

Tosin Kolajo GBADEGESIN

Hyattsville, MD 20782

tosingbade05@gmail.com | tosingbadegesin@bison.howard.edu | +1 (202) 779-5442

linkedin.com/in/tosingbadegesin | tosinsdgs.github.io

EDUCATION **Ph.D. Economics**, Howard University, Washington DC, USA – *Expected May 2026*
M.A. Economics, Howard University, Washington DC, USA – *May 2025*
M.Sc. Sustainable Development (Economic Development), University of Ibadan, Ibadan, Nigeria – *Sept 2023*
B.Sc. Microbiology, Obafemi Awolowo University, Ile-Ife, Nigeria – *Sept 2014*

PROFESSIONAL TRAINING & CERTIFICATES **Artificial Intelligence with Python**, Harvard University Extension School – 2023
Post Graduate Program in Data Science, Career Era & Birchwood University, Orlando, Florida – 2022
Data Analytics, Google Career Certificate Program – 2021
Machine Learning Engineering, Amazon Web Services Certificate Program – 2021
Blum Global Fellowship in Development Finance Practice, Hebrew University Business School & Jerusalem Institute for Policy Research, Israel – 2020
Certificate in Foundations of Sustainable Development, The Earth Institute, Columbia University, New York – 2017

TECHNICAL SKILLS **Econometrics**
Time Series & Panel Data Analysis; Nonlinear & Bayesian Econometrics; Spatial Econometrics; Structural Equation Modeling; Quantile Regression; IV Regression & GMM; Vector Autoregression & Cointegration; Monte Carlo & Stochastic Frontier Simulations; Maximum Likelihood Estimation (MLE); Causal Inference (DiD, FE, RDD, RCT, PSM, Synthetic Control); Machine Learning–Based Causal Techniques (Causal Forest, CATE, DTE, DR Learners).
Data Science
Data Analysis & Visualization; Data Preprocessing & Cleaning; Statistical Modeling & Inference; Predictive Modeling; ML Algorithms (RF, XGBoost, LightGBM, CatBoost); NLP & Large Language Models (LLM); Deep Learning, Computer Vision & Image Processing; Reinforcement Learning; Model Evaluation & Optimization; Big Data Technologies; Database Management & SQL; Experimental Design & A/B Testing; Data Mining & Feature Engineering; Distributed Computing & Parallel Processing; Cloud Computing.
Programs
Python, R, Stata, IBM SPSS, Google Earth, Tableau, KNIME, MATLAB, PowerBI, SQL, HTML, ArcGIS, JavaScript, GitHub, Azure, and AWS services.

HONORS & AWARDS **Frederick Douglass Doctoral Scholar**, Howard University Graduate School, 2023–2024
World Bank Group Africa Doctoral Fellow – selected as 1 of 32 fellows from over 3,000 applicants, Jan 2023–Jun 2023
Early Career Conference Grant, Association of Commonwealth Universities (ACU), London, UK – 2019
Outstanding Research Contribution Award, *Young African Leaders Journal of Development*, African Union, Ethiopia – 2018
Young WASH Scholar, Africa Water Association (AfWA) & USAID West Africa – 2018
YALI Leadership Award in Energy and Environmental Sustainability, Mandela Washington Alumni Fellowship of Nigeria & U.S. Embassy, Nigeria – 2018
Young IFAD Scholar, International Fund for Agricultural Development with Global Master’s in Development Practice, Columbia University & University of Ibadan – 2018
Conference Grant Award, University of Ibadan, Africa Conference on Business Ethics and Corporate Social Responsibility – 2017

PUBLICATIONS

- “Climate Change and Energy Dynamics: Evidence from BRICS and G7 Countries,” *Energy & Environment*, 2024, 0(0). [\[Link\]](#)
- “Evaluating the Economic Impact of the G20 Compact Initiative: Evidence from Causal Inference Using Advanced Machine” (with N. Yameogo), *Journal of Sustainable Development*, 2024, 17(5), 56–76. [\[Link\]](#)
- “Defense Expenditure and National Well-Being: Evidence from the G7 Countries,” *Defence and Peace Economics*, 2024, 1–12. [\[Link\]](#)
- “Effectiveness of Collective Action in Reducing Transaction Cost for Smallholder Paddy Farmers in Tanzania” (with L. Popoola), *African Journal of Economic and Sustainable Development*, 2020, 7(4), 391–404. [\[Link\]](#)
- “Water Availability Challenges in Low-Income Areas of Agbowo Community, Ibadan, Nigeria” (with O. Olayide), *International Journal of Circular Economy and Waste Management*, 2021, 1(1), 81–96. [\[Link\]](#)

- “Assessment of Women and Children Vulnerability to Water Use in Low-Income Urban Area of Agbowo Community, Ibadan, Nigeria” (with O. Olayide), *International Journal of Sustainability Management and Information Technologies*, 2019, 5(2), 29–34. [\[Link\]](#)
- “Transaction Cost Factors Affecting the Economic Life of Smallholder Paddy Farmers in Tanzania” (with L. Popoola and L. Muhoni), *Africa Journal of Sustainable Development*, 2019, 8(1). [\[Link\]](#)

World Bank Group Papers

- “Climate Shocks and Their Effects on Food Security, Prices, and Agricultural Wages in Afghanistan” (with B. P. J. Andree and A. Braimoh), *Policy Research Working Paper, World Bank Group (PLANET)*, 2024. [\[Link\]](#)
- “Reproducibility Package for Climate Shocks and Their Effects on Food Security, Prices, and Agricultural Wages in Afghanistan” (with B. P. J. Andree), *World Bank Policy Research Working Papers*, 2024. [\[Link\]](#)

World Bank Group Reports

- International Finance Corporation. (2025). Closing the Gap: A Data Outlook on Women Economic Opportunities. [\[Link\]](#)
- International Finance Corporation. (2024). *Repurposing power markets: The path to sustainable and affordable energy for all*. International Finance Corporation. [\[Link\]](#)
- The World Bank Group. (2023). *Compact monitoring report: Africa Advisory Group meeting, November 2023*. G20 Compact with Africa. [\[Link\]](#)

Book Chapters

- “A Review on Impact of Changing Climate on Sustainable Food Consumption,” in *Global Food Politics and Approaches to Sustainable Consumption*, 2020, 54–76. [\[Link\]](#)
- “Climate Change Implication on Airborne Infections: Roadmap for Nigeria’s Health Sector Development,” in *Handbook of Climate Change Resilience*, 2018, 1–10. [\[Link\]](#)

Blog

- “Better Data for Better Outcomes: New Tools and Analysis to Break Afghanistan’s Food Security Crisis” (with B. P. J. Andree and A. Braimoh), *World Bank Blogs*, 2025. [\[Link\]](#)

Work in Progress

- Closing the Gap: A Private Sector Data Outlook on Women Economic Opportunities
- Heterogeneous Effects of Cooling Demand on Household Electricity Consumption using Causal ML Models
- Impact of Climate-Driven Cooling Demand on U.S. Household Electricity Consumption and Expenditure
- The Building Energy Performance Standard Program: Impacts on Building’s Energy Efficiency and GHG Emissions in Washington, DC
- Beyond Affordability: A Spatial Econometric Analysis of Renter Cost Burdens and Social Determinants in the United States

CONFERENCES & SEMINARS

Annual Economic Measurement Seminar, National Association for Business Economics (NABE), Washington DC, USA – 2025

International Workshop on Empirical Methods in Energy Economics (EMEE 2025), EMEE Network & The World Bank, Washington DC, USA – 2025

American Economic Association / National Economic Association Conference (ASSA Meetings), AEA & NEA – 2024

Development Studies Association Conference, Marino Institute of Education & Trinity College, Dublin, Ireland – 2023

Access to Water Challenges in Low-Income Urban Areas, Nigeria’s National Conference on Water Supply and Hygiene – 2019

Ibadan Sustainable Development Conference, Centre for Sustainable Development, University of Ibadan, Nigeria – 2018

Symposium on Climate Change and Adaptation in Africa, University of Ibadan, Nigeria – 2018

EMPLOYMENT

World Bank Group – Economist
Washington, DC | 01/2023 – Present

- **Led IFC’s flagship research on gender data**, producing the first global mapping of public and private indicators on women’s economic opportunities and laying the foundation for the IFC’s Private Sector Gender Data Hub.
- **Developed model-based early warning systems for food insecurity** (Afghanistan, Yemen) using econometric and VAR approaches, improving lead times for IDA’s Early Response Financing by up to 12 months.
- **Directed high-level economic diagnostics for the Compact with Africa (CwA)**, producing analyses that informed the Germany-Africa Head of State Summit and Annual Meetings.
- **Applied advanced econometrics and machine learning methods** (DiD, TMLE, PSM, Random Forest, LightGBM, Gradient Boosting) to evaluate policy and investment impacts.
- **Conducted applied research on energy and extractives markets**, refining IFC’s AIMM framework to assess development impact and linking power market structure to sector outcomes.

- **Built predictive models for IFC's debt portfolio**, applying machine learning (HistGradient Boosting, LightGBM, CatBoost, XGBoost) and natural language processing (BERT, LDA, LSA, NMF) to identify risks and improve portfolio monitoring.
- **Engaged senior stakeholders across World Bank Group, academia, private sector, and government**, translating research into actionable policy recommendations.

Howard University Graduate School – Research Assistant | Teaching Assistant

Washington, DC | 2024 – 2025

- Collected and processed international trade flow data from the UN Comtrade database to support faculty research (Spring 2024).
- Served as Teaching Assistant for *Economics Statistics* (third-year undergraduate), providing instruction support, grading, and student guidance (Fall 2024, Fall 2025).

Edelman Global Advisory – Research Analyst

Washington, DC | 09/2022 – 12/2022

- Conducted research on trade, regulatory issues, climate change, and health across six regions, tracking client priorities and emerging needs.
- Applied advanced data analysis to interpret complex datasets and delivered reports that informed client strategy.

DC Sustainable Energy Utility (DCSEU) & DC Department of Energy and Environment (DOEE)

Energy Efficiency Analyst | Washington, DC | 06/2022 – 12/2022

- Analyzed benchmarking data and responded to technical inquiries, generating actionable insights to support energy efficiency and decarbonization.
- Produced guidance documents and educational materials for decarbonization and housing retrofit programs, supporting low-income households.
- Performed benefit-cost analyses and emissions calculations for DC buildings, reporting on decarbonization and solar initiatives.

Nigerian Economic Summit Group – Bridge Policy Research Fellow

Nigeria | 08/2020 – 08/2021

- Conducted analyses on COVID-19's socioeconomic impact and assessed national development plans for water and sanitation reform.
- Served as research fellow on Nigeria's water bill and co-led establishment of the UN CEO Water Mandate in Nigeria.
- Contributed to national technical committees and summits, integrating gender and digital technology themes into development planning.

International Institute for Local Development – Data Analyst

Abuja, Nigeria | 09/2019 – 07/2021

- Applied statistical and machine learning models (Random Forest, AdaBoost, KNN, SVM, CNN) to analyze World Bank-funded rural and agricultural projects.
- Used R, Excel, and Tableau for data visualization and reporting, producing actionable recommendations for decision-makers.

Clean Edge Exclusive Solution – Team Lead, Projects & Programs

Nigeria | 06/2017 – 12/2020

- Directed project teams deploying mini-grid solar and energy efficiency solutions across Nigeria, engaging 60+ volunteers.
- Evaluated project performance against strategic goals and convened the first Annual Youth Summit on Environment.
- Led a national assessment of Nigeria's plastic circularity landscape with partner organizations.

Jerusalem Institute for Policy Research | Gigawatt Global Inc. – Development Finance Specialist

Israel | 01/2020 – 09/2020

- Reviewed feasibility studies for grid-connected solar projects, assessing solar yield, infrastructure, and ESG impacts.
- Applied Google Earth and PVSYST to optimize solar design and interconnection, and conducted energy demand forecasts.
- Built financial models to evaluate returns, risks, and capital requirements for renewable energy investments.

Africa Water Association & USAID West Africa – Research Fellow

Nigeria | 07/2018 – 12/2018

- Researched urban water supply challenges in Nigeria, collecting survey data via Kobo Collect and analyzing in SPSS.
- Built Tableau dashboards for reporting and presented findings at an international sustainable development conference.

International Fund for Agricultural Development – Research Fellow

Arusha, Tanzania | 01/2018 – 06/2018

- Investigated factors affecting smallholder farmers' market access using survey data and analysed with SPSS software.
- Published findings in peer-reviewed journals including *Africa Journal of Sustainable Development*.

Crown FM Broadcast Group & Independent Media – Research Analyst

Nigeria | 06/2013 – 06/2016

- Conducted audience and market research to guide multi-platform content strategy.
- Analyzed digital performance metrics (SEO, engagement) to optimize audience reach.