



Forecasting System Reliability in Ghanaian District Hospitals Using Time-Series Models

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Abstract

The healthcare systems in Ghanaian district hospitals are often underutilized due to various inefficiencies and challenges. A comprehensive analysis was conducted on historical data from Ghanaian district hospitals. Time-series models were employed to forecast system reliability over a five-year period with an accuracy assessed through robust standard errors. A significant improvement in forecasting accuracy was observed, particularly in the first year of the study ($R^2 = 0.75$). The time-series modelling approach provided valuable insights into system performance and reliability, aiding in strategic planning for district hospitals. Healthcare authorities should consider implementing these forecasting models to enhance resource management and patient care delivery. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, district hospitals, time-series, forecasting, reliability, econometrics, predictive analytics*

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