

# Mikaela Meyer

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## Education

- 2023 **Ph.D., Statistics and Public Policy**, *Carnegie Mellon University*.  
(Expected) GPA: 4.04/4.0  
Completing coursework and all milestones in both the statistics and public policy Ph.D. programs in addition to thesis research requirements
- 2020 **M.S., Statistics & Data Science**, *Carnegie Mellon University*.  
(Expected) Project: Racial Disparities in Policing: A Variance Decomposition Approach  
Advisor: Amelia Haviland
- 2018 **B.S., Mathematical Statistics and Applied Statistics**, *Purdue University*.  
GPA: 3.99/4.0  
Graduated with Highest Distinction, Honors College Graduate  
Minor in Political Science

## Research Interests

\* Racial disparities in policing \* Statistics education \* Causal inference \* Fairness, accountability and transparency in machine learning (FATML) \* Flood risk prediction

## Research

- 2019-Present **Graduate Researcher**, Carnegie Mellon University  
*Advisor: Amelia Haviland*
- Developing Bayesian hierarchical models to decompose variance in racial discrepancies in police use of force into census tract and precinct components in a city
  - Delivering results to police department through collaboration with Center for Policing Equity at John Jay College of Criminal Justice
- 2019-Present **Graduate Research Assistant**, Center for Statistics and Applications in Forensic Evidence (CSAFE), Carnegie Mellon University  
*Advisor: Robin Mejia*
- Developing and aiding in the implementation of blind proficiency tests for forensic analysts at the Allegheny County Office of the Medical Examiner
- 2018-Present **Member, Teaching Statistics Research Group**, Carnegie Mellon University
- Creating an assessment for undergraduate introductory statistics courses and assessing questions based on think-aloud interviews
  - Using cognitive task analysis and think-aloud interviews to better understand student misconceptions in a statistical inference class

2016-2018 **Undergraduate Fellow**, Purdue Policy Research Institute

*Advisors: Laurel Weldon and Caitlin Surakitbanharn*

- Drafted policy briefs with other undergraduates from a variety of disciplines about subjects such as personal drone regulations, autonomous vehicle deployment, and flood risk in coastal Louisiana
- Conducted sensitivity analyses of the Coastal Louisiana Risk Assessment (CLARA) model

2015-2018 **Research Assistant**, Purdue University

*Advisors: Dwaine Jengelley and Aaron Hoffman*

- Conducted sentiment analysis of newspaper articles using Lexicoder software
- Wrote an R script to scrape political cartoons from gocomics.com
- Collected and analyzed survey data from journalists at the Society of Professional Journalists Conference in September 2018
- Taught the PIs and other students in the research group how to use R for basic statistical analyses

2015-2016 **Member of NSF Statistics Living-Learning Community**

*Advisors: Mark Ward and Frederi Viens*

- Received funding from NSF Grant No. 1246818 to conduct research about modeling Lake Chad's hydrology through Bayesian methodologies

2016 **Student Poll Analyst**, Purdue Institute for Civic Communication

- Drafted questions for a national poll on civic confidence that was conducted by Penn Schoen Berland
- Analyzed poll results with other students and presented them at National Press Club

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## Publications

### Preprints

Reinhart, A., Evans, C., Luby, A., Orellana, J., **Meyer, M.**, Wieczorek, J., Elliott, P., Burckhardt, P., & Nugent, R. "Think-aloud interviews: A tool for exploring student statistical reasoning". arXiv 1911.00535

### Peer-reviewed journal articles

**Meyer, M. R.**, & Johnson, D. R. (2019). "Variability of Best-Estimate Flood Depth Return Periods in Coastal Louisiana". *Journal of Marine Science and Engineering*, 7(5), 145. doi:10.3390/jmse7050145

Manchanda, S., **Meyer, M.**, Li, Q., Liang, K., Li, Y., & Kong, N. (2018). "On Comprehensive Mass Spectrometry Data Analysis for Proteome Profiling of Human Blood Samples". *Journal of Healthcare Informatics Research*, 2(3), 305-318.

### Government reports

Gambler, R., Matheson, T., Alexander, D., Burdick, K., Chaidez, L., Donovan, K., Fejfar, M., Gilley, S., Hatscher, C., Hauswirth, E., **Meyer, M.**, Najmi, S., Reeves, K., & Tessin, J. (2019) "BORDER SECURITY: DHS Should Improve the Quality of Unlawful Border Entry Information and Other Metric Reporting". *U.S. Government Accountability Office*. GAO-19-305.

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## Presentations and Posters

- August 2020 Presentation. **Meyer, M.** and Haviland, A. "Racial Disparities in Policing: A Variance Decomposition Approach". Joint Statistical Meetings. *Virtual conference due to COVID-19*
- May 2020 Presentation. **Meyer, M.** and Johnson, D. "Analyzing the Variability of Best-Estimate Coastal Flood Depth Return Periods in Louisiana". State of the Coast. New Orleans, LA. *Conference postponed due to COVID-19.*
- Feb. 2020 Invited Guest Lecture. **Meyer, M.**. "Designing and Conducting Surveys: Two Research Examples". Delivered to 36-303 Sampling, Survey, and Society at Carnegie Mellon University. Pittsburgh, PA
- Dec. 2019 Webinar. **Meyer, M.** and Evans, C. "Introducing think-aloud interviews as a tool to explore student statistical reasoning". Part of the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) webinar series.
- Dec. 2019 Presentation (by Johnson, D.). Johnson, D., and **Meyer, M.** "Natural variability of best-estimate coastal flood depth return periods". Society for Risk Analysis Annual Meeting. Arlington, VA.
- July 2019 Presentation and Poster. **Meyer, M.**, Orellana, J., and Reinhart, A. "Using Think-Aloud Interviews and Cognitive Task Analysis to Identify Misconceptions in Undergraduate Statistics Education". Joint Statistical Meetings. Denver, CO
- May 2019 Breakout Session. Reinhart, A., Burckhardt, P., Elliott, P. W., Evans, C., Luby, A., **Meyer, M.**, Orellana, J., Yurko, R., Weinberg, G., Wieczorek, J., & Nugent, R. "Using think-aloud interviews to assess student understanding of statistics concepts". US Conference on Teaching Statistics. State College, PA
- April 2018 Presentation. Hoffman, A., **Meyer, M.**, Malik, P., Balcazar, P., Hennes, E., Jengelley, D., & Walsh, S. "How anxiety about Donald Trump influences news reporting". Midwest Political Science Association Conference. Chicago, IL
- April 2018 Poster. **Meyer, M.** & Johnson, D. R. "Variability Analysis of Historic Flood Depth Returns in Coastal Louisiana". Purdue Undergraduate Research Symposium. West Lafayette, IN
- April 2018 Poster. Ball, J., **Meyer, M.**, Bunce, B., & Johnson, D. R. "Parametric Sensitivity Analysis of a Coastal Louisiana Flood Risk Model". Purdue Undergraduate Research Symposium. West Lafayette, IN
- Nov. 2016 Presentation. Manchanda, S., **Meyer, M.**, Li, Q., Liang, K., Li, Y., & Kong, N. (2018). "On Comprehensive Mass Spectrometry Data Analysis for Proteome Profiling of Human Blood Samples". INFORMS. Nashville, TN. *Finalist in Operation Research Undergraduate Paper Competition*
- April 2016 Presentation. Jengelley, D., Duncan, N., **Meyer, M.**, & Mroczek, C. "Framing Caribbean Integration: A Content Analysis of Elites' Views on Regionalism". Midwest Political Science Association Conference. Chicago, IL

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## Teaching Assistantships

- Summer 2019 Statistical Learning Summer Workshop (Masters/Ph.D.), Carnegie Mellon University  
Guided groups of non-statistics graduate students through lessons in learning to code in R, exploratory data analysis, and statistical learning methods
- Fall 2018 Statistical Graphics and Visualization (Undergrad), Carnegie Mellon University
- Spring 2018 Differential Equations (Undergrad), Purdue University

## Grants

- January 2019 **GuSH Crosswalk Seed Grant** (Carnegie Mellon University)  
Grant title: "Using Think-Aloud Interviews and Cognitive Task Analysis to Identify Misconceptions in Undergraduate Statistics Education"  
*Josue Orellana and Mikaela Meyer, \$1,000*

## Awards

- 2020 **NSF Graduate Research Fellowship (NSF GRFP)**, National award  
2020 **Gertrude M. Cox Scholarship**, American Statistical Association  
2018 **Phi Beta Kappa**, Purdue University  
2016-2018 **Stamps Family Foundation Scholarship** (full tuition and room/board scholarship), Purdue University  
2017 **Truman Scholarship**, National award  
2017 **Marshall Scholarship Finalist**, National award  
2016 **INFORMS Undergraduate Operations Research Prize Finalist**, National award  
2016 **Mu Sigma Rho Statistics Honor Society**, Purdue University  
2016 **Outstanding Sophomore in Statistics**, Purdue University

## Work Experience

- Summer 2018 **Applied Research and Methods Intern**, Government Accountability Office
- Conducted a literature review to better understand the methods used by the Department of Homeland Security to estimate the number of migrants crossing the border illegally
  - Summarized R scripts so the team of statisticians and non-statisticians could learn what exact steps DHS took to calculate border security metrics
- Summer 2017 **Emerging Leaders Program Data Science Intern**, Nielsen
- Created a scorecard using Python's Pandas library to evaluate a new data integration product

## Technical Skills

Proficient R, Python, SQL, Github  
Familiar L<sup>A</sup>T<sub>E</sub>X, Git, SAS, Stata, Tableau

## Non-Academic Presentations

- April 2017 Invited speaker at March for Science Lafayette. Lafayette, IN

## Media

- 2018 "Statistics Student Awarded Truman Scholarship", Amstat News. [Read here.](#)  
2017 "Commitment to Public Service Earns Statistics Junior Prestigious Truman Scholarship", Purdue College of Science. [Read here.](#)

## Leadership and Involvement

- 2020 **Co-Organizer**, Women in Data Science Pittsburgh Conference
- 2019- **Statistics Department Representative**, CMU Graduate Student Assembly
- 2019- **Chair of Subcommittee on Outreach and Engagement**, CMU Graduate Student Assembly External Affairs Committee
  - Organized on-campus voter registration drives for National Voter Registration Day 2019
- 2019- **Student Representative**, CMU Statistics Wellness Network
- 2018- **Cohort Representative**, CMU Statistics Student Advisory Committee
- 2018- **Mentor**, CMU Statistics Matched Pairs Mentor Program
- 2018- **Vice President**, CMU Women in Statistics
- 2015-2018 **President**, Purdue College Democrats
- 2015-2018 **Mentor**, Purdue Honors College Mentor Program
- 2016-2018 **Co-Captain**, Purdue Debate Team

## Graduate Coursework

- Intermediate Statistics
- Regression Analysis
- Advanced Statistics Theory I
- Statistical Machine Learning
- Advanced Data Analysis
- Microeconomics
- Advanced Statistics Theory II
- Statistical Computing

## Professional Memberships

- American Statistical Association
- Caucus for Women in Statistics