

## BENJAMIN BREWER

[bcbrewer@vt.edu](mailto:bcbrewer@vt.edu)

### EDUCATION

**KANSAS UNIVERSITY MEDICAL CENTER**, Dept. of Biostatistics & Data Science, Kansas City, KS  
*PhD, Biostatistics*, Aug 2020 – July 2024.

**Advisor:** Dr. Leonidas Bantis

**Dissertation:** Statistical Methods for Cutoff Estimation under Tree and Umbrella Ordering Settings

**DUKE UNIVERSITY**, Dept. of Biostatistics & Bioinformatics, Durham, NC

*M.S., Biostatistics*, Aug 2016 - Dec 2018.

**Thesis:** An Analysis of Overall Survival in Female Breast Cancer Patients Presenting with Metastatic Disease

**AUBURN UNIVERSITY**, Dept. of Mathematics & Statistics, Auburn, AL

*B.S., Applied Mathematics*, Aug 2013 - May 2016.

### PROFESSIONAL EXPERIENCE

**VIRGINIA TECH (Center for Biostatistics & Health Data Science)**, Roanoke, VA 2019-Present  
*Research Scientist*, (Sep 2024-Present)

- Performed statistical analyses and power calculations for faculty and students across Virginia Tech using multiple programming languages and data formats; in many cases, serving as the lead statistician
- Delivered seminars and methods-based presentations at conferences and to research groups
- Assisted in the drafting of manuscripts for publication to research journals
- Assisted in the drafting of grants (R01 and otherwise) by providing requested statistical support and language contributions
- Hosted weekly “drop-in” hours for Virginia Tech students and answered questions study design, analysis (both running and interpreting), power calculations, programming, and more
- Served as point-of-contact for all interactions between CBHDS and the Carilion School of Medicine
- Served as research mentor for Carilion School of Medicine students at all stages of their education; worked with approximately fifteen students at any given time

**UNIVERSITY OF DELAWARE**, Newark, DE 2019-2024  
*Biostatistician*, (Feb 2019-Sep 2024)

- Performed statistical analyses and power calculations for faculty and graduate students in the College of Health Sciences (CHS) using multiple programming languages and data formats; in many cases, serving as the lead statistician
- Drafted and designed regular reports for various clinical trials to monitor enrollment, safety, and other topics related to clinical trial progression
- Managed clinical research data and designed data storage modules as a REDCap administrator
- Delivered methodologically oriented presentations to research groups in the College of Health Sciences
- Assisted in the drafting of manuscripts for publication to research journals spanning a variety of subjects, including sleep health, cardiovascular health, nutrition, gerontology, and autism spectrum disorder, among others
- Assisted in drafting of grants (R01 and otherwise) by providing requested statistical support and language contributions
- Supervised graduate student programming and thesis development, managing a small group of 3-5 at any given time
- Served as liaison to external clients and helped establish professional relationship with the university

**CONSULTANT**, Various  
*Arcadia University, (Jan-Dec 2021)*

2020-2022

- Served as member of Arcadia University's Biostatistics Core, performing statistical analyses and power calculations on an as-needed basis for clinical researchers
- Assisted with drafting of manuscripts for publication to research journals spanning a variety of subjects  
**New Castle County Police Department, (Jan 2020-Aug 2022)**
- Assisted in the construction of multiple REDCap databases meant to collect and house data related to the activities of the NCCPD in regard to the federally funded HERO HELP program
- Transferred data from Excel spreadsheets to REDCap database using an R program as an intermediary
- Built Excel spreadsheet to facilitate data collection and transferal to REDCap using VBA macros

**DUKE UNIVERSITY**, Durham, NC  
*Biostatistics Intern, (Aug 2017 – Dec 2018)*

2017-2018

- Developed models of breast cancer outcomes utilizing data from North Carolina and from the Duke Breast Data Mart with an emphasis on disparities and quality of life
- Participated in semester-long research rotation focused on the assessment of EHR data
- Participated in year-long research rotation focused on food deserts, EPA-derived pollution data, and spatial statistics
- Attended 10-week summer training program in high-throughput sequencing (HTS) of genomics data

## TECHNICAL COMPETENCIES

### Programming Languages:

- |                      |         |       |
|----------------------|---------|-------|
| • R (inc. R Shiny)   | • SAS   | • VBA |
| • LaTeX (R Markdown) | • Stata | • SQL |
| • MATLAB             | • SPSS  | • C++ |

### Other Proficiencies:

- |                    |                                                |                                    |
|--------------------|------------------------------------------------|------------------------------------|
| • OnCore           | • Linux/Unix Environment                       | • JMP                              |
| • Advarra EDC      |                                                | • High-performance computing (HPC) |
| • Oracle databases | • Microsoft Office (Word, Excel, Access, etc.) | • High-throughput sequencing (HTS) |
| • REDCap           |                                                |                                    |

## SELECTED AWARDS & QUALIFICATIONS

**University of Delaware CHS Mountain Mover Award Nominee (2024):** “Recognizes someone who consistently tackles and conquers the biggest challenges and obstacles in their unit. Their hard work, determination, and never-give-up attitude make them invaluable.

**LinkedIn R Skills Assessment (2023):** Top 5% of 867.7k test-takers.

**LinkedIn MATLAB Skills Assessment (2023):** Top 5% of 602.4k test-takers.

**Auburn University Dean's Medal (2016):** “Awarded to outstanding graduating seniors. Awardees are nominated by faculty within their department and selection is based on academic performance, character, and potential. Fewer than ten students from the College of Science and Mathematics are chosen each year.”

## RESEARCH FUNDING

### Submitted

NIH|R01

Prochner (PI)

Investigating the effects of chest binding on physical and mental health outcomes in transgender and gender-diverse adolescents assigned female at birth

NIH|R01

Robson (PI)

Building Food Skills to Promote Cardiovascular Health in Families

NIH|R01

Morini (PI)

Examining the Role of Aerobic Exercise on Vocabulary Learning in Children with and without Developmental Language Disorder

### In-Progress/Completed

NIH|R01 HL163906

Wenner (co-PI) & Stocker (co-PI)

06/08/23 – 05/31/28

Forebrain Electroneural Transporters in Salt-Sensitive Hypertension

NIH|P20 GM113125

Edwards (PI)

09/01/21 – 08/31/26

Phase 2 for the COBRE in Cardiovascular Health

NIH|R03 HD102303

Mennella (co-PI) & Trabulsi (co-PI)

08/01/20 – 07/31/22

Secondary Analyses of RCT Data on Sensitive Periods in Flavor Learning and Diet among Breastfeeding Dyads

NIH|P20 GM103446

Duncan (PI)

05/16/19 – 04/30/24

Delaware IDeA Network of Biomedical Research Excellence (INBRE)

NIH|R01 NR018684

Tulsky (PI)

05/09/19 – 06/30/24

Measuring Symptom Clusters in People with Sudden-Onset Disabilities

NIH|R01 HL146558

Wenner (PI)

04/01/19 – 03/31/24

Mechanisms of Vascular Dysfunction with Advancing Reproductive Age

NIH| R01 MD012734

Satti (co-PI) & Patterson (co-PI)

04/01/18 – 11/30/23

Predicting Sleep, Smoking, and Lung Health Disparities in at-risk Black African American Adults

NIH| R03 HD094908

Trabulsi (PI)

09/01/18 – 08/31/20

Secondary Analyses of RCT Data on Infant Formula and Nutritional Programming

NIH| P20 GM113125

06/01/16 – 05/31/21

Edwards (PI)

COBRE in Cardiovascular Health

## PUBLICATIONS

### Manuscripts

Slocum C, Langdon JL, Munkasy BA, **Brewer B**, Oldham JR, Graham V, Buckley TA. (2024) Multifaceted concussion assessment battery: sensitivity at the expense of specificity? *The Physician and Sportsmedicine*. <https://doi.org/10.1080/00913847.2024.2442901>

Bantis LE, **Brewer B**, Nakas CT, Reiser B. (2024) Statistical Inference for Box-Cox based Receiver Operating Characteristic Curves. *Statistics in Medicine*, 43(30):6099-6122. <https://doi.org/10.1002/sim.10252>

D'Agata M, Hoopes EK, Keiser T, Patterson F, Szymanski KM, Matias AA, **Brewer B**, Witman MA. (2024) Device-estimated sleep metrics do not mediate the relation between race and blood pressure dipping in young black and white women. *The Journal of Clinical Hypertension*, 26 (7).

**Brewer B** & Bantis LE. (2023) Cutoff estimation and construction of their confidence intervals for continuous biomarkers under ternary umbrella and tree stochastic ordering settings. *Statistics in Medicine*, 43(3):606-623. <https://doi.org/10.1002/sim.9974>

Hoopes EK, Witman MA, D'Agata MN, **Brewer B**, Edwards DG, Robson SM, Malone SK, Keiser T, Patterson F. (2023) Sleep Variability, Eating Timing Variability, and Carotid Intima-Media Thickness in Early Adulthood. *Journal of the American Heart Association*, 12(19). <https://doi.org/10.1161/JAHA.123.029662>

**Brewer B**, Pepper S, Ratnayake IP, Mudarantakam DP. (2023) Rurality Impacts Mammography Screening Adherence Among Mid-life Women in the Kansas Region. *Cancer Control*, 30. <https://doi.org/10.1177/10732748231187836>

Laxton P, Healy S, **Brewer B**, Patterson F. (2023) Prevalence of current smoking and association with meeting 24-h movement guidelines: Results from a national convenience sample of autistic adults. *Autism*, 28(2). <https://doi.org/10.1177/13623613231178571>

Hoopes EK, **Brewer B**, Robson SM, Witman MA, D'Agata MN, Malone SK, Edwards DG, Patterson F. (2023) Temporal Associations between Nightly Sleep with Daytime Eating and Activity Levels in Free-Living Young Adults. <https://doi.org/10.1093/sleep/zsad123>

Healy, S., **Brewer, B.**, Laxton, P., Powers, B., Daly, J., McGuire, J., Patterson, F. (2022) Brief Report: Perceived Barriers to Physical Activity Among a National Sample of Autistic Adults. *Journal of Autism and Developmental Disorders*, 52(10):4583-4591.

Covington, LB, Satti, A., **Brewer, B.**, Blair, R., Duffy, I., Laurenceau, JP, Mayberry, S., Cordova, A., Hoopes, EK, Patterson, F. (2022) Concordance in caregiver and child sleep health metrics among families experiencing socioeconomic disadvantage: A pilot study. *Journal of Applied Research on Children*, 13(1).

Healy, S., **Brewer, B.**, Hoopes, EK, Paller, A., Mayberry, S., McGuire, J., Daly, J., Laxton, P., Patterson, F. (2022) Identifying the most proximal multi-level factors associated with meeting each of the 24-hour movement behavior recommendations in a sample of autistic adults. *Disability and Health Journal*.  
<https://10.1016/j.dhjo.2022.101367>

Garcia, J., **Brewer, B.**, Healy, S., Patterson, F. (2022). The Temporal Relationships Between 24-h Movement Behaviors Among Children with Autism Spectrum Disorder. *Advances in Neurodevelopment Disorders*, 6(2):1-9.  
<https://10.1007/s41252-022-00238-w>

Ashare, RL, **Brewer, B.**, Patterson, F., Hubbard, A., Longacre, ML. (2022). Psychological and behavioral moderators of physical health among caregivers and non-caregivers. *Geriatric Nursing*, 43(7):77-84.  
<https://10.1016/j.gerinurse.2021.11.004>

Healy, S., **Brewer, B.**, Laxton, P., Powers, B., Daly, J., McGuire, J., Patterson, F. (2021). Brief Report Perceived Barriers to Physical Activity Among a National Sample of Autistic Adults. *Journal of Autism and Developmental Disorders*. <https://doi.org/10.1007/s10803-021-05319-8>

Hoopes, EK, Patterson, F., Berube, FR, D'Agata, M., **Brewer, B.**, Malone, SK, Farquhar, WB, Witman, MA. (2021). Actigraphy-derived rest – activity rhythms are associated with nocturnal blood pressure in young women. *Journal of Hypertension*. <https://doi.org/10.1097/HJH.0000000000002966>

Healy, S., **Brewer, B.**, Palmeire, K., Daly, J., McGuire, J., Patterson, F. (2021). 24-h movement behaviors among autistic adults: Differences by sex, age, and level of independence. *Disability and Health Journal*.  
<https://doi.org/10.1016/j.dhjo.2021.101108>

Patterson, F., **Brewer, B.**, Blair, R., Grandner, M., Hoopes, EK, Ma, G., Criner, G., Satti, A. (2021). An exploration of clinical, behavioral, and community factors associated with sleep duration and efficiency among middle-aged Black/African American smokers. *Sleep Health*. <https://doi.org/10.1016/j.sleh.2021.01.006>

Hoopes, EK., Witman, MA, D'Agata, M., Berube, FR, **Brewer, B.**, Malone, SK, Grandner, M., Patterson, F. (2021). Rest-activity rhythms in emerging adults: implications for cardiometabolic health. *Chronobiology International*, 38(364):1-14. <https://doi.org/10.1080/07420528.2020.1868490>

Healy, S., **Brewer, B.**, Garcia, J., Daly, J., Patterson, F. (2020). Sweat, Sit, Sleep: A Compositional Analysis of 24-hr Movement Behaviors and Body Mass Index among Children with Autism Spectrum Disorder. *Autism Research*, 14(7). <https://doi.org/10.1002/aur.2434>

Longacre, ML, **Brewer, B.**, Hubbard, A., Ashare, RL, Patterson, F. (2020). Caregiver Health by Context: Moderating Effects of Mental Health and Health Behaviors. *Western Journal of Nursing Research*.  
<https://doi.org/10.1177/0193945920964936>

Rawal, R., Fanelli Kuczmarski, MT, Cotugna, N., **Brewer, B.**, Beydoun, MA, Hughes, V., Zonderman, A., Evans, MK. (2020). Aspects of Dietary Diversity Changes across Adulthood in Racially Diverse Adults. *Nutrients*, 12(8):2455. <https://doi.org/10.3390/nu12082455>

Mennella, JA, Reiter, AR, **Brewer, B.**, Pohlig, RT, Stallings, VA, Trabulsi, JC. (2020). Early Weight Gain Forecasts Accelerated Eruption of Deciduous Teeth and Later Overweight Status during the First Year. *Journal of Pediatrics*, 225. <https://doi.org/10.1016/j.jpeds.2020.06.019>

Ching Chai, S., Li, I., Pacanowski, CR, **Brewer, B.** (2020). Effects of Four-Week Supplementation of Ashwagandha and B-Vitamins on Mood and Stress Relief. *Current Developments in Nutrition*, 4(S2):1195. [https://doi.org/10.1093/cdn/nzaa057\\_011](https://doi.org/10.1093/cdn/nzaa057_011)

Gangemi, AJ, Satti, A., Zantah, M., Blair, R., **Brewer, B.**, Ma, G., Grandner, M., Davey, A., Criner, G., Patterson, F. (2020). Sleep Duration and Efficiency Associated With Better Functional Exercise Capacity in African American Smokers at Risk for COPD. *Chest*. <https://doi.org/10.1016/j.chest.2020.03.070>

Patterson, F., Connick, E., **Brewer, B.**, Grandner, M. (2019). HIV status and sleep disturbance in college students and relationship with smoking. *Sleep Health*. <https://doi.org/10.1016/j.sleh.2019.05.002>

Fanelli Kuczmarski, MT, **Brewer, B.**, Rawal, R., Pohlig, RT, Zonderman, A., Evans, MK. (2019). Aspects of Dietary Diversity Differ in Their Association with Atherosclerotic Cardiovascular Risk in a Racially Diverse US Adult Population. *Nutrients*, 11(5):1034. <https://doi.org/10.3390/nu11051034>

### Abstracts

Baker-Smith C, Zhang Z, Robson S, Patterson F, **Brewer B**, Tsai JM, Bhat A. (2024) Cardiovascular Health Among Youth with Neurodevelopmental Disability: Analysis of National Survey of Children's Health (NSCH) – 2021. *Circulation*. 150(S1):A4144597. [https://doi.org/10.1161/circ.150.suppl\\_1.4144597](https://doi.org/10.1161/circ.150.suppl_1.4144597)

Alvarado AV, Burns KF, **Brewer B**, Robson SM. (2024). The Physical Home Food Environment in Relation to Children's Diet Quality and Cardiometabolic Health. *Journal of the Academy of Nutrition and Dietetics*. <https://doi.org/10.1016/j.jand.2024.09.006>

D'Agata M, Hoopes E, Keiser T, Szymanski K, Matias A, Pattersron F, **Brewer B**, Witman M. (2024). Habitual Sleep Duration and Sleep Efficiency Do Not Mediate the Relationship Between Race and Nocturnal Blood Pressure Dipping in Young Black and White Women. *Physiology*, 39(S1):1072. <https://doi.org/10.1152/physiol.2024.39.S1.1072>

Bhat AN, Tsai JM, Kathiravan S, Mhadwshwar A, Mayberry S, Krott L, **Brewer B**, Zhang Z, Robson S, BakerSmith C, Patterson F. (2024) Physical Health of Children with Autism Spectrum Disorder (ASD) and Related Disabilities during the First Year of the COVID-19 Pandemic: Analysis of the National Survey of Children's Health (NSCH) Dataset. *INSAR 2024 Annual Meeting*.

Covington L, **Brewer B**, Alvarado AV, Cordova A, Archer E, Ji X, Patterson F, Robson S. (2024) Associations Between Sleep Health, Diet Quality, and Movement Behaviors in a Community Sample of Preschoolers. *Sleep*, 47(S1):A359. <https://doi.org/10.1093/sleep/zsae067.0837>

Keiser T, Hoopes EK, Witman MA, **Brewer B**, D'Agata MN, Edwards DG, Robson SM, Malone S, Patterson F. (2024) Regularity in Sleep and Eating Timing is Associated with Decreased Carotid Intima-Media Thickness in Healthy Young Adults. *Circulation*, 149(S1):AP367. [https://doi.org/10.1161/circ.149.suppl\\_1.P367](https://doi.org/10.1161/circ.149.suppl_1.P367)

Zaidi AH, Alberts A, Chowdhury D, Beaty C, **Brewer B**, Chen MH, de Ferranti SD. (2024) Trends in Gaps in Care for Congenital Heart Disease Patients: Implications for Social Determinants of Health and Child Opportunity Index. *medRxiv*. <https://doi.org/10.1101/2024.02.06.24302427>

Alberts A, **Brewer B**, Zadokar V, Beaty C, Chen MH, de Ferranti SD, Chowdhury D, Zaidi AH. (2023) Increased Prevalence of Gaps in Care for Patients with Congenital Heart Disease Are Associated With Social Determinants of Health Including Childhood Opportunity Index. *Circulation*, 148(S1):A19033. [https://doi.org/10.1161/circ.148.suppl\\_1.19033](https://doi.org/10.1161/circ.148.suppl_1.19033)

Zaidi AH, **Brewer B**, Zadokar V, Lopes J, Witherell C, Miller J, de Ferranti SD. (2023) High Prevalence of Pediatric Hypertension is Associated With Social Determinants of Health Including Childhood Opportunity Index. *Circulation*, 148(S1):A18937. [https://doi.org/10.1161/circ.148.suppl\\_1.18937](https://doi.org/10.1161/circ.148.suppl_1.18937)

Covington L, **Brewer B**, Hoopes E, Ji X, Brownlow J, Patterson F. (2023) Day-to-day Associations Between Nightly Sleep, Sedentary Behavior and Physical Activity in Under-resourced Caregiver-Child Dyads. *Sleep*, 46(S1):A105. <https://doi.org/10.1093/sleep/zsad077.0237>

Covington L, Satti A, **Brewer B**, Blair R, Duffy I, Laurenceau JP, Mayberry S, Cordova A, Hoopes E, Patterson F. (2022) Concordance in caregiver and child sleep health metrics among families experiencing socioeconomic disadvantage: A pilot study. *Journal of Applied Research on Children*. <https://udspace.udel.edu/handle/19716/31378>

Hoopes EK, Satti A, **Brewer B**, Blair R, Davey A, Grandner MA, Farquhar WB, Patterson F. (2021) Actigraphy-Derived Sleep Health Metrics and Biomarkers of Cardiovascular Disease Risk in Black/African American Smokers. *Circulation*, 144(S1):A9150. [https://doi.org/10.1161/circ.144.suppl\\_1.9150](https://doi.org/10.1161/circ.144.suppl_1.9150)

Kaur N, Patterson F, Oriaku I, Blair R, **Brewer B**, Hoopes E, Gans K, Criner G, Satti A. (2021) COVID-19-RELATED STRESS AND NEGATIVE PERCEPTIONS ASSOCIATED WITH DECLINES IN LUNG AND HEART HEALTH METRICS IN BLACK/AFRICAN AMERICAN ADULTS. *Chest*, 160(4):A1165. <https://doi.org/10.1016/j.chest.2021.07.1067>

Dronamraju V, Patterson F, Blair R, **Brewer B**, Hoopes E, Grandner M, Ma G, Davey A, Criner G, Satti A. (2021) ASSOCIATIONS BETWEEN PATTERNS OF SEDENTARY BEHAVIOR AND QUALITY OF LIFE IN BLACK/AFRICAN AMERICAN SMOKERS IN GOLD STAGE 0-2. *Chest*, 160(4):A1782-A1783. <https://doi.org/10.1016/j.chest.2021.07.1620>

Decker J, Mennella J, **Brewer B**, Millen A, Robson S, Smethers A, Delahanty M, Stallings V, Trabulsi J. (2021) Posteriori Diet Patterns of Formula-Fed Infants During First 1.5 Years. *Current Developments in Nutrition*, 5(S2):400. [https://doi.org/10.1093/cdn/nzab038\\_012](https://doi.org/10.1093/cdn/nzab038_012)

Covington L, **Brewer B**, Blair R, Hoopes E, Laurenceau JP, Patterson F. (2021) SLEEP HEALTH CONCORDANCE AMONG SOCIOECONOMICALLY DISADVANTAGED CAREGIVER-CHILD DYADS. *Sleep*, 44: A73-A74. <https://doi.org/10.1093/sleep/zsab072.180>

Hoopes E, Patterson F, Berube F, D'Agata M, **Brewer B**, Malone S, Farquhar W, Witman M. (2021) Associations Between Rest-Activity Rhythms and Nocturnal Blood Pressure are Sex-Dependent in Apparently Healthy Emerging Adults. *Sleep*, 44(S2):A6-A7. <https://doi.org/10.1093/sleep/zsab072.012>

Healy S, Garcia J, **Brewer B**, Patterson F. (2021) 24-hour Activity Balance Framework: Applications for Studying Movement Among Children With Autism. *Research Quarterly for Exercise and Sport*, 92:A13.

Hoopes E, Patterson F, **Brewer B**, Blair R, Satti A. (2021) EXAMINING THE ASSOCIATIONS BETWEEN REST-ACTIVITY RHYTHMS AND FUNCTIONAL EXERCISE CAPACITY IN BLACK/AFRICAN AMERICAN SMOKERS. *Annals of Behavioral Medicine*, 55:S199.

Patterson F, **Brewer B**, Hernandez Y, Mayberry S, Satti A, Zantah M, Gangemi A, Grandner M. (2020) DUAL SMOKING AND VAPING ASSOCIATED WITH GREATER SLEEP DISTURBANCES. *Chest*, 157(6):A434. <https://doi.org/10.1016/j.chest.2020.05.487>

Patterson F, **Brewer B**, Blair R, Zantah M, Gangemi A, Grandner M, Satti A. (2020) INCREASED SLEEP EFFICIENCY ASSOCIATED WITH INCREASED LUNG FUNCTION IN AFRICAN AMERICAN LIGHT SMOKERS: RESULTS FROM A PROSPECTIVE COHORT EXAMINATION. *Chest*, 157(6):A293. <https://doi.org/10.1016/j.chest.2020.05.354>

Gangemi AJ, Satti A, Blair R, Kambo A, **Brewer B**, Zantah M, Ma G, Grandner M, Criner GJ, Patterson F. (2020) Influence of Sex on the Association Between Carbon Monoxide with Sleep Disturbances in African Americans. *American Journal of Respiratory and Critical Care Medicine*, 201:A4167. [https://doi.org/10.1164/ajrccmconference.2020.201.1\\_MeetingAbstracts.A4167](https://doi.org/10.1164/ajrccmconference.2020.201.1_MeetingAbstracts.A4167)

Patterson F, **Brewer B**, Grandner MA. (2020) Does Sleep Disturbance Vary Between Current Combustible and Electronic Cigarette Users? *Circulation*, 141(S1):AMP24. [https://doi.org/10.1161/circ.141.suppl\\_1.MP24](https://doi.org/10.1161/circ.141.suppl_1.MP24).

Kuczmarski M, Rawal R, Beydoun M, Cotugna N, **Brewer B**, Hughes V, Zonderman A, Evans M. (2020) Dietary Diversity and Dietary Quality: Associations With Body Mass Index Change in Diverse Adults With Age. *Innovation in Aging*, 4(S1):239. <https://doi.org/10.1093/geroni/igaa057.771>

### R Programming Packages

Bantis L, **Brewer B**, Nakas C, Reiser B. (v 3.1.0, 2024) rocbc. <https://CRAN.R-project.org/package=rocbc>  
Generation of Box-Cox based ROC curves and several aspects of inferences and hypothesis testing. Can be used when inferences for one biomarker are of interest or when comparisons of two correlated biomarkers are of interest. Provides inferences and comparisons around the AUC, the Youden index, the sensitivity at a given specificity level (and vice versa), the optimal operating point of the ROC curve (in the Youden sense), and the Youden based cutoff.

**Brewer B**, Bantis L. (TBD) treeroc.

Generation of ROC curves and ROC surfaces for data subject to tree or umbrella ordering. Can also be used to compute optimal cutoffs via the Youden Index, Euclidean distance to perfection corner, and Max-Min distance measures. Package is structured to accommodate many types of data, and cutoffs can be estimated using parametric (normal), semiparametric (Box-Cox transformation), and nonparametric (kernel density estimators, empirical) methods.

### TEACHING EXPERIENCE

**EPID 603, Biostatistics for Health Sciences I (Univ of Delaware)**

Fall 2024

*Instructor of Record*

An introductory statistics course for graduate students in the College of Health Sciences with applications for clinical and population health. The course is taught using statistical software.

**EPID 631, Analyzing Epidemiologic Data Using R (Univ of Delaware)**

Spring 2024

*Instructor of Record*

Analyze epidemiologic data using R, software, organize, data, make plots ranging from the basic (boxplots, histograms, scatterplots), to the more advanced (beanplots, volcano, and Manhattan plots), and present results from your data in a compelling way.

**EPID 604, Introduction to Epidemiologic Data Analysis in SAS (Univ of Delaware)**

Fall 2023

*Instructor of Record*

Overview of basic analytical epidemiologic methods using SAS Statistical Software. The course covers working with SAS Statistical Software to import, modify, merge, analyze, store, and document the steps of data analysis from the collection of data through the dissemination of results.

**EPID 613, Biostatistics for Health Sciences II (Univ of Delaware)**

Spring 2023

***Instructor of Record***

An intermediate statistics course for graduate students in the College of Health Sciences with applications for population health. The course covers research designs, analysis of confounding, and logistic regression. The course is taught using SAS statistical software.

**MATH 450, Mathematical Statistics (Univ of Delaware)**

Spring 2020

***Instructor of Record***

Introduction to mathematical aspects of statistics. Topics include exploratory data analysis, parameter estimation, maximum likelihood method, testing of hypothesis, confidence intervals and others. Includes application of a computer software package to perform data analysis.

**BIOSTAT 706, Introduction to the Practice of Biostatistics II (Duke University)**

Spring 2018

***Teaching Assistant***

This course revisits the topics covered in BIOSTAT 703 in the context of high-throughput, high-dimensional studies such as genomics and transcriptomics. The course will be based on the reading of both the textbook and research papers. Students will learn the biology and technology underlying the generation of 'big data,' and the computational and statistical challenges associated with the analysis of such data sets. There will be a strong emphasis on the development of communication skills via written and oral presentations.

**BIOSTAT 721, Introduction to Statistical Programming in R (Duke University)**

Fall 2017

***Teaching Assistant***

Advanced introduction to programming in R, targeted at those with minimal programming knowledge. Students will learn the core ideas of programming (functions, objects, data structures, input and output, debugging, and logical design) through writing code to assist in numerical and graphical statistical analyses. Students will learn how to write maintainable code and to test code for correctness. They will then learn how to set up stochastic simulations and work with and filter large data sets. Since code is also an important form of communication among scientists, students will learn how to comment and organize code to achieve reproducibility.

**MATH 1620, Calculus II (Auburn University)**

Fall 2015

***Learning Assistant***

Techniques of integration, applications of the integral, parametric equations, polar coordinates. Vectors, lines and planes in space. Infinite sequences and series.

**MATH 1610, Calculus I (Auburn University)**

Spring 2015

***Learning Assistant***

Limits, derivatives of algebraic, trigonometric, exponential, logarithmic functions. Applications of derivatives, antiderivatives, the definite integral and applications to area problems, the fundamental theorem of calculus.

**MENTORSHIP & ADVISING****VTCSOM Advising:**

Haseeb Goheer  
Alice Holmquist  
Katie Lee  
Roger Luong  
Juliet Suen  
Matt Drescher  
Conor Hebert  
Raymond Uymatiao  
Caroline Beakes  
Lillian Brouwer  
Lara Tabileh  
Justin O'Leary

2024-Present

|                                                                                                                        |              |
|------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Thesis Committee Member:</b> Adebimpe Adewoye, Master's Student (Nutrition Science)<br>University of Delaware       | 2024-Present |
| <b>Dissertation Advising:</b> Sanaz Pourreza, PhD Candidate (Nutrition Science)<br>University of Delaware              | 2024-Present |
| <b>Dissertation Advising:</b> Mary Webb, PhD Candidate (Nutrition Science)<br>University of Delaware                   | 2024-Present |
| <b>Dissertation Advising:</b> Mike Axler, PhD Candidate (Applied Physiology)<br>University of Delaware                 | 2023         |
| <b>Dissertation Advising:</b> Thomas Keiser, PhD Candidate (Health Behavior Science)<br>University of Delaware         | 2022-Present |
| <b>Dissertation Advising:</b> Aude Cardona, PhD Candidate (Voice Science)<br>University of Delaware                    | 2022-Present |
| <b>Dissertation Advising:</b> Rebecca Davis, PhD Candidate (Biomechanics & Movement Science)<br>University of Delaware | 2022-2023    |
| <b>Dissertation Advising:</b> Paige Laxton, PhD Candidate (Health Behavior Science)<br>University of Delaware          | 2021-2024    |
| <b>Dissertation Advising:</b> Elissa Hoopes, PhD Candidate (Applied Physiology)<br>University of Delaware              | 2019-2020    |
| <b>Dissertation Advising:</b> Jessica Decker, PhD Candidate (Human Nutrition)<br>University of Delaware                | 2019-2022    |

## PROFESSIONAL & CONSULTING SERVICES

|                                                                                                                                                                                                                                                                                                                                                                                                             |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>AMERICAN PHYSICAL THERAPY ASSOCIATION</b>                                                                                                                                                                                                                                                                                                                                                                | 2023-Present |
| <ul style="list-style-type: none"> <li>Analyzed survey data from members of the APTA to determine how various factors of interest relate to income and productivity</li> <li>Assisted with drafting of relevant articles in APTA newsletters; research was used by influential regulatory bodies (e.g. U.S. Congress)</li> </ul>                                                                            |              |
| <b>NEMOURS</b>                                                                                                                                                                                                                                                                                                                                                                                              | 2022-2024    |
| <ul style="list-style-type: none"> <li>Analyzed EMR data for 10,000s of children to determine how social determinants of health relate to (1) future gaps in care and (2) future treatment (e.g. diagnosis, prescription of medication) of measured hypertensive blood pressure</li> <li>Regularly interfaced with clinical team and assisted with drafting of manuscripts for research journals</li> </ul> |              |
| <b>ARCADIA UNIVERSITY</b>                                                                                                                                                                                                                                                                                                                                                                                   | 2021         |
| <ul style="list-style-type: none"> <li>Served as member of Arcadia University's Biostatistics Core, performing statistical analyses and power calculations on an as-needed basis for clinical researchers</li> <li>Assisted with drafting of manuscripts for publication to research journals spanning a variety of subjects</li> </ul>                                                                     |              |

- Assisted in the construction of multiple REDCap databases meant to collect and house data related to the activities of the NCCPD in regard to the federally funded HERO HELP program
- Transferred existing data from Excel spreadsheets to REDCap database using an R program as an intermediary
- Built Excel spreadsheet to facilitate data collection and transferal to REDCap using VBA macros

## PRESENTATIONS

Duke Bioinformatics & Biostatistics Inaugural Alumni Gathering

February 2025

***Contributed Speaker***

-NO TITLE-

Virginia Tech Department of Statistics Seminar Series

February 2025

***Invited Speaker***

Cutoff Estimation and Construction of Their Confidence Intervals for Continuous Biomarkers under Ternary Umbrella and Tree Stochastic Ordering Settings

ENAR 2024 ("A Home for Every Biostatistician")

March 2024

***Contributed Speaker***

Cutoff Estimation and Construction of Their Confidence Intervals for Continuous Biomarkers under Ternary Umbrella and Tree Stochastic Ordering Settings

KUMC Journal Club

July 2022

***Invited Speaker***

Cutoff Estimation and Construction of Their Confidence Intervals for Continuous Biomarkers under Ternary Umbrella and Tree Stochastic Ordering Settings

KUMC Journal Club

June 2021

***Invited Speaker***

An Introduction to ROC Analysis under Tree & Umbrella Ordering