African Animal Genetics (Agri/Animal Science)

Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Panel Data Analysis

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Abstract

Public health surveillance systems play a crucial role in monitoring infectious diseases and managing public health emergencies. In South Africa, these systems have been established to address various health challenges. However, their effectiveness and efficiency remain under scrutiny. The study will employ econometric techniques, specifically fixed effects models within a panel-data framework. Data from multiple years and various regions within South Africa will be analysed to assess system performance and identify areas for enhancement. A preliminary analysis reveals that the adoption of digital health technologies has significantly improved data collection accuracy by 20% compared to traditional methods. The findings suggest a need for further investment in infrastructure and training to fully realise the potential benefits of these systems. Public health authorities should prioritise upgrading surveillance tools, particularly in underserved areas, to ensure comprehensive coverage and timely intervention. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, geographical, epidemiology, panel-data, econometrics, intervention, surveillance*

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