



# Methodological Assessment of Public Health Surveillance Systems in Senegal Employing Quasi-Experimental Designs

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## Abstract

Public health surveillance systems in Senegal have been established to monitor diseases and outbreaks but their effectiveness is not well understood. A comprehensive search of peer-reviewed journals was conducted using databases such as PubMed and Scopus. Studies employing quasi-experimental designs were included if they measured the impact of surveillance system improvements or changes on disease detection or response times. The analysis identified a trend towards increasing use of interrupted time series (ITS) models in evaluating public health surveillance systems, with some studies reporting reductions in outbreak detection times by up to 20%. Quasi-experimental designs offer valuable insights into the efficiency of Senegal's public health surveillance systems but require further methodological refinement and replication. Future research should aim to validate findings through additional quasi-experimental studies and consider integrating machine learning techniques for more complex data analysis. Public health surveillance, Quasi-experimental design, Interrupted time series (ITS), Efficiency gains, Senegal Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, surveillance, methodology, evaluation, quasi-experimental, health systems, design*

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