



# Methodological Evaluation of District Hospitals Systems in Rwanda Using Time-Series Forecasting Models

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**Published:** 10 June 2011 | **Received:** 24 January 2011 | **Accepted:** 19 May 2011

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**DOI:** [10.5281/zenodo.18925846](https://doi.org/10.5281/zenodo.18925846)

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## Abstract

Rwanda aims to improve healthcare services, including district hospitals, by adopting time-series forecasting models for system evaluation. A systematic literature review was conducted to analyse existing studies on district hospital systems, focusing on the use of time-series forecasting techniques for system evaluation and prediction of healthcare outcomes. The analysis revealed a directionality in forecast accuracy with models showing an improvement rate of up to 30% in yield predictions over baseline methods. Time-series forecasting models can be effectively utilised to evaluate district hospital systems in Rwanda, providing insights for system optimization and performance enhancement. District hospitals should integrate time-series forecasting into their evaluation frameworks to improve healthcare outcomes and resource allocation. Treatment effect was estimated with  $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, Rwanda, healthcare, forecasting, econometrics, evaluation, district hospitals*

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