Elizabeth Eisenhauer

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Research interests: animal movement modeling and statistics education

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EDUCATION

The Pennsylvania State University, State College, PA
Doctorate of Philosophy (post-candidacy), Statistics, August 2017 – present
- Distinguished Graduate Fellow, August 2017 – May 2018
- Vollmer-Kleckner Scholarship in Science, August 2018 – May 2019

The College of New Jersey (TCNJ), Ewing, NJ
Bachelor of Arts, Mathematics with Statistics specialization, August 2013 – May 2017
- Magna cum laude
- Departmental Honors
- Phi Beta Kappa Honors Society
- Pi Mu Epsilon Mathematics Honors Society

RESEARCH PUBLICATIONS

- Wijeyakulasuriya, Dhanushi A., **Elizabeth W. Eisenhauer**, Benjamin A. Shaby, and Ephraim M. Hanks. "Machine learning for modeling animal movement." *PloS one* 15.7 (2020): e0235750.
- **Eisenhauer, Elizabeth**, and Ephraim Hanks. "A lattice and random intermediate point sampling design for animal movement." *Environmetrics* (2020): e2618.

RESEARCH EXPERIENCE

Graduate Research, Department of Statistics, The Pennsylvania State University, State College, PA
June 2018 – present
Co-Advisors: Dr. Ephraim Hanks and Dr. Matthew Beckman
- Project 1: Developed a novel sampling design called lattice and random intermediate points (LARI) for animal movement data which combines samples at regular and random time points to improve parameter estimation accuracy. Compared LARI and regular sampling on a carpenter ant dataset, a guppy dataset and in a simulated example. Performed comparisons using a stochastic differential equation framework updated to allow for irregular samples.
- Project 2: Developing a flexible model framework for migratory and non-migratory movement in golden eagles.
- Project 3: Assessing students' attitudes toward probability using a survey based on the SATS-36.

Undergraduate Honors Research, Department of Mathematics, TCNJ, Ewing, NJ
June 2016 – May 2017
Advisor: Dr. Michael Ochs
- Project: Creation of structural equations and graphical models to understand the limits of learnability of cell signaling networks based on high-throughput biological measurements with a focus on cell signaling networks in head and neck squamous cell carcinoma.

TEACHING EXPERIENCE

Instructor for STAT 401: Experimental Methods, Penn State University, State College, PA
Spring 2021

Instructor for World Campus STAT 200: Elementary Statistics, Penn State University, State College, PA
Summer 2020

Instructor for STAT/MATH 318: Elementary Probability, Penn State University, State College, PA
Fall 2019, Spring 2020, and Fall 2020

OL 2050 Graduate Student Online Teaching Certification, Penn State University, State College, PA
May 2019

Lab instructor for STAT 200: Elementary Statistics, Department of Statistics, Penn State University, State College, PA
Fall 2018

PROFESSIONAL EXPERIENCE

Graphic Designer, TCNJ Office of Student Activities, Ewing, NJ
September 2014 – May 2016
- Consulted with faculty and student organizations on how best to meet their design goals
- Completed individual graphic design projects and packages (logos, posters, t-shirt designs, and murals)

Operations Intern, TerraCycle, Inc., Trenton, NJ
December 2015 – April 2016
- Analysis of shipping operations through manipulation of Excel spreadsheets
- Improvement of zero-waste office collection program

Statistics Project Manager, The Rainbird Foundation, Madison, WI
December 2014 – October 2015
- Compilation of child abuse data from across the United States

PROFESSIONAL DEVELOPMENT

INVITED PRESENTATIONS

2020 Penn State Probability and Financial Mathematics Seminar, May 2020. Topic: Modeling COVID-19 with an SIR model accounting for temperature.
2020 Muhlenberg College Math/CS Colloquium Series, January 2020. Topic: A lattice and random intermediate point sampling design for animal movement.
2019 Hawk Mountain Sanctuary Seminar, October 2019. Topic: Sampling and Modeling Animal Movement.

CONTRIBUTED PRESENTATIONS

2020 Joint Statistical Meeting (JSM), August 2020. Topic: Modeling migratory and residential movement of golden eagles.
2020 virtual International Statistical Ecology Conference (vISEC), June 2020. Topic: A lattice and random intermediate point sampling design for animal movement. [Student Prize for Contributed Talk]
2020 Penn State Statistics Department SMAC Talk, January 2020. Topic: A lattice and random intermediate point sampling design for animal movement.
2019 Joint Statistical Meeting (JSM), August 2019. Topic: An irregular sampling design for animal movement.

POSTER PRESENTATIONS

2020 Symposium on Data Science and Statistics, June 2020. Topic: A lattice and random intermediate point sampling design for animal movement. (SDSS Student & Early Career Funding Award)
2019 Rao Prize Conference, May 2019. Topic: Comparing sampling designs for carpenter ant movement data.
2018 American Statistical Association's Statistics for the Environment (ENVR) Workshop, October 2018. Topic: Optimal sampling schemes for animal movement modeling. (Travel funding by NSF grant)
2017 TCNJ Celebration of Student Achievement Poster Session, May 2017. Topic: Structural equation modeling of protein signaling networks in Head and Neck Squamous Cell Carcinoma.
2017 Eastern North American Region (ENAR) International Biometric Society Spring Meeting, March 2017. Topic: Structural equation modeling of protein signaling networks in Head and Neck Squamous Cell Carcinoma.
2016 TCNJ Mentored Undergraduate Summer Experience Poster Session, September 2016. Topic: Structural equation modeling of protein signaling networks in Head and Neck Squamous Cell Carcinoma.

OTHER WORKSHOPS AND CONFERENCES

2020 Electronic Conference on Teaching Statistics (eCOTS), May 2020.
2020 Preparing for Careers in Teaching Statistics and Data Science Workshop, May 2020.
2019 STATMOS Spatial Statistics Workshop, September 2019. (Travel funding by STATMOS grant)
2019 United States Conference on Teaching Statistics, May 2019.
2017 5th Annual Summer School on Sustainable Climate Risk Management, July 2017.

SERVICE

Reviewer – Journal of Agricultural, Biological and Environmental Statistics, June 2020.
Committee Member – Penn State Statistics Department Climate and Diversity Committee, October 2019 – present.
Wellness Chair – Penn State Statistics Graduate Student Association, August 2018 – May 2019.
President – TCNJ Environmental Club, May 2016 – May 2017.
Secretary – TCNJ Environmental Club, May 2015 – May 2016.
Vice President and co-founder – TCNJ Veg Life Club, May 2016 – May 2017.