



## Evaluating Surveillance System Yield in Ghana

*A Methodological Protocol for Difference-in-Differences Analysis*

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### ABSTRACT

**Background:** Public health surveillance systems are critical for early disease detection and response, yet their methodological evaluation, particularly regarding 'yield' or case detection efficiency, remains underdeveloped in many settings. Robust, quantitative frameworks are needed to assess the impact of system enhancements.

**Purpose and objectives:** This protocol details a methodological approach to evaluate the yield improvement of a surveillance system intervention in Ghana. The primary objective is to quantify the causal effect of the intervention on reported case counts, controlling for underlying temporal trends and confounding factors.

**Keywords:** *Public health surveillance, Health systems evaluation, Sub-Saharan Africa, Difference-in-differences, Surveillance yield, Ghana, Methodological protocol*

#### Article Highlights

- Details a quasi-experimental difference-in-differences design for causal evaluation.
- Aims to quantify the percentage change in case detection yield from system interventions.
- Employs propensity score matching and cluster-robust inference for district-level analysis.
- Proposes a model to isolate intervention effects from underlying temporal trends.

#### Core Analytical Model

The specified DiD model is:  $Y_{it} = \beta_0 + \beta_1 \text{Intervention}_i + \beta_2 \text{Post}_t + \delta(\text{Intervention}_i \times \text{Post}_t) + \varepsilon_{it}$ , where  $Y_{it}$  is the log-transformed case count. The coefficient  $\delta$  is the key estimator of causal impact.

*This article presents a research protocol; empirical results are forthcoming.*

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