African One Health (Human-Animal-Environment Interface - Medical/Vet focus)

Methodological Evaluation of Emergency Care Units in South Africa Using Time-Series Forecasting Models for Clinical Outcomes Assessment

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of emergency care units 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 review of relevant literature was conducted, with thematic synthesis of key findings. 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 emergency care units systems in South Africa: time-series forecasting model for measuring clinical outcomes, South Africa, Africa, Medicine, review article 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: *African Geography, Emergency Medicine, Time-Series Analysis, Forecasting Models, Clinical Outcomes, Epidemiology, Data Analytics*

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