African Journal of Endocrinology and Metabolism

Methodological Evaluation of Urban Primary Care Networks in South Africa Using Time-Series Forecasting Models for Clinical Outcomes Measurement

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Published: 13 October 2010 | **Received:** 14 June 2010 | **Accepted:** 26 September 2010

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DOI: 10.5281/zenodo.18901845

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of urban primary care networks systems in South Africa: time-series forecasting model for measuring clinical outcomes in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of urban primary care networks systems in South Africa: time-series forecasting model for measuring clinical outcomes, South Africa, Africa, Medicine, protocol This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, geospatial, longitudinal, regression, cohort, precision medicine, epidemiology*

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