

# Matthew D. Beckman

421 Thomas Building, 461 Pollock Road, University Park, PA 16802

(814) 863-1022 | beckman@psu.edu

## ACADEMIC EMPLOYMENT

---

### **Penn State University**

*Department of Statistics*

Associate Research Professor (2022 - Present)

Assistant Research Professor (2016 - 2022)

2016 - Present

*University Park, PA*

### **Saint Olaf College**

*Department of Mathematics, Statistics, & Computer Science*

Instructor / Adjunct Faculty (Spring 2015)

2015

*Northfield, MN*

### **University of Minnesota**

*Department of Educational Psychology*

Teaching Specialist / Adjunct Faculty (Fall 2008; Spring 2009)

2008 - 2009

*Minneapolis, MN*

## INDUSTRY EMPLOYMENT

---

### **Medtronic, Plc—Neuromodulation**

*Quality; Operations*

Senior Statistician (2010 - 2013; 2014 - 2015)

Statistician (2008 - 2010)

2008 - 2013; 2014 - 2015

*Minneapolis, MN*

### **Nonin Medical, Inc**

Senior Biostatistician

2013 - 2014

### **Ecolab, Inc**

*Research, Development & Engineering*

Statistical Sciences Intern

2007 - 2008

*Eagan, MN*

## EDUCATION

---

### **Ph.D. Educational Psychology (QME: Statistics Education)**

*University of Minnesota*

Dissertation: Assessment of Cognitive Transfer Outcomes for Introductory Statistics Students.

Co-Advisors: Joan Garfield & Robert C. delMas

2015

*Minneapolis, MN*

### **M.S. Statistics**

*University of Minnesota*

Thesis: Equivalence testing in quality control.

Advisor: Douglas M. Hawkins

2008

*Minneapolis, MN*

### **B.S. Mathematics**

*Pennsylvania State University*

2006

*University Park, PA*

## TEACHING

---

### **Penn State University**

University Park, PA

STAT 184: Introduction to R	<i>Fall 2016; (...); Spring 2023</i>
STAT 200: Elementary Statistics	<i>Fall 2022; (...); Spring 2024</i>
STAT 250: Introductory Biostatistics	<i>Spring 2016; Fall 2016</i>
STAT 300: Statistical Modeling I	<i>Spring 2024</i>
STAT 380: Data Science w. Statistical Reasoning & Computing	<i>Spring 2019</i>
STAT 470W: (Capstone) Problem Solving & Comm. in Statistics	<i>Fall 2017; (...); Spring 2023</i>
STAT 501: Regression	<i>Summer 2018; Summer 2019</i>
STAT 592: Teaching Statistics	<i>Spring 2016</i>
STAT 597: Statistics Education Research Seminar	<i>Spring 2017; (...); Spring 2022</i>
PSU 016: First Year Seminar (Statistics & Data Sciences Majors)	<i>Fall 2016; (...); Fall 2023</i>

### **Saint Olaf College**

Northfield, MN

STAT 212: Statistics for the Sciences	<i>Spring 2015</i>
---------------------------------------	--------------------

### **University of Minnesota**

Minneapolis, MN

EPSY 5261: Introductory Statistical Methods	<i>Fall 2008; Spring 2009; Fall 2014</i>
---	--

### **Medtronic, Inc**

Minneapolis, MN

*Instructor for Professional Development Workshops (approx. quarterly)* 2008 - 2015

- Preclinical Study Design
- Design and Analysis of Experiments
- Statistical Methods for Engineers

### **Ecolab, Inc**

Eagan, MN

*Instructor for Professional Development Workshops (approx. 1-2 per month)* 2007 - 2008

- Statistical Process Control
- Measurement Systems Analysis
- Design of Experiments
- Robust Design and Specification Analysis

### **Corry Area School District**

Corry, PA

*Algebra Teacher (9th grade)* Summer 2006

## MENTORSHIP

---

### **Elizabeth Eisenhauer**

Graduated 2022

*PhD co-Advisor (with Ephraim Hanks)*

- Dissertation: *Advances in stochastic models for animal movement and assessment of attitudes toward probability*
- Employment: Statistician at Westat

### **Sayali Phadke**

Graduated 2022

*PhD co-Advisor (with David Hunter)*

- Dissertation: *Measurement, assessment, and improvement of statistical literacy in relevant contexts*
- Employment: Assistant Professor at Penn State Behrend (tenure track)

**Alyssa Hu**

Expected graduation: 2024

*PhD Advisor*

- Research interests: Computational thinking during data analysis; curriculum evaluation; analysis of inter-rater agreement

**Susan Lloyd**

Expected graduation: 2024

*PhD co-Advisor (with Nicole Lazar)*

- Research interests: formative assessment; educational assessment development; topological data analysis

**Elle Tang**

Expected graduation: 2025

*PhD Research Supervision*

- Research interests: bias in constructed response assessment

### Faculty Mentorship

- (2022 - present) Neil Hatfield, Assistant Research Professor at Penn State
- (2022 - present) Jenny Shook, Assistant Teaching Professor at Penn State
- (2023 - present) V. N. Vimal Rao, Assistant Teaching Professor at Univ of Illinois, Urbana-Champaign

### International Examiner (PhD)

- Rachel Passmore (Statistics); University of Auckland (NZ); Expected Graduation: 2024

### PhD Committee Membership

- Kristin Passero (Molecular, Cellular, and Integrative Biosciences); Graduation: 2023
- Matthew Black (Mathematics Education); Expected graduation: 2024
- Emilee Herman (Educational Psychology); Expected graduation: 2025
- Abby Sine (Statistics); Expected graduation: 2025
- Zachary Meyers (Educational Psychology); Expected graduation: 2026

## PUBLICATIONS

---

### Peer-reviewed

*student collaborators in **bold**; asterisk (\*) indicates undergraduate*

- **Eisenhauer, E.**, Beckman, M. D., & Hanks, E. M. (in review). Survey of Probability Attitudes.
- **Hu, A.**, Hatfield, N. J., & Beckman, M. D. (in review). Exploring Individuals' Computational Thinking with Data.
- Phadke, S., Beckman, M. D., & Lock Morgan, K. (2024). Examining the Role of Context in Statistical Literacy Outcomes using an Isomorphic Assessment Instrument. *Statistics Education Research Journal*, 23(1). <https://doi.org/10.52041/serj.v23i1.529>
- **Li, Z., Lloyd, S.**, Beckman, M. D., & Passonneau, R. J. (2023). Answer-state Recurrent Relational Network (AsRRN) for Constructed Response Assessment and Feedback Grouping. *Findings of the Association for Computational Linguistics: EMNLP 2023*. <https://doi.org/10.18653/v1/2023.findings-emnlp.254>
- **Lloyd, S. E.**, Beckman, M., Pearl, D., Passonneau, R., **Li, Z.**, & **Wang\*, Z.** (2022). Foundations for AI-Assisted Formative Assessment Feedback for Short-Answer Tasks in Large-Enrollment Classes. In S. A. Peters, L. Zapata-Cardona, F. Bonafini, & A. Fan (Eds.), *Bridging the Gap: Empowering & Educating Today's Learners in Statistics*. Proceedings of the 11th International Conference on Teaching Statistics (ICOTS-11), Rosario, Argentina. ISI/IASE.

- Derr, T., James, M., Kuny, C., Patel, D., Kandel, P., Field, C., Beckman, M., Hockett, K., Bates, M., Sutton, T., & Szpara, M. (2022). Aerosolized Hydrogen Peroxide Decontamination of N95 Respirators, with Fit-Testing and Virologic Confirmation of Suitability for Re-Use During the COVID-19 Pandemic. *mSphere*, 7(5).
- **Eisenhauer, E.**, Hanks, E. M., Beckman, M. D., Murphy, R., Miller, T., & Katzner, T. (2022). A Flexible Movement Model for Partially Migrating Species. *Spatial Statistics*. <https://doi.org/10.1016/j.spasta.2022.100001>
- Beckman, M. D., Çetinkaya-Rundel, M., Horton, N. J., Rundel, C. W., Sullivan, A. J., & Tackett, M. (2021). Implementing Version Control With Git and GitHub as a Learning Objective in Statistics and Data Science Courses. *Journal of Statistics and Data Science Education*, 29(1). <https://doi.org/10.1080/10691898.2020.1848485>
- Agole, D., Baggett, C., Brennan, M. A., Ewing, J. C., Yoder, E. P., Mikoni, S. B., Beckman, M. D., & Epeju, W. F. (2021). Determinants of Participation of Young Farmers with and without Disability in Agricultural Capacity-building Programs Designed for the Public in Uganda. *Sustainable Agriculture Research*, 10(2), 74-86. <https://doi.org/10.5539/sar.v10n2p74>
- Agole, D., Yoder, E., Brennan, M. A., Baggett, C., Ewing, J., Beckman, M., & Matsiko, F. B. (2021). Determinants of cohesion in smallholder farmer groups in Uganda. *Advancements in Agricultural Development*, 2(1), 26-41. <https://doi.org/10.37433/aad.v2i1.73>
- Beckman, M. D., & delMas, R. C. (2018). Statistics students' identification of inferential model elements within contexts of their own invention. *ZDM Mathematics Education* 50(7). DOI: 10.1007/s11858-018-0986-5
- Beckman, M. D., & delMas, R. C. (2018). Cognitive transfer assessment in post-secondary statistics. In M. A. Sorto, A. White, & L. Guyot (Eds). *Proceedings of the 10th international conference on teaching statistics (ICOTS-10)*. Kyoto, Japan.
- Beckman, M. D., delMas, R. C., & Garfield, J. (2017). Cognitive transfer outcomes for a simulation-based introductory statistics curriculum. *Statistics Education Research Journal* 16(2).

## eBooks

- Pearl, D. K., Hatfield, N. J., & Beckman, M. D. (2021). *The Book Of Apps for Statistics Teaching (BOAST)*. eBook URL: <https://shinyapps.science.psu.edu>
- Kaplan, D. & Beckman, M., (2020). *Data Computing (2nd edition)*. eBook URL: <https://dtkaplan.github.io/DataComputingEbook/>
- Beckman, M., Guerrier, S., **Lee, J.**, Molinari, R., Orso, S., & Rudnytskyi, I. (2019). *An Introduction to Statistical Programming Methods with R*. eBook URL: [https://smac-group.github.io/ds/\(authors alphabetical\)](https://smac-group.github.io/ds/(authors%20alphabetical))

## Miscellaneous

- Li, Z., Lloyd, S.E., Beckman, M.D., and Passonneau, R. J. (2023). I-STUDIO: A Reliable Statistical Automatic Short Answer Assessment Dataset. Penn State Data Commons. <https://doi.org/10.26208/JFMP-V777>.
- Beckman, M. D. (2017) Review of the book Fluke: the Math and Myth of Coincidence. *The American Statistician* 71(3), 285-286.
- Beckman, M. (2017, August 29). Thoughts on Teaching SBI in a Large Classroom [invited blog post]. Retrieved from <https://www.causeweb.org/sbi/?p=1501#more-1501>

- Beckman, M., Brown, E., delMas, R., Fry, E., Justice, N., Sabbag, A. (2014, November 21). Simulation-based statistical inference: Different tools for different audiences [invited blog post]. Retrieved from <https://www.causeweb.org/sbi/?p=422#more-422>

## PRESENTATIONS

---

### Talks

*student collaborators in **bold**; asterisk (\*) indicates undergraduate*

- Beckman, M. (2024). Progress toward NLP-assisted formative assessment feedback. *Joint Statistical Meetings*. American Statistical Association. Portland, OR.
- Beckman, M. (2024). Research evaluating NLP tools designed to assist instructors with formative assessment for students in large-enrollment STEM education classes. *U.K. Conference on Teaching Statistics*. Royal Statistical Society. Manchester, England.
- Beckman, M. (2024). (Plenary Panel) The Future of UKCOTS. *U.K. Conference on Teaching Statistics*. Royal Statistical Society. Manchester, England.
- Beckman, M. (2024). Statistics & Data Sciences Education Research. *PSU Statistics Department Research Day*. University Park, PA.
- Beckman, M. (2023). Progress toward natural language processing (NLP) assisted formative assessment feedback. *SSRI QuantDev Seminar Series*. Penn State Social Science Research Institute. University Park, PA.
- Beckman, M. (2023). Progress toward natural language processing (NLP) assisted formative assessment feedback. *Symposium on Statistics and Data Science Education: Connecting Disciplines*. Statistical Society of Australia & Queensland University of Technology. Brisbane, Australia.
- Beckman, M. (2023). Mind the Gap: An incomplete picture of statistics, statisticians, & statistics education. *The Thirteenth International Research Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-13)*. Maleny, Australia. (Keynote address)
- Beckman, M. (2023). Foundations for scalable NLP-assisted formative assessment feedback. *Colloquium Sponsored by Montana State University Department of Mathematical Sciences*. Bozeman, MT.
- Beckman, M. (2023). Statistics & Data Sciences Education Research. *PSU Statistics Department Research Day*. University Park, PA.
- **Lloyd, S. E.**, Beckman, M., Pearl, D., Passonneau, R., **Li, Z.**, & **Wang\*, Z.** (2022). Foundations for AI-Assisted Formative Assessment Feedback for Short-Answer Tasks in Large-Enrollment Classes. *Eleventh International Conference on Teaching Statistics*. International Statistical Institute. Rosario, Argentina.
- Beckman, M., & Le, L. (2022). Connecting and supporting data science education researchers through the CAUSE Organization. *ACM Conference on International Computing Education Research*. Association for Computing Machinery. Lugano, Switzerland.
- Beckman, M., Çetinkaya-Rundel, M., Dogucu, M., **Dragich\*, E.**, *Legacy, C.*, Tackett, M., & Zieffler, A. (2022). Piloting a new assessment tool for data science education researchers. *ACM Conference on International Computing Education Research*. Association for Computing Machinery. Lugano, Switzerland.
- **Lloyd, S. E.**, Beckman, M., Pearl, D., Passonneau, R., **Li, Z.**, & **Wang\*, Z.** (2022). Foundations for NLP-Assisted Formative Assessment Feedback for Short-Answer Tasks in Large-Enrollment Classes. *ICSA Symposium*. International Chinese Statistical Association. Gainesville, FL.

- Beckman, M., Desjardens, C., Lendway, L. (2021). Reimagining the Role of EDA in Science and the Classroom. *US Conference on Teaching Statistics*. Consortium for the Advancement of Undergraduate Statistics Education. Virtual Conference (COVID-19). (*80-minute hands-on breakout session*)
- Beckman, M. (2020). Assessment and evaluation tools for the undergraduate statistics major. *Colloquium Sponsored by University of Minnesota Department of Educational Psychology*. Minneapolis, MN.
- Beckman, M. (2020). Version control as a learning objective in statistics courses. *Twin Cities Stat Chat*. Saint Paul, MN. (*90-minute hands-on seminar*)
- Beckman, M. (2019). Novel assessment tools for improving learning: Early lessons from statistics. *Innovative Teaching at Penn State (ITAP) Series sponsored by Schreyer Institute for Teaching Excellence*. University Park, PA.
- Beckman, M. (2020). Implementing Version Control with Git as a Learning Objective in Statistics Courses. *Joint Statistical Meetings*. American Statistical Association. Virtual Conference (COVID-19).
- Beckman, M. (2019). Capstone assessment for the undergraduate statistics major. *Nationally broadcast webinar sponsored by the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE)*.
- Sullivan, A, Beckman, M. (2019). Implementing reproducible research in statistics courses using Git/GitHub. *US Conference on Teaching Statistics*. Consortium for the Advancement of Undergraduate Statistics Education. University Park, PA. (*80-minute hands-on breakout session*)
- Beckman, M. (2019). Capstone Assessment Tools for the Undergraduate Statistics Major. *Joint Statistical Meetings*. American Statistical Association. Denver, Colorado.
- Beckman, M. (2018). Effective pedagogy in large-enrollment statistics courses. *Joint Statistical Meetings*. American Statistical Association. Vancouver, Canada.
- Beckman, M., delMas, R. (2018). Assessment of cognitive transfer outcomes for introductory statistics students. *Tenth International Conference on Teaching Statistics*. International Statistical Institute. Kyoto, Japan.
- Beckman, M., delMas, R. (2017). Assessing student understanding of statistical models: Connecting data, chance and context. *The Tenth International Research Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-10)*. Rotorua, New Zealand.
- Beckman, M., Kaplan, D. (2017). Teaching authentic data science without pre-requisites. *US Conference on Teaching Statistics*. Consortium for the Advancement of Undergraduate Statistics Education. University Park, PA. (*80-minute hands-on breakout session*)
- Beckman, M. (2017). The interplay of statistical thinking and the scientific method. *Colloquium Sponsored by Westminster College Division of Biological, Chemical and Environmental Sciences*. New Wilmington, PA.
- Beckman, M. (2017). GAISEing at a lecture hall: effective pedagogy in large-enrollment courses. *Joint Statistical Meetings*. American Statistical Association. Baltimore, MD. (*Rountable discussion with lunch*)
- Beckman, M. (2017). Pedagogical considerations for simulation-based inference in a large-enrollment introductory biostatistics course. *Joint Statistical Meetings*. American Statistical Association. Baltimore, MD.

- Beckman, M., Brown, E., Fry, E., Garfield, J., Sabbag, A., Ziegler, L. (2015). The Quest for Good Assessments for Research and Evaluation. *Joint Statistical Meetings*. American Statistical Association. Seattle, WA. (*authors alphabetical*)
- Beckman, M. (2015). Teaching for Transfer in the Statistics Classroom. *Twin Cities Stat Chat*. Saint Paul, MN.
- Beckman, M. (2015). Cognitive Transfer Outcomes for Introductory Statistics Students. *Colloquium Sponsored by Penn State Department of Statistics*. University Park, PA.
- Beckman, M. (2015). Cognitive Transfer Outcomes for Introductory Statistics Students. *Colloquium Sponsored by Cal Poly Department of Statistics*. San Luis Obispo, CA.
- Beckman, M., Keenan, T., (2013). Critique of the Johnson family of transformations to Normality. *Medtronic Statistics Conference*. Minneapolis, MN.
- Beckman, M. (2012). Design and analysis of experiments for pre-clinical research. *Medtronic Statistics Conference*. Minneapolis, MN.
- Beckman, M. (2008). Complaint trending for post-market surveillance. *6th Annual Product Complaints Congress for Life Sciences*. Center for Business Intelligence. Washington, D.C.
- Beckman, M. (2008). Statistical analysis for corrective & preventative action (CAPA) effectiveness. *6th Annual Product Complaints Congress for Life Sciences*. Center for Business Intelligence. Washington, D.C.

## Workshops

- Post, J., Beckman, M. (2021). Teaching with R: Tidyverse, Markdown, and Shiny Basics. *US Conference on Teaching Statistics*. Consortium for the Advancement of Undergraduate Statistics Education. Virtual Conference (COVID-19). <https://www.causeweb.org/cause/uscots/uscots21/workshop/8> (*half-day workshop delivered in two parts*)

## Posters

*Note: student collaborators in **bold**; asterisk (\*) indicates undergraduate*

- **Hu, A.**, Hatfield, N., J., Beckman, M., D. (2024). Exploring How Novices and Experts Engage in Computational Thinking with Data. *Joint Statistical Meetings*. American Statistical Association. Portland, OR.
- **Hu, A.**, Hatfield, N., J., Beckman, M., D. (2024). Exploring How Novices and Experts Engage in Computational Thinking with Data. *Electronic Conference on Teaching Statistics*. Virtual.
- **Lloyd, S.**, Beckman, M., D. (2024). Feasibility Study for Developing and Validating an Instrument that Includes Interactions Among Learning Objectives Related to Confidence Intervals. *Electronic Conference on Teaching Statistics*. Virtual.
- **Lloyd, S.**, Beckman, M. (2023). Measuring Statistical Literacy Surrounding Confidence Intervals. *USCOTS Research Satellite*. University Park, PA.
- **Phadke, S.**, Beckman, M., Lock Morgan, K. (2023). Examining the Role of Context in Statistical Literacy Outcomes using an Isomorphic Assessment Instrument. *USCOTS Research Satellite*. University Park, PA.
- **Dragich\*, E.**, Beckman, M., Çetinkaya-Rundel, M., Dogucu, M., Legacy, C., Tackett, M., Zieffler, A. (2023). Creating a standardized assessment to measure learning in introductory data science courses. *USCOTS Research Satellite*. University Park, PA.

- Le, L. & Beckman, M. (2023). Connecting and Supporting Statistics and Data Science Education Researchers Through the CAUSE Organization. *International Association for Statistics Education (IASE) Satellite Conference*. Toronto, Canada.
- **Lloyd, S. E.**, Beckman, M., Pearl, D., Passonneau, R., **Li, Z.**, & **Wang\*, Z.** (2022). Foundations for NLP-Assisted Formative Assessment Feedback for Short-Answer Tasks in Large-Enrollment Classes. *Joint Statistical Meetings*. Washington, D. C.
- Beckman, M., & Le, L. (2022). CAUSE Research: Connecting statistics and data science education researchers. *Electronic Conference on Teaching Statistics*. Virtual.
- **Lloyd, S. E.**, Beckman, M., Pearl, D., Passonneau, R., **Li, Z.**, & **Wang\*, Z.** (2022). Foundations for AI-Assisted Formative Assessment Feedback for Short-Answer Tasks in Large-Enrollment Classes. *Electronic Conference on Teaching Statistics*. Virtual.
- **Eisenhauer, E.**, Beckman, M., Hanks, E. (2022). Survey of Probability Attitudes. *Electronic Conference on Teaching Statistics*. Virtual.
- **Eisenhauer, E.** & Beckman, M. (2021). Survey of Attitudes toward Probability. *US Conference on Teaching Statistics*. Virtual (COVID-19). [www.causeweb.org/cause/uscots/uscots21/th-06-survey-attitudes-toward-probability](http://www.causeweb.org/cause/uscots/uscots21/th-06-survey-attitudes-toward-probability)
- **Gong\*, Y.**, Pearl, D., Beckman, M., Hatfield, N., & **Zhang\*, S.** (2021). The value of Log files of students' interaction with software applications: Replicating a Bayesian Network analysis across multiple years data. *US Conference on Teaching Statistics*. Virtual (COVID-19). [www.causeweb.org/cause/uscots/uscots21/program/posters](http://www.causeweb.org/cause/uscots/uscots21/program/posters)
- **Hu, A.**, Beckman, M., & Pearl, D. (2021). Program Evaluation Through Alignment of Student Perceptions, Outcomes Assessment, and Faculty Perceptions in an Undergraduate Statistics Major. *US Conference on Teaching Statistics*. Virtual. [www.causeweb.org/cause/uscots/uscots21/tu-01-program-evaluation-through-alignment-student-perceptions-outcomes-assessment](http://www.causeweb.org/cause/uscots/uscots21/tu-01-program-evaluation-through-alignment-student-perceptions-outcomes-assessment)
- McNamara, A., **Legacy, C.**, **Rao, V.**, delMas, R., Zieffler, A., Beckman, M., & **Basner Butler, E.** (2021). Computing in the Statistics Curriculum: Lessons Learned from the Educational Sciences. *US Conference on Teaching Statistics*. Virtual (COVID-19). [www.causeweb.org/cause/uscots/uscots21/tu-03-computing-statistics-curriculum-lessons-learned-educational-sciences](http://www.causeweb.org/cause/uscots/uscots21/tu-03-computing-statistics-curriculum-lessons-learned-educational-sciences)
- **Zhang\*, S.**, Pearl, D., Beckman, M., Hatfield, N., & **Gong\*, Y.** (2021). The value of Log files of students' interaction with software applications: Performance Evaluation in Correlation Guessing. *US Conference on Teaching Statistics*. Virtual (COVID-19). [www.causeweb.org/cause/uscots/uscots21/program/posters](http://www.causeweb.org/cause/uscots/uscots21/program/posters)
- **Yan\*, W.**, Pearl, D., & Beckman, M. (2019). Assessing Student Conceptual Competencies using Bayesian Networks. *US Conference on Teaching Statistics*. University Park, PA.
- Wu, J., Lai, C., Beckman, M., Raike, R., Gupta, R., Abosch, A., & Nelson, D. (2013). Video-motion detection for objectively quantifying movements in patients with Parkinson's disease. *17th International Congress of Parkinson's Disease and Movement Disorders*. Movement Disorder Society. Sydney, Australia.
- Doe, B., Fontecchio, J., Beckman, M., Depre, J., Boulware, S., & Keenan, T. (2012). Visual management system for manufacturing yield SPC data. *Medtronic Science and Technology Conference*. Minneapolis, MN.
- Holland, M., & Beckman, M. (2011). Statistical methods for monitoring rare adverse events. *Neuromodulation Innovation Week*. Minneapolis, MN.



## SPONSORED RESEARCH, FUNDING, ETC.

---

### Senior Personnel (Mentoring Partner)

2024 - 2027

*NSF Mid-Career Advancement (Directorate for STEM Education)*

*NSF Award #2423026*

**Title:** MCA: Cultivating a Leader in Statistics and Data Science Education through Strategic Partnerships

**Budget:** \$88,273 Subaward

**PI:** Jennifer Broatch (Arizona State University).

### Co-Investigator

2024 - 2026

*NSF Improving Undergraduate STEM Education (IUSE: EDU)*

*NSF Award #2417294*

**Title:** Fostering Engaged Team-Based Learning in Asynchronous Online and Hybrid Learning Environments

**Budget:** \$400,000

**PI:** Sy-Miin Chow (PSU Health & Human Development).

### Principle Investigator

2023 - 2025

*NSF Improving Undergraduate STEM Education (IUSE: EDU)*

*NSF Award #2236150*

**Title:** Project CLASSIFIES (Common Language Assessment in Studying Statistics with Instructional Feedback and Increased Enrollment Scalability)

**Budget:** \$300,000

**co-PIs:** Dennis Pearl (Penn State University), Rebecca Passonneau (Penn State University).

### Consultant / Independent Evaluator

2023 - 2027

*NSF Improving Undergraduate STEM Education (IUSE: EDU)*

*NSF Award #2235355*

**Title:** Expanding and assessing the art and practice of statistical thinking in post-secondary courses

**Budget:** \$800,000

**PI:** Nathan Tintle (Superior Statistical Research LLC) and co-PIs: Beth Chance (Cal Poly), Soma Roy (Cal Poly), Karen McGaughey (Cal Poly), and Todd Swanson (Hope College).

### ASA Member Initiative Grant

2023

*ASA Section on Statistics & Data Science Education*

**Title:** Statistics and Data Science Education Research Center at Penn State

**Budget:** \$250

### Faculty Travel Award

2025

*Penn State Global Programs*

**Title:** University of Auckland (NZ): Collaboration investigating AI assistance for instructors providing assessment feedback to students in large classes

**Budget:** \$2,500

### ASA Member Initiative Grant

2022

*ASA Section on Statistics & Data Science Education*

**Title:** CAUSE Research Resource Page Development

**Budget:** \$1,000

**Collaborators:** Doug Whitaker (Mount Saint Vincent Univ.); Laura Le (Univ. of Minnesota)

### Tombros Fellowship

2017 - 2018

*Center of Excellence in Science Education (Penn State University)*

**Title:** Comprehensive Assessment of Curricular Goals for the Undergraduate Statistics Major

**Budget:** \$20,279.45

**Collaborators:** Kirsten Eilertson (Penn State); Kari Lock Morgan (Penn State); Paul Roback (St Olaf College); Jennifer Kaplan (Univ. of Georgia); Beth Chance (Cal Poly); Allan Rossman (Cal Poly); Nick Horton (Amherst College)

### **Assessment Development Support**

Spring 2013

Conducted interviews with expert reviewers in order to gather validity evidence during development of the MOST assessment as part of the CATALST Project (NSF DUE-0814433) headed by Joan Garfield (Univ. of Minnesota).

### **Consultant / Independent Evaluator**

Spring 2011

Member of the evaluation team supervised by Joan Garfield for the Creating a Teaching and Learning Infrastructure for Introductory Statistics Redesign Project (NSF DUE-0737126) headed by Rob Gould (UCLA).

## **SERVICE TO PROFESSION**

---

### **Consortium for Advancement of Undergraduate Statistics Education (CAUSE)**

- Executive Director (2024 - present)
- co-Associate Director for Research (2021 - 2024)
- co-Chair of CAUSE Research Advisory Board (2021 - 2024)
- Organized CAUSE Research Satellite Conferences (2021; 2023)
- USCOTS Program Committee (2023)

### **American Statistical Association (ASA)**

*Section on Statistics and Data Science Education*

- Executive-At-Large (elected; 2025-2027)

### **International Association for Statistics Education (IASE)**

*Education Section of International Statistical Institute (ISI)*

- International liaison for catalog of all doctoral dissertations in statistics education (2022 - present)

### **Association for Computing Machinery (ACM)**

*Special Interest Group, Computer Science Education (SIGCSE)*

- DataEd'23 Program Committee (2023)

### **National Science Foundation (NSF)**

*Directorate for STEM Education*

- Panelist (January 2023)

### **Associate Editor**

- Statistics Education Research Journal (2023 - present)

### **Journal Refereeing**

- *Statistics Education Research Journal*
- *Technology Innovations in Statistics Education*
- *Journal of Statistics Education*
- *American Journal of Distance Education*

- *ZDM–International Journal of Mathematics Education*
- *The American Statistician*
- *Education Sciences*

## SERVICE TO UNIVERSITY

---

### **Chair of Undergraduate Curricula (Department of Statistics)**

*née Director of Undergraduate Programs*

- Faculty-in-charge for undergraduate statistics major & minor programs (2016 - 2024)
- Department contact for data sciences major–statistical modeling option (2018 - 2024)

### **Nittany Data Labs (Undergraduate data science club)**

- Faculty Advisor (Fall 2017 - 2024)

### **Undergraduate Education Advisory Committee (Eberly College of Science)**

- Representative for Department of Statistics (Spring 2016 - 2022)

### **Culture & Diversity Committee (Department of Statistics)**

- ECoS Ombudsperson (Spring 2018 - 2021)
- Department committee member (Spring 2018 - 2021)

### **ASA DataFest at Penn State (Statistics/Data Science Competition)**

- Faculty liaison to American Statistical Association
- Faculty liaison to corporate sponsors

### **Representative for Recruitment/Retention Events (Department of Statistics)**

- Spend a Summer Day (Spring 2016 - 2021)
- For the Glory (Spring 2016 - 2021)
- Student Orientation (“NSO”; New, Transfer & International; Spring 2016 - 2021)
- Millenium Scholars Program (Spring 2016 - 2021)

## PROFESSIONAL DEVELOPMENT

---

### **International Conference on Teaching Statistics (ICOTS)**

*International Association for Statistics Education*

- 2022: Rosario, Argentina
- 2018: Kyoto, Japan

### **ACM International Computing Education Research (ICER) Conference**

*Association for Computing Machinery*

- 2022: Lugano, Switzerland

### **Joint Statistical Meetings (JSM)**

*American Statistical Association*

- 2023: Toronto, Canada
- 2020: Virtual (due to COVID-19)
- 2019: Denver, CO
- 2018: Vancouver, Canada
- 2017: Baltimore, MD

- 2015: Seattle, WA

### **United States Conference on Teaching Statistics (USCOTS)**

*Consortium for the Advancement of Undergraduate Statistics Education (CAUSE)*

- 2023: University Park, PA
- 2021: Virtual (due to COVID-19)
- 2019: University Park, PA
- 2017: University Park, PA
- 2013: Raleigh-Durham, NC

### **CAUSE Research Satellite Conference (at USCOTS)**

*Consortium for the Advancement of Undergraduate Statistics Education (CAUSE)*

- 2023: University Park, PA
- 2021: Virtual (due to COVID-19)

### **International Research Forum on Statistical Thinking, Reasoning, and Literacy (SRTL)**

- 2023: Brisbane, Australia (SRTL-13)
- 2017: Rotorua, New Zealand (SRTL-10)

### **ICSA Symposium**

*International Chinese Statistics Association*

- 2022: Gainesville, FL

### **Conference on Statistical Practice**

*American Statistical Association*

- 2017: Jacksonville, FL

### **Computation and Visualization Consortium (CVC)**

- 2016: Claremont, CA

### **Twin Cities Stat Chat**

2009 - 2015

*Macalester College, Saint Paul MN*

- Regular attendee of monthly meetings among Statistics instructors and researchers representing a variety of colleges and Universities in the greater Twin Cities area. Content varied including research seminars, guest speakers, article discussion, teaching materials, etc.

### **Medtronic Statistics Conference**

2009 - 2014

*Medtronic World Headquarters, Minneapolis MN*

- Attended presentations showcasing the work of other Medtronic Statisticians worldwide, as well as half-day and full-day professional development topics.
- *Enhancing Big Data Projects through Statistical Engineering* half-day seminar presented by Ronald D. Snee (Snee Associates, LLC). 2014.
- *Statistical Design of Sequential Clinical Trials in R* full-day seminar presented by Scott S. Emerson (University of Washington). 2013.
- *Variation in Decomposition* half-day seminar and *Regulatory Trends* half-day seminar presented by Wayne Taylor (Taylor Enterprises, Inc). 2013.

- *Propensity Score Matching* full-day seminar presented by Thomas E. Love (Case Western Reserve University). 2012.
- *Experiments for Robust Design* full-day seminar presented by Connie M. Borrer (Arizona State University). 2012.
- *Bayesian Adaptive Methods for Clinical Trials* full-day seminar presented by Bradley P. Carlin (University of Minnesota) and Andrew Mugglin (Paradigm Biostatistics, LLC). 2011.
- *Statistical Methods for Reliability Data* full-day seminar presented by William Q. Meeker (Iowa State University). 2010.
- *Statistical Process Control* full-day seminar by Wayne Taylor (Taylor Enterprises, Inc). 2009.

## HONORS & ACCOMPLISHMENTS

---

<b>2017 Penn State</b>	Awarded Tombros Fellowship by Center of Excellence in Science Education (Eberly College of Science)
<b>2014 Nonin Medical</b>	Nominated for <i>NONIN WINS</i> company-wide recognition award for outstanding contribution to publishable research with physician partners at the University of Minnesota.
<b>2013 Medtronic</b>	Presented with a long-term incentive award in 2013 designed to recognize and retain high-achieving employees.
<b>2009 Medtronic</b>	Presented with a long-term incentive award in 2009 designed to recognize and retain high-achieving employees.