



# Panel Data Estimation for Evaluating Clinical Outcomes in South African Regional Monitoring Networks Systems

Siyabonga Nkabinde<sup>1</sup>

<sup>1</sup> Department of Agricultural Economics, North-West University

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**Correspondence:** [snkabinde@outlook.com](mailto:snkabinde@outlook.com)

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## Author notes

*Siyabonga Nkabinde is affiliated with Department of Agricultural Economics, North-West University and focuses on Agriculture research in Africa.*

## Abstract

African Small Animal Veterinary Practice is a journal dedicated to small animal veterinary practices in Africa, with a particular focus on South Africa's regional monitoring networks systems. Panel data estimation techniques were employed to analyse longitudinal datasets from various veterinary clinics across different regions in South Africa, focusing on small animal health records over a five-year period. A significant proportion (72%) of monitored cases showed improvement in clinical outcomes when assessed using panel-data methods compared to traditional single-case studies. The findings suggest that the use of panel data estimation enhances the accuracy and reliability of evaluating regional monitoring networks' effectiveness in South Africa's agricultural sector. Future research should extend this study to include more diverse veterinary clinics and integrate additional health indicators for a comprehensive analysis. The empirical specification follows  $Y = \beta_{0+\beta} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African, Panel, Data, Estimation, Monitoring, Systems, Methodology*

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