

Katya Kelly

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Education

Macalester College

B.A. in Applied Mathematics & Statistics, GPA 3.93

Minors in Geography, Computer Science

Saint Paul, MN

Aug. 2015–Dec. 2018

Coursework

Survival Analysis • Bayesian Statistics • Mathematical Statistics • Probability • Statistical Computing and Machine Learning • Advanced Cartography & Geovisualization • Health GIS • Regional Geography of the US and Canada • World Regional Geography • Internet Computing • Software Design & Development • Algorithm Design & Analysis • Object-Oriented Programming and Data Structures

Skills

Languages and Software

R, Python, HTML/CSS, JavaScript, Java, ArcGIS, QGIS, Mapbox, Leaflet, Inkscape, InDesign, LaTeX, Microsoft Office

Methods

Data visualization, data wrangling, regression, survival analysis, R package development, Markov chain Monte Carlo, cartography, layout design, web mapping, network analysis, spatial autocorrelation, site suitability analysis, map digitization, web design

Experience

Macalester College - Department of Geography

GIS Lab Assistant

Saint Paul, MN

Sept. 2018–Dec. 2018

- o Held lab hours twice per week to help GIS students with assignments and ArcGIS troubleshooting

Voting Rights Data Institute - Tufts, Harvard, MIT

Undergraduate Summer Fellow

Cambridge, MA

June 2018–July 2018

- o Helped create an open-source shapefile of voting precincts in Ohio
- o Helped build a Shiny app to visualize a Markov chain algorithm for redistricting
- o Worked on smaller weekly projects related to gerrymandering and redistricting reform

Macalester College - Department of Math, Statistics, & Computer Science

Teaching Assistant for Introduction to Statistical Modeling

Saint Paul, MN

Jan. 2017–Dec. 2017

- o Held weekly office hours to answer student questions about assignments, course material, and coding in RStudio
- o Attended three one-hour class periods per week to assist with in-class activities and lab assignments
- o Graded quizzes, homework assignments, and labs for over 60 students

Projects

Digitizing, Districting, and Data: Creating an Open-Source Precinct Shapefile for Ohio

VRDI & Senior Capstone

Saint Paul, MN

June 2018–Current

- o Developing an R package for approximating precinct boundaries
- o Digitized images of voting precincts using QGIS
- o Helped write an algorithm in R to classify census blocks without a precinct classification
- o Joined election data to classified census blocks

Whip It Like a (Wo)Man: Survival Analysis of Minority Contestants in MasterChef Junior

Survival Analysis

Saint Paul, MN

Sept. 2018–Dec. 2018

- o Used survival analysis methods in R to model survival of contestants by race and gender
- o Co-wrote a paper on discrimination in the culinary industry and how our analysis contributes to the larger conversation

Checking the Media: A Cluster Analysis of Wealth and Suicide Rates in the United States

Health GIS

Saint Paul, MN

Jan. 2018–Apr. 2018

- Acquired and cleaned raw .csv files and shapefiles
- Performed statistical analyses such as LISA tests, Moran's I analysis, and difference in means tests
- Produced demonstrative choropleth maps of suicide and wealth patterns for all ages and for residents aged 15-24

Predicting the Big One: Using Bayesian Modeling Techniques to Predict Earthquakes

Bayesian Statistics

Saint Paul, MN

Oct. 2017–Dec. 2017

- Used R to import and wrangle raw data
- Performed Markov chain Monte Carlo sampling and Bayesian regression to develop prediction models

Barriers to Bicycling in Minneapolis, Minnesota

Introduction to Geographic Information Systems

Saint Paul, MN

Nov. 2017–Dec. 2017

- Analyzed raw data using geoprocessing tools in ArcGIS
- Produced 4 exploratory maps and a final site suitability map for new bicycling education centers
- Co-wrote a paper on the nuances of bicycling as a social barrier to certain demographics living within the city

R Packages

Jolly, K. and **Kelly, K.** (2019). approxprecincts: Approximate Voting Precinct Boundaries Using Voterfile Addresses. R package version 0.0.0.9000. <https://github.com/ykelly/approxprecincts>

Honors and Awards

Best Video Presentation

Electronic Undergraduate Statistics Research Conference

Saint Paul, MN

2 Nov. 2018

Ezra J. Camp Endowed Prize in Mathematics & Statistics

Macalester College

Saint Paul, MN

18 Apr. 2018

DeWitt Wallace Distinguished Scholar

Macalester College

Saint Paul, MN

Sept. 2017

Presentations

Digitizing, Districting, and Data: Creating an Open-Source Precinct Shapefile for Ohio

Electronic Undergraduate Statistics Research Conference

Saint Paul, MN

2 Nov. 2018

GIS as a Civic Engagement Tool: The Geography of Voting Rights

Macalester College Geography Dept. Seminar

Saint Paul, MN

18 Oct. 2018

Checking the Media: A Cluster Analysis of Wealth and Suicide Rates in the United States

Midwest Undergraduate Geography Symposium - Public Poster Session

River Falls, WI

21 Apr. 2018