



# Methodological Evaluation of District Hospitals Systems in Ethiopia Using Time-Series Forecasting Models for Yield Improvement Analysis

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## Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of district hospitals systems in Ethiopia: time-series forecasting model for measuring yield improvement in Ethiopia. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of district hospitals systems in Ethiopia: time-series forecasting model for measuring yield improvement, Ethiopia, Africa, Medicine, protocol This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_1$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Ethiopia, District Hospitals, Time-Series Analysis, Forecasting Models, Yield Improvement, Methodology, Evaluation, Medicine



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