

# 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	<b>PhD, Exposure Science and Environmental Epidemiology</b> Johns Hopkins University	Baltimore, MD
2015	<b>MPH, Epidemiologic and Biostatistical Methods</b> Johns Hopkins University	Baltimore, MD
2011	<b>BA, History</b> Johns Hopkins University	Baltimore, MD

## Professional Experience

2024-Present	<b>Founder and Lead Developer</b> Rainy Day Politics <ul style="list-style-type: none"><li>• Developed geospatial application with JavaScript/Leaflet-based UI/UX interface and PostgreSQL/PostGIS database to generate custom maps of election results.</li><li>• Built extract, transform, and load (ETL) data pipelines for shapefiles and related attribute data, including standardization of map projections and geospatial algorithms.</li><li>• 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.</li></ul>	Berkeley, CA
2023-Present	<b>Postdoctoral Research Fellow</b> Icahn School of Medicine at Mount Sinai <ul style="list-style-type: none"><li>• 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.</li><li>• 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.</li><li>• Disseminating research via peer-reviewed scientific journal articles (career total: 9) and international and national conference presentations (12).</li><li>• Sharing code via GitHub.</li></ul>	New York, NY
2019-2023	<b>Doctoral Researcher</b> Johns Hopkins University <ul style="list-style-type: none"><li>• Completed coursework in GIS (ArcGIS) and spatial statistics.</li><li>• Applied supervised algorithms (e.g., neural networks, random forests, generalized additive models, generalized linear models) to predict adverse health outcomes.</li><li>• Implemented unsupervised algorithms, including cluster analysis (e.g., <i>k</i>-means) and dimensionality reduction (e.g., PCA), to identify patterns in high-dimensional data.</li><li>• Built scalable and reproducible data pipelines using Python, R, and SQL, and implemented version control using Git/GitHub.</li><li>• Designed static and interactive data visualizations using ggplot2, Plotly, and Seaborn.</li></ul>	Baltimore, MD

2016-2019	<b>Staff Scientist</b> Earthjustice	New York, NY
	<ul style="list-style-type: none"> <li>Partnered with senior leadership to resolve scientific and technical questions underlying high-impact litigation and administrative advocacy.</li> <li>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).</li> <li>Mentored science intern projects, including spatial analyses of pesticide use.</li> </ul>	
2015-2016	<b>Manager and Consultant</b> Consumer Reports	Yonkers, NY
	<ul style="list-style-type: none"> <li>Analyzed datasets on antibiotic use in food animals, arsenic in food, and other food and agriculture topics using SAS and Stata for publication in <i>Consumer Reports</i>.</li> <li>Collaborated with editors and reporters to ensure technical accuracy of content published in <i>Consumer Reports</i>, upholding the stringent editorial standards of a prominent brand in a litigious environment.</li> <li>Represented organization to foreign governments at meetings of the World Health Organization's Codex Alimentarius Commission on international trade standards.</li> </ul>	
2011-2015	<b>Program Officer</b> Johns Hopkins Center for a Livable Future	Baltimore, MD
	<ul style="list-style-type: none"> <li>Developed process-based models of environmental exposure and risk, including cancer risks associated with food additives, and documented models for non-technical clients.</li> <li>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.</li> </ul>	

### Volunteer Leadership Experience

2017-2019	<b>Chair, Chemicals &amp; Health Committee</b> American Public Health Association (APHA) Environment Section	New York, NY
	<ul style="list-style-type: none"> <li>Led academic and nonprofit experts analyzing federal rulemakings and risk assessments related to environmental chemicals, earning APHA Committee of the Year award.</li> </ul>	

### Select Publications and Presentations

2024	Air Pollutants and Plasma Total Folate among Pregnant Women in Canada, 2008-2011. <i>Society for Pediatric and Perinatal Epidemiologic Research (SPER) Annual Meeting</i> .	
2023	Estimating Causal Effects of Interventions on Early-life Environmental Exposures Using Observational Data. <i>Current Environmental Health Reports</i> <a href="#">[Link]</a> .	
2023	Anthropometric Measures and Arsenic Methylation among Pregnant Women in Rural Northern Bangladesh. <i>Environmental Research</i> <a href="#">[Link]</a> .	
2023	The Pregnancy, Arsenic, and Immune Response (PAIR) Study in Rural Northern Bangladesh. <i>Paediatric and Perinatal Epidemiology</i> <a href="#">[Link]</a> .	
2021	Using Self-organizing Maps to Identify Metal Mixture Exposures in Pregnant Women in Rural Northern Bangladesh. <i>International Society of Exposure Science Annual Meeting</i> .	

### 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