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

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Abstract

Public health surveillance systems are crucial for monitoring disease outbreaks in Tanzania, particularly in rural areas where healthcare infrastructure is limited. We will use a difference-in-differences model to assess changes in disease reporting before and after implementing new surveillance protocols. The analysis will include time-series data from multiple regions across Tanzania. A preliminary analysis suggests that the difference-in-differences model detects an 18% increase in reported diseases post-intervention, with a robust standard error of ±4%. The application of the difference-in-differences model shows promise for evaluating public health surveillance systems but requires further validation and expansion to diverse regions. Further studies should include cross-sectional surveys to validate findings and expand the study to other geographical areas in Tanzania. Public Health Surveillance, Difference-in-Differences Model, Tanzania Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Public Health Surveillance, Difference-in-Differences, Spatial Analysis, Geographic Information Systems, Evaluation Framework, Quantitative Methods*

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