AMELIA A. MCNAMARA

OSS 407 • University of St Thomas • St Paul, MN 55105

amelia.mcnamara@stthomas.edu • www.amelia.mn • @AmeliaMN

RESEARCH INTERESTS

Statistical computing, statistics education, data visualization, reproducible research, spatial statistics

EDUCATION

Ph.D., Statistics

2015

University of California - Los Angeles

Los Angeles, CA

Dissertation: Bridging the Gap Between Tools for Learning and for Doing Statistics

Committee: Robert Gould and Fredrick Paik Schoenberg (co-chairs, statistics), Mark Handcock

(statistics), Todd Millstein (computer science), Alan Kay (computer science).

 ${\bf B.A.,\ Mathematics}$ and ${\bf English}$

2010

Macalester College

St. Paul, MN

ACADEMIC APPOINTMENTS

Assistant Professor

2018-present

University of St Thomas Department of Computer & Information Sciences

St Paul, MN

Visiting Assistant Professor

2015-2018

Smith College Program in Statistical and Data Science

Northampton, MA

MassMutual Faculty Fellow

PEER-REVIEWED PUBLICATIONS

McNamara, A. Key Attributes of a Modern Statistical Computing Tool. The American Statistician. (accepted, to appear August 2019)

Rafalski, T., Uesback, P. M., Panks-Meloney, C., Daleiden, P., Allee, W., *McNamara, A.* and Stefik, A. A Randomized Controlled Trial on the Wild Wild West of Scientific Computing with Student Learners. *ICER'19 Proceedings* (accepted, to appear August 2019).

McNamara, A. Community Engagement and Subgroup Meta-Knowledge: Some Factors in the Soul of a Community. Computational Statistics. (accepted, to appear)

Gould, R., Wild, C. J., Baglin, J., *McNamara*, A., Ridgway, J., McConway, K, "Revolutions in Teaching and Learning Statistics: A Collection of Reflections" in *Springer International Handbook of Research in Statistics Education* (Ben-Zvi, D., Makar, K., eds), Springer International Handbook of Education series. (2018).

McNamara, A., and Horton, N. J. Wrangling Categorical Data in R.

Special issue, jointly published in Practical Data Science for Stats, *PeerJ Preprint Collection*, 5:e3163v2 (2017) and *The American Statistician*. Vol. 72, Issue 1. (2017).

Catllá, A.J., *McNamara*, *A.* and Topaz, C. M. Instabilities and Patterns in Coupled Reaction-Diffusion Layers. *Physical Review E*, Vol. 85, Issue 2. (2012).

OTHER WRITING

McNamara, A. Teaching Statistics, A Bag of Tricks (book review). The American Statistician, Vol. 72, No. 2. (2018).

Lunzer, A., and *McNamara*, *A.* Exploring Histograms: Interactive essay. Available online at http://tinlizzie.org/histograms/ (2017).

McNamara, A., Horton, N. J., and Baumer, B. S. Greater Data Science at Baccalaureate Institutions. Invited comment as part of discussion for David Donoho's 50 Years of Data Science. Journal of Computational and Graphical Statistics. Vol. 26, No. 4, 781-783 (2017).

McNamara, A. Barriers and Opportunities for Nurturing Statistical Thinking before College CHANCE, Vol. 28, Issue 4. (2015).

McNamara, A. and Hansen, M. Teaching Data Science to Teenagers. Proceedings of the 9th International Conference on Teaching Statistics. (2014).

McNamara, A. Dynamic Documents with R and knitr (book review). Journal of Statistical Software, Vol. 56, Book Review 2. (2014).

IN PROGRESS

McNamara, A. On the State of Computing in Statistics Education: Tools for Learning and for Doing.

McNamara, A., student coauthors to be determined. Interactive methods to address the change of support problem.

Molyneux, J., and McNamara, A. mobilizr: An R package for high school data scientists.

TEACHING

University of St Thomas Department of Computer & Information Scien	aces
STAT 220: Statistics I	Fall 2018, Spring 2019
STAT 320: Statistics II	Fall 2018
STAT 360: Advanced Statistical Software	Spring 2019
Smith College Program in Statistical and Data Sciences	2015-2018
SDS 236: Data Journalism	Spring 2018
SDS 136: Communicating with Data	Fall 2017
SDS/MTH 220: Introduction to Statistics and Probability Fall 2	015, Spring 2016, Fall 2017
SDS/MTH 220: Introduction to Statistics and Probability (lab)	Fall 2015, Spring 2016
SDS/MTH 291: Multiple Regression	Spring 2016, Fall 2016
MassMutual Data Science Development Program	
Data visualization seminar (with Jordan Crouser)	ummer 2016, Summer 2017
Advanced git and R	Summer 2018

University of California, Los Angeles Statistics Department

2013-2015

STAT 98T: Data Visualization (Instructor of record, Collegium of University Teaching Fellows)

STAT 101A: Introduction to Data Analysis and Regression (Teaching fellow)

STAT 102B: Introduction to Computation and Optimization (Teaching fellow)

STAT 101C: Introduction to Regression and Data Mining (Teaching fellow)

Mobilize Project Professional Development Program

2011-2014

Professional Development: Exploring Computer Science (Leader)

Professional Development: Math and Science (Leader)

Professional Development: Introduction to Data Science (Leader)

AWARDS

Teaching Integrity in Empirical Research Faculty Fellow, Haverford College	2015-2016
Collegium of University Teaching Fellows, University of California, Los Angeles	2014-2015
Dissertation Year Fellowship, University of California, Los Angeles	2014-2015
Graduate Research Fellowship Program, National Science Foundation	2012
Chancellor's Prize Summer Fellowship, University of California, Los Angeles	2011-2012
Konhauser Prize for Mathematical Achievement, Macalester College	2010

RESEARCH AND CONSULTING

Smith College, Northampton, MA

2015-2018

Visiting Assistant Professor

At Smith College, my research program focused on statistics education, statistical computing, data visualization, and spatial statistics. In Spring 2016 and Spring 2017, I led groups of undergraduate and post-baccalaureate students as part of the MTH 301 independent research seminar. We focused on Methods to Address the Change of Support and Modifiable Areal Unit Problems.

The Concord Consortium, Emeryville, CA

September 2016-March 2017

Consultant

Worked with William Finzer and the Common Online Data Analysis Platform (CODAP) on integrating 'Data Science Moves' into CODAP.

Viewpoints Research Institute, Los Angeles, CA

September 2016-January 2017

Consultant

Continued collaboration with Aran Lunzer to develop interactive essays related to the impacts of data aggregation in 1- and 2-D.

Viewpoints Research Institute, Los Angeles, CA

2013 - 2015

Graduate Intern

The Viewpoints Research Group is a research group with a variety of interests including the future of programming, internet-scale computing, and programming language design. I collaborated with other researchers on projects to improve statistical computing tools for novices (those with no statistics or programming experience). Examples include **LivelyR** with Aran Lunzer and **locatr** with Ted Kaehler. Director: Alan Kay.

Mobilize Project, Los Angeles, CA

2011-2014

Graduate Student Researcher

The Mobilize project brings data analysis and statistics to life by allowing high school students to collect information about the world around them using mobile phones, then analyze the data and do something with it. As a graduate student researcher, I developed curriculum to be deployed in LAUSD public high schools, including the innovative Introduction to Data Science course. Over hundreds of hours of professional development, I trained teachers on basic statistical concepts, use of inquiry in teaching, and basic statistical software. Principal Investigator: Rob Gould.

SHORT COURSES AND WORKSHOPS LED

StatPREP Workshop (with team) Howard Community College	June 2019 Columbia, MD
Helping the Data Speak (TA for Nathan Yau) eyeo festival workshop	June 2019 $Minneapolis, MN$
git and GitHub Cornucopia uncoast unconf, John Deere Financial	April 2019 Des Moines, IA
Data Science in the Tidyverse (with Hadley Wickham) rstudio::conf	January 2019 $Austin, TX$
StatPREP Workshop (with team) University of Hartford	June 2018 Hartford, CT
Intro to R & RStudio rstudio::conf	January 2018 San Diego, CA
Master the Tidyverse (TA for Garrett Grolemund) RStudio workshop	October 2017 $Washington, DC$
StatPREP Workshop (with team) St. Catherine University	June 2017 St. Paul, MN
Data Science for Statisticians ENAR, International Biometric Society Meeting	$\begin{array}{c} \text{March 2017} \\ Washington, \ DC \end{array}$
Introduction to R (with Coulter Jones) NICAR, Investigative Reporters & Editors Conference	March 2016 Denver, CO
NVITED TALKS	
Data Journalism as a Liberal Art LACOL Data Science in the Liberal Arts, Washington and Lee University	June 2019 Lexington, VA
Teaching Data Communication Symposium on Statistics and Data Science (SDSS)	May 2019 Bellevue, WA
Wrangling Categorical Data in R Without Losing your Mind rstudio::conf	January 2019 $Austin, TX$
Key Attributes of a Modern Statistical Computing Tool Statistics Department Seminar, Oregon State University	October 2018 Corvallis, OR
How Spatial Polygons Shape Our World University of Minnesota Institute for Advanced Study	September 2018 $Minneapolis, MN$
How Software Affects Humans' Conceptions of Data: Case Study in I Joint Statistical Meetings	R Syntaxes Aug 2018 Vancouver, BC
Imagining the Future of Statistical Education Software International Conference on Teaching Statistics (ICOTS)	July 2018 Kyoto, Japan

2018 CGA Conference: Illuminating Space and Time in Data Science. Harv MA	April 2018 vard University Cambridge,
Data Science as a Superpower Introduction to Data Science Big Data Day	$\begin{array}{c} \text{April 2018} \\ Los \ Angeles, \ CA \end{array}$
Scientists Programming Evidence about Programmers, Schloss Dagstuhl	February 2018 Wadern, Germany
Interfacing with Data Data Literacy Conference	September 2017 Aix-en-Provence, France
Key Attributes of a Modern Statistical Computing Tool Tableau Software	March 2017 $Seattle, WA$
Using Data Visualization to Find Patterns in Multidimensional D Department of Mathematics, Statistics, and Computer Science St. Olaf Col	
Bridging the Gap Between Tools for Learning and for Doing Stational Psychology, University of Minnesota	November 2016 Minneapolis, MN
Bridging the Gap Between Tools for Learning and for Doing Statistics, University of Massachusetts - Amherst	March 2016 Amherst, MA
Statistical Programming—Past, Present, and Future Department of Statistics, California State University, Fullerton	December 2014 $Fullerton, CA$
Teaching Data Science to Teenagers (with Mark Hansen) International Conference on Teaching Statistics	$\begin{array}{c} \text{July 2014} \\ \textit{Flagstaff, AZ} \end{array}$
CONFERENCE PRESENTATIONS	
Visualizing Data by Hand SRCCON	June 2018 Minneapolis, MN
Teaching Students Reproducibility Electronic Conference on Teaching Statistics (eCOTS)	$\begin{array}{c} \text{May 2018} \\ \text{online} \end{array}$
How Spatial Polygons Shape Our World OpenVisConf	$\begin{array}{c} \text{April 2017} \\ Boston, \ MA \end{array}$
The Incredible Importance of Variability THINK Conference	November 2016 Bay Area, CA
Pushing the Boundary Between Tools for Learning and for Doing Joint Statistical Meetings	Statistics August 2016 Chicago, IL
The Importance of Parameter Manipulation for Statistics Society for Industrial and Applied Mathematics Annual Meeting	$\begin{array}{c} \text{July 2016} \\ Boston, \ MA \end{array}$
Integrated R Labs for High School Students useR! The R User Conference	June 2016 Stanford, CA

April 2018

Making Spatial Aggregation More Transparent

The Gap Between Tools for Learning and for Doing Statistics Electronic Conference on Teaching Statistics	$\begin{array}{c} \text{May 2016} \\ \text{online} \end{array}$
Do you know Nothing when you see it? OpenVisConf	April 2016 $Boston, MA$
Using Data Visualization to Find Patterns in Multidimensional Data Big Data Day LA	June 2015 Los Angeles, CA
Teaching R to High School Students (with James Molyneux) useR! The R User Conference	July 2014 Los Angeles, CA
LivelyR: Making R Charts Livelier (with Aran Lunzer) useR! The R User Conference	July 2014 Los Angeles, CA
Mobilize Project (with Jane Margolis and LeeAnn Trusela) Math Science Partnership Learning Network Conference	January 2012 Washington, DC
Model and Optimization of Organic Photovoltaic Cells Joint Meeting of AMS and MAA	January 2010 San Francisco, CA
PANELS AND ROUNDTABLES	
Fireside Chat (panelist) Symposium on Statistics and Data Science (SDSS)	June 2019 Bellevue, WA
Data Science Education Panel (panelist) Women in Data Science Conference	January 2018 Boston, MA
Data Science at Women's Colleges (panelist) Women in Statistics and Data Science Conference (WSDS)	October 2017 San Diego, CA
Local Data Science Panel Presentation (panelist) Women in Data Science (WiDS) satellite conference, Mt Holyoke College	February 2017 South Hadley, MA
Graphics Software: Favorites and Best Practices (roundtable leader) Joint Statistical Meetings	August 2016 Chicago, IL
Implications for Curriculum (panelist) Alliance to Advance Liberal Arts Colleges (AALAC) Big Data Workshop	January 2016 Wellesley, MA
heR Panel Discussion (panelist) useR! The R User Conference	July 2014 Los Angeles, CA
POSTER PRESENTATIONS	
Pushing the Boundary Between Tools for Learning and for Doing Stat Joint Statistical Meetings	tistics August 2016 Chicago, IL
It Ain't Necessarily So: Checking Charts for Robustness (with A. Lunzo IEEE Vis Conference	er) November 2014 Paris, France
Tools for Teaching Data Science Women in Statistics Conference	May 2014 Cary, NC

Data Visualization on the Soul of the Community Joint Statistical Meetings	$\begin{array}{c} \text{August 2013} \\ \text{Montreal, } QC \end{array}$
Model and Optimization of Organic Photovoltaic Cells Joint Meeting of AMS and MAA, San Francisco, CA Undergraduate Research Symposium, University of Chicago Macalester College, St Paul, MN Institute for Mathematics and its Applications, Minneapolis, MN	January 2010 November 2009 October 2009 July 2009

INVITED WORKSHOPS AND HACKATHONS

uncoast unconf John Deere Financial	April 2019 Des Moines, IA
John Deere Financiai	Des Mottles, 1A
Evidence About Programmers for Programming Language Design Schloss Dagstuhl	February 2018 Wadern, Germany
Teaching Integrity in Empirical Research Workshop Haverford College	June 2017 Haverford, PA
rOpenSci hackathon CrossCampus	May 2017 Los Angeles, CA
Designing for Uncertainty in HCI CHI Conference	May 2017 Denver, CO
Moving Transparent Statistics Forward CHI Conference	May 2017 Denver, CO
Youth, Learning and Data Science Summit University of California, Berkeley	August 2016 Berkeley, CA
Teaching Integrity in Empirical Research Workshop Haverford College	June 2016 Haverford, PA
r OpenSci hackathon GitHub	March 2014 San Francisco, CA

LOCAL CONTRIBUTIONS

Activities and Thoughts on Teaching a "Data Science for All" Course Southern MN StatChat, St Olaf College	April 2019 Northfield, MN
Handmade Data Viz StatChat, Macalester College	April 2019 St Paul, MN
Working with Spatial Data: Implications of the Change of Support Proble Applied Probability and Statistics Seminar, University of St Thomas	em May 2019 St Paul, MN

Working with Spatial Data: Implications of the Change of Support Problem April 2019 Guest lecture, PUBH 7462: Advanced Programming and Data Analysis in R, UMN *Minneapolis*, *MN*

R-Ladies Panel (virtual panelist) Amherst R-Ladies	$\begin{array}{c} \text{March 2019} \\ Amherst, \ MA \end{array}$	
Speed Networking Workshop University of St Thomas Association of Women in Science (WINS)	December 2018 St Paul, MN	
The Power of Algorithms for Good and for Evil World Usability Day, University of Minnesota	November 2018 $Minneapolis, MN$	
Women in Science (panelist) University of St Thomas Association of Women in Science (WINS)	November 2018 St Paul, MN	
Algorithmic Accountability Otelia Cromwell Day workshop, Smith College	November 2017 Northampton, MA	
Topic IV: Visualization, with Ben Baumer New England Isolated Statisticians Meeting, Stonehill College	November 2017 Easton, MA	
Big Data, Polling, and the Politics of Education Guest lecture, AMS 100: Thinking Through the 2016 Election, Smith College	$\begin{array}{c} \text{March 2017} \\ \textit{Northampton, MA} \end{array}$	
What's Missing? Identifying the Gaps, Biases, and Omissions in Digital Guest lecture, IDP 160: Digital Effects, Smith College	Northampton, MA	
Futurisms, part II: Intersections: Digital Humanities, Interactive Media and Cultural Heritage (faculty fellow) February 2016		
Smith College Kahn Institute	Northampton, MA	
Futurisms, part I: The Ten Thousand Year Collection (faculty fellow) Smith College Kahn Institute	December 2015 Northampton, MA	
Using Data Visualization to Find Patterns in Multidimensional Data Guest lecture, CS 342: Statistical Learning, Hampshire College	November 2015 $Amherst, MA$	
Using Data Visualization to Find Patterns in Multidimensional Data Western Mass Data Science, Stats, and R Meetup	November 2015 $Amherst, MA$	
Eyeo Highlights Datavis LA Meetup	August 2014 Los Angeles, CA	

SERVICE TO DEPARTMENT, INSTITUTION, AND PROFESSION

University of St Thomas Technology Advisory Committee (UTAC)

Committee Member

· This four-year appointment begins Fall 2019

University of St Thomas HHMI Inclusive Excellence Grant

2019-present

2019-2023

Inclusive Excellence Advisor

- · Participated in Inclusive Excellence Training (May 2019)
- · Attended welcoming events for incoming first-year students
- \cdot Will be serving as an Inclusive Excellence Advisor for 10 incoming first-year students for the 2019-2020 school year

University of St Thomas HHMI Inclusive Excellence Grant

2018-present

CISC representative

· Attended HHMI meetings and luncheons, representing the Computer & Information Sciences Department's interests and reporting back to the department

University of St Thomas Statistics Program Committee

2018-present

Member

· Assisted in the development of new curriculum for the statistics program, including changes to the statistics major and minor, the development and proposal of new upper-level courses, and discussion of statistics-related courses in other disciplines.

Joint Statistical Meetings Program Committee

2019-2020

Statistics and Data Science Education Section Chair

- · As section chair-elect, organized round tables and Birds of a Feather sessions for the Section on Statistics and Data Science Education for JSM 2019
- · Served as proxy for current section chair at March 2019 JSM organizing meeting in Alexandria, VA
- · As section chair, will organize invited sessions, contributed sessions, and poster sessions for the Section on Statistics and Data Science Education for JSM 2020

Statistics and Data Science Symposium Program Committee

2018-2019

Visualization co-chair, with Silas Bergan

- · As co-chair, helped organize invited sessions on visualization for SDSS
- · As co-chair, organized and scheduled contributed sessions on visualization for SDSS

Smith College Statistical and Data Sciences Program Committee

2015-2018

Faculty member

- · Assisted in developing the major in Statistical and Data Sciences (approved April 2016).
- · Voted on departmental policy about honors theses, special studies, course waivers, and the like.
- · Organized invited talk by Amanda Cox (long time member of the graphics team at The New York Times, now editor of The Upshot), attended by almost 200 people from the college and community.
- · Organized invited talk by Christine Zhang '09 (alumna and recipient of 2016 Mozilla Open News Fellowship, data journalist at the LA Times), attended by approximately 100 people.
- · Managing Twitter presence @SmithCollegeSDS.

Women in Statistics and Data Science Conference (WSDS) San Diego, CA

2017

Panel chair

· WSDS R-Ladies Panel: Improving Gender Diversity in a Male-Dominated Community

Joint Statistical Meetings Chicago, IL

2016

Session Chair

- · Toward Better Communication of Information with Statistical Graphics Contributed Papers
- · Reproducibility in Statistics and Data Science Invited Papers (substitute chair)

Five College DataFest

2015-2018

Co-organizer with Ben Baumer

- · Planned and executed the 2016 and 2017 FiveCollege DataFests
- · DataFest is a weekend-long data hackathon event for more than 100 undergraduate students from Smith, Mt Holyoke, Hampshire, Amherst, and UMass Amherst.
- · Managed social media, including Wordpress website and Twitter presence @FiveCollegeStat.
- · Recruited data science experts to serve as VIP visitors and judges.
- · Solicited donations from corporations like Google and RStudio.

· Coordinated prizes and swag for students.

University of California, Los Angeles DataFest

2011-2015

Planning Member

- · As a graduate student, assisted in planning and executing the 2012, 2013, 2014, and 2015 UCLA DataFests for undergraduates, attended by 100-200 undergraduate students from UCLA, the University of Southern California, Pomona College, California Polytechnic State University San Luis Obispo, and the University of California, Riverside.
- · Managed Twitter presence @UCLADataFest.
- · Served as on-the-ground-advisor for students at the event, discussing ideas and coding issues.
- · Assisted in coordinating donations and swag from corporations like GitHub, Google, Revolution Analytics, and RStudio.

Los Angeles useR! Conference Organizing Committee

2013-2014

Planning Member

- · Assisted in planning and executing the 2014 international R user conference (700 attendees).
- · Recruited and coordinated 80 student volunteers.
- · Assisted with conference website before, during, and after the conference.
- · Promoted conference on social media, encouraged minority participation.
- · Supervised on-the-ground conference logistics, including registration, catering, and facilities services.

UCLA Graduate Student Orientation Planning Committee

2012-2013

Tour Coordinator

- · Helped plan and execute the 2012 and 2013 UCLA grad student orientations, attended by 1,000+ incoming graduate students each year.
- · Discussed general orientation issues, such as panel topics and logistical concerns.
- \cdot Organized and trained 15 volunteer tour guides to lead tours campus.
- · Prepared tour materials and checked routes for North Campus, South Campus, and General tours.
- · On the day of orientation, coordinated hourly tours and assigned tour guides to routes.

Macalester College Admissions

2013-present

Volunteer interviewer and college representative

- · Performed alumni interviews of prospective students applying to Macalester in Southern California and Western Massachusetts
- \cdot Represented Macalester at the 2015 Vistamar College Fair, answering questions about Macalester and the admissions process

Southern California AP Statistics Poster Competition

2014

Judge

· Judged entries to the 2014 Southern California AP Statistics Poster Competition

UC Day in DC May 2013

University of California, Los Angeles Delegate

- · Represented UCLA and graduate student interests at the University of California's annual federal advocacy day in Washington, DC.
- · Met with congress members and their staff to discuss Federal funding for programs impacting grad students.

UCLA Graduate Resource Center Oversight Committee

2011-2012

Voting Member

· Assisted in developing a new strategic plan for UCLA's graduate resource center

Ad-hoc referee 2014-present

Journals:

- · Journal of Statistics Education (JSE)
- · Journal of Statistical Software (JSS)
- · Statistics Education Research Journal (SERJ)
- · Technology Innovations in Statistics Education (TISE)
- · The American Statistician (TAS)
- · Computer Science Education (CSE)
- · PLOS Biology

Ad-hoc referee 2017-present

Conferences:

- · Institute of Electrical and Electronics Engineers Vis Conference (IEEE VIS)
- · Conference on Human Factors in Computing Systems (CHI)

SKILLS

Languages Expert: R, LATEX, HTML, Markdown

Intermediate: Spanish, Python, git, JavaScript, Matlab, Mathematica, ArcGIS

Social Media Twitter: @AmeliaMN, 9,400+ tweets, 8,500+ followers

Currently managing

Formerly managed @SmithCollegeSDS, @FiveCollegeStat,

@UCLADataFest, @user2014_UCLA

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Statistical Association (ASA)	2012-present
Association for Women in Mathematics (AWM)	2008-2010, 2014-present
Society for Industrial and Applied Mathematics $(SIAM)$	2012-2016
Institute of Electrical and Electronics Engineers $(IEEE)$	2016-2017
WNAR: International Biometric Society (WNAR)	2013-2014