

EDUCATION

Carnegie Mellon University, Pittsburgh, PA

- *Ph.D. Candidate in Statistics & Data Science.*
- *Master of Science in Statistics.*

Expected May 2027
May 2024

Kenyon College, Gambier, OH

- *Bachelor of Arts in Mathematics & Statistics, Magna Cum Laude.*

May 2020

RESEARCH EXPERIENCE

Carnegie Mellon University, Pittsburgh, PA

Spring 2023-Present

Statistics Ph.D. Student | Supervisor: Will Townes, Ph.D.

- Study genetic underpinnings and biomarkers of human disease.
- Design and evaluate statistical methodology for use on genomic data.
- Collaborate with Dr. Kathryn Torok at the University of Pittsburgh Medical Center (UPMC) to evaluate the impact of stem cell transplants on RNA and protein expression in blood samples of pediatric scleroderma patients.

National Cancer Institute, National Institutes of Health, Bethesda, MD

Fall 2020-Spring 2022

Postbaccalaureate CRTA Research Fellow | Supervisor: Philip Rosenberg, Ph.D.

- Developed novel statistical methodology in cancer surveillance.
- Created RStudio software for the application of these methods by biomedical researchers.
- Methodology includes age-period-cohort modeling, kernel smoothing algorithms, model selection techniques, changepoint detection, and generalized linear models.
- Applications include quantification of trends in breast, pancreas, and oral cancer incidence, as well clinical recommendations for patient hip fracture risk assessment.

The Ohio State University, Columbus, OH

Summer 2018

Statistical Genetics Research Assistant | Supervisor: Asuman Turkmen, Ph.D.

- Compared the efficacy of three multivariate methods for detecting relationships between genes and disease risk in Genome Wide Association Study (GWAS) data to three similar methods popular in the field of statistics.
- Conducted simulation studies and applied methods to Dallas Heart Study data, noting which methods picked up on the known relationship between rare variations in the ANGPTL5 gene and reduced triglyceride levels.
- Participated in a weekly journal club with Ohio State doctoral students in statistics, biostatistics, and epidemiology. Met with faculty in these departments to learn about their career paths and areas of research.

TEACHING & MENTORING EXPERIENCE

Carnegie Mellon University, Pittsburgh, PA

Undergraduate Statistics Teaching Assistant

Fall 2022-Present

- Hold office hours and grade student assignments.
- Courses include: Modern Regression (36-401), Undergraduate Advanced Data Analysis (36-402), Statistical Methods in Health Sciences (36-470), Foundations of Data Science Online Graduate Certificate (36-640 and 36-641), PhD Regression Analysis (36-707), and Machine Learning II for M.S. in computational finance (46-927).

National Institutes of Health, Bethesda, MD

College Summer Opportunities to Advance Research (CSOAR) Mentor

Summer 2021

- Served as a primary mentor through CSOAR, which provides research opportunities to college students disadvantaged by circumstances that have negatively impacted their educational opportunities.
- Taught student age period cohort analysis and oversaw final project, "Recent Trends in Oral Tongue Cancer Incidence in the United States by Region".

Summer Internship Program (SIP) Mentor

Summer 2021

- Co-mentored a college student through SIP, sharing the ins and outs of government biomedical research.
- Introduced student to statistical methodology in changepoint detection and complementary RStudio software.

- Showed student how to run simulation studies comparing methods, resulting in the final presentation, “Estimating Changes in Average Annual Percentage Change of Disease Rates: Alternatives to Join-Point Regression”.

Kenyon College, Gambier, OH

Career Services Associate

Spring 2018-Spring 2020

- Workshopped résumés and cover letters with college students, helping students effectively market their skills.

Apprentice Teacher of Spanish

Fall 2017 & Spring 2020

- Planned language-learning activities for college students in introductory Spanish classes using online resources, games, and activities designed to facilitate listening, speaking, reading, and writing practice.
- Taught supplementary Spanish lessons four times per week, with an emphasis on conversation practice.

Association for Women in Mathematics Secretary

Spring 2018-Spring 2020

- Nominated for national membership by Kenyon mathematics faculty.
- Planned and organized mathematics education outreach events, such as a campus-wide STEM activities fair.

STEM and Data Teaching Assistant

Summer 2017

- Collaborated with science faculty to introduce underrepresented first-year students to STEM at Kenyon.
- Facilitated evening homework help sessions for students five nights per week.

PUBLICATIONS

- Storandt, M. H., Tella, S. H., Wiecezorek, M. A., Hodge, D., **Elrod, J. K.**, Rosenberg, P. S., Jin, Z., & Mahipal, A. (2024). Projected Incidence of Hepatobiliary Cancers and Trends Based on Age, Race, and Gender in the United States. *Cancers*, 16(4), Article 4. <https://doi.org/10.3390/cancers16040684>
- Rosenberg, P. S., Filho, A. M., **Elrod, J.**, Arsham, A., Best, A. F., & Chernyavskiy, P. (2023). Smoothing Lexis diagrams using kernel functions: A contemporary approach. *Statistical Methods in Medical Research*, 09622802231192950. <https://doi.org/10.1177/09622802231192950>
- Zumsteg, Z. S., Luu, M., Rosenberg, P. S., **Elrod, J. K.**, Bray, F., Vaccarella, S., Gay, C., Lu, D. J., Chen, M. M., Chaturvedi, A. K., & Goodman, M. T. (2023). Global Epidemiologic Patterns of Oropharyngeal Cancer Incidence Trends. *JNCI: Journal of the National Cancer Institute*, djad169. <https://doi.org/10.1093/jnci/djad169>
- Allbritton-King, J. D., **Elrod, J. K.**, Rosenberg, P. S., & Bhattacharyya, T. (2022). Reverse engineering the FRAX algorithm: Clinical insights and systematic analysis of fracture risk. *Bone*, 159, 116376.

AWARDS & CERTIFICATES

- Health Science Communication & Policy Workshop Certificate, NIH Office of AIDS Research Spring 2021
 - Gained practical knowledge in developing and evaluating a health communication campaign.
 - Studied the health policy legislative process, including securing research funding and resources.
- Fulbright English Teaching Assistant Award, Spain, 2020-2021 Spring 2020
 - Turned down due to COVID-19.
- Sigma Xi – Scientific Research Honor Society, Kenyon-Denison Chapter Spring 2020
- Wendell D. Lindstrom Memorial Prize Spring 2018
 - Recognizes first or second-year college students who have demonstrated great promise in mathematics.
- Pi Mu Epsilon – Honorary National Mathematics Society Spring 2018
- Kenyon College National Merit Scholarship Fall 2016-Spring 2020

PRESENTATIONS

Carnegie Mellon University Department of Statistics & Data Science Project Presentation November 2023

- *Evaluating Genetic Colocalization Analysis Techniques with an Application in Schizophrenia Etiology.*

Postbac Poster Day, National Institutes of Health

April 2021

- *An R Package for Kernel Filtration of Rates on a Lexis Diagram.*

The Ohio State University Comprehensive Cancer Center & Kenyon College Pelotonia Partnership

July 2018

Undergraduate Research Symposium

- *Using Multivariate Association Measures to Identify Relationships Among Genetic Variants and Multi-Dimensional Structured Traits*