Bayesian Hierarchical Model for Evaluating Public Health Surveillance Systems in Ghana,

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Abstract

Public health surveillance systems play a critical role in monitoring disease outbreaks and managing public health risks efficiently. Bayesian hierarchical models are employed to analyse surveillance data from to , accounting for spatial and temporal variations. The model revealed a significant proportion (35%) of underreported health events in the surveillance system, indicating room for improvement in detection rates. Bayesian hierarchical models offer a robust framework for assessing public health surveillance systems' performance over time. Enhanced training programmes and technology upgrades are recommended to improve detection capabilities within the Ghanaian surveillance system. Public Health Surveillance, Bayesian Hierarchical Models, Risk Reduction, Ghana Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\neg}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ghana, Geographic Cluster Analysis, Bayesian Hierarchical Models, Markov Chain Monte Carlo, Spatial Epidemiology, Quantile Regression, Model Calibration*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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