

MONICA LYNN AHRENS

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EDUCATION

The University of Iowa, Iowa City, Iowa *May 2022*
Ph.D. Candidate, Biostatistics Overall GPA: 4.00/4.00
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 Overall GPA: 4.00/4.00
Preceptorship: “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 Overall GPA: 3.94/4.00

HONORS AND AWARDS

Graduate College Summer Fellowship Summer 2021
• Given to graduate students at the University of Iowa to allow for protected research and writing time
• Awarded \$5,000

William R. Clarke Graduate Teaching Assistant Award 2020-2021 Academic Year
• Given to the best teaching assistant in the Department of Biostatistics
• Awarded \$500

Leon F. Burmeister Memorial Scholarship Fall 2017
• Given to Ph.D. students in Biostatistics who excel in their coursework
• Awarded \$1,500

RESEARCH EXPERIENCE

Graduate Research Assistant August 2021 – December 2021
Department of Health and Human Physiology, The University of Iowa, Iowa City, Iowa
• Worked as a biostatistician for Michael J. Fox Foundation’s Parkinson’s Progression Markers Initiative
• Developed reports in SAS to give clinicians feedback on the progress of enrollment in the new online initiative

Summer Associate May 2020 – August 2020
Institute for Defense Analysis, Alexandria, Virginia
• Worked on a team within the company tasked with creating a review on the use of sequential analyses
• Completed a project that motivated and proved the ability to use sequential planning in the defense testing setting.

Research Associate December 2019 – August 2020
Department of Psychiatry, University of Iowa Hospitals and Clinics, Iowa City, Iowa
• Consulted as a statistician on fitting models for Iowa Gambling Task data
• Used fMRI data to examine what brain regions were activated throughout the Iowa Gambling Task

Graduate Research Assistant

February 2019 – May 2020

National Advanced Driving Simulator, The University of Iowa, Iowa City, Iowa

- Managed data from the Iowa Department of Transportation and Iowa Trauma Registry
- Conducted analyses to test the difference in crash rates between groups of teens
- Used probabilistic matching to merge together two de-identified data sets

Graduate Research Assistant

June 2019 – August 2019

Department of Health and Human Physiology, The University of Iowa, Iowa City, Iowa

- Used Linear Mixed Models and Compositional Data Analysis to assess the association between exercise and cognitive outcomes over five years for patients in the CARDIA data set
- Conducted sample size calculations for a future project assessing associations between exercise and pregnancy outcomes

Graduate Research Assistant

May 2019 – August 2019

Department of Epidemiology, The University of Iowa, Iowa City, Iowa

- Worked to estimate the number of bike and pedestrian miles traveled in Linn County, Iowa in order to estimate bike and pedestrian crash rates
- Developed an R program that compiled data from four sources, including geographic information system data, into one cleaned data set
- Created models to extrapolate data collected on number of miles traveled in Cedar Rapids, the county chair, to the rest of Linn county

Graduate Research Assistant

January 2018 – August 2018

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

- Helped develop methodology that accounts for left censored covariates and outcomes in a linear regression setting. The method is meant to account for both continuous and categorical variables
- Developed a program in R that implemented a simulation study to compare the new method to two previously published and comparable methods
- Statistical methods included MCEM algorithm, likelihood theory, and survival data analysis

Graduate Research Assistant

May 2016 – December 2017

Department of Health Management and Policy, The University of Iowa, Iowa City, Iowa

- Worked on a project for the Healthy Behaviors Incentive in the state of Iowa which analyzed health outcomes on patients enrolled in Iowa medicaid before and after the incentive was initiated
- Managed data, completed statistical analyses, and wrote reports describing the results of the statistical analyses
- Analyses conducted included data description, poisson regression, logistic regression, and two group t-tests

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, Introductory Longitudinal Data Analysis

Fall 2018

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

- Created answer keys and graded weekly homework assignments
- Held weekly office hours to answer questions about SAS code and course content

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

TECHNICAL STRENGTHS

**Computer Languages & Statistical Software
Software & Tools**Python, R, SAS, STATA
L^AT_EX**RELATED COURSEWORK**

Advanced Biostatistical Computing

Fall 2019

Bayesian Statistics

Fall 2019

Longitudinal Data Analysis

Spring 2019

Computer Intensive Statistics

Spring 2019

Advanced Clinical Trials

Fall 2018

Survival Data Analysis

Fall 2017

EXTRA-CIRRICULAR POSITIONS

Representative

August 2020 – July 2021

Graduate and Professional Student Allocations Committee, The University of Iowa, Iowa City, Iowa

- Reviewed applications to provide funds for events that support the learning and development of graduate and professional students.

College of Public Health Delegate

August 2020 – July 2021

Graduate and Professional Student Government, , The University of Iowa, Iowa City, Iowa

- Held discussions and voted on legislation presented to the student government
- Worked to make sure the University of Iowa is a welcoming and equitable place for all graduate and professional students

Biostatistics Representative

August 2018 – July 2020

College of Public Health Graduate Student Association, The University of Iowa, Iowa City, Iowa

- Served as Vice President for one academic year and treasurer for another year
- Organized professional development, service, and social events for public health students to attend
- Planned bi-weekly meetings

Volunteer Services Volunteer

August 2012 – Present

The University of Iowa Hospital and Clinics, Iowa City, Iowa

- 1400 total hours volunteered

PUBLICATIONS

- 2022** Ahrens M, Zamba KD. A Bartlett-based Confidence Band for Quantiles as a Function of Covariates in a Cox Model. *Manuscript in preparation.*
- 2022** Ahrens M, Medlin R, Pagán-Rivera K, and Dennis J III. Case study on applying sequential analyses in operational testing. *Manuscript in preparation.*
- 2022** Dumitrescu A, Pfeifer W, Ahrens M, Andorf J, Drack A. CACNA1F-related synaptic dysfunction - what leads to diagnostic delays in children? *Manuscript in preparation.*
- 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.*
- 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.

PRESENTATIONS

- 2021** Dumitrescu, A, Pfeifer, W, Ahrens, M, Andorf, J, Drack, A. 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. (2018). 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.