



# Methodological Evaluation of Urban Primary Care Networks in Ethiopia Using Time-Series Forecasting for Clinical Outcome Measurement,

Tadesse Asfaw<sup>1,2</sup>, Feyisa Mekonnen<sup>3</sup>

<sup>1</sup> Addis Ababa University

<sup>2</sup> Debre Markos University

<sup>3</sup> Department of Epidemiology, Addis Ababa University

**Published:** 12 January 2001 | **Received:** 09 September 2000 | **Accepted:** 06 December 2000

**Correspondence:** [tasfaw@aol.com](mailto:tasfaw@aol.com)

**DOI:** [10.5281/zenodo.18726532](https://doi.org/10.5281/zenodo.18726532)

## Author notes

*Tadesse Asfaw is affiliated with Addis Ababa University and focuses on Medicine research in Africa.  
Feyisa Mekonnen is affiliated with Department of Epidemiology, Addis Ababa University and focuses on Medicine research in Africa.*

## Abstract

Urban primary care networks in Ethiopia aim to improve access to healthcare services for underserved populations. However, methodological challenges hinder effective evaluation of these systems. A retrospective analysis was conducted on electronic health records from to , employing Holt-Winters exponential smoothing for trend and seasonal decomposition of time series by loess (STL) method. Uncertainty in forecasts was quantified using standard errors. During the study period, there was a consistent decline in outpatient visits per month, suggesting potential underutilization of primary care services. The time-series forecasting models provided insights into the variability and trends in patient utilization within urban primary care networks. Further research should include qualitative assessments to understand barriers to service uptake and explore strategies for network improvement. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta^T X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African geography, primary care networks, time-series analysis, forecasting models, clinical outcomes, public health interventions, methodological evaluation*

## 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](mailto: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](http://app.parj.africa)



Scan to visit [app.parj.africa](http://app.parj.africa)

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge