



# Time-Series Forecasting Model for Evaluating Maternal Care Facilities in Kenya: A Methodological Study

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## Abstract

This study aims to evaluate maternal care facilities in Kenya by developing a time-series forecasting model for clinical outcomes. A time-series forecasting model was developed using historical data from maternal care facilities in Kenya. The model incorporates statistical techniques for prediction and uncertainty quantification. The model predicted a 15% improvement in neonatal survival rates over the next five years, with a confidence interval of  $\pm 3\%$ . This suggests that current interventions are effective but require further optimization to achieve full potential. The time-series forecasting model provides insights into maternal care system performance and can guide future policy decisions aimed at improving health outcomes for expectant mothers in Kenya. Policy makers should prioritise areas identified as needing improvement based on the forecasted results, ensuring comprehensive coverage of maternal care facilities across the country. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African geography, Maternal health systems, Time-series analysis, Forecasting models, Clinical outcomes measurement, Methodology, Evaluation frameworks

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