



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

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Abstract

Clinical outcomes in rural clinics of Kenya are often suboptimal due to resource limitations and logistical challenges. A time-series analysis was conducted using data from five rural clinics. The model utilised an ARIMA (AutoRegressive Integrated Moving Average) framework to forecast patient recovery times and treatment efficacy. Uncertainty was quantified through robust standard errors. The ARIMA model demonstrated a mean absolute error reduction of 15% in predicting patient recovery times compared to previous models, indicating improved accuracy in forecasting clinical outcomes. The time-series forecasting model showed promise for enhancing the evaluation and improvement of clinical practices in rural healthcare settings. Further validation is recommended with larger datasets and different types of clinical data. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Rural Health, Time-Series Analysis, Clinical Outcomes, Forecasting Model, Data Analytics, Epidemiology, Resource Management

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