African Public Health Nursing

Methodological Assessment and Risk Reduction Evaluation of Public Health Surveillance Systems in Senegal: A Panel Data Approach

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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: panel-data estimation for measuring risk reduction in Senegal. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A policy analysis was undertaken using national and regional policy documents relevant to the study scope. 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: panel-data estimation for measuring risk reduction, Senegal, Africa, Medicine, policy analysis 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 Africa, Public Health Surveillance, Panel Data Analysis, Epidemiology, Risk Assessment, Socioeconomic Factors, Cluster Randomization*

ABSTRACT-ONLY PUBLICATION

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