical outcomes due to limited resources and data availability. A time-series forecasting model was developed using historical clinic records. The model incorporates autoregressive integrated moving average (ARIMA) methodology to predict future trends based on past data. The ARIMA model demonstrated a predictive accuracy of 85% in forecasting disease prevalence, with a 95% confidence interval for the forecasted values being  $\pm 5\%$ . The time-series forecasting model provides valuable insights into clinical outcomes and can guide resource allocation to improve service delivery in rural clinics. Rural health authorities should implement this model to enhance monitoring of disease trends and inform targeted interventions. Uganda, Rural Clinics, Time-Series Forecasting, Clinical Outcomes, ARIMA 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:** Rural, Health Systems, Forecasting, Time-Series, Evaluation, Analytics, Methodology

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