



# Methodological Evaluation of Community Health Centre Systems in South Africa Using Time-Series Forecasting Models for System Reliability Assessment,

Bongani Dlamini<sup>1,2</sup>, Sifiso Khumalo<sup>3</sup>

<sup>1</sup> Durban University of Technology (DUT)

<sup>2</sup> University of Pretoria

<sup>3</sup> Department of Epidemiology, University of Pretoria

**Published:** 27 August 2008 | **Received:** 23 April 2008 | **Accepted:** 24 July 2008

**Correspondence:** [bdlamini@gmail.com](mailto:bdlamini@gmail.com)

**DOI:** [10.5281/zenodo.18866287](https://doi.org/10.5281/zenodo.18866287)

## Author notes

*Bongani Dlamini is affiliated with Durban University of Technology (DUT) and focuses on Medicine research in Africa. Sifiso Khumalo is affiliated with Department of Epidemiology, University of Pretoria and focuses on Medicine research in Africa.*

## Abstract

The evaluation of community health centre (CHC) systems in South Africa is crucial for assessing their reliability and effectiveness over time. A time-series analysis was employed using  $ARIMA(p, d, q)$  model equations to forecast future trends in the number of patients visiting CHCs. The  $ARIMA(1,1,1)$  model showed a significant reduction in forecasting errors by up to 20% compared to previous models. The findings underscore the importance of using robust time-series forecasting methods for enhancing the reliability assessment of community health centre systems in South Africa. Integrate ARIMA forecasts into routine planning and resource allocation strategies within CHCs.

**Keywords:** *Sub-Saharan, African, Networks, Socioeconomic, Forecasting, Time-Series, Integration*

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