African Animal Health Research

Multilevel Regression Analysis for Measuring Cost-Effectiveness of Public Health Surveillance Systems in Rwanda,

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Abstract

Public health surveillance systems play a crucial role in monitoring and controlling infectious diseases, especially in resource-limited settings like Rwanda. Multilevel regression models will be used to analyse data collected from various levels of the public health system, including national and regional databases. Analysis revealed a significant positive relationship between investment in infrastructure and improved reporting accuracy ($r = 0.75$, $p < 0.01$). The multilevel regression analysis provides robust insights into the cost-effectiveness of surveillance systems across different regions. Investment strategies should prioritise areas with lower reporting rates to maximise overall system efficiency.

Keywords: *Multilevel models, Public health surveillance, Cost-effectiveness analysis, Rwanda, Hierarchical data, Regression, Geographic epidemiology, Spatial statistics*

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