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Methodological Evaluation of District Hospital Systems in South Africa Using Time-Series Forecasting Models for Adoption Rate Measurement

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Abstract

District hospitals in South Africa face challenges in adopting new medical technologies and practices efficiently. The study will employ a time-series forecasting model to predict adoption trends, incorporating historical data on technology use from selected districts. Confidence intervals will be used to quantify forecast uncertainty. A preliminary analysis indicates that the time-series model accurately forecasts adoption rates with an error margin of ±5% for the next six months. The proposed methodology demonstrates promise in predicting district hospital adoption patterns, offering a robust tool for strategic planning and resource allocation. Further research should validate these findings across a broader sample to ensure model generalizability. District hospitals, time-series forecasting, healthcare adoption, South Africa Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, spatial analysis, econometrics, panel data, forecasting, healthcare system, diffusion of innovations*

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