

Fikrewold H. Bitew, PhD

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Education

2016 – 2020: Ph.D. in Applied Demography

Department of Demography, College of Public Policy, The University of Texas at San Antonio
Dissertation: Spatio-temporal inequalities and Machine-Learning Algorithms for predicting determinants of undernutrition among women and children in Ethiopia (Prof. Corey Sparks, chair)

2021 -2022: Master's in Artificial Intelligence & Machine Learning: Business Applications

McCombs School of Business, The University of Texas, Austin

2006 – 2008: M.S. in Population Studies (Reproductive Health)

Institute of Population Studies, Addis Ababa University, Addis Ababa, Ethiopia

2000 – 2004: B.S. in Applied Mathematics and Statistics

Mathematics Department, Faculty of Science, Addis Ababa University, Ethiopia

Employment

I/2024 –02/2025: Data Analyst, CCRI-DRM (Consultant), Data and Analytics Team (DAT), DAPM NYHQ (Remote)

- Support development of subnational Children's Climate Risk Index – Disaster Risk Model (CCRI-DRM) for 7 countries.
- Assist in data collection, cleaning, coding, and model construction in Excel, integrating with platforms like GeoSight.
- Collaborate with UNICEF teams, national consultants, and GIS experts to refine methodologies and validate findings.

12/2022- 12/2023: Data and Applied Research Analyst (Social and Behaviour Change), ECARO, 11.5 months, full time, home-based

- SBC Evidence Systems^{**}: Design, analyze, and visualize SBC data using surveys, KAPB studies, and behavioral insights with PowerBI, R, and Python.
- Data Tools & Management^{**}: Build and manage data tools, dashboards, and systems with PowerBI, R, Python, and Kobo.
- Technical Support^{**}: Guide providers, review literature, and train on data methods using R, Python, and Stata.
- Deliverables^{**}: Present findings in reports and dashboards via PowerBI and Python over 11.5 months.

9/2020 –9/2022: Statistical Analysis Consultant Nutrition, Data & Analytics Section, DAPM (Remote) UNICEF - United Nations Children's Fund

- Identify relevant data sources – The nutrition team currently maintains an internal catalog of

- several types of data sources including household surveys (DHS, MICS, SMART, ...) surveillance, and administrative reports. Based on the survey catalog, identify data sources for children's nutrition.
- Support with data analysis – Support data analysis to present current status, trends, and inequities in children's nutrition. Developed STATA and R codes for reanalyzing surveys similar to the MACROS in STATA developed by the nutrition team for other nutrition indicators.
 - Developed database and data tables to be published with the report.
 - Recommended appropriate actions and practices to optimize data accuracy, ensure timely resolution of critical data management and increase the relevance of operational and results in data to user needs.

01/2016 – Present: Sr. Institutional Research Analyst II
The University of Texas-San Antonio (UTSA), Texas

- Explored data from the various large, complex, multi-dimensional datasets.
- Built automated paginated reports for the university, colleges, departments, and programs using business intelligence tools: SQL Server Reporting Services (SSRS) and Crystal Reports. Identified correlations, highlight patterns, and establish significance for results monitoring and reporting.
- Built institutional research data visualizations using Power-BI
<https://www.utsa.edu/ir/content/dashboards/>)
- Developed data visual information products such as infographics and maps to support planning, monitoring, institutional effectiveness, and decision-making.
- Performed technical analysis from Banner, Oracle, SQL-Server, and other databases using SQL, Stata, Python, R, to perform major institutional research projects.
- Researched and produced reports and visualizations for major UTSA grant applications and ad-hoc requests from internal and external entities.
- Collaborated with internal colleagues in relevant working groups to provide the highest quality of institutional research to advance the university's effectiveness through the collection and reporting of institutional data.
- Built and deployed Machine Learning models for institutional effectiveness. Major Machine Learning Projects include:
 - Predicting Student Retention: A Comparative Study of Predictive Models for Predicting Student Retention at the University of Texas-San Antonio
 - Predicting Student's first-year GPA: Machine Learning Algorithms for Predicting Student's first-year GPA.
- Provided technical guidance/ leadership to strengthen the skills of all institutional research staff and partners towards institutional effectiveness.
- **Publication and data dissemination**
 - Produced fact books, concept papers, preliminary analyses, and automated reports to support the use of data analytics and data science techniques in the office of institutional research.
 - Built and managed the university institutional research website (<https://www.utsa.edu/ir/>)

01/2014 – 02/2016: Sr. Institutional Research Analyst
Dallas County Community College District

- **Technical support including**
 - Retrieve dataset using SQL and built reports from Access, Oracle, and Colleague database system as the system changes/expands
 - Produced automated paginated reports using business Intelligence Tools: Crystal Reports, Power BI and Tableau, SQL Server Reporting Services (SSRS), MS-Access
 - Completed and submitted student-related IPEDS surveys for all seven colleges, completes and submitted HR-related surveys for the District and seven colleges, and assisted with the other IPEDS surveys completed by the District Service Center by collaboratively working with other team members.
 - Researched and responded to several ad-hoc requests from internal and external entities.
 - Participated in data collection, compiled, analyzed, and interpreted data in collaboration with other team members.
 - Provided technical guidance/ leadership to strengthen the skills of all research and evaluation staff and partners towards institutional effectiveness.
- **Data Dissemination:**
 - Built the office of institutional research website using Microsoft SharePoint (see <https://www.mountainviewcollege.edu/aboutmvc/research/pages/institutional-research.aspx>)
 - accessible: where institutional reports and tables are stored so that all users can access them easily.
 - comprehensive: The website consists of results from various censuses and surveys, periodical publications (dashboards, fast facts, survey evaluations, fact books), and other documents which are released by DCCCD.

02/2009 – 02/2013: Sr. Monitoring and Evaluation Coordinator
Center for Disease Control (CDC), Addis Ababa, Ethiopia

- **Technical Support for Impact Evaluation**
 - Integrated diverse data sources and produced innovative solutions for a variety of complex problems
 - Facilitated learning and development through planning and organization of training events, activities, and other capacity-building initiatives to enhance the understanding and competencies of staff in using data produced through corporate performance monitoring and reporting tools.
 - Sets standards, develop corporate guidance, and build capacity for use and application of inSight data
 - Developed and maintained information to support the transformation of data into information for decision-making
 - Monitor CDC's data management systems and processes to identify weaknesses (inconsistencies, redundancies, gaps, and potential problems) and facilitates processes to improve quality assurance mechanisms.

- Recommended appropriate actions and practices to optimize data accuracy, ensure timely resolution of critical data management and increase the relevance of operational and results in data to user needs.
- Built strategic partnerships and alliances. Seeks cooperation and strengthens collaboration with internal/external partners, regularly engaging them in dialogue to exchange knowledge and experiences, develop operational prototypes, and document methodologies and lessons learned, to ensure synergy, enhance policy coherence, and harmonize systems and approaches to performance monitoring and reporting.
- Contributed to the development of Ethiopian Health Professionals Ethical Code of Conduct, developed by the Food, Medicine, and Health Care Administration and Control Authority of Ethiopia (FMHACA)
- Provided technical support to strengthen the skills of all research and evaluation staff by researching cutting-edge evaluation/research methodologies with a focus on advice to all staff on the best available evaluation methods to address specific evaluation questions.

02/2009 – 02/2011: Fellowship in Population and Health
ICF Macro, Maryland, US

- Conducted global, regional, and country-level data compilation mainly in surveys related to child and maternal mortality and nutritional status.
- Trained the application of mixed methods, including a combination of experimental and quasi-experimental designs to evaluate the impact of policies, programs, and interventions
- Implemented both experimental and quasi-experimental design research methods for several projects undertaken in Africa and the United States.
- Conducted quality assessment on demographic and health surveys of developing countries.
- Support methodological work on estimation in areas related to child and maternal nutritional status
- Carried out data analysis to be included in inter-agency reports, publications, other relevant reports, as well as peer-reviewed journal articles.

07/2007 – 07/2008: Research Assistant
Addis Ababa University, Addis Ababa, Ethiopia

- Developed and maintained software systems for data entry, editing, imputation, and analysis for paper-based hospital surveillance
- Applied statistical models using linear and logistics regressions and survival analysis
- Produced data analysis to support report writing and publication

01/2006 – 07/2008: Full Time Mathematics Instructor & Department Chair
Jebena Adventist Institute, Addis Ababa, Ethiopia

Department of Mathematics

- **Courses Taught:** Algebra I, Pre-Calculus, Geometry, Algebra 2/Trigonometry

01/2004 – 07/2006: Full-Time Instructor
Admas University, Adwa, Ethiopia

Department of Computer Science

- **Courses Taught:** Database Management System, System Analysis and Design Methods
Programming with C++, Microsoft Office

Technical Skills

- Programming languages: R, Python, C++
- Analyzing data using: SQL, Hive, Impala, Pig, Spark
- Machine learning:
 - Python data science stack - NumPy, Pandas, Scikit-Learn, Pytorch, SciPy, Matplotlib, ggplot2
 - A strong understanding of the mathematical foundations of machine learning (linear algebra, calculus, applied probability)
 - Ability to create various types of ML algorithm
 - Ability to create models using frameworks such as TensorFlow, PyTorch, PySpark
- Time Series Analysis and Predictive Modelling with ARIMA Models
- Experienced with the following statistical and predictive modeling approaches: Gaussian Process; Markov Models; Hierarchical Clustering; K-Means; Linear Regression; Logistic Regression; Monte Carlo Simulation; Neural Networks.
- Data Visualization tools: Tableau or PowerBI
- Business intelligence tools: Crystal Reports, and SQL Server Reporting Services (SSRS)
- Geographic Information Systems: ArcGIS, QGIS, Spatial Analysis using R
- Statistical software: Stata, SAS, SPSS, CS-Pro
- Website development tools: Dreamweaver, HTML, Javascript, SharePoint

Honors and Awards

31 May 2010: Fellowship Award in Population and Health, ICF Macro, Maryland, US

<https://dhsprogram.com/pubs/pdf/WP77/WP77.pdf>

Peer-Reviewed Publications

- **Fikrewold H. Bitew and Lauren Apgar.** *A Machine Learning Approach to Predicting Master's Degree Completion at the University of Texas at San Antonio.* **The AIR Professional File**, Article 176, Winter 2025 Volume. Association for Institutional Research. <https://doi.org/10.34315/apf1762025>
- **Fikrewold H. Bitew**, Corey S. Sparks, and Samuel H. Nyarko. Spatio-temporal Inequalities and determinants of childhood undernutrition among under-5 children in Ethiopia (Journal of Spatial demography), Journal of Spatial and Spatio-temporal Epidemiology
<https://doi.org/10.1177/03795721231158503>
- **Fikrewold H. Bitew**, Corey S. Sparks, and Samuel H. Nyarko. "Machine learning algorithms for predicting undernutrition among under-five children in Ethiopia." Published online by Cambridge University Press: 08 October 2021. Public Health Nutrition Journal.
<https://doi.org/10.1017/S1368980021004262>
- **Fikrewold H. Bitew**, Samuel H. Nyarko, Lloyd Potter & Corey S. Sparks. "Machine learning approach

for predicting under-five mortality determinants in Ethiopia: evidence from the 2016 Ethiopian Demographic and Health Survey.” Published by Genus – an interdisciplinary, peer-reviewed, open-access journal of population sciences – 04 November 2020. Journal of Population Sciences. Genus 76, Article Number: 37 (2020).

<https://doi.org/10.1186/s41118-020-00106-2>

- UNICEF-WHO-The World Bank: Joint child malnutrition estimates — levels and trends – 2021 edition. *Developed database and data tables to be published with the report.*
<https://data.unicef.org/resources/jme-report-2021/>
- Samuel H. Nyarko, Corey S. Sparks & **Fikrewold Bitew**. “Spatio-temporal variations in unmet need for family planning in Ghana: 2003–2014.” Published by Genus: 21 November 2019. Journal of Population Sciences. Genus, 75, Article Number: 22 (2019).
<https://genus.springeropen.com/articles/10.1186/s41118-019-0069-7>
- **Fikrewold Bitew** and Samuel H. Nyarko. "Modern contraceptive use and intention to use: implication for under-five mortality in Ethiopia." Published by Heliyon – an all-science, open-access journal that is part of the Cell Press family. Heliyon 5 (2019): e02295.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6716109/pdf/main.pdf>
- **Fikrewold Bitew**, Samuel H. Nyarko, and Corey S. Sparks. "Spatial and temporal variations in women undernutrition in Ethiopia-A multilevel analysis." Published by African Population. Volume 33. No. 1 (2019).
<https://aps.journals.ac.za/pub/article/view/1364>
- Assefa Hailemariam and **Fikrewold Haddis**. “Factors Affecting Unmet Need for Family Planning in Southern Nations, Nationalities and Peoples Region, Ethiopia.” Published by Ethiopian Journal of Health Science. Volume 21(2): 77-89. July 2011.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275860/>

Article republished by National Library of Medicine, National Center for Biotechnology Information.
<http://www.ncbi.nlm.nih.gov/pubmed/22434988>

- **Fikrewold H. Bitew** and Daniel S. Telake. Undernutrition among Women in Ethiopia: Rural-Urban Disparity. Published by USAID. Demographic and Health Surveys (DHS) Working Papers No. 77. 2010. Calverton, Maryland, USA: ICF Macro.
<https://dhsprogram.com/pubs/pdf/WP77/WP77.pdf>
- **Fikrewold Haddis**, Daniel Sahleyesus, and Biruk Tensou. “Infertility in Ethiopia: Prevalence and associated risk factors.” Presented at Population Association of America, 2010 Annual Meeting, Dallas, Texas <http://paa2010.princeton.edu/>

Conference Proceedings and Presentations

- **Fikrewold Bitew** and Ashwin Jayagopal: “Application of SSRS for Automating Regular Reports.” Team: Turning the Corner and Racing Ahead. Southern Association for Institutional Research (SAIR 2021), 48th Annual Conference. October 9—October 12, 2021. Louisville, KY, Page 26
<https://www.sair.org/media/Program-2.pdf>
- **Fikrewold Bitew** and Ashwin Jayagopal: “Application of SSRS for Automating Regular Reports.” Team: Spurring Innovation through Research. Texas Association for Institutional Research (TAIR 2020). 42nd Annual Conference. March 1-4, 2020. San Antonio, TX Page 28 <http://texas-air.org/wp-content/uploads/2020/02/TAIR-2020-Brochure.pdf>
- **Fikrewold Bitew**, Johnelle P. Sparks, Yibeltal T. Bayou, Elhakim A. Ibrahim. “Trends and risk factors for under-five mortality: evidence from Ethiopian Demographic and Health Surveys, 2011-2016.” BMC Pregnancy and Childbirth. Population Association of America, 2019 Annual Meeting Final Program. April 10-13. Austin, Texas. Page 157
<http://paa2019.populationassociation.org/hps/PAA2019FullProgram.pdf>
- **Fikrewold Bitew**, Jinny Case, and Mahmoud Abunawas. Workshop Presentation: “Data Visualizations using Power BI: for Beginners.” Texas Association for Institutional Research (TAIR Summer Workshops 2018), Austin, TX
<https://texas-air.org/assets/pdf/2018SummerWorkshops.pdf>
- **Fikrewold Bitew**, Samuel H. Nyarko, and Corey S. Sparks (2019) Spatio-Temporal Inequalities and Determinants of Undernutrition among Children in Ethiopia. 209 Southern Demographic Association Annual Meeting in Durham, New Orleans, LA, October 10-12
<https://paa.confex.com/paa/2018/meetingapp.cgi/Paper/20512>
- **Fikrewold H. Bitew** and Telake, Daniel S. Telake. “Infertility in Ethiopia: Prevalence and Associated Risk Factors”, Population Association of America’s Annual Meeting, April 2010.
<https://paa2010.princeton.edu/abstracts/I01024>
- **Fikrewold H. Bitew** and Corey Sparks 2010. “Risk Factors for Under-5 Mortality: Evidence from Ethiopian Demographic and Health Surveys (DHS).” Southern demographic association 2018 annual meeting Page 10 https://sda-demography.org/resources/Documents/SDA%202018%20Final%20Program_v7_I00518.pdf