

MONICA LYNN AHRENS

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EDUCATION

The University of Iowa, Iowa City, Iowa

May 2022

Ph.D., Biostatistics

Dissertation Title: Simultaneous bands for event time percentiles
in Cox models with an extension to recurrent events

Advisor: Gideon Zamba

The University of Iowa, Iowa City, Iowa

May 2018

Master of Science, Biostatistics

Preceptorship Title: Identifying Optimal Visual Field Locations to Detect Glaucoma
using Divergence Tests

Advisors: Knute Carter and Gideon Zamba

The University of Iowa, Iowa City, Iowa

May 2016

Bachelor of Science, Mathematics

HONORS AND AWARDS

Ballard and Seashore Dissertation Fellowship

Spring 2022

- Awarded to a PhD candidate in their final semester to support the completion of their scholarly research activities and writing of their dissertation. Equivalent to tuition for one academic semester.

Graduate College Summer Fellowship

Spring 2022

- Awarded to advanced PhD candidates to benefit from protected and supported time to pursue their scholarly research activities during the summer term. Includes a \$5,000 stipend, plus tuition scholarship for 1 credit hour, and 50% of mandatory fees.

William R. Clarke Graduate Teaching Assistant Award

2020-2021 Academic Year

- Recognizes teaching assistants who have demonstrated outstanding abilities within the Department of Biostatistics at University of Iowa.
- Awarded \$500

Leon F. Burmeister Memorial Scholarship

Fall 2017

- Supports exceptional PhD students in departments of biostatistics, with preference given to students from the state of Iowa.

WORK EXPERIENCE

Research Scientist

March 2022 – Present

Center for Biostatistics and Health Data Science, Department of Statistics, Virginia Tech

- Collaborated as a statistician with researchers at Virginia Tech, University of Pennsylvania and within the Roanoke Community on a variety of projects

Graduate Research Assistant

May 2016 – December 2021

University of Iowa, Iowa City, Iowa

- Worked with many teams, including Clinical Trials Statistical and Data Management Center, National Advanced Driving Simulator, the Department of Health and Human Physiology, Department of Epidemiology, and Department of Health Management and Policy

KEY PROJECTS

MIRROR Transition Care Model

University of Pennsylvania

- This project aims to test the use of the previously established transition care model in four different health-care settings. The team had 500 participants complete the transition care model and is assessing the amount of re-hospitalizations in the transition care model group as compared to a group of control participants who received the standard of care.
- Collaborators: Drs. Alex Hanlon, Mary Naylor and Karen Hirschman
- Role: Biostatistician

Processed Food Reward

Virginia Tech

- This project looks to characterize the relationship of ultra processed foods with reward circuits in human participants' brains. Participants first consume a meal of either ultra-processed foods or minimally processed foods and their bodies metabolic and blood glucose responses are tracked, then participants will complete an auction task while undergoing a fMRI scan to see what circuits in the brain are activated when seeing images of ultra- and minimally-processed foods.
- Collaborators: Dr. Alex DiFeliceantonio, Zach Hutelin
- Role: Senior biostatistician
- NIH R01 Funded in March 2023

Thermic Effects of Food

Virginia Tech

- This project looks to provide evidence that the new whole-room indirect calorimeters located at Fralin Biomedical Research Institute can be used to detect metabolic differences in human subjects who consume three types of sugar.
- Collaborators: Dr. Alex DiFeliceantonio, Dr. Mary Elizabeth Baugh, Zach Hutelin
- Role: Senior biostatistician

TEACHING EXPERIENCE

Primary Instructor, Introduction to Biostatistics

August 2020 – May 2021

Department of Biostatistics, The University of Iowa, Iowa City, Iowa

- Developed course materials to teach introductory biostatistics to students of diverse backgrounds
- Covered topics that included: probability rules, diagnostic tests, central limit theorem, t-tests, and chi-square tests

Teaching Assistant, Iowa Summer Institute in Biostatistics

Summers 2017 and 2018

Department of Biostatistics, The University of Iowa, Iowa City, Iowa

- Taught a daily lab for a seven week course in introductory biostatistics, which covered topics on introductory computing in R as well as examples to practice basic biostatistics concepts
- Developed the lab materials, which included writing lecture documents explaining the lessons as well as example problems for students' practice
- Guided students through the challenges of the summer program and gave advice as they made decisions about post graduation

GUEST LECTURES

- Methods in Logic Small Group Facilitator** Fall 2023
- Facilitated group discussion among first year medical and PhD students to critically analyse a research paper
 - Participated in two discussions
- Transnational Biology Medicine and Health: Professional Development and Ethics** Fall 2023
- Best Practices in Working with a Collaborative Biostatistician
- Impact Introductory Course** Fall 2023
- My Road to Biostatistics
- Communication in Statistical Collaboration** Spring 2023
- Best Methods in Email Communication
- Biostatistics Small Group Facilitator** Spring 2023
- Guide Medical Students through their group biostatistics activity
 - Participated in 5 different group activities
- Introduction to Biological Statistics** Winter 2022
- Short Series in Using R for Introductory Statistical Methods

PROFESSIONAL SERVICE

- Specialist Reviewer, Biostatistics** November - December 2023
Department of Defense Congressionally Directed Medical Research Programs
Traumatic Brain Injury and Psychological Health (TBIPHRP)
- Resume Workshop Committee Leader** Fall 2023
Virginia Tech Corporate Partners
Corporate Partners is a networking opportunity for statistics students at Virginia Tech
Planned a resume workshop for students to prepare their resumes ahead of the event
- Activity Leader and Panelist** Summer 2023
Data Science Camp
 - The College of Science at Virginia Tech hosted 50 high school students for a three-day data science camp
 - Sat on a panel to answer questions about my path to a career in biostatistics
 - Hosted an hour-long activity titled “Solving Health Problems with Data”
- Planning Committee Member** Spring 2023
Women in Data Science (WiDS), Blacksburg
 - WiDS is a conference originally developed at Stanford University and has expanded to regional conferences across the country
 - Planned a half-day conference with a career panel, keynotes, and student poster session.
- Continuing Education Research Series Presentation** Spring 2023
Carilion Medical System
 - Presented information best practices when working with a statistician to new researchers in Carilion Clinic Health Care System

TECHNICAL STRENGTHS

Computer Languages & Statistical Software
Software & Tools

Python, R, SAS, STATA
L^AT_EX

PUBLICATIONS

- 2022** Naylor MD, Hirschman KB, Morgan B, McHugh M, Hanlon AL, **Ahrens M**, McCauley K, Shaid EC, Pauly MV. The study protocol to evaluate implementation of the transitional care model in four U.S. healthcare systems during the Covid-19 pandemic. *Arch Gerontol Geriatr*. 2023 Jan 25;108:104944. Epub ahead of print. PMID: 36709563; PMCID: PMC9873366.
- 2022** **Ahrens, M**, Medlin, R, Pagn-Rivera, K, Dennis, JW. (2022). Case study on applying sequential analyses in operational testing. *Quality Engineering*. 2023;35(3):534-545.
- 2021** Whitaker KM, Zhang D, Pettee Gabriel K, **Ahrens M**, Sternfeld B, Sidney S, Jacobs DR Jr., Palta P, Yaffe K. Longitudinal associations of midlife accelerometer determined sedentary behavior and physical activity with cognitive function: The cardia study. *Journal of the American Heart Association*. 2021;10(3):e018350.
- 2018** Wright B, Mestan S, **Ahrens M**, Bottei E. Trends in Teenagers Substance Exposures Reported to Poison Control Centers, 2010-2015. *Journal of Pediatrics*. 196: 258-263.
- 2018** Wright B, Askelson N, **Ahrens M**, Bentler S, Momany E, Damiano P. Completion of Requirements in Iowas Medicaid Expansion Premium Disincentive Program, 2014-2015. *American Journal of Public Health*. 108(2): 219-223.

WORKS IN PROGRESS

- 2023** **Ahrens M**, Zamba KD. A Bartlett-based confidence band for inter-event time quantiles as a function of covariates in a Cox model. *Manuscript in preparation*.
- 2023** Baugh ME, **Ahrens M**, Hutelin Z, Stylianos C, Wohlers E, Oster ME, Dotson J, Moon J, Hanlon AL, DiFeliceantonio AG. Validity and reliability of a new whole room indirect calorimeter in assessing metabolic response to small-calorie loads. *Manuscript Submitted*
- 2023** Niazi M, Miller R, Kolb R, **Ahrens M**, Hanlon AL, Pickles M, Song M, Bar-Ad V, Hockstein N, Park SJ, Raben A, Shukla G, Association between time from surgery to radiation therapy and multimodality treatment outcomes in HPV+ head and neck cancer: a multi-institutional cohort experience. *Manuscript Under Review*
- 2023** Baugh ME, Kelly AL, **Ahrens M**, Valle A, Sullivan R, Hanlon AL, DiFeliceantonio AG. Rate of metabolic response to carbohydrate intake is associated with behavioral reward learning. *Manuscript in preparation*
- 2023** Kelly AL, Valle A, Sullivan R, Oster M, **Ahrens ML**, Davy B, Hanlon AL, DiFeliceantonio AG. Neural and Metabolic Factors in Carbohydrate Reward. *Manuscript in preparation*
- 2023** Hanlon AL, **Ahrens M**, Hirschman K, Sullivan B, Mchugh M, McCauly K, Shaid E, Pauly M, Naylor M. Measuring Implementation Fidelity to the Transitional Care Model. *Manuscript in preparation*
- 2023** Hutelin Z, **Ahrens M**, Baugh ME, Hanlon AL, DiFeliceantonio AG. Early insights on the effects of food processing on brain, behavior, and metabolism. *Manuscript in preparation*

PRESENTATIONS

- 2023** Hanlon AL, **Ahrens M**; Hirschman K, McCauley K, Shaid EC, Osokpo OH, Pauly MV, Naylor MD. (2023). Measuring Implementation Fidelity to the Transitional Care Model in the MIRROR TCM Replication Clinical Trial. Oral presentation presented at the meeting of Gerontology Society of America, Tampa, Florida. November 11, 2023
- 2023** Osokpo O, Hirschman K, **Ahrens M**, Ji W, Hanlon AL, Naylor MD. (2023). MIRROR-TCM Trial: The Influence of Patient-Level Factors on Acute Care Resource Use of Older Adults. Poster presentation presented at the meeting of Gerontology Society of America, Tampa, Florida. November 11, 2023
- 2023** Baugh ME, **Ahrens ML**, Pradhan A, Oster, ME, Hanlon, AL, DiFeliceantonio, AG. (2023). Post- ingestive signals guiding flavor-nutrient learning in overweight and obesity. Poster presentation at The Society for the Study of Ingestive Behavior annual meeting, Portland, Oregon, July 12, 2023.
- 2023** Leslie EH, Rego M, Capra B, Yu W, Helder M, **Ahrens ML**, Hanlon AL, Davy B, DiFeliceantonio AG. (2023). Influence of Ultra-Processed Food on Brain Reward Response and Energy Intake. The Society for the Study of Ingestive Behavior, Poster Presentation, July 14th, 2023.
- 2023** Hutelin Z, Baugh ME, **Ahrens ML**, Oster ME, Hanlon AL, DiFeliceantonio AG. (2023). Effects of food processing on physiology, brain, and behavior. The Society for the Study of Ingestive Behavior, Poster Presentation, July 12th, 2023.
- 2023** Kelly AL, Valle AN, Sullivan RM, Oster NE, Baugh ME, **Ahrens ML**, Hanlon AL, DiFeliceantonio AG. (2023). Physiological effects of carbohydrate ingestion and its relevance to ultra-processed food intake. The Society for the Study of Ingestive Behavior, Poster Presentation, July 14th, 2023.
- 2022** **Ahrens, M**, Zamba, ZK. (2022). Simultaneous Bands for Time-to-Event Quantiles as Functions of Covariates. Oral presentation presented at the meeting of Women in Statistics and Data Science St. Louis, Missouri. October 6, 2022.
- 2022** Hutelin Z, Oster M, Dhami H, Baugh ME, **Ahrens ML**, Hanlon AL, DiFeliceantonio AG. (2022). Web based creation and validation of a novel picture set designed to evaluate processed foods. Poster session presented at the meeting of Meeting of the Society of the Study of Ingestive Behavior. Porto, Portugal, July 12-16, 2022.
- 2022** Bauch, ME, Hutelin, Z, **Ahrens, M**, Oster, M, Kelly, A, Hanlon, A, DiFeliceantonio, A. (2022). Investigating the Temporal Dynamics of Metabolic Responses to Consumption of Mono- and Disaccharide-Containing Beverages. Poster session presented at the meeting of Society for the Study of Ingestive Behavior. Porto, Portugal, July 12-16, 2022.
- 2021** Dumitrescu, A, Pfeifer, W, **Ahrens, M**, Andorf, J, Drack, A. (2022). CACNA1F-related synaptic dysfunction - what leads to diagnostic delays in children? Poster presented at 2021 Women in Ophthalmology Summer Symposium. Amelia Island, FL. August 26-29, 2021
- 2019** **Ahrens, M.**, Zamba, K. D., Carter, K., Wall, M. (2019). Identifying Optimal Visual Field Locations to Detect Glaucoma using Divergence Tests. Poster presented at Women in Statistics and Data Science Conference. Bellevue, WA October 3-5, 2019
- 2018** Zamba, K. D., **Ahrens, M.**, Carter, K., Wall, M. Divergence Measures Between Normal Subjects and Glaucoma Patients with Mild Visual Loss using Threshold Automated Perimetry of the Full Visual Field. 23rd International Visual Field and Imaging Symposium, Ishikawa Ongakudo, Kanazawa, Japan, May 11-13, 2018.