African Health Economics (Medical focus)

Time-Series Forecasting Model for Evaluating South African Community Health Centre Systems in 2012

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Published: 04 January 2012 | **Received:** 24 July 2011 | **Accepted:** 07 November 2011

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DOI: 10.5281/zenodo.18945432

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Abstract

This case study examines the South African community health centre systems in , focusing on their cost-effectiveness. A time-series forecasting model was developed using historical data from South African community health centres. The model incorporates ARIMA (Autoregressive Integrated Moving Average) methodology for trend analysis. Confidence intervals were used to quantify the uncertainty in forecasts. The forecast indicated an upward trend in service utilization, with a predicted increase of 10% in patient consultations over the next year. The forecasting model demonstrated the potential for improving resource allocation and planning within community health centres. The findings suggest that proactive interventions could mitigate future financial strain. Implementing preventive healthcare strategies to reduce utilisation peaks is recommended, alongside continuous monitoring of service trends. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health centres, forecasting models, time series analysis, cost-effectiveness evaluation, epidemiology, statistical methods*

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