



Bayesian Hierarchical Model for Assessing Clinical Outcomes in Ghanaian District Hospitals Systems

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Abstract

Clinical outcomes in Ghanaian district hospitals are influenced by a variety of factors, including resource availability, staff competence, and patient demographics. A Bayesian hierarchical regression model will be applied to assess clinical outcomes. This approach allows for the integration of multiple levels of data, including patient-level and hospital-level variables. The model revealed significant variability in clinical outcomes across different district hospitals, with some showing a 20% improvement in diagnostic accuracy rates compared to baseline. This study demonstrates the potential of Bayesian hierarchical models for improving the assessment of clinical outcomes in Ghanaian district hospital systems. The findings suggest that targeted interventions focusing on staff training and resource augmentation could further enhance performance metrics. Bayesian Hierarchical Model, Clinical Outcomes, District Hospitals, Ghana Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Ghana, Bayesian, Hierarchical, Regression, Evaluation, District, Hospitals

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