

Exponent®
Engineering & Scientific Consulting

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Professional Profile

Emma Moynihan, PhD, MPH is a Senior Scientist at Exponent with expertise in environmental epidemiology and exposure assessment, pharmacoepidemiology, and real-world evidence (RWE) methods. She holds a doctorate in Environmental Health Sciences from the Johns Hopkins Bloomberg School of Public Health. and was a Johns Hopkins Data Science Fellow.

Dr. Moynihan's pharmacoepidemiology practice spans post-market safety surveillance, pharmacovigilance, regulatory submissions, and real-world evidence study design for pharmaceutical and biotechnology clients. She applies epidemiological and biostatistical methods to drug safety questions across therapeutic areas including oncology, metabolic disorders, and rare disease, delivering work products for both regulatory and litigation contexts. Her experience includes FDA Adverse Event Monitoring System signal detection, systematic literature review, and critical appraisal of clinical and observational evidence. She has extensive experience assessing epidemiology study design, methodology, and causal inference across observational studies and is proficient in R, Python, STATA, SQL, and ArcGIS.

Her environmental epidemiology practice focuses on the critical evaluation of epidemiological literature involving, for example, per- and polyfluoroalkyl substances (PFAS), electromagnetic fields (EMF), pesticides, heavy metals, and ambient air pollutants. Her work also includes infectious disease epidemiology and foodborne outbreak investigations.

Prior to joining Exponent, Dr. Moynihan supported epidemiologic surveillance programs for federal agencies including the CDC and NIH at ICF, where she contributed to survey design, qualitative research, and quality control across large-scale public health studies including the CDC's Foodborne Disease Active Surveillance Network (FoodNet). Her dissertation applied epidemiologic methods to evaluate whether environmental risk factors including pesticide exposure and heat stress were associated with kidney disease in the NIH Agricultural Health Study, a large prospective cohort of more than 50,000 pesticide applicators. During her PhD, she also received a Certificate in Risk Sciences and Public Policy.

Academic Credentials & Professional Honors

Ph.D., Environmental Health and Engineering, Johns Hopkins University, 2023

M.P.H., Public Health, Johns Hopkins University, 2018

B.A., History, Loyola University Maryland, 2012

Caplan Scholarship Fund in Climate Change and the Environment 2020-2022

U.S. Student Fulbright Award, U.S. Department of State 2013

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Prior Experience

Data Visualization and Epidemiology Intern, Baltimore City Health Department 2020-2021

Student Intern, Maryland Department of Health – Emerging Infections Program 2019-2021

Research Assistant, Johns Hopkins University School of Public Health 2018-2023

Research Assistant, ICF 2016-2017

Research Program Coordinator, Johns Hopkins University School of Medicine 2015-2016

Professional Affiliations

International Society for Pharmacoepidemiology

Society for Risk Analysis

Publications

Select Publications

Moynihan, E., & Ramachandran, R. (2026). "Environmental Exposures," In M. Latshaw and J. Bressler (Eds.), The Environment and Your Health. Johns Hopkins University Press. (Book Chapter)

Kirman CR, Sheehan PJ, Li AA, Bus JS, Su SH, Dopart PJ, Watson HN, Moynihan EE, Reiss R. "Characterization of Background Exposures to Ethylene Oxide in the United States: A Reality Check on Theoretical Health Risks for Potentially Exposed Populations near Industrial Sources," Int J Environ Res Public Health. 2025 Apr 10;22(4):597. doi: 10.3390/ijerph22040597. PMID: 40283821; PMCID: PMC12026671.

Scrafford CG, Davis BJK, Higgins KA, Moynihan E, Morris-Schaffer K, Anderson M, Rackl SM, Hearon S, Davis D. (2025). "Estimated long-term dietary exposure to cadmium from consumption of spinach in the United States: A probabilistic assessment," Food and Chemical Toxicology. 197:115269. doi: 10.1016/j.fct.2025.115269.

Kyle M, Burns D, Murray CR, Watson H, Swaney J, Spevack S, Leonhard M, Simon M, Moynihan E, Lapane KL, Wang SV, Longo CL, Ritchey ME, Dore DD. (2025). "Cardiovascular safety of fixed-dose extended-release naltrexone/bupropion in clinical practice," Obesity Pillars. 13:100169. doi: 10.1016/j.obpill.2025.100169.

Sundermeir SM, Tigue E, Acciai F, Moynihan E, Niles MT, Neff R. (2025). "US state-level containment policies not associated with food insecurity changes during the early COVID-19 pandemic: a multilevel analysis," Public Health Nutrition. 28(1):e37. doi:10.1017/S1368980024002696.

Ceryes CA, Nussbaumer E, Moynihan E, Moore ERH, Love DC, Agnew J, Neff R, Fry J. (2025). "Health and Safety in U.S. Chesapeake Bay Oyster Aquaculture: A Qualitative Study," Journal of Agromedicine. 30(2):360-375. doi: 10.1080/1059924X.2025.2462321.

Dore DD, Kyle M, Burns D, Murray CR, Watson H, Swaney J, Spevack S, Leonhard M, Simon M, Moynihan E, Lapane KL, Wang SV, Longo CL, Ritchey ME. "Cardiovascular safety of fixed-dose extended-release naltrexone/bupropion in clinical practice," Obesity Pillars. 2025;100169. ISSN 2667-3681.

Das, D., Babik, K. R., Moynihan, E., & Ramachandran, G. (2023). "Experimental studies of particle removal and probability of COVID-19 infection in passenger railcars," Journal of occupational and

environmental hygiene, 20(1), 1–13.

Moynihan, E., Avraam, C., Siddiqui, S., Neff, R. (2022). "Optimization Based Modeling for the Food Supply Chain's Resilience to Outbreaks," Front. Sustain. Food Syst. 6.

Moynihan, E., * Das, D., * Nicas, M., McCollum, E.D., Ahmed, S., Roy, A. D., Chowdhury, N., Hanif, A.A.M., Babik, K.R., Baqui, A.H. Ramachandran, G. (2021). "Estimating residential air exchange rates in rural Bangladesh using a near field-far field model," Building and Environment. 206.

Avraam, C., Zhang, Y., Sankaranarayanan, S., Zaitchik, B., Moynihan, E., Juturu, P., Neff, R., Siddiqui, S. (2021). "Optimization-Based Systems Modeling for The Food-Energy-Water Nexus," Current Sustainable/Renewable Energy Report. 8:4-16.

Beaudry, M. B., Townsend, L., Heley, K., Cogan, E. (maiden name), Schweizer, N. and Swartz, K. (2017). "Fulfilling the Common Core Standards and Meeting Students' Needs for Depression Education: ADAP," J School Health. 87: 296–299.

*Authors contributed equally

Presentations

Jung AM, Rubinstein J, Cuglievan B, Toner K, Moynihan E, Nicholson G, Fryzek J, Simpson L, Thomas CT, Jabbour EJ. Early Mortality and Age-Related Survival Patterns in T-Cell Acute Lymphoblastic Leukemia: A United States (US) Population-Based SEER Study. Poster presented at: NORD Breakthrough Summit. 2026.

Moynihan E, Fryzek J, Dowling A, Rogers Murray C, Burns D, Orzechowski A. Real-World Evidence for AI-Enabled Medical Devices: A Lifecycle Review of Regulatory Guidance and Gaps. Poster presentation at: The 42nd Annual Meeting of the International Society for Pharmacoepidemiology. Milan, Italy

Rogers Murray C, Burns D, Orzechowski A, Moynihan E. AI Failure Incidents and Implications for Pharmacoepidemiology and Drug Safety. Poster presentation at: The 42nd Annual Meeting of the International Society for Pharmacoepidemiology. Milan, Italy.

Moynihan, E. & Miller, A. (December 20025). Bridging Epidemiology and Supply Chain Traceback Methodologies: Opportunities for Fresh Produce Outbreak Investigations. Poster presentation, Society for Risk Analysis Annual Conference. (Washington, DC).

Moynihan, E., Fryzek, J., Sorensen, H. (October 2025) Leveraging Denmark’s National Health Registries to Advance Rare Disease Research and Clinical Development. Poster presentation, National Organization for Rare Disorders Annual Conference (Washington DC).

Rogers Murray, C., Kyle, M., Burns, D., Watson, H., Swaney, J., Spevack, S., Leonhard, M., Simon, M., Moynihan, E., Lapane, K., Wang, S., Longo, C., Ritchey, M., Dore, D. (August 2025). Poster presentation, Emulating a Clinical Trial to Assess the Fitness of Real-World Data for Evaluating the Cardiovascular Safety of Fixed-Dose Combination Naltrexone/Bupropion in the United States (Washington, D.C.)

Moynihan, E., Dopart, P., Sheehan, P. (December 2024). Evaluation of National Ambient Background Ethylene Oxide (EO) Concentrations 2019-2023. Poster presentation, Society for Risk Analysis Annual Conference (Austin, Texas)

Burns, D., Kyle, M., Rogers Murray, C., Watson, H., Swaney, J., Spevack, S., Leonhard, M., Simon, M., Moynihan, E., Lapane, K., Wang, S., Longo, C., Ritchey, M., Dore, D. (August 2024) Evaluating the Cardiovascular Safety of Naltrexone/Bupropion in the United States. Poster presentation, International Society for Pharmacoepidemiology (Berlin, Germany)

Moynihan, E., Parks, C., Sandler D., Ramachandran, G. (October 2022). Quantifying Heat Stress Among Pesticide Applicators in the Agricultural Health Study. Oral presentation, 3rd International Symposium to Advance Total Worker Health. (Bethesda, MD).

Moynihan, E., Parks, C., Sandler, D., Ramachandran, G. (May 2022). Pesticide Use in the Agricultural Health Study & Risk of End-Stage Kidney Disease: An Updated Analysis. Poster presentation, American Industrial Hygiene Association Annual Conference (AIHce EXP). (Nashville, TN)

Moynihan, E., Parks, C., Sandler, D., Ramachandran, G. (May 2022). A Mixed Methods Approach to Quantifying Occupational Heat Stress in the Agricultural Health Study. Poster presentation, American Industrial Hygiene Association Annual Conference (AIHce EXP). (Nashville, TN)

Moynihan, E. (October 2021). Quantifying Occupational Heat Stress Among U.S. Agricultural Workers. Guest lecture at University of California Berkeley. Center for Occupational and Environmental Health. (Online)

Moynihan, E. (July 2021). Getting the Denominator Right in Monitoring Racial Disparities in Phased Rollout of COVID-19 Vaccine. Oral presentation, Baltimore Data Week: Baltimore Data about COVID-19 Series (Online)

Moynihan, E., Robsky, K., Marx, M., Wedlock, P., Malone, J., Jones, F., Prata Menezes, N., Gurley, E., Babik, K., Kostandova, N., Dzirasa, L., Phelan-Emrick, D. (June 2021). Getting the Denominator Right in Monitoring Racial Disparities in Phased Rollout of COVID-19 Vaccine. Oral presentation, Council of State and Territorial Epidemiologists 2021 Annual Conference (Online)

Moynihan, E. (April 2021) New Understandings in Heat Stress. Oral presentation, Chesapeake American Industrial Hygiene Association/American Association of Safety Professionals Educational Seminar. (Online)

Moynihan, E., Moore, E., Biehl, E., Neff, R. (May 2020). What would a 50% reduction in waste food look like in the United States? Agriculture, Food, and Human Values Society (AFHVS) & Association for the Study of Food and Society (ASFS) Conference (Athens, GA) Abstract accepted; conference cancelled due to COVID-19 pandemic.

Moore, E., Moynihan, E., Biehl, E., Neff, R., (May 2020). What does “acceptable” food look like in a resilient food system? Agriculture, Food, and Human Values Society (AFHVS) & Association for the Study of Food and Society (ASFS) Conference (Athens, GA) Abstract accepted; conference cancelled due to COVID-19 pandemic.

Parekh, V., Ruble, A., Townsend, L., Beaudry, M.B., Cogan, E., Schweizer, B., DePaulo, J.R., Swartz, K. (October 2015). Using Mobile Technology to Address Adolescent Depression Education. Poster presented,International Conference on Communication in Healthcare (New Orleans, LA).

*Authors contributed equally

Additional Education & Training

Johns Hopkins Data Science Fellowship 2022

Certificate in the Risk Sciences and Public Policy, Johns Hopkins School of Public Health 2020