

Ellen Graham

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Education

- 2017–2021 **Bachelor of Arts**, *Macalester College*, Saint Paul, 4.0.
Major: Applied Mathematics and Statistics
Minor: Computer Science
Honors Thesis: A Computationally Efficient Spatio-temporal Generalized Linear Mixed Model
Description: Aims to extend a computationally efficient model for point referenced spatial data put forth by Guan and Haran to the temporal domain by adding separable temporal effects which can also be reduced using the random projections algorithm.
Advisors: Dr. Brianna Heggeseth, Dr. Alicia Johnson

Research Experience

- Summer **Research Assistant**, *Biocomplexity Institute, University of Virginia*.
2020 Partnered with two small local governments to help address pressing issues in their communities using data science techniques.
 - Worked with the Charlottesville City and Albemarle County Fire and Emergency Medical Services department to help understand the impact that COVID-19 was having on service delivery, especially with respect to ensuring equity. Discovered a precipitous drop in call volume due to COVID-19, and helped determine whether communities were being systemically underserved using spatial modeling. The full project can be found [here](#).
 - Our interdisciplinary team worked with the Halifax county administrator on reducing rates of incarceration and recidivism within the county. This involved collecting data from disparate sources and presenting it such that community leaders could gain valuable insights from it. The full project can be found [here](#).

Summer **Research Assistant**, *Macalester College*.
2019 Researched existing methods for clustering longitudinal data with categorical responses with Dr. Brianna Heggeseth. We then applied these methods to both data on cancer patients moving through the healthcare system, and sleep stages as collected by FitBits. In order to streamline analysis, we created this [Shiny App](#) with several novel visualization methods to assess clustering efficacy for these data.

Teaching Experience

- 2018 - 2020 **Teaching Assistant**, *Macalester College*.
Assisted with *Introduction to Statistical Modeling* with Professor Brianna Heggeseth, *Computational Linear Algebra* with Professor Lori Ziegelmeier, and *Introduction to Data Science* with Professor David Shuman and Professor Lisa Lendway. For each course, I ran office hours to assist students with statistics and programming questions, assisted in class, and helped grade assignments.

Presentations

- August 2020 Data Science for the Public Good Symposium, Arlington, VA, Finn Roberts, Chase Dawson, Ellen Graham, Saimun Habib, "[The Impact of COVID-19 on the Equitable Delivery of Emergency Medical Services](#)" (poster session).
- August 2019 Macalester Summer Research Symposium, Saint Paul, MN, Brianna Heggeseth, Kieu Giang Nguyen, Ellen Graham, Zuofu Huang, "[Clustering Longitudinal Categorical Data](#)" (poster session).

Statistics Outreach

- January 2020 **Workshop Facilitator**, *Blackwood Gallery, University of Toronto*.
(Upcoming) Prepare and run "Reading Open Data: Data Visualization, Citizen Science, and Collective Action" for the *Running with Concepts: Mediatric Edition*, a workshop focused on using and visualizing data for artists and activists.
- Spring 2020 **Data Sensing, Mississippi Barge Project**.
Prepared and Visualized data for Professor John Kim of Macalester College for a project, found [here](#), on the complex ways people interact with the Mississippi River.
- Spring 2020 **Data Science for Good Facilitator**, *Macalester College*.
Arranged and facilitated presentations by local data organizations to Macalester students.
- August 2019 **Attended JSM**.

Awards

- 2017– Present Dewitt Wallace Distinguished Scholarship, Macalester College
- 2017– Present Deans List, Macalester College
- 2019 Best in Show, DataFest, Macalester College

Skills

- General Statistics and Data Communication, Project Leadership, Collaborative Software Design
- Languages R, C++, C, Python, JavaScript, Java, D3, SQL
- Software ArcGIS Pro, R Shiny, R Studio, Flask Microserver