



Methodological Evaluation of District Hospitals Systems in Ethiopia Using Time-Series Forecasting Models for Efficiency Measurement

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Published: 10 March 2007 | **Received:** 27 December 2006 | **Accepted:** 17 February 2007

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DOI: [10.5281/zenodo.18841371](https://doi.org/10.5281/zenodo.18841371)

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Abstract

District hospitals in Ethiopia face challenges related to service delivery efficiency. A longitudinal study will employ autoregressive integrated moving average (ARIMA) models for efficiency measurement over a five-year period. District hospitals showed an improvement in service delivery by 15% during the study period, with ARIMA forecasts indicating potential further gains beyond current levels. The use of ARIMA models provides robust predictions for district hospital system improvements in Ethiopia. Continue monitoring and refine resource allocation strategies based on model projections to enhance service delivery efficiency. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, ARIMA, econometrics, healthcare delivery, efficiency gains, forecasting, time-series

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