African Health Economics (Business focus)

Bayesian Hierarchical Model for Evaluating Clinical Outcomes in Urban Primary Care Networks in South Africa: A Methodological Investigation

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Abstract

Urban primary care networks in South Africa are crucial for addressing health inequalities. However, their efficacy varies significantly across different settings and populations. A Bayesian hierarchical model will be employed to analyse data from multiple urban primary care sites. This approach allows for the integration of site-specific characteristics while accounting for variability across different contexts. The preliminary analysis suggests that a higher proportion (35%) of patients in one network exhibited improved clinical outcomes compared to baseline, with significant differences observed between networks. This study provides foundational insights into the effectiveness of urban primary care networks by leveraging Bayesian hierarchical modelling techniques. Further empirical research should be conducted to validate these findings and explore potential policy implications for resource allocation in primary healthcare systems. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Urbanization, Health Inequality, Primary Care, Bayesian Statistics, Hierarchical Modelling, Quantitative Methods, Geographic Analysis*

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