African Veterinary Anaesthesia

Bayesian Hierarchical Model for Evaluating Clinical Outcomes in Uganda's Public Health Surveillance Systems

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Abstract

Public health surveillance systems in Uganda are crucial for monitoring clinical outcomes efficiently. However, their effectiveness can be improved through advanced analytical methods. A Bayesian hierarchical model was developed to analyse data from multiple healthcare facilities. This approach accounts for both local variability and overall system performance, providing insights into clinical effectiveness across different regions. The model identified significant regional differences in the success rates of certain interventions, indicating that tailored strategies are necessary for optimal outcomes. This study demonstrated the utility of Bayesian hierarchical models in refining public health surveillance systems and improving their diagnostic accuracy. Public health officials should consider implementing these models to better understand system performance and allocate resources more effectively. Bayesian Hierarchical Model, Clinical Outcomes, Public Health Surveillance Systems, Uganda Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\ p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Uganda, Bayesian, Hierarchical, Model, Surveillance, Evaluation, Methodology*

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