Time-Series Forecasting Model Evaluation for Yield Improvement in Rwanda's District Hospitals System

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Abstract

Rwanda's district hospitals play a critical role in healthcare delivery across rural regions. However, there is variability and unpredictability in service utilization patterns that can affect yield improvement strategies. A comprehensive review of existing literature and data from selected district hospitals was conducted. A hybrid ARIMA-PROPHET model was employed to forecast yield trends over a five-year period with robust standard errors accounting for uncertainty. The hybrid ARIMA-PROPHET model demonstrated an average accuracy of 85% in predicting yield improvements, indicating its potential as a reliable forecasting tool for district hospitals. This study suggests that the hybrid ARIMA-PROPHET model can effectively forecast yield improvements in Rwanda's district hospital systems, improving resource management and patient care outcomes. District health authorities should adopt this model to predict future yield trends, ensuring timely interventions and resource allocation based on accurate forecasts. forecasting models, time-series analysis, district hospitals, yield improvement, hybrid ARIMA-PROPHET Treatment effect was estimated with $text\{logit\}(\pi) = beta\, 0 + \beta^{\rightarrow}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Forecasting, Time-series, Econometrics, Analytics, Metrics*

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