Methodological Evaluation of District Hospitals Systems in Ghana Using Time-Series Forecasting Models to Measure Clinical Outcomes

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Abstract

District hospitals in Ghana play a crucial role in healthcare delivery but face challenges in maintaining consistent clinical outcomes. A longitudinal study employed ARIMA (AutoRegressive Integrated Moving Average) model to analyse clinical data over multiple years. The ARIMA model predicted a decreasing trend in patient recovery times by 5% within the next year with a confidence interval of ±3%. This indicates potential improvements if interventions are implemented. ARIMA models provide reliable forecasts for clinical outcomes, aiding in resource allocation and strategic planning. Introduce targeted training programmes and improved supply chain management to mitigate forecasted trends. District Hospitals, Ghana, Clinical Outcomes, ARIMA Model, Forecasting 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, Longitudinal, Hospital Systems, Ghana, Methodology, Clinical Outcomes, Time-Series Analysis*

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