African Molecular Biology (Core Life Science)

Bayesian Hierarchical Model for Assessing System Reliability in Public Health Surveillance Systems in Senegal

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring diseases and outbreaks effectively. However, their reliability can be assessed through statistical models to enhance decision-making. A Bayesian hierarchical model was employed to assess system reliability. This approach allows for the incorporation of spatial and temporal dependencies within the data. The analysis revealed that the proportion of reported health events with accurate time stamps varied significantly across regions in Senegal, necessitating targeted interventions. The findings suggest that a tailored intervention strategy is required to improve the reliability of public health surveillance systems in different geographical areas of Senegal. Public health officials should prioritise data collection methods and ensure accurate time stamping for improved system performance. Bayesian hierarchical model, Public Health Surveillance, Reliability Assessment, Senegal 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, Bayesian, Hierarchical, Reliability, Surveillance, Markov, Networks*

ABSTRACT-ONLY PUBLICATION

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