African Wilderness Medicine

Panel Data Estimation for Evaluating Cost-Effectiveness of District Hospitals in Ghana: A Methodological Assessment

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Abstract

District hospitals in Ghana play a crucial role in providing healthcare services to rural populations. However, their effectiveness and cost-effectiveness are not well understood due to limited data and methodological challenges. A mixed-method approach combining quantitative panel-data analysis with qualitative interviews was employed. Panel data from five randomly selected districts were analysed over a period of three years, accounting for both fixed and random effects to ensure robustness. The estimated cost-effectiveness ratio (CER) varied significantly across the districts, ranging from 0.85 to 1.25. District X showed the highest CER at 1.10, indicating a more efficient use of resources compared to other areas. This study provides valuable insights into the cost-effectiveness and resource allocation in district hospitals within Ghana's healthcare system. Based on this analysis, targeted interventions should focus on improving service delivery efficiency and financial management practices in lower-performing districts. Treatment effect was estimated with $text{logit}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African Geography, District Hospitals, Cost-Effectiveness Analysis, Panel Data, Econometrics, Health Economics, Regression Models*

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