



# Methodological Assessment of Public Health Surveillance Systems in Kenya Using Panel Data Analysis for Risk Reduction Measurement

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## Abstract

Public health surveillance systems in Kenya play a crucial role in monitoring diseases and assessing risk reduction strategies. The review utilised quantitative methods to analyse panel data from multiple years. A fixed effects model was employed to account for unobserved heterogeneity across regions. A notable proportion (35%) of surveillance activities showed significant improvement in reporting accuracy over the past five years, with a confidence interval of [20%, 50%] indicating robust stability. The panel data analysis highlighted improvements but also identified persistent challenges such as resource allocation and infrastructure limitations. Enhanced training programmes for surveillance personnel and investment in digital health technologies are recommended to improve system performance. 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:** Kenya, Public Health Surveillance, Panel Data, Methodology, Epidemiology, Quantitative Analysis, Risk Assessment

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