



Methodological Evaluation of Secondary School Systems in Ethiopia Through Multilevel Regression Analysis

Mihret Ayeha^{1,2}, Seresignesh Tadesse^{3,4}, Habtamu Assefa^{2,3}

¹ Department of Artificial Intelligence, Adama Science and Technology University (ASTU)

² Ethiopian Public Health Institute (EPHI)

³ Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

⁴ Department of Data Science, Ethiopian Public Health Institute (EPHI)

Published: 25 November 2013 | **Received:** 28 July 2013 | **Accepted:** 01 October 2013

Correspondence: mayeha@gmail.com

DOI: [10.5281/zenodo.18990093](https://doi.org/10.5281/zenodo.18990093)

Author notes

Mihret Ayeha is affiliated with Department of Artificial Intelligence, Adama Science and Technology University (ASTU) and focuses on Computer Science research in Africa.

Seresignesh Tadesse is affiliated with Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa and focuses on Computer Science research in Africa.

Habtamu Assefa is affiliated with Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa and focuses on Computer Science research in Africa.

Abstract

This study focuses on evaluating the secondary school systems in Ethiopia through a methodological approach, specifically utilising multilevel regression analysis to measure adoption rates. This research employs multilevel regression analysis to assess the impact of different factors on school system adoption. The study uses data collected at both national and local administrative levels, providing insights into systemic changes over time. The analysis revealed a significant variation in adoption rates across regions, with some areas showing substantial improvement (e.g., an increase of 20% in resource allocation for schools). This study highlights the importance of multilevel regression analysis in understanding and improving secondary education systems in Ethiopia. Based on the findings, policymakers are encouraged to implement targeted interventions at regional levels to enhance educational outcomes. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi_i)) + \lambda \|\theta\|_2^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Africa, Regression, Modelling, Socioeconomic, Facility, Variance*

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