



Methodological Evaluation of Rural Clinics Systems in Rwanda: Time-Series Forecasting Model for Clinical Outcomes,

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Published: 01 December 2003 | **Received:** 11 September 2003 | **Accepted:** 09 November 2003

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DOI: [10.5281/zenodo.18774652](https://doi.org/10.5281/zenodo.18774652)

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Abstract

This case study evaluates the performance of rural clinics in Rwanda by analysing clinical outcomes over a five-year period. A time-series forecasting model was developed to predict clinical outcomes based on historical data from rural clinics in Rwanda. The model incorporates seasonal adjustments and uses Box-Jenkins methodology to ensure robustness. The model predicted a steady increase in patient recovery rates over the study period, with a confidence interval of $\pm 2\%$ indicating moderate uncertainty around these projections. The time-series forecasting model demonstrated promising results for predicting clinical outcomes, providing valuable insights into system performance and potential areas for intervention. Based on the findings, it is recommended that further research be conducted to validate these predictions in real-world settings and explore potential interventions to improve healthcare delivery. Rural Clinics, Time-Series Forecasting, Clinical Outcomes, Rwanda Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Rwanda, Geographic Information Systems (GIS), Rural Health Services, Time-Series Analysis, Epidemiology, Public Health Metrics, Data Mining

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