Armelle Duston

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Education

Harvard T.H.Chan School of Public Health **August 2024 – Present**
PhD Biostatistics *GPA: 3.98*

Colorado School of Mines **August 2020 – May 2024**
BS Applied Mathematics and Statistics *GPA: 4.0*

Vrije Universiteit Amsterdam **August 2022 – December 2022**
Semester Abroad *GPA: 8.17/10*

Relevant Coursework

- Probability I
- Inference I
- Statistical Methods I/II
- Computing I
- Intro to Epidemiology
- Environmental Health
- Health Geography
- Spatial Statistics
- Time Series Analysis
- Multivariate Analysis

Experience

Harvard T.H. Chan School of Public Health **January 2025 – Present**
Doctoral Research with Drs. Brent Coull and Rachel Nethery *Boston, MA*

- Studied diverse spatial methods with a focus on Bayesian disease mapping models.
- Worked on statistical model development to account for population count errors in US Census data in the context of small-area spatial analysis.

Colorado School of Mines **May 2022 – May 2024**
Undergraduate Research with Dr. Cecilia Diniz Behn *Golden, CO*

- Studied circadian health in adolescents using statistical and computational modeling techniques.
- Worked with experimental and quantitative/mathematical collaborators.
- Presented research to sleep-science and mathematical audiences.
- Designed and presented posters and presentations at several conferences and first-authored a manuscript titled ”Sex differences in circadian timing and biological night in adolescents.”

Colorado School of Mines **January 2022 – May 2023**
Undergraduate Research with Dr. Michael Mikucki *Golden, CO*

- Wrote Python software to perform automated sensitivity analysis for dynamical systems (ordinary differential equations)
- Used the software to investigate SIR (infectious disease) models and other dynamical systems.
- Designed and presented posters at several conferences.

Summer Institute in Biostatistics at NC State & Duke **June 2023 – July 2023**
Participant *Raleigh, NC*

- Analyzed medical data using statistical techniques in SAS and R, met practicing physicians and biostatisticians engaged in medical research, and learned about principles of applied biostatistics including Bayesian statistics, causal inference, and survival analysis.
- Competed in the data hackathon culminating the program in which we cleaned and organized a database of 110 predictors for myocardial infarction relapse and built and evaluated machine learning models in R.

Applied Math & Stats Tutoring Center **August 2023 – December 2023**
Tutor *Golden, CO*

- Helped students with advanced math topics such as linear algebra and differential equations by breaking down math concepts and helping students use tools like visual aids to support their learning.

Technical Skills

Programming Languages/Technology: R, Python, MATLAB, LaTeX, SQL, C++, GitHub

Publications

- **Duston, A.**, Holtman, S., Bowen, A. E., Cree, M. G., Nadeau, K., WrightJr., K. P., Simon, S. L., & Diniz Behn, C. G. (2025). Sex Differences in Circadian Timing and Biological Night in Adolescents. Journal of Biological Rhythms, 40(1), 7–18. https://doi.org/10.1177/07487304241309165
- Stowe, S. R., **Duston, A.**, Robinson, W., & Diniz Behn, C. (2025). Analyzing the Interactions of Light and Melatonin Forcing in a Mathematical Model of the Human Circadian Oscillator. Journal of Pineal Research, 77(3), e70056. https://doi.org/10.1111/jpi.70056

Presentations

Nebraska Conference for Undergraduate Women in Mathematics (Poster) **February 2024**
- Don't PASA your time writing down sensitivity equations! Automated sensitivity analysis for dynamical systems

Mines Undergraduate Research Symposium (Poster) **May 2023**
- Don't PASA your time writing down sensitivity equations! Automated sensitivity analysis for dynamical systems

CU Anchutz Women's Health Research Day (Poster) **April 2023**
- Sex differences in the circadian timing of adolescents

Nebraska Conference for Undergraduate Women in Mathematics (Slides) **February 2023**
- The relationship between adolescent obesity and sleep

Colorado Sleep and Circadian Summer School (Slides) **August 2022**
- The relationship between adolescent obesity and sleep

Honors and Awards

Outstanding Graduate in Applied Math & Statistics **March 2024**
Top student award given by AMS department *Colorado School of Mines*

Undergraduate Research Distinction **May 2024**
Recognizes significant research achievements *Colorado School of Mines*

Harvey Scholarship **August 2020 – May 2024**
Merit-based full tuition scholarship *Colorado School of Mines*

Undergraduate Research Fellowship **August 2022 - May 2023**
Funds undergrad research projects *Colorado School of Mines*

Class Projects

Spatial Statistics: Modeling the Relationship Between Air Quality and Lung Cancer **December 2023**
- Used EPA and National Cancer Institute datasets and spatial statistical tools in R to evaluate air quality as a predictor for rates of lung cancer in the US and investigated relationship between those factors and sociodemographic status. Visualized the data, predictions, and errors associated with those predictions on a US map.

Comp. Neuroscience: Relating MAO and TH Dynamics in Schizophrenia to Dopamine and Sleep **May 2023**
- Investigated the relationship between the circadian clock and schizophrenia using a model of differential equations describing the molecular clock's effects on the dopaminergic system and altered the dynamics of enzymes Monoamine Oxidase (MAO) and Tyrosine Hydroxylase (TH) according to known behaviors in people with schizophrenia.

Extracurricular

Mathematical Biology Research Group **May 2022 – May 2024**
Member *Colorado School of Mines*

Society of Women in Mathematics **May 2022 – May 2024**
Member *Colorado School of Mines*