African Diving and Hyperbaric Medicine

Time-Series Forecasting Models in Evaluating Community Health Centre Systems in South Africa: A Methodological Assessment

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of community health centres systems in South Africa: time-series forecasting model for measuring yield improvement in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. 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 community health centres systems in South Africa: time-series forecasting model for measuring yield improvement, South Africa, Africa, Medicine, original research This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Spatio-Temporal, Modelling, Epidemiology, Forecasting, Operationalization*

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