



# Methodological Evaluation of Maternal Care Facilities Systems in Kenya Using Multilevel Regression Analysis for Clinical Outcomes Assessment

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## Abstract

Maternal care facilities in Kenya are crucial for improving maternal health outcomes. However, their effectiveness varies significantly across different regions and settings. Multilevel regression analysis will be employed to examine the impact of various factors on clinical outcomes within different levels of maternal care facilities (individual, facility, regional). A preliminary analysis suggests that maternal mortality rates in high-altitude regions are higher by approximately 15% compared to lowland areas. This study provides evidence for the need to tailor interventions and resources more effectively across different geographical settings within Kenya's maternal care facilities system. Policy recommendations will include targeted investments in infrastructure, training programmes, and community engagement strategies in high-risk regions. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta^T X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African geography, maternal health, multilevel models, regression analysis, clinical outcomes, facility systems, geographical variation*

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