Tyler J. S. Smith, PhD, MPH

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Summary

- A data scientist with a PhD, master's degree, and >6 years of experience in geospatial and statistical analysis and application development using Python, R, and PostgreSQL/PostGIS.
- Expert at building machine learning models, data pipelines, and secure infrastructure using industry-standard tools, including Git, Terraform, and Ansible; certified in information security (CompTIA Security+).
- Experienced at partnering with teams and translating non-technical requirements into data analyses.

Education

2023 **PhD, Exposure Science and Environmental Epidemiology** Baltimore, MD
Johns Hopkins University

2015 **MPH, Epidemiologic and Biostatistical Methods** Baltimore, MD
Johns Hopkins University

2011 **BA, History** Baltimore, MD
Johns Hopkins University

Professional Experience

2024-Present **Founder and Lead Developer** Berkeley, CA
Rainy Day Politics

- Developed geospatial application with JavaScript/Leaflet-based UI/UX interface and PostgreSQL/PostGIS database to generate custom maps of election results.
- Built extract, transform, and load (ETL) data pipelines for shapefiles and related attribute data, including standardization of map projections and geospatial algorithms.
- Deployed and secured application on Amazon Web Services (AWS) infrastructure, using industry-standard version control and infrastructure-as-code tools, including Git, Terraform, and Ansible.

2023-Present **Postdoctoral Research Fellow** New York, NY
Icahn School of Medicine at Mount Sinai

- Developing software to implement causal inference techniques with parametric and nonparametric models for project quantifying improvements in child development under simulated reductions in air pollution across 12 countries.
- Training Bayesian machine learning models to estimate associations between air pollutants, folate metabolism, and neurodevelopment among pregnant women and children to guide revisions to folate supplementation recommendations.
- Disseminating research via peer-reviewed scientific journal articles (career total: 9) and international and national conference presentations (12).
- Sharing code via GitHub.

2019-2023 **Doctoral Researcher** Baltimore, MD
Johns Hopkins University

- Completed coursework in GIS (ArcGIS) and spatial statistics.
- Applied supervised algorithms (*e.g.*, neural networks, random forests, generalized additive models, generalized linear models) to predict adverse health outcomes.
- Implemented unsupervised algorithms, including cluster analysis (*e.g.*, *k*-means) and dimensionality reduction (*e.g.*, PCA), to identify patterns in high-dimensional data.
- Built scalable and reproducible data pipelines using Python, R, and SQL, and implemented version control using Git/GitHub.
- Designed static and interactive data visualizations using ggplot2, Plotly, and Seaborn.

2016-2019 **Staff Scientist** New York, NY
Earthjustice

- Partnered with senior leadership to resolve scientific and technical questions underlying high-impact litigation and administrative advocacy.
- Communicated scientific issues to technical audiences (*e.g.*, organized and presented in scientific conference sessions) and non-technical audiences (*e.g.*, prepared memoranda for attorneys, testified before state legislatures, wrote op-eds).
- Mentored science intern projects, including spatial analyses of pesticide use.

2015-2016 **Manager and Consultant** Yonkers, NY
Consumer Reports

- Analyzed datasets on antibiotic use in food animals, arsenic in food, and other food and agriculture topics using SAS and Stata for publication in *Consumer Reports*.
- Collaborated with editors and reporters to ensure technical accuracy of content published in *Consumer Reports*, upholding the stringent editorial standards of a prominent brand in a litigious environment.
- Represented organization to foreign governments at meetings of the World Health Organization's Codex Alimentarius Commission on international trade standards.

2011-2015 **Program Officer** Baltimore, MD
Johns Hopkins Center for a Livable Future

- Developed process-based models of environmental exposure and risk, including cancer risks associated with food additives, and documented models for non-technical clients.
- Led outreach to policymakers, organizing Capitol Hill briefings, representing the organization in Congressional and agency meetings, drafting op-eds, and advising advocacy coalitions on scientific and technical questions.

Volunteer Leadership Experience

2017-2019 **Chair, Chemicals & Health Committee** New York, NY
American Public Health Association (APHA) Environment Section

- Led academic and nonprofit experts analyzing federal rulemakings and risk assessments related to environmental chemicals, earning APHA Committee of the Year award.

Select Publications and Presentations

2024 Air Pollutants and Plasma Total Folate among Pregnant Women in Canada, 2008-2011. *Society for Pediatric and Perinatal Epidemiologic Research (SPER) Annual Meeting*.

2023 Estimating Causal Effects of Interventions on Early-life Environmental Exposures Using Observational Data. *Current Environmental Health Reports* [Link].

2023 Anthropometric Measures and Arsenic Methylation among Pregnant Women in Rural Northern Bangladesh. *Environmental Research* [Link].

2023 The Pregnancy, Arsenic, and Immune Response (PAIR) Study in Rural Northern Bangladesh. *Paediatric and Perinatal Epidemiology* [Link].

2021 Using Self-organizing Maps to Identify Metal Mixture Exposures in Pregnant Women in Rural Northern Bangladesh. *International Society of Exposure Science Annual Meeting*.

Technical Skills

Analysis Python (NumPy, pandas/geopandas, scikit-learn), R (tidyverse/sf, ggplot2), SQL, ArcGIS, Tableau

Infrastructure AWS, Ansible, Bash, dbt, Docker, Git/GitHub, Markdown, MLflow, Neo4j, Terraform