



Time-Series Forecasting Model for Evaluating Efficiency Gains in Rwanda's District Hospitals Systems,

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Abstract

This study evaluates the efficiency of district hospitals in Rwanda by applying a time-series forecasting model to historical data. A time-series forecasting model was developed using historical financial and service utilization data from to . The model accounts for potential confounding variables such as economic conditions and population growth trends. The analysis revealed a consistent upward trend in hospital efficiency, with an estimated gain of 5% over the decade, although variability was observed among different regions. The time-series forecasting model provides insights into system performance and highlights areas needing intervention to maintain or enhance efficiency. Implementing targeted interventions in underserved regions and fostering collaborative efforts between hospitals can further optimise resource allocation and service delivery. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Rwanda, District Hospitals, Time-Series Analysis, Forecasting Models, Efficiency Measurement, Econometrics, Data Analytics

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