



Time-Series Forecasting Model for Evaluating Efficiency Gains in Ghanaian District Hospitals Systems,

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Abstract

Ghanaian district hospitals have been evaluated for efficiency over several years, with some studies focusing on forecasting future trends. A time-series forecasting model was applied to historical data of hospital performance metrics, including patient admissions and bed occupancy rates. Robust standard errors were used for uncertainty quantification. The forecast indicated an improvement trend in efficiency gains over the period, with a 5% increase expected by , based on current trends. The time-series forecasting model provided insights into future efficiency improvements and highlighted areas needing further attention. Further research should explore strategies to enhance hospital performance in line with forecasted improvements. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, district hospitals, time-series analysis, forecasting, efficiency measurement, econometrics, health systems research*

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