



# Time-Series Forecasting Model for Evaluating Clinical Outcomes in Maternal Care Facilities in South Africa: A Methodological Assessment

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## Abstract

Maternal care facilities in South Africa face challenges related to clinical outcomes management. A time-series forecasting model was developed to analyse historical data from maternal care facilities. Robust standard errors were used to account for prediction uncertainties. The model identified a significant upward trend in neonatal mortality rates over the past five years, necessitating targeted interventions. The findings suggest that timely and effective interventions can mitigate adverse clinical outcomes in maternal care facilities. Facilities should prioritise resource allocation for high-risk areas and implement regular quality improvement programmes based on model insights. Maternal Care, Time-Series Forecasting, Clinical Outcomes, Neonatal Mortality 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:** *Sub-Saharan, African, Maternal, Care, Systems, Forecasting, Analytics, Methodology*

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