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Time-Series Forecasting Model Evaluation for Risk Reduction in Community Health Centres Systems, Kenya

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Abstract

Community health centres in Kenya face challenges in risk reduction due to variability in healthcare service delivery. The study will employ an ARIMA (AutoRegressive Integrated Moving Average) model to forecast future trends in service utilization and cost-efficiency metrics. Uncertainty around these forecasts will be quantified using robust standard errors. Initial data analysis suggests a moderate reduction in healthcare costs by optimising resource allocation, with projected savings of approximately 15% over the next fiscal year. The ARIMA model demonstrates promise as an analytical tool for risk management in community health settings, particularly when combined with real-time monitoring systems. Implement a phased rollout strategy incorporating feedback mechanisms to continuously refine forecasting models and ensure their relevance to local contexts. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, ARIMA, Time-Series Analysis, Forecasting, Epidemiology, Public Health, Methodology*

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