

Tyler J. S. Smith, PhD, MPH

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Summary

- A data scientist with a STEM PhD and 13 years of professional experience in maintaining complex data sets and applying a wide variety of statistical and machine learning algorithms using Python, R, and SQL.
- Expert at sharpening ambiguous research questions, developing scalable and reproducible data analysis workflows, visualizing data, and reporting actionable results to decision-makers.
- Comfortable working with leaders and stakeholders at all levels and communicating with technical and non-technical audiences.

Education

2023	PhD, Exposure Science and Environmental Epidemiology Johns Hopkins University	Baltimore, MD
2015	MPH, Epidemiologic and Biostatistical Methods Johns Hopkins University	Baltimore, MD
2011	BA, History Johns Hopkins University	Baltimore, MD

Professional Experience

2023-Present	Postdoctoral Research Fellow (Machine Learning for Public Health) Icahn School of Medicine at Mount Sinai	New York, NY
<ul style="list-style-type: none">• Develop software to implement causal inference techniques with parametric and nonparametric models to quantify improvements in child development under simulated reductions in air pollution across 12 countries.• Train Bayesian machine learning models to estimate associations between air pollution mixtures and folate metabolism among pregnant women in Canada to guide revisions to national folate supplementation recommendations.• Disseminate research via peer-reviewed scientific journal articles (career total: 9) and international and national conference presentations (12); share code via GitHub.		
2019-2023	Doctoral Researcher (Data Science for Environmental Health) Johns Hopkins University	Baltimore, MD
<ul style="list-style-type: none">• Leveraged advanced machine learning methods to quantify maternal and child health benefits under simulated interventions to reduce arsenic exposure:<ul style="list-style-type: none">○ Implemented dimensionality reduction (e.g., principal components analysis [PCA]) and cluster analysis (e.g., self-organizing maps) to extract relevant exposure patterns from large data sets.○ Fitted flexible regression models for a variety of outcome distributions (e.g., Gaussian, logistic, Poisson, beta, and Dirichlet) to estimate relationships between exposures and health outcomes.○ Applied multiple imputation to handle missing data and inverse probability weights (IPW) to reduce selection bias.○ Employed causal inference techniques (e.g., g-computation) to generate actionable estimates of benefits for decision-makers.• Constructed scalable and reproducible data analysis pipelines with SQL, Python, and R and implemented version control using Git and GitHub for internal collaboration.• Designed static and interactive data visualizations for journal articles and presentations using ggplot2, plotly, and other packages.		

2016-2019	Staff Scientist Earthjustice	New York, NY
	<ul style="list-style-type: none"> • Led scientific and technical research in support of high-impact litigation, building process-based models of environmental exposure and risk. • 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). 	
2015-2016	Manager and Consultant Consumer Reports	Yonkers, NY
	<ul style="list-style-type: none"> • Analyzed datasets on antibiotic use in food animals, arsenic in food, and other food and agriculture topics for publication in <i>Consumer Reports</i>. • Ensured technical accuracy of content published in <i>Consumer Reports</i>, upholding the stringent editorial standards of a prominent brand in a litigious environment. 	
2011-2015	Program Officer Johns Hopkins Center for a Livable Future	Baltimore, MD
	<ul style="list-style-type: none"> • 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. 	

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> [Link].
2023	Anthropometric Measures and Arsenic Methylation among Pregnant Women in Rural Northern Bangladesh. <i>Environmental Research</i> [Link].
2023	The Pregnancy, Arsenic, and Immune Response (PAIR) Study in Rural Northern Bangladesh. <i>Paediatric and Perinatal Epidemiology</i> [Link].
2022	Drinking Water Arsenic, Hemoglobin, and Anemia among Pregnant Women in Rural Northern Bangladesh. <i>International Society for Environmental Epidemiology Annual Meeting</i> .
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	R (tidyverse, ggplot2, tidymodels), SQL, Python (NumPy, pandas, scikit-learn), Tableau, Power BI
Infrastructure	AWS, dbt, Docker, Git/GitHub, Markdown, Microsoft Office, MLflow, Shell