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Time-Series Forecasting Model for Clinical Outcomes in Community Health Centres in Kenya: Methodological Evaluation

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Abstract

Community health centers in Kenya have been identified as critical for improving healthcare delivery to underserved populations. A comprehensive longitudinal study was conducted on data from to . The time-series model used for prediction included an autoregressive integrated moving average (ARIMA) approach with robust standard errors estimated via bootstrapping methods. The ARIMA model demonstrated a significant predictive accuracy in forecasting clinical outcomes, showing a mean absolute error reduction of 12% over baseline models. The study provides a validated framework for future time-series forecasting studies in community health centers within Kenya and beyond. Future research should explore the broader applicability and scalability of these forecasting methods to other healthcare contexts, particularly those with limited resources. community health centers, clinical outcomes, ARIMA model, time-series analysis, robust standard errors Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African epidemiology, longitudinal analysis, time-series analysis, forecasting models, health outcomes assessment, data mining, qualitative methods*

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