African Mechanical Engineering Research

Methodological Evaluation of Public Health Surveillance Systems in Ethiopia Using Time-Series Forecasting Models

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of public health surveillance systems systems in Ethiopia: time-series forecasting model for measuring adoption rates in Ethiopia. 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 public health surveillance systems systems in Ethiopia: time-series forecasting model for measuring adoption rates, Ethiopia, Africa, Medicine, data descriptor 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: *Ethiopia, Public Health Surveillance, Time-Series Analysis, Forecasting Models, Methodology, Epidemiology, Data Quality Assessment*

ABSTRACT-ONLY PUBLICATION

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