



Time-Series Forecasting Model Evaluation in Tanzanian District Hospitals: A Methodological Assessment of Clinical Outcomes Systems

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Abstract

Clinical outcomes in Tanzanian district hospitals are influenced by a variety of factors including patient demographics, healthcare delivery systems, and resource availability. A time-series forecasting model was developed using historical data from Tanzanian district hospitals, focusing on patient admissions, length of stay, and discharge rates. Model performance was evaluated using statistical metrics such as mean absolute error (MAE) and confidence intervals. The MAE for the predictive models ranged 0.5% to +1.2%, indicating moderate agreement with actual outcomes over a one-year period. Time-series forecasting models can effectively predict clinical outcomes in Tanzanian district hospitals, but further refinement is required to improve accuracy and reliability. Investment should be prioritised in training staff on model usage and data management practices to enhance model performance. Clinical Outcomes, Time-Series Forecasting, District Hospitals, Tanzania Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 p X_p$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, African, methodology, demographics, modelling, time-series, resource-access, clinical-outcomes

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