African Dietetics Practice

Methodological Evaluation of Public Health Surveillance Systems in Senegal Using Time-Series Forecasting Models for Reliability Assessment

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of public health surveillance systems systems in Senegal: time-series forecasting model for measuring system reliability in Senegal. 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 public health surveillance systems systems in Senegal: time-series forecasting model for measuring system reliability, Senegal, Africa, Medicine, intervention study 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, Surveillance, Systems, Epidemiology, Forecasting, Reliability*

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