African Veterinary Parasitology

Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Panel Data for System Reliability Measurement

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Abstract

Public health surveillance systems in Kenya are crucial for monitoring and controlling vector-borne diseases such as malaria and zika virus. However, their effectiveness varies significantly across different regions. Panel data from four major regions were analysed using a random effects model (RE) to measure system reliability. Uncertainty was quantified with robust standard errors, ensuring the robustness of our findings. The analysis revealed that regional disparities significantly impact surveillance effectiveness, with one region showing a 20% lower detection rate compared to others. Our results suggest that targeted interventions are needed in regions with lower system reliability to improve overall public health outcomes. Health authorities should prioritise the development and support of surveillance systems in underperforming regions to enhance their efficiency and effectiveness. Public Health Surveillance, System Reliability, Panel Data Analysis, Vector-Borne Diseases, Kenya 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, Spatial-Analysis, Panel-Data, Reliability, Epidemiology, Health-Dynamics*

ABSTRACT-ONLY PUBLICATION

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