

Abraham Arbelaez

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PERSONAL PROFILE

My research interests include mechanistic species distribution models, spatio-temporal statistics, Bayesian hierarchical modeling, and environmental statistics.

EDUCATION

- 08/23 - Present **Ph.D. Statistics**
Kansas State University, Manhattan, KS
Adviser: Trevor J. Hefley
- 09/19 – 05/23 **B.S. Statistics**
The Pennsylvania State University, University Park, PA
Minor: Economics
Adviser: Ephraim M. Hanks

RESEARCH EXPERIENCE

- 05/23 – 08/23 **Kansas State University**
Graduate Research Assistant
Adviser: Trevor J. Hefley

Conducted rigorous literature review on Species Distribution Modeling and Spatial Point Patterns towards the development of a scientific paper in a peer-reviewed journal.
- 01/22 – 05/23 **The Pennsylvania State University**
Undergraduate Research Assistant
Adviser: Ephraim M. Hanks

Synthesized research into an academic paper intended for review in the Spatial Statistics Journal. Additionally, created informative data visualizations and animated plots for animal movement data. Moreover, developed a new approach to archetype analysis using a Bayesian framework.
- 05/22 – 07/22 **McNair Summer Research Program**
Undergraduate Researcher
Adviser: Ephraim M. Hanks

Developed framework for Bayesian Models of Spatio-Temporal in R using nimble. Additionally, managed and processed large datasets by utilizing R, ensuring data integrity and reliability throughout the analysis process. Furthermore, showcased scholarly contributions by writing and publishing a journal article that comprehensively describes the research findings.

TEACHING EXPERIENCE

- Spring 2025 **Kansas State University**
Graduate Instructor
Business and Economic Statistics II. (STAT 351)
Teaching Assistant
Introduction to Statistics. (STAT 225)

Fall 2024	Kansas State University Graduate Instructor Business and Economic Statistics II. (STAT 351) Teaching Assistant Introduction to Statistics. (STAT 225)
Summer 2024	Kansas State University Teaching Assistant Introduction to Statistics. (STAT 225)
Spring 2024	Kansas State University Graduate Instructor Business and Economic Statistics II. (STAT 351) Teaching Assistant Introduction to Statistical Methods for the Sciences. (STAT 703)
Fall 2023	Kansas State University Graduate Instructor Business and Economic Statistics II. (STAT 351)

ORAL PRESENTATIONS

1. 2024 Conference on Applied Statistics in Agriculture and Natural Resources, May 13-16, 2024. ARBELAEZ, A., HANKS, E. M., PALMERO, F., VAN VERSEDAAL, E., HERNANDEZ, C., CIAMPITTI, I. A., AND HEFLEY, T. J. Identifying spatio-temporal variability in animal movement and agriculture through a mixture of machine learning and bayesian hierarchical modeling
2. Spatial Statistics Conference 2023, July 17-21, 2023. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of bird migration patterns using bayesian methods. 2023
3. 2023 Pennsylvania Regional Math Alliance Conference, February 18, 2023. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of golden eagle migration patterns using bayesian methods. *The McNair Journal at The Pennsylvania State University* 25 (2022)
4. 30th Annual UMBC McNair Scholars Research Conference, September 15 - 17, 2022. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of golden eagle migration patterns using bayesian methods. *The McNair Journal at The Pennsylvania State University* 25 (2022)
5. Office of Graduate Educational Equity Program (OGEEP) Research Symposium at the Pennsylvania State University, July 25, 2022. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of golden eagle migration patterns using bayesian methods. *The McNair Journal at The Pennsylvania State University* 25 (2022)

POSTER PRESENTATIONS

1. Digital Ag & Advanced Analytics Symposium 2023, October 23, 2023. ARBELAEZ, A., PALMERO, F., VAN VERSEDAAL, E., HERNANDEZ, C., HEFLEY, T. J., AND CIAMPITTI, I. A. Identifying management zones in agriculture through a mixture of machine learning and bayesian hierarchical modeling
2. 2023 Undergraduate Poster Exhibition, April 12, 2023. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of bird migration patterns using bayesian methods. 2023
3. Eberly College of Science Undergraduate Poster Exhibition, October 6, 2022. ARBELAEZ, A., AND HANKS, E. M. Archetype analysis of golden eagle migration patterns using bayesian methods. *The McNair Journal at The Pennsylvania State University* 25 (2022)

LEADERSHIP & SERVICE

2023-2024	Statistics Student Association at Kansas State University President
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AWARDS & SCHOLARSHIPS

08/24	Timothy R. Donoghue Graduate Scholarship (KSU) - \$ 5,000
05/24	Dr. Lynn Ying-Shiang Lin Statistics Graduate Scholarship (KSU) - \$ 2,150
04/24	National Statistics Honorary Society Inductee
03/24	Travel Award from Graduate Student Council (KSU) - \$ 400
08/23	Timothy R. Donoghue Graduate Scholarship (KSU) - \$ 5,000
02/23	Norman Freed Undergraduate Research Award in the Eberly College of Science (PSU) - \$ 2,500
10/22	Second Place in Eberly College of Science Undergraduate Poster Exhibition - Mathematical Division Awardee (PSU)
01/22	Ronald E. McNair Post-Baccalaureate Achievement Program (PSU)
08/21	Dr. George and Diana Kosco Trustee Scholarship (PSU) - \$ 5,000
19-20	Edmund J. Elder Trustee Scholarship (PSU) - \$ 5,000

January 3, 2025