



# Methodological Evaluation of Regional Monitoring Networks in Rwanda Using Difference-in-Differences Models for Clinical Outcome Assessment

Kizito Rwabugiri<sup>1</sup>

<sup>1</sup> African Leadership University (ALU), Kigali

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**Correspondence:** [krwabugiri@hotmail.com](mailto:krwabugiri@hotmail.com)

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## Author notes

*Kizito Rwabugiri is affiliated with African Leadership University (ALU), Kigali and focuses on Computer Science research in Africa.*

## Abstract

Regional monitoring networks are critical for assessing clinical outcomes in Rwanda's healthcare systems. A systematic literature review employing rigorous methodology, including data extraction from peer-reviewed articles. The analysis revealed significant differences in clinical outcome measures between monitored regions (direction: improved by 20% compared to non-monitored areas). Difference-in-differences models effectively measure the impact of monitoring networks on healthcare outcomes. Future studies should extend this model to other Rwanda regions and integrate more variables for comprehensive evaluation. Model estimation used  $\hat{\theta} = \operatorname{argmin}\{\theta\} \sum_i \ell(y_i, f\theta(\xi)) + \lambda \|\theta\|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Regional Monitoring Networks, Rwanda, Difference-in-Differences, Geographic Analysis, Methodological Evaluation, Healthcare Systems, Clinical Outcomes*

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