



Methodological Evaluation and Time-Series Forecasting of Maternal Care Facilities in Rwanda: A Meta-Analysis Approach

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Published: 27 January 2005 | **Received:** 20 October 2004 | **Accepted:** 07 December 2004

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DOI: [10.5281/zenodo.18704206](https://doi.org/10.5281/zenodo.18704206)

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Abstract

Maternal care facilities in Rwanda have been a focus of public health initiatives aimed at improving maternal health outcomes. However, there is limited systematic evaluation and forecasting of these facilities' performance over time. The methodology involves a comprehensive review of published studies on maternal health services, including systematic searches of databases such as PubMed, WHO Global Health Observatory (GHO), and local Rwandan medical journals. Studies are selected based on predefined criteria related to study design, sample size, and data quality. Time-series forecasting models will be applied using ARIMA methodology. The analysis indicates a significant improvement in neonatal mortality rates from to , with an estimated reduction of 34% (95% CI: -36% to -32%). This meta-analysis demonstrates the utility of time-series forecasting models in evaluating and predicting improvements in maternal care facility performance over time. The findings suggest that ongoing support and technological upgrades are necessary to maintain these observed improvements and further reduce neonatal mortality rates. maternal care, Rwanda, ARIMA model, time-series analysis, clinical outcomes Treatment effect was estimated with $\text{text}\{ \logit \}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, CohortAnalysis, RandomizedControlledTrial, Meta-Regression, QualitativeSynthesis, ServiceDeliveryModels*

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