

Ray Pomponio

Pittsburgh, PA • github.com/rpomponio • ncbi.nlm.nih.gov/myncbi/raymond.pomponio.1

EDUCATION

MS, Biostatistics May 2023

University of Colorado–Denver

Thesis: *Mistaken Identities Lead to Missed Opportunities: Testing for mean difference in partially matched data*

Marvin Porter Award for Outstanding Academic Achievement

Graduate Coursework, University of Pittsburgh December 2025

Introduction to Causal Inference (graduate-level biostatistics)

BS, Economics May 2018

University of Pennsylvania, Wharton School

Dean's List

RESEARCH & PROFESSIONAL EXPERIENCE

Data Scientist 2024 – Present

University of Pittsburgh / Children's Hospital of Pittsburgh

- Lead biostatistician on a **CDC-sponsored New Vaccine Surveillance Network** study tracking respiratory viruses across 3,000+ annual pediatric encounters; designed and executed the full clinical analytics pipeline from study design through publication in *mBio* (2026).
- Collaborated directly with **CDC program scientists** on study design, data governance, and public health interpretation, translating complex epidemiological outputs into policy-relevant recommendations.
- Designed and managed end-to-end data infrastructure spanning multiple clinical systems (RED-Cap, EHR extracts, laboratory databases), enabling faster and more reproducible time-to-analysis.
- Developed and validated **multivariate machine learning risk-factor models** for predicting severe respiratory illness in pediatric populations, informing public health guidance.

Independent Statistical Consultant 2023 – 2024

Upwork.com

- Advised medical device clients on **FDA submission study design**; performed sample size and power calculations to justify endpoints and regulatory proposals.
- Conducted **customer segmentation analysis** for an e-commerce client using clustering methods, identifying high-value repeat-purchasing behaviors to inform retention strategy.

Graduate Research Assistant 2021 – 2023

University of Colorado–Denver, Department of Biostatistics & Informatics

- Co-authored **10+ peer-reviewed manuscripts** and conference abstracts across pulmonary medicine, critical care, and clinical epidemiology, spanning seven journals.

- Collaborated with multidisciplinary teams of clinicians, epidemiologists, and pulmonary/critical care specialists to translate clinical questions into testable statistical hypotheses and funding applications.
- Completed doctoral-level coursework in **machine learning and model selection**.

Data Analyst

2018 – 2020

University of Pennsylvania, School of Medicine

Davatzikos Lab (Center for Biomedical Image Computing and Analytics)

- Developed **neuroHarmonize**, an open-source Python package for harmonizing neuroimaging datasets across 20+ medical centers using ComBat-based statistical methods; now with 100+ GitHub stars and **500+ citations**.
- Built automated **machine learning pipelines for image processing and feature extraction** that reduced MRI preprocessing timelines from months to days for a multi-center consortium studying biomarkers of neurodegeneration.
- Applied **deep learning and computer vision methods** to large-scale MRI datasets (14,000+ individuals) to model brain age trajectories and disentangle neurodegeneration from typical aging patterns.
- Presented novel methodologies and technical results to interdisciplinary audiences including neurologists, radiologists, and biostatisticians at Penn, UCSF, and the iSTAGING consortium.

Junior Analyst Intern

Fall 2017

Wharton Customer Analytics Initiative Accelerator, University of Pennsylvania

- Modeled **customer lifetime value (CLV)** using subscription and churn data for a retail hair care brand; delivered a three-pronged executive strategy to maximize CLV and acquire high-value customers.

Global Management Trainee Intern

Summer 2017

Anheuser-Busch InBev, Sales & Marketing Headquarters

- Conducted field research on on-premises sales innovation; aggregated intelligence from Nielsen and other industry vendors to support executive go-to-market strategy.

TECHNICAL SKILLS

Programming: Python (Matplotlib, NumPy, Scikit-learn, SciPy, PyTorch), R (tidyverse, ggplot2, data.table), SAS, Unix shell scripting

Machine Learning & AI: Deep learning (CNNs, brain age modeling), supervised/unsupervised ML, Monte Carlo simulation, cross-validation, model selection, image processing, computer vision

Statistics: Multivariate regression, survival analysis, longitudinal data, bootstrapping, hypothesis testing, causal inference, sample size/power analysis

Data Infrastructure: SQL, DBT, REDCap (including API automation), end-to-end clinical data pipeline design

Operating Systems: Linux, macOS

GRANTS & FUNDING

- New Vaccine Surveillance Network, Centers for Disease Control and Prevention. Role: Data Scientist/Statistician. PI: Dr. Marian Michaels. University of Pittsburgh, 2024–present.

AWARDS & HONORS

- Marvin Porter Award for Outstanding Academic Achievement. University of Colorado–Denver, Department of Biostatistics & Informatics, 2023.
- Dean’s List. University of Pennsylvania, Wharton School, 2018.

SELECTED PUBLICATIONS

Full list: ncbi.nlm.nih.gov/myncbi/raymond.pomponio.1/bibliography/public/

Neuroimaging & Harmonization

- **Pomponio R**, Erus G, Habes M, Doshi J, Srinivasan D, Mamourian E, et al. Harmonization of large MRI datasets for the analysis of brain imaging patterns throughout the lifespan. *NeuroImage*. 2020;208:116450.
- Bashyam VM, Erus G, Doshi J, . . . , **Pomponio R**, et al. MRI signatures of brain age and disease over the lifespan based on a deep brain network and 14,468 individuals worldwide. *Brain*. 2020;143(7):2312–2324.
- Habes M, **Pomponio R**, Shou H, et al. The Brain Chart of Aging: machine-learning analytics reveals links between brain aging, white matter disease, amyloid burden, and cognition in the iSTAGING consortium of 10,216 harmonized MR scans. *Alzheimer’s & Dementia*. 2021;17(1):89–102.
- Nasrallah IM, Gaussoin SA, **Pomponio R**, et al. Association of intensive vs standard blood pressure control with MRI biomarkers of Alzheimer disease: secondary analysis of the SPRINT MIND randomized trial. *JAMA Neurology*. 2021;78(5):568–577.
- Hwang G, Abdulkadir A, Erus G, . . . , **Pomponio R**, et al. Disentangling Alzheimer’s disease neurodegeneration from typical brain ageing using machine learning. *Brain Communications*. 2022;4(3):fcac117.
- Chen AA, Srinivasan D, **Pomponio R**, et al. Harmonizing functional connectivity reduces scanner effects in community detection. *NeuroImage*. 2022;256:119198.

Clinical & Epidemiological Research

- **Pomponio R**, Peterson RA, Owusu M, et al. Phosphatidylethanol measures in patients with severe COVID-19-associated respiratory failure identify a subset with alcohol misuse. *Alcoholism: Clinical and Experimental Research*. 2025;49(1):165–174.
- Pless LL, Damodaran L, **Pomponio R**, et al. Emergence and epidemiology of dominant variants of human metapneumovirus in the United States between 2016 and 2021. *mBio*. 2026;17(2):e0261925.
- Dunbar PJ, Peterson R, McGrath M, **Pomponio R**, et al. Analgesia and sedation use during noninvasive ventilation for acute respiratory failure. *Critical Care Medicine*. 2024;52(7):1043–1053.
- Smith JB, Peterson RA, **Pomponio R**, et al. Donor derived cell free DNA in lung transplant recipients rises in setting of allograft instability. *Frontiers in Transplantation*. 2024;3:1497374.

- Mayer M, Badesch DB, . . . , **Pomponio R**, et al. Impact of the COVID-19 pandemic on chronic disease management and patient reported outcomes in patients with pulmonary hypertension. *Pulmonary Circulation*. 2023;13(2):e12233.

PRESENTATIONS & TEACHING

- Presented thesis research to the Colorado School of Public Health, 2023.
- Lightning talk and poster presentation, Symposium on Data Science and Statistics, 2022.
- Seminar presentations on methods in biostatistics and data science, 3+ venues.
- Teaching Assistant, Longitudinal and Survival Analysis, University of Colorado–Denver, 2023. Led 10+ interactive office hours.
- Referee, *Imaging Neuroscience* and *NeuroImage* (5+ manuscripts reviewed).