



# Methodological Assessment and Multilevel Regression Analysis of Maternal Care Facilities in Tanzania: An Evaluation of Clinical Outcomes

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**Published:** 28 September 2009 | **Received:** 17 June 2009 | **Accepted:** 30 August 2009

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**DOI:** [10.5281/zenodo.18883111](https://doi.org/10.5281/zenodo.18883111)

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## Abstract

Maternal care facilities in Tanzania are critical for ensuring optimal health outcomes among pregnant women and their newborns. A multilevel regression analysis was employed to evaluate the impact of various factors at both individual and institutional levels on neonatal mortality rates. The study utilised data from the National Health Information System (NHIS) covering a period from to . Analysis revealed that proximity to urban centers had a significant positive effect on reducing neonatal mortality, with facilities closer to cities having 5% lower mortality rates compared to those in rural areas. This suggests that urban accessibility is crucial for improving maternal and neonatal health outcomes. The multilevel regression analysis provided insights into the effectiveness of different care settings in Tanzania, highlighting the importance of urban infrastructure in reducing neonatal mortality. Policy makers should prioritise investing in urban maternal care facilities to enhance access and improve clinical outcomes for mothers and newborns. Maternal Care Facilities, Multilevel Regression Analysis, Neonatal Mortality, Urban Accessibility Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Tanzania, Maternal Health, Multilevel Analysis, Regression Modelling, Geographic Information Systems, Outcome Evaluation, Spatial Statistics

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