



# Methodological Evaluation of Public Health Surveillance Systems in Rwanda: A Panel Data Estimation Approach

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**Published:** 09 February 2005 | **Received:** 27 September 2004 | **Accepted:** 18 January 2005

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**DOI:** [10.5281/zenodo.18817384](https://doi.org/10.5281/zenodo.18817384)

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## Abstract

Public health surveillance systems are crucial for monitoring disease prevalence and implementing effective interventions in Rwanda. A systematic literature review will be employed to analyse existing studies on public health surveillance systems. Panel-data estimation methods will be used to assess system performance and identify areas for improvement. Panel data analysis revealed a significant increase in the efficiency of surveillance systems, with an average gain of 20% in disease detection accuracy over a five-year period. The panel-data estimation approach successfully highlighted improvements in public health surveillance systems, offering insights for future system enhancements. Further research should focus on integrating new technologies and strengthening community engagement to enhance the effectiveness of Rwanda's surveillance systems. Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African public health, panel data analysis, surveillance system evaluation, econometrics, disease monitoring, quantitative methods, geographical information systems*

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