

# Methodological evaluation of emergency care systems in Uganda

*a panel-data analysis of clinical outcomes and operational performance*

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Received: 21 December 2007 | Accepted: 05 March 2008 | Published: 22 March 2008 | DOI:

[10.5281/zenodo.18957087](https://doi.org/10.5281/zenodo.18957087)

## ABSTRACT

**Background:** Emergency care systems in sub-Saharan Africa are critical for reducing preventable mortality, yet robust methodological frameworks for their longitudinal evaluation are lacking. Existing assessments often rely on cross-sectional data, failing to capture system dynamics and temporal trends in performance.

**Purpose and objectives:** This study aimed to develop and apply a panel-data methodology to evaluate the operational performance and clinical outcomes of hospital-based emergency care units in Uganda, identifying key drivers of system efficiency and patient survival.

**Keywords:** *Emergency care systems, Sub-Saharan Africa, Panel-data analysis, Clinical outcomes, Operational performance, Uganda, Health systems evaluation*

### Article Highlights

- Panel-data analysis reveals dynamics missed by cross-sectional studies.
- Nurse staffing levels are a significant, modifiable driver of patient survival.
- Central referral units underperform regional facilities on patient throughput.
- Methodology provides a robust framework for longitudinal system evaluation.

### Methodological Contribution

Applies econometric panel-data models to longitudinally evaluate emergency care system performance in a low-resource setting.

*This study develops a novel framework for evaluating health system dynamics over time.*

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