African Health Economics (Business focus)

Methodological Evaluation of Public Health Surveillance Systems in Senegal Using Time-Series Forecasting Models for Risk Reduction Measurement

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring disease trends and implementing timely interventions to reduce morbidity and mortality. The study will employ ARIMA (AutoRegressive Integrated Moving Average) model for forecasting disease incidence rates in Senegal. Uncertainty will be assessed through robust standard errors and confidence intervals. A preliminary analysis indicates a downward trend in the number of reported cases over the past five years, suggesting effective surveillance measures have reduced communicable diseases' impact. The ARIMA model demonstrates its utility for forecasting disease trends in Senegal's public health systems, providing insights into risk reduction strategies. Public health officials should continue and enhance existing surveillance efforts to sustain the observed downward trend in disease incidence. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, geographical, surveillance, forecasting, ARIMA, time-series, evaluation*