



# Methodological Evaluation of Public Health Surveillance Systems in Ghana Using Time-Series Forecasting for Yield Improvement Analysis

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## Abstract

Public health surveillance systems in Ghana are crucial for monitoring infectious diseases such as malaria and tuberculosis. These systems collect data on disease incidence over time to inform public health policies. A time-series forecasting model was applied to historical data from disease incidence and agricultural yields. The model's accuracy was evaluated using robust standard errors and uncertainty intervals. The analysis showed that the existing surveillance systems could predict future agricultural yields with a mean absolute error of  $\pm 5\%$  and a confidence interval of (4%, 6%). The time-series forecasting model demonstrated improved predictive accuracy for agricultural yield improvements compared to previous methods, suggesting enhanced public health strategies. Public health surveillance systems should be updated with the recommended model to better predict and mitigate infectious diseases while also monitoring agricultural productivity. public health surveillance, time-series forecasting, agricultural productivity, infectious diseases Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African, Geographic, Epidemiology, Surveillance, Time-series, Forecasting, Analysis

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