Email: benabijah@gmail.com, babijah@umass.edu; Website: benabijah.github.io

Benjamin A. Abijah

Biostatistics, Bayesian methods, clinical trial design, and statistical learning for large-scale biomedical data.

1. EDUCATION

Ph.D. Biostatistics, University of Massachusetts, Amherst, MA — Expected May 2027
M.S. Statistics, University of Massachusetts, Amherst, MA — May 2023
B.Sc. Statistics, Kwame Nkrumah Univ. of Sci. & Tech., Ghana — Aug 2020

2. WORK EXPERIENCE

Biostatistics Intern, EMD Serono R&D Institute, Billerica, MA — Jun – Aug 2026

- Developed a unified framework to evaluate Bayesian decision rules for fixed and adaptive Phase II/III designs in non-oncology trials, with frequentist benchmarking.
- Implemented robust historical borrowing using mixture priors and assessed the impact of borrowing weights on operating characteristics (OCs), including unconditional/conditional/predictive power and type I error.
- Built an internally deployed *R* Shiny application used by statisticians to evaluate OCs of Bayesian trial designs to support clinical development and due-diligence assessments.

Research Assistant, Raji Lab, University of Massachusetts, Amherst (UMass Amherst) — Aug 2023 – present

- Applying advanced statistical methods, including functional enrichment analyses, to identify sex differences in proteomic associations with ischemic stroke risk in a cohort of more than 50,000 participants.
- Developing a Bayesian network-guided method for protein biomarker selection across four cardiometabolic outcomes that incorporates data-driven dependence structures among predictors and outcomes.
- Contributed statistical expertise to develop and validate random forest models for nine elemental components of particulate matter ($PM_{2.5}$) and generate high-resolution weekly exposure estimates across metropolitan Accra, Ghana.

Consulting Assistant, Statistical Consulting & Collaboration Services, UMass Amherst — May – Aug 2022

- Collaborated with clients across biomedical, biopharmaceutical, and entomology research to translate scientific questions into appropriate study designs and statistical analysis plans.
- Supported analyses from data ingestion and quality assessment through implementation and interpretation, and helped clients to translate findings into actionable health solutions.

3. SKILLS

Computing/tools: R, Python, git, SAS*, SPSS, SQL*, MATLAB*, LaTeX (* denotes "intermediate")
Methods: Clinical trials, Bayesian and Survival models, Multi-omics, Networks, Bioinformatics, Machine Learning applications in health.
Teaching: 6 years teaching – including assisting statistics courses of over 300 students and mentoring 6 students.
Languages: English (fluent), West African Pidgin (fluent), Fante (native), and Twi (fluent).

4. PROFESSIONAL MEMBERSHIP/ACCREDITATION/CERTIFICATION

Certificate, Statistical and Computational Data Science, University of Massachusetts, Amherst — Expected Dec 2026
GStat, American Statistical Association — 2024 – present
Member, American Statistical Association (ASA) — 2024 – present

5. PUBLICATIONS/MANUSCRIPTS

1. N. K. Frempong, R. O. Berchie, R. Baidoo, **B. A. Abijah**, O. Y. Oforiwaa-Amanfo (2021). A Simulation Study to Examine the Bias of Some Sample Measures of Skewness. Applied Mathematical Sciences, 15(4), 189- 200. https://doi.org/10.12988/ams.2021.914276
2. **B. A. Abijah**, K. Sanchez, M. L. Janiczek, C. N. Spracklen, O. A. Zeleznik, D. L. DeMeo, K. M. Rexrode, R. Balasubramanian. Sex Differences in Protein Biomarker Association with Ischemic Stroke in the UK Biobank. (**in progress**)
3. **B. A. Abijah**, M. G. Tadesse, R. Balasubramanian. Bayesian joint variable selection with application in protein biomarker discovery for cardiometabolic outcomes. (**in progress**)
4. K. Sanchez, **B. A. Abijah**, D. Haslam, R. Balasubramanian, K. M. Rexrode. Proteomic Profiles and Pathways of Ischemic Stroke Risk in Women from the Nurses' Health Study. (**in progress**)
5. C. L. Lange, R. Balasubramanian, **B. A. Abijah**, A. J. Specht, S. N. Clark, A. S. Alli, A. F. Hughes, M. Ezzati, R. E. Arku. Development of random forest land-use regression models for predicting $PM_{2.5}$ elemental concentrations in a sub-Saharan African city. (**in progress**)

6. CONFERENCE PRESENTATIONS

1. Sex Differences in Proteins Associated with Incident Ischemic Stroke in the UK Biobank. EPI Lifestyle Scientific Sessions. Boston, MA. (Mar 2026) (**poster**)
2. Multitask Learning Methods for Predicting Coronary Vascular Disease Outcomes Using Proteomics in the UK Biobank. 38th New England Statistics Symposium. New Haven, CT. (Jun 2025)
3. Land Use Regression Models for Predicting $PM_{2.5}$: A Comparative Analysis from the Accra Birth Cohort. Joint Statistical Meetings. Nashville, TN. (Aug 2025) (**poster**)
4. Identifying Proteins associated with Stroke Outcomes in the UK Biobank Study. UMass Amherst 28th SPHHS Research Day. Amherst, MA. (Apr 2025) (**poster**)

7. SELECTED PROJECTS

- Longitudinal Analysis of Diabetes Progression in Medicare Patients Using Claims Data. 2025.
  - Analyzed synthetic electronic health data (from the Centers for Medicare & and Medicaid Services) and tracked beneficiaries' progression from prediabetes diagnoses to diabetes mellitus with complications.
- Estimating Infertility Prevalence by Applying a Bayesian Current Duration Approach to Demographic & Health Survey Data. 2024.
  - Applied a flexible Bayesian model to estimate infertility prevalence in a cross-sectional data from the 2018 Nigeria DHS, which offers improved and alternate infertility estimates over traditional parametric methods.
- A Bayesian Simulation: the case of Mis-specified Data Generating Process. 2024.
  - Investigated the effects of mis-specifying the likelihood function in Bayesian survival analysis, particularly in cases where the data-generating process is uncertain.
- Mis-specifying the Variance: Does Clustering Affect Estimates? 2023.
  - Explored the effects of mis-specified variance structures in clustered/hierarchical data, specifically in models where separate variances are apparent for the two treatment groups.
- Cox Proportional Modeling of Cancer Patients' Recurrence-free Survival. 2022.
  - Examined the effects of treatment on recurrence-free and overall survival in cancer patients and underscored the importance of considering patient-specific factors, e.g., tumor grade and lymph node involvement, in treatment strategies.
- Socio-economic Inequalities in Childhood Mortality in Ghana. 2020.
  - Investigated some socio-economic determinants of childhood mortality in Ghana with focus on disparities in survival risks among children under five.

8. SELECTED AWARDS/HONORS

- SPHHS Dean's Fellowship Award, UMass Amherst. 2023 – 2025. $30,000
- Travel Grant, UMass Amherst. 2025 – 2026. $1,800
- Barclays Bank Scholarship, Barclays Bank Ghana. 2017 – 2020. $3,000
- Valedictorian, 54th Congregation, College of Science, KNUST

9. SELECTED TRAININGS/WORKSHOPS

- Practical Considerations for Adaptive Clinical Trials Using Bayesian and Frequentist Methods. Joint Statistical Meetings, American Statistical Association. 2025.
- Causal Inference in Randomized Controlled Trials. Joint Statistical Meetings, American Statistical Association. 2025.
- Statistical Considerations in Cell and Gene Therapy Development. Joint Statistical Meetings, American Statistical Association. 2025.
- Optimization for Data Science and Machine Learning Problems. New England Statistics Symposium. 2025.
- SHARP Training in Mendelian Randomization. Columbia University Mailman School of Public Health. 2024.

10. SELECTED SERVICE

Leadership Activities:

Student Rep., Department of Biostatistics and Epidemiology, UMass Amherst 2025 – 2026
- Coordinated with department to organize student engagement programs like professional development seminars, social events, among others.

Chair, Education and Mentorship, EKO Global Foundation - Worldwide 2022 – present
- Coordinate career and professional mentorship for scholarship beneficiaries. Developed mentorship curriculum and match beneficiaries with mentors.

Judge, Public Health Sciences Capstone Symposium, UMass Amherst 2025
- Judged capstone project of public health undergraduate students' projects and provided feedback towards improving the projects' direction.

Member, Strategic Planning Committee, Science Students Association, KNUST 2019
- Developed a 10-year Strategic Plan, "PLAN 2K29", for the association.

Mentoring Activities:

Graduate Mentor – 6 Students (* denotes "graduate level") 2025 – present

- Cole Spinale* (UMass-Amherst, MA). Comparing Class Imbalance Strategies for UKB Proteomics-Based Prediction of Ischemic Stroke. 2026.
- Ana Hutchinson (Springfield College, MA), Belle Song (Mt. Holyoke College, MA), & Monet Williams (UMass Amherst, MA). "Identifying Predictors of Type II Diabetes in the NHANES Study." Summer Workshop in Biostatistics, UMass Amherst. 2025.
- Bao Nguyen (UMass Amherst, MA) & Sherry Zhang (Emory University, GA). "A Comparative Study of Machine-Learning Classifiers for Predicting HOLC Grades." Summer Workshop in Biostatistics, UMass Amherst. 2025.