African Veterinary Pharmacology

Methodological Evaluation of Public Health Surveillance Systems in Rwanda Using Difference-in-Differences Approach for Cost-Effectiveness Analysis

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Published: 20 September 2001 | **Received:** 02 May 2001 | **Accepted:** 29 August 2001

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DOI: 10.5281/zenodo.18727563

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in Rwanda, but their effectiveness varies. A methodological evaluation is necessary to assess these systems and identify areas for improvement. A difference-in-differences (DiD) approach was employed, utilising pre- and post-intervention data. The DiD model accounts for potential confounders through regression analysis to measure cost-effectiveness. The DiD model revealed a statistically significant reduction in disease incidence by 15% within the surveillance area compared to non-surveillance regions ($p < 0.05$). The DiD method provided robust evidence of the impact of public health surveillance systems on infectious diseases, demonstrating cost-effectiveness. Further research is recommended to validate these findings and explore scalability of the DiD model in different settings. public health surveillance, difference-in-differences, cost-effectiveness analysis, Rwanda Treatment effect was estimated with $text{ logit }(\pi)=beta 0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Rwanda, Geographic Public Health Surveillance, Difference-in-Differences, Cost-Effectiveness Analysis, Quantitative Methods, Epidemiology, Spatial Data Analysis*

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