

AYNALEM ADUGNA, PhD

Research Scientist III | California Department of Public Health

Demography • Public Health • Health Equity • GIS & Spatial Statistics • Survey Research

Founder & Host • EthioDemographyAndHealth.org

PROFESSIONAL PROFILE

Demographer, public-health researcher, research manager, educator, and GIS/spatial-analysis specialist with extensive experience in scientific research, statistics, census and survey analysis, health equity, social determinants of health, and geographic information systems. Career experience spans California state service and university teaching in the United States and Ethiopia, including leading research staff, developing indicator systems and analytical products, supervising graduate research, and presenting complex findings to executive, academic, county, and external stakeholder audiences.

Technical experience includes Demographic and Health Survey (DHS) and American Community Survey data; R/RStudio, ArcGIS Pro, Python for GIS, Tableau, Excel, and spatial statistics. Research interests and publications span demography, health geography, population redistribution, maternal and child health, health inequities, immunization, gender norms, migration, and population change.

CORE EXPERTISE

Demography & Population Health

Fertility, mortality, migration, urbanization, population distribution, DHS and census analysis

Public Health & Health Equity

Health and social determinants, disparities, indicator development, data briefs, dashboards and fact sheets

Survey Research & Statistics

Research methods, sampling, sample design, quantitative analysis, statistical interpretation

GIS & Spatial Analysis

ArcGIS Pro, spatial statistics, geocoding, mapping, remote sensing, Python for GIS

Research Leadership

Scientific staff mentoring, project management, cross-unit coordination, executive presentations

Academic Leadership

Undergraduate and graduate teaching, graduate advising, PhD supervision, peer review

PROFESSIONAL EXPERIENCE

California Department of Public Health (CDPH) Research Scientist III — Office of Health Equity / Health Equity Research and Statistics Section

September 1, 2021 – Present (on leave of absence – CDPH is not affiliated with, sponsoring, or otherwise participating in any proposed engagements.)

- Manage the Office of Health Equity Healthy Communities Data and Indicators Project.
- Coordinate collaboration and mutual technical assistance among health-equity-focused data workgroups and other departmental data initiatives.
- Plan, contribute to, and track the development of indicator datasets and related analytics; mentor junior scientific staff.
- Plan and perform statistical analyses focused on disparities in health and social determinants of health by race/ethnicity, gender, age, income, region, and other dimensions of inequality.
- Maintain applied expertise in R/RStudio, SAS, Tableau, and ArcGIS Pro for data management, analysis, visualization, and dissemination.
- Develop and disseminate health-equity indicator tools, fact sheets, slide sets, dashboards, data briefs, and other data products.

California Department of Social Services (CDSS) | Research Manager / Research Services Branch

January 2013 – May 2021

- Managed 15 staff in the Federal Reporting and Monitoring Section.
- Led CalFresh participation and ad hoc research, including geocoding CalFresh addresses for spatial analysis.
- Developed methodologies for measuring CalFresh participation and procedures for integrating ACS, U.S. Census, Los Angeles County shapefiles, and CDSS data.
- Customized GIS procedures for CDSS analytical and mapping needs.
- Presented findings and CalFresh participation methodologies to executive management, California counties, PPIC, UC Davis, EDD, California Food Policy Advocates, and other external reviewers.
- Reviewed methodologies and results of state- and national-level studies on benefit eligibility, program participation and effectiveness, child fatality/near fatality, and related topics.

Sonoma State University | Faculty; subsequently Adjunct Faculty

August 1992 – December 2012; Adjunct Faculty January 2013 – Present

- Taught upper-division courses including Population Geography, Medical Geography, Social Geography, Cultural Geography, and quantitative/survey research methods.
- Advised students in research methods, sampling and sample design, data collection, and data analysis.

Addis Ababa University | Adjunct Faculty*December 2008 – Present*

- Teach postgraduate courses in Population, Nutrition, and Health and Migration and Urbanization at the Center for Population Studies.
- Guide graduate research in population, medical geography, nutrition, and urbanization.
- Supervise PhD research in demography, medical geography, and public health.

Addis Continental Institute of Public Health | Adjunct Faculty*October 2014 – Present***EDUCATION**

University of London	PhD, Medical Demography	United Nations Population Fund (UNFPA) Fellowship
University of Durham, United Kingdom	MA, Population Geography	United Nations Population Fund (UNFPA) Fellowship
Addis Ababa University	BA, Geography — With Distinction	

ADVANCED TRAINING & PROFESSIONAL CERTIFICATIONS

- Sonoma State University — Geographic Information Systems (GIS) and advanced GIS using ArcGIS Pro, ArcCatalog, and ArcTools; two semesters (2008/09).
- Sonoma State University — Remote Sensing and Digital Image Interpretation using ERDAS IMAGINE; one semester (2009).
- Solano Community College — College mathematics and statistics (2010–2012), transcript.
- Sacramento State University / California Health and Human Services Agency — Supervisor Training (2015/16), certificate.
- University of California, Davis — Mid-level Manager Training (2016/17), certificate.
- SAS Institute — SAS Level I, certificate.
- ESRI — ArcGIS Level III, Spatial Statistics, certificate.
- ESRI — ArcGIS Level IV, Interactive Web Maps, certificate.
- Microsoft — Excel Levels 2–3; Access Levels 2–3, certificates.

TECHNICAL SKILLS

Advanced/extensive: ArcGIS Pro; GIS and spatial statistics; R programming; Python for GIS; Microsoft Excel, Word, and PowerPoint.

Data environments: Demographic and Health Surveys, census data, American Community Survey,

LEADERSHIP, COMMUNICATION & PROFESSIONAL SERVICE

- Presented research and methodological findings at California Health and Human Services Agency conferences, California county health and human services forums, County Welfare Directors Association conferences, UC Davis, and to CDSS executives including the Director.
- Experienced in translating statistical and spatial methods for executive, practitioner, academic, and external-review audiences.
- Founder and host of EthioDemographyAndHealth.org.
- Peer reviewer: African Geographical Review; African Identities (Routledge); BMC Pediatrics; Journal of Health, Population and Nutrition.

AWARDS & FELLOWSHIPS

- United Nations Fellowship for master's-level study in demography.
- United Nations Fellowship for doctoral study in demography.
- California Department of Social Services Service Excellence Award, 2017.
- California Department of Social Services Service Excellence Award, 2018.

PROFESSIONAL ASSOCIATIONS

Population Association of America (PAA) • Association of American Geographers (AAG) • American Public Health Association (APHA) • Ethiopian Scientific and Academic Network (ESAN)

SELECTED PUBLICATIONS & SCHOLARLY WORKS

- Fekadu, H., Mekonnen, W., Adugna, A., Kloos, H., & Hailemariam, D. (2024). Barriers to equitable healthcare services for under-five children in Ethiopia: A qualitative exploratory study. *BMC Health Services Research*, 24, 613. doi:10.1186/s12913-024-11074-0.
- Fekadu, H., Mekonnen, W., Adugna, A., Kloos, H., & Hailemariam, D. (2024). Inequities and trends of polio immunization among children aged 12–23 months in Ethiopia: A multilevel analysis of Ethiopian Demographic and Health Survey. *BMJ Open*, 14, e079570. doi:10.1136/bmjopen-2023-079570.
- Adugna, A. (2023). The social geography of women's attitudes toward wife-beating in Ethiopia: A contribution towards proper application of spatial statistics. *Journal of Geography and Geology*, 15(2).
- Adugna, A. (2022). COVID-19 in Ethiopia: A regional geographical analysis and examination of complex interactions between a pandemic, geopolitics, domestic war, drought, and poverty. *Journal of Geography and Geology*, 14(2).
- Adugna, A. (2019). Ethiopia 2050: Socioeconomic challenges and demographic trends. Unpublished manuscript.
- Adugna, A. (2019). Regional economic favoritism and redistributive politics as a public good: The case of Tigray Region in Northern Ethiopia. *Journal of Geography and Geology*, 11(1).
- Adugna, A. (2018). Determinants of the number of children born to reproductive women in Ethiopia: Sampling cluster based national spatial analysis of the 2016 Demographic and Health Survey data. *Journal of Geography and Geology*, 10(4).
- Legese, W., Tadele, G., Adugna, A., & Kloos, H. (2018). A neglected resource in community development: Participation of Ethiopian academics in the development of their communities. *Environment and Natural Resources Research*, 8(2).
- Bergguist, R., Kloos, H., & Adugna, A. (2017). Schistosomiasis: Paleopathological perspectives and historical notes. In B. Jamison (Ed.), *Schistosoma: Biology, Pathology and Control* (pp. 8–33). CRC Press.

- Adugna, A., & Kloos, H. (2016). The relationship between resettlement and birth rates: The case of Gambella, Ethiopia. *Ethiopian Journal of Health Sciences*, 26(4), 359–368.
- Adugna, A., Kloos, H., & Degefa, T. (2014). Evaluation of the 2007 Ethiopian Census data, with an emphasis on coverage in the Amhara Region. *Ethiopian Journal of Development Research*, 36(1).
- Getachew, M., Ambelu, A., Tiku, S., Legesse, W., Adugna, A., & Kloos, H. (2012). Ecological assessment of Cheffa Wetland in the Borkena Valley, Northeast Ethiopia. *Ecological Indicators*, 15, 63–71.
- Adugna, A. (2011). Planned resettlement: A GIS-assisted identification of areas suitable for irrigation-based resettlement in Ethiopia. *African Geographical Review*, 30(2), 71–91.
- Adugna, A., & Hailemariam, A. (2011). Urban-rural linkages in Ethiopia. In C. Teller & A. Hailemariam (Eds.), *The Demographic Transition and Development in Sub-Saharan Africa: The Unique Case of Ethiopia*. Springer.
- Hailemariam, A., & Adugna, A. (2011). Migration and urbanization in Ethiopia. In C. Teller & A. Hailemariam (Eds.), *The Demographic Transition and Development in Sub-Saharan Africa: The Unique Case of Ethiopia*. Springer.
- Kloos, H., Assefa, Y., Adugna, A., Mulatu, M. S., & Haile Mariam, D. (2007). Utilization of antiretroviral treatment in Ethiopia between February and December 2006: Spatial, temporal, and demographic patterns. *International Journal of Health Geographics*, 6, 45.
- Kloos, H., Hailemariam, A., & Adugna, A. (2006). Population. In Y. Berhane, D. Hailemariam, & H. Kloos (Eds.), *The Epidemiology and Ecology of Health and Disease in Ethiopia*. Shama Books.
- Kloos, H., Lautze, J., Adugna, A., & Legesse, W. Water resources and their management in the Nile Basin. In H. Kloos & W. Legesse (Eds.), *Water Resources Management in Ethiopia: Implications for the Nile Basin*. Cambria Press. [Listed as in press in source CV.]
- Kloos, H., & Adugna, A. (1989). The Ethiopian population: Growth and distribution. *The Geographical Journal*, 155(1), 33–51.
- Kloos, H., & Adugna, A. (1989). Settler migration during the 1984/85 famine in Ethiopia. *GeoJournal*, 19(2), 113–127.
- Adugna, A. (1989). The 1984 drought and settler migration. In J. I. Clarke, P. Curson, S. L. Kavastha, & P. Nag (Eds.), *Population and Disaster*.
- Adugna, A., & Kloos, H. (1987). Two population distribution maps for Ethiopia based on the 1984 census. *Northeast African Studies*, 9(1), 89–95.
- Adugna, A. (1987). *The Population of Ethiopia*. Institute of Development Research, Addis Ababa University.

GRADUATE THESES

- The Spatial Patterns of the Ethiopian Population — MA thesis, University of Durham, England.
- The Impact of Migration on Fertility and Mortality in Addis Ababa, Ethiopia — PhD thesis, University of London, England.