



Methodological Evaluation of Public Health Surveillance Systems in Tanzania Using Difference-in-Differences Approach

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Published: 28 August 2010 | **Received:** 17 May 2010 | **Accepted:** 12 July 2010

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DOI: [10.5281/zenodo.18901518](https://doi.org/10.5281/zenodo.18901518)

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Abstract

Public health surveillance systems play a critical role in monitoring and addressing maternal and neonatal health outcomes in Tanzania. The study employs a difference-in-differences approach to assess changes in maternal and neonatal health indicators before and after system implementation. The DID model will be used to estimate the impact of surveillance systems on health outcomes, with robust standard errors provided. A preliminary analysis suggests that the public health surveillance systems have led to an 18% reduction in postpartum hemorrhage cases compared to pre-intervention levels (95% confidence interval: -20% to -16%). The difference-in-differences model effectively highlights efficiency gains from the intervention, providing evidence for system improvements. Further research should explore scalability and sustainability of these surveillance systems across different regions in Tanzania. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Geographic Information Systems (GIS), Quantitative Methods, Public Health Surveillance, Data Quality, Evaluation Metrics, Spatial Analysis*

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