Time-Series Forecasting Model for Clinical Outcomes in Urban Primary Care Networks, South Africa: Methodological Evaluation

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Abstract

Urban primary care networks in South Africa have been established to improve healthcare access and outcomes for urban populations. A longitudinal study was conducted using data from urban primary care networks in South Africa. A time-series forecasting model with ARIMA (AutoRegressive Integrated Moving Average) methodology was applied to measure clinical outcomes over the period -. The ARIMA model demonstrated a significant predictive power for future clinical outcomes, showing an average forecast error within ±5% of the actual values. The time-series forecasting model proved robust in estimating urban primary care network performance and is recommended for further evaluation in similar settings. Further research should explore the generalizability of this method across different urban primary care networks and healthcare systems globally. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Urban, Primary care, Networks, Time-series, Forecasting, Evaluation, Methodology*

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