Methodological Assessment and Time-Series Forecasting of South African Secondary School Systems: A Clinical Outcomes Perspective

Sifiso Mathebula[1]**, Zola Motsi**[2,3]**, Kgosi Molefi**[2,4]**, Mpho Hlengwa**[2,3]

[1] Department of Research, University of Venda

[2] University of Venda

[3] South African Institute for Medical Research (SAIMR)

[4] Department of Advanced Studies, Stellenbosch University

Author notes

Sifiso Mathebula is affiliated with Department of Research, University of Venda and focuses on Physics research in Africa.

Zola Motsi is affiliated with University of Venda and focuses on Physics research in Africa.

Kgosi Molefi is affiliated with Department of Advanced Studies, Stellenbosch University and focuses on Physics research in Africa.

Mpho Hlengwa is affiliated with University of Venda and focuses on Physics research in Africa.

Abstract

The secondary school systems in South Africa face significant challenges related to educational outcomes and resource allocation. A mixed-method approach will be employed, integrating qualitative interviews with quantitative data from existing administrative records. A time-series forecasting model using an autoregressive integrated moving average (ARIMA) technique will be developed and validated. Initial findings suggest a moderate positive trend in student performance over the past decade, though variability is evident across different regions. The ARIMA model demonstrated robust predictive power for future clinical outcomes when calibrated with historical data from South African schools. Investment strategies should be tailored to address regional disparities identified by the analysis. The empirical specification follows $Y = \vec{\beta}_{0+\beta} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, longitudinal study, mixed methods, time-series analysis, outcome assessment, predictive modelling, educational indicators*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge