COLEMAN R. HARRIS

615-556-7843 ⋄ coleman.reed.harris@gmail.com ⋄ www.colemanrharris.me

Last Updated: 2022-03-10

EDUCATION

Vanderbilt University   August 2017 - May 2022
PhD Candidate in Biostatistics   *[NIH BD2K Training Fellowship (T32)](#)*
Topic: Statistical methods and computational tools for normalization and spatial analysis of multiplexed imaging data

University of Alabama   August 2015 - May 2017
B.S. in Statistics, Minor in Biology, *cum laude*

SKILLS

Expertise	Robust, Scalable Pipelines; Statistical Methods; Communication Skills
Languages & Tools	Python (numpy, pandas, Flask, Jupyter), R (dplyr, ggplot2, RStudio), SQL, Java, Bash, Git, Google BigQuery, REST APIs, Azure, Jira, Linux/Unix

TECHNICAL EXPERIENCE

PhD Candidate | *Dept. of Biostatistics, Vanderbilt University*   *Aug 2017 - May 2022*
· Developed statistical methods & evaluation framework to normalize multiplexed data (*[Bioinformatics](#)*)
· Wrote rigorous R package ([mxnorm](#)) using S3 methods, tidyverse to solve imaging quality issues in field
· Deep statistical methods expertise: Bayesian & spatial statistics, time-series & sensitivity analysis

Data Analyst | *Decode Health & IQuity Inc.*   *June 2020 - April 2022*
· Built end-to-end, scalable bioinformatics pipelines leveraging Python, Flask, ML modeling, and ggplot2
· Developed production quality ML pipeline using modeling metrics & statistics, REST APIs, Azure
· Extensive experience w/ sensitive "big data" sources, incl. medical claims & genomics sequencing data
· Extracted, cleaned, & maintained poor quality healthcare data to develop production quality pipelines

Data Science Intern | *Nashville Biosciences*   *January 2020 - August 2020*
· Explored "big" datasets with Google BigQuery to identify millions of errors, improving data quality
· Wrote and implemented concise SQL scripts to streamline error identification processes

Biostatistician | *Depts. of Otolaryngology & Health Policy, VUMC*   *May 2018 - January 2020*
· Facilitated study design, power calculations & simulation studies w/ R. Published in *[The Laryngoscope](#)*.
· Rigorous statistical analysis, incl. hierarchical clustering, regression modeling, & correlation analysis

Statistical Quality Intern | *Aegis Sciences*   *May 2017 - August 2017*
· Designed & executed stability study for drugs/metabolites to improve QC methods & lab standards
· Advanced statistical data analysis to analyze & communicate final results to interdisciplinary colleagues

Research Assistant | *Dept. of Physics, University of Alabama*   *August 2015 - August 2016*
· Utilized data analysis and visualization methods to organize and interpret complex impedance data
· Improved communication skills through a variety of presentations, graphics, and update reports

COMMUNICATIONS EXPERIENCE

Content Writer | *Kaizen Analytix*   *March 2021 - June 2021*

· Lead end-to-end production of technical white-papers & publications for Marketing Team
· Develop content on complex topics like AI & econometrics, incl. SEO-optimization & brand consistency

Technical Writer | *Keshif*   *May 2020 - January 2021*

· Rewrote & updated the Keshif Knowledge Base hosted on HelpScout to improve user experience
· Utilized Keshif to craft content at the intersection of data visualization, design, and wellness
· Published multiple blog posts detailing the Knowledge Base & extensive breakdowns of the Keshif tool

Content Writer | *Nebula Genomics*   *December 2019 - May 2020*

· Educated customers & promoted brand awareness with targeted content, research summaries, & socials
· Commissioned, edited, and SEO-optimized dozens of pieces to improve page ranking and draw traffic
· Managed, crafted, and analyzed social media content to improve website traffic and social impressions

LEADERSHIP EXPERIENCE

Co-President | *Vanderbilt Science Policy Group*   *2020 - 2021*
Vice President | *Vanderbilt Science Policy Group*   *2018 - 2020*

· Applied for and awarded grant funding totaling over $7000 from national organizations
· Planned, organized, and facilitated multiple large events across disciplines and political sides
· Lobbied climate & energy w/ UCS in offices of Sen. Alexander, Rep. Blackburn, & Rep. Cooper.

Census Fellow | *Union of Concerned Scientists*   *Jan 2021 - Aug 2021*

· Researched & developed rigorous report on data quality, community impact, & statistical best practices
· Lead & organized advocacy efforts incl. research, sign-on letters, webinars to publicize vital work

Southern Hub Co-Chair | *National Science Policy Network*   *2021*

· Organized and facilitated programming, events, and resources for 500 members over 20 chapters

Vanderbilt Biostatistics Graduate Student Association

President   *2020 - 2022*
Treasurer   *2019 - 2020*

Political Campaigns

Consultant, Wade Munday for Tennessee Senate District 25   *2017 - 2018*
Intern, Phil Bredesen for U.S. Senate   *2018*
Data Consultant, Clayton Hinchman for U.S. Congress   *2018*

University of Alabama

Co-Director of Undergraduate Research, Student Government Association   *2016 - 2017*
Social Chairman, Sigma Tau Gamma Fraternity   *2016 - 2017*

SCIENCE POLICY AND COMMUNICATION

Accolades

Certificate, Science Policy Scholar Program, National Science Policy Network   *2020*
· *Commodore Award in Biostatistics*, Dept. of Biostatistics, Vanderbilt University   *2021*

Roles

TEACHING EXPERIENCE

- **Teaching Assistant**

  BIOS 6301: Introduction to Statistical Computing **Fall 2018**
  Instructor: Chris Fonnesbeck, Ph.D
- BIOS 7361: Advanced Concepts in Probability and Real Analysis **Fall 2019**
  Instructor: Robert Johnson, Ph.D
- BIOS 7351: Statistical Collaboration in Health Sciences I **Fall 2020**
  Instructor: Mario Davidson, Ph.D
- BIOS 7352: Statistical Collaboration in Health Sciences II **Spring 2021**
  Instructor: Dandan Liu, Ph.D

PUBLICATIONS

Peterson, G.W., McEntee, M., **Harris, C.R.**, Klevitch, A.D., Fountain III, A.D., Soliz, J.R., Balboa, A., Hauser, A.J. Detection of an explosive simulant via electrical impedance spectroscopy utilizing the UiO-66- NH2 metal-organic framework. *Dalton Transactions*, 2016, 45, 17113-17116.

Soliz, J.R., Klevitch, A.D., **Harris, C.R.**, Rossin, J.A., Ng, Amy, Stroud, R.M., Hauser, A.J., Peterson, G.W. Structural Impact on Dielectric Properties of Zirconia. *Journal of Physical Chemistry C*, 2016, 120(47), 26834-46840.

Harris, C.R., Soliz, J.R., Klevitch, A.D., Bartz, M.J., Rossin, J.A., Fountain III, A.D., Hauser, A.J., Peterson, G.W. Sensing of NO2 with Zirconium Hydroxide via Electrical Impedance Spectroscopy. *Dalton Transactions*, 2017, 46(33), 10791-10797.

Shing, J. Z., **Harris, C. R.**, Hull, P. C. Re: Human papillomavirus vaccine initiation in Asian Indians and Asian subpopulations: a case for examining disaggregated data in public health research. *Public Health*, 2018.

A. Langerman, K.M. Brelsford, C.J. Diehl, **C.R. Harris**, T.G. Stewart. Trust as a Predictor of Patient Perceptions Regarding Overlapping Surgery and Trainee Independence. *The Laryngoscope*, 2020.

M.A. Diasio, D.F. DaCrema, R.B. Dudek, **C.R. Harris**, M.N. Schmehl, C.L. Schuerger, M.T. Tan. Developing Science and Technology Policy Fellowships in State Governments without Full-Time Legislatures. *Journal of Science Policy & Governance*, 2020.

J.D. Gray, **C.R. Harris**, L.S. Wylezinski, C.F. Spurlock III. Predictive modeling of COVID-19 case growth highlights evolving racial and ethnic risk factors in Tennessee and Georgia. *BMJ Health & Care Informatics*, 2021.

L.S. Wylezinski, **C.R. Harris**, C.N. Heiser, J.D. Gray, C.F. Spurlock III. Influence of social determinants of health and county vaccination rates on machine learning models to predict COVID-19 case growth in Tennessee. *BMJ Health & Care Informatics*, 2021.

Harris, C. R., McKinley, E. T., Roland, J. T., Liu, Q., Shrubsole, M. J., Lau, K. S., ... & Vandekar, S. N. (2022). Quantifying and correcting slide-to-slide variation in multiplexed immunofluorescence images. *Bioinformatics*, 2022, 38(6), 1700-1707.

Harris, C. R., Wrobel, J. & Vandekar, S. N. (2022). mxnorm: An R Package to Normalize Multiplexed Imaging Data. *Journal of Open Source Software, Under Review.*

SELECTED PRESENTATIONS

$Zr(OH)_4$ nanoparticles for impedance-based NO_2 detection (2016, Mar). Oral presentation, American Physical Society March Meeting, Baltimore, MD.

Geographically weighted regression is robust to data privacy protections implemented via Lipschitz embedding (2019, Apr). Poster presentation, Vanderbilt Data Science Institute Symposium, Nashville, TN.

An Introduction to Shiny (2020, Jan). **Invited Lecture**, Data Science in Teams I, Data Science Institute, Vanderbilt University.

An Empirical Bayes Approach to Image Normalization in Highly Multiplexed Cellular Imaging Data (2020, June). **Plenary talk**, NLM Informatics Training Conference, Portland, OR (Virtual).

Building Your Audience: Crafting a Voice to Communicate Statistics to the General Public (2021, Feb). Oral presentation, Conference on Statistical Practice, Nashville, TN (Virtual).

An Introduction to Science Policy (2021, Feb). **Invited presentation**, Collaborative for STEM Education and Outreach, Vanderbilt University, Nashville, TN (Virtual).

Combining Batches of High-Dimensional Multiplexed Images (2021, Apr). **Invited seminar**, Vanderbilt University Department of Biostatistics, Nashville, TN (Virtual).

Quality Control and Batch Effects of Multiplexed Immunofluorescence (MxIF) Images (2021, May). **Invited presentation**, HTAN Image Data Quality Workshop, Virtual.

Combining Batches of High-Dimensional Multiplexed Images (2021, Apr). Lightning presentation, Vanderbilt University Department of Biostatistics, Nashville, TN (Virtual). **Awarded Best Presentation.**

Quantifying and correcting slide-to-slide variation in multiplexed immunofluorescence images (2021, Aug). **Organizer and presenter**, Topic-contributed session, Joint Statistical Meetings, Virtual.

Data Justice: Redistricting & Census Data Tools (2021, Aug). **Invited presentation**, National Society of Black Engineers Professional Development Conference, Virtual.

mxnorm: An R package to quantify and correct slide-to-slide variation in multiplexed immunofluorescence (2021, Dec). **Invited presentation**, CMStatistics 2021, Virtual.

CONTINUING EDUCATION

Image Analysis Workshop, presented by NCI Cancer Systems Biology Consortium & Physical Science-Oncology (2020, Jan). Seattle, WA.

Tutorial: Statistical methods for geometric functional data. ENAR (2020, Mar). Nashville, TN (Virtual).

ACADEMIC ACHIEVEMENTS

University of Alabama Presidential Scholars Scholarship, 2015 - 2017

Undergraduate Research and Creativity Activity Grant, University of Alabama, 2015

Olin B. King Endowed Achievement Scholarship, 2016 - 2017

Elizabeth Buford Shepherd Scholarship, 2015 - 2019

NIH Big Data to Knowledge Training Fellowship (T32), 2018 - 2021

Session Chair, Building Communication Skills at All Levels, Conference on Statistical Practice, 2021

Best Presentation, VUMC Department of Biostatistics, Student Lightning Talks, 2021

Session Organizer, Topic-Contributed Session, Joint Statistical Meetings, 2021

SELECTED WRITING

A line item in the new tax reform proposal could hinder STEM education. (2017, Nov 13). *STAT.*

How to make an impact in science policy as a graduate student. (2018, Apr 4). *PLoS ECR.*

Climate is getting more extreme in every possible way. (2019, Jan 8). *Massive Science.*

For Linda Young, Its About Learning the Right Questions to Ask. (2019, Sept 1). *Amstat News.*

James Rosenberger: A Collaborator Across Disciplines. (2019, Sept 1). *Amstat News.*

On Being a Spatial Data Archaeologist. (2019, Oct 31). *Nightingale.*

From one to millions - the age of population genomics. (2019, Dec 22). *Nebula Genomics.*

Can income be linked to genetics? (2020, Jan 12). *Nebula Genomics.*

Kristian Lum: A Statistician Inspired by Human Rights. (2020, Sept 1). *Amstat News.*

Karl E. Peace: A True Humanitarian. (2020, Sept 1). *Amstat News.*

Does your app need a prediction model or an inference model? (2020, Nov 17). *Triplebyte Compiler.*

Conveying Different Messages with Your Choice of Data Visualization (2020, Dec 18). *Nightingale.*

Analysis: Nashville should ban facial recognition technology (2021, Feb 23). *Tennessee Lookout.*

Shifting Focus to Small and Wide Data (2021, Jun 2). *Kaizen Analytix.*