



# Time-Series Forecasting Model for Evaluating Community Health Centre Systems in Ghana,

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## Abstract

Community health centres in Ghana have faced challenges in service delivery over time. The study employed a time-series analysis using an ARIMA model to predict future performance based on historical data from the present. A significant decrease ( $p < 0.01$ ) was observed in patient wait times, indicating improved system efficiency over the decade. The time-series forecasting model accurately predicted service trends and could guide future resource allocation strategies for community health centres in Ghana. Community health centre managers should focus on enhancing telemedicine services to reduce physical waiting times. community health centres, ARIMA model, patient wait times, reliability assessment Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Geographic, Sub-Saharan, Public Health, Time-Series, ARIMA, Evaluation, Forecasting*

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