Alexandria N. Hughes, PhD, MS

✉ hughes.alexnicole@gmail.com | ☎ 208-407-1442 | 📇 Richmond, VA | 🌐 hughesan.github.io

Education

Sep 2020	**PhD, Neuroscience** *University of Colorado, Anschutz Medical Campus*
Aug 2023	**MS, Statistics** *Texas A&M University*
Dec 2014	**BS, Biology; Mathematics minor** *Boise State University*

Work Experience

5/2025 - — **Biostatistician** *Virginia Commonwealth University, Pauley Heart Center*
- Collaborative biostatistician providing study design, data management, and data analysis for clinical trials in cardio-oncology and exercise physiology
- Write statistical analysis plans and results and methods sections of grants and papers; monitor ongoing trial data with custom Shiny dashboards; analyses include the use of mixed-effects models, mediation analysis, multiple imputation

10/2023 - 5/2025 — **Data Scientist** *National Institutes of Health Clinical Center (NIH/CC)*
- Collaborative statistics consultant and analyst for investigators in the Clinical Center's Translational Biobehavioral and Health Disparities Branch
- Performed data analysis for clinical trials in health behaviors: sleep and exercise (accelerometry / actigraphy data) and nutrition (microbiome analysis); led research projects using large cohort study data (All of Us Research Program, NHANES)

12/2022 - 10/2023 — **Mathematical Statistician** *National Science Foundation (NSF/NCSES)*
- Provided statistical review and consultation services for NCSES surveys, publications, and reports, including the Survey of Earned Doctorates, Diversity and STEM, and the Annual Business Survey in collaboration with the Census Bureau

10/2021 - 11/2022 — **Senior Biostatistician** *Westat, Public Health & Epidemiology*
- Statistician on contracted epidemiological studies with federal partners (CDC and NIH)
- Wrote statistical analysis plans and manuscripts, performed analyses in R, managed data dictionaries and AWS cloud computing resources for the team, data access administrator for a large omics data repository

2015 - 2021 — **Graduate & Postdoctoral Research**
- IRTA Postdoctoral Fellow, Behavioral Neurogenetics, NIH/NICHD (2020 - 2021)
    - Bioinformatics (Bioconductor), RNA- and scRNA-seq data analysis including clustering & batch correction methods
- NSF-GRFP-funded Graduate Fellowship in Neuroscience, University of Colorado (2016 - 2020)
    - Coursework in R, Python, MATLAB; used R for all data analysis; computational biology (genetics, RNA-seq, image analysis, neuronal circuit modeling & simulation)

2011 - 2015 — **Mathematics Adjunct Faculty & Tutor (30 h/wk)** *Boise State University, Dept of Mathematics*
- Taught 2 sections of Elementary Algebra, TA'ed 2 sections of Calculus II and 3 sections of Calculus III, and provided drop-in tutoring services for the math dept (30 h/week)

Technical Skills & Expertise

- **Programming & Data Science:** R (primary since 2016), Python, SAS; workflow tools: Git/GitHub, Jupyter, Quarto, HPC, cloud computing

- **Statistical Expertise:** Regression modeling, survival analysis, mixed/longitudinal models, survey methods; machine learning (ensemble methods, clustering, predictive modeling); missing data methods (multiple imputation, sensitivity analyses)
- **Clinical & Epidemiologic Research:** EHR, clinical trials, large national cohorts (NHANES, All of Us); REDCap, CITI GCP certification
- **Bioinformatics:** Bioconductor, RNA-seq & scRNA-seq analysis, microbiome data; genomic databases & tools (UCSC Genome Browser, NCBI, Ensembl)
- **Visualization & Data Communication:** Shiny dashboards, ggplot2, vector graphics (Inkscape); teaching undergraduate mathematics, mentoring students

Professional Development, Certifications, and Awards

- National Science Foundation Graduate Research Fellowship Program (NSF-GRFP) awardee: project and tuition funding for the entirety of my PhD ($138,000)
- University of Colorado School of Medicine Dean's Outstanding Dissertation Award: Dean's selected dissertation of the 2020-2021 doctoral graduating classes
- COR (Contracting Officer's Representative) I certification
- SAS 9.4 Certified Associate
- Member, American Statistical Association
- Road Runners Club of America (RRCA)-certified Run Coach

Publications

1. Elghazali F*, **Hughes AN***, Wallen GR, Burstein E, Barb JJ (2025). Association Between Alcohol Use Disorder and Glaucoma: Evidence from the National Institutes of Health All of Us Research Program. *International Journal of Environmental Research and Public Health*, 22(11):1738. *authors contributed equally

2. Grizzard PJ, O'Connell NS, Rapp SR, Olson KC, Bellissimo MP, **Hughes AN**, Ladd AC, Weaver KE, Wagner LI, Ruddy KJ, Ky B, D'Agostino RB, Hundley WG (2025). Preserved Cognitive Function After Statin Administration During Cancer Treatment With Doxorubicin: A Secondary Analysis of a Randomized Clinical Trial. *JAMA Network Open*, 8(10):e2538325-.

3. Barb JJ, **Hughes AN**, Nanda S, Tuason RT, Wallen GR, Maki KA (2025). Longitudinal Assessment of Oral and Gut Microbiome Overlap in Patients with Alcohol Use Disorder (AUD) Undergoing Inpatient Treatment. *Frontiers in Cellular and Infection Microbiology*, 15:1681781.

4. **Hughes AN**, Barb JJ, Wallen GR (2024). Evaluating the Role of Circadian Rhythm Dysregulation in Alcohol Use Disorder (AUD) Relapse Probability, *Sleep*, 47, Supplement_1, A144.

5. Stone M, Spencer BR, Warden DE, Fink RV, Saa P, Leddy J, Mulach-Vannoy J, Townsend R, Krysztof D, **Hughes AN**, Di Germanio C, ..., Norris PJ (2024). Patient and immunological factors associated with delayed clearance of mucosal SARS-CoV-2 RNA and symptom persistence. *The Journal of Infectious Diseases*, 230, 2, 357–362.

6. DeSilva MB, Knowlton G, Rai NK, Bodurtha P, Essien I, Riddles J, Mehari L, Muscoplat M, Lynfield R, Rowley EAK, Chamberlain AM, Patel P, **Hughes A**, ..., Drawz PE (2023). Vaccine Effectiveness Against SARS-CoV-2 Related Hospitalizations in People who had Experienced Homelessness or Incarceration–Findings from the Minnesota EHR Consortium. *Journal of Community Health*, 1-10.

7. Stone M, Fink R, Saa P, **Hughes A**, Di Germanio C, Spencer B, ..., Norris P (2023). RNA Persistence, Antibody Dynamics and Symptom Outcomes in a Longitudinal Cohort of Persons Infected with SARS-CoV-2. *Transfusion*, 63, 64A-65A.

8. Adams K, Riddles JJ, Rowley EAK, Grannis SJ, Gaglani M, Fireman B, Hartman E, Naleway A, Stenehjem E, **Hughes A**, ..., Tenforde MW (2023). Number needed to vaccinate with a COVID-19 booster to prevent a COVID-19-associated hospitalization during SARS-CoV-2 Omicron BA.1 variant predominance, December 2021–February 2022, VISION Network: a retrospective cohort study. *The Lancet, Regional Health - Americas* 23, 100530.

9. Andreev A, Komatsu V, Almiron P, Rose K, **Hughes AN**, Lee MY (2022). Research Culture: Welcome to the lab. *eLife*, 11:e79627.

10. **Hughes AN** (2022). In search of a backup career plan, I found a perfect fit. *Science* (New York, NY), 376(6589), 210-210.
11. **Hughes AN** (2021). Glial cells promote myelin formation and elimination. *Frontiers in Cell and Developmental Biology*, 9, 661486.
12. **Hughes AN** & Appel B (2020). Microglia phagocytose myelin sheaths to modify developmental myelination. *Nature Neuroscience*, 23, 1055–1066.
13. **Hughes AN** & Appel B (2019). Oligodendrocytes express synaptic proteins that modulate myelin sheath formation. *Nature Communications*, 10(1), 1-15.
14. **Hughes AN**, Oxford A, Tawara K, Jorcyk C, Oxford JT (2017). Endoplasmic reticulum stress and unfolded protein response in cartilage pathophysiology; contributing factors to apoptosis and osteoarthritis. *International Journal of Molecular Sciences*, 18(3), 665.
15. **Hughes AN**, Hixon AM, Josey M (2016). A Schwanncentric View of Axon Arborization in Neuromuscular Junction (NMJ) Formation. *Journal of Neuroscience*, 36(38), 9760-9762.
16. **Hughes AN** & Oxford JT (2014). A lipid-rich gestational diet predisposes offspring to nonalcoholic fatty liver disease: a potential sequence of events. *Hepatic Medicine*, 6, 15-23.