Megan Heyman

Curriculum Vitae

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**EDUCATION**

2016 Ph.D., School of Statistics, University of Minnesota

 “Bootstrap Techniques in the Partial Linear Model”

2014 M.S., School of Statistics, University of Minnesota

2008 B.S., Mathematics, Rose-Hulman Institute of Technology

**WORK EXPERIENCE**

2022 - Rose-Hulman Institute of Technology, Mathematics, Associate Professor

2016 - 2022 Rose-Hulman Institute of Technology, Mathematics, Assistant Professor

2010 – 2011 Target Enrollment Group, Enrollment Analyst

2008 – 2009 Diversified Systems, Inc., Process Engineer

**TEACHING EXPERIENCE**

**Rose-Hulman Institute of Technology**

MA223: Engineering Statistics Most Quarters

MA381: Introduction to Probability w/ Statistics S 17-18, 18-19

MA382: Introduction to Statistics w/ Probability F 17-18, 18-19, 19-20,

 20-21, 22-23

MA386: Statistical Programming F 19-20, 23-24

MA480: Nonparametric Statistical Methods & Applications S 16-17

MA480: Time Series Analysis F 20-21

MA481: Mathematical Statistics W 22-23

MA485: Applied Linear Regression & Time Series W 17-18, 19-20, 21-22

 23-24

MA487: Design of Experiments W 16-17, 18-19, 20-21,

 22-23, 24-25

MA490: Independent Study W 16-17

MA495: Independent Research Project W 17-18, 19-20,

 S 18-19

**University of Minnesota (Instructor of Record)**

STAT4101: Theory of Statistics I S 15-16

STAT3022: Data Analysis S 14-15

**University of Minnesota (Teaching Assistant)**

STAT5102: Sampling Methodology in Finite Populations F 15-16

STAT5102: Theory of Statistics II F 12-13

STAT5101: Theory of Statistics I F 12-13

STAT3011: Introduction to Statistical Analysis S 11-12

STAT1001: Introduction to the Ideas of Statistics F 11-12

**Teaching Workshops**

2023 ICI Leadership Academy, met 1 day per month all year

2023 L&T Summer Online Cohort, June

2020 Creating Adaptable Courses, Rose-Hulman, June - July

2017 Summer Institutes on Scientific Teaching, Minneapolis, Jun. 5 - 9

**RESEARCH SCHOLARSHIP**

**Peer-Reviewed Publications**

2024 Speer, J., Heyman, M. “Environmental Factors Driving Diversification of Ponderosa Pine in the Western United States.” *Land*. 13, 1428. <https://doi.org/10.3390/land13091428>

2021 **Heyman, M.**, Liner, A. “Cultivating an understanding of spatio-temporal dependencies.” *Journal of the Indian Statistical Association*. Vol.59(2) ([link](https://www.indstatassoc.org/journal-jisa/previous-volumes/dec-2021-volume-592))

2020 **Heyman, M.**, St. George, S., and Chatterjee, S. “Quantifying Spatial and Temporal Relationships Among Tree-Ring Records.” *Statistics and Applications.* Vol. 18(2): 163-185

 <https://ssca.org.in/media/13_Vol_18_No._2_2020_Chatterjee.pdf>

2019 **Heyman, M.** “Exploring statistical inference for population means through rubber chickens.” *Teaching Statistics.* Vol. 41(3): 110-114.

 <https://doi.org/10.1111/test.12202>

2017 Braverman, A., Chatterjee, S., **Heyman, M.**, and Cressie, N. “Probabilistic Evaluation of Competing Climate Models.” *Adv. Stat. Clim. Meteorol. Oceanogr.* 3: 93-105. <https://doi.org/10.5194/ascmo-3-93-2017>

2015 **Heyman, M.** and Chatterjee, S. “Predicting Crop Yield via Partial Linear Model with Bootstrap.” *Machine Learning and Data Mining Approaches to Climate Science: Proceedings of the 4th International Workshop on Climate Informatics.* Eds. V. Lakshamanan, E. Gilleland, A. McGovern, and M. Tingley. Springer International Publishing, 2015. 81-90. Print.

**Submitted Publications**

2024 Ejlali, M., Heyman, M. “Multi-scale habitat selection of breeding birds of tallgrass prairie on non-native reclaimed mine grasslands” *Acta Ornthologica*

**R Packages in CRAN**

2019 **Heyman, M.** “lmboot: Bootstrap in Linear Models.” R package version 0.0.1, 2019. [https://CRAN.R-project.org/package=lmboot](https://cran.r-project.org/package%3Dlmboot)

2016 **Heyman, M.** and Chatterjee, S. “WiSEBoot: Wild Scale-Enhanced Bootstrap.” R package version 1.4.0, 2016. [http://CRAN.R-project.org/package=WiSEBoot](http://CRAN.R-project.org/package%3DWiSEBoot).

**Invited Presentations**

2023 “Frequent Use of Authentic Assessments in the Statistics Classroom,” IISA International Conference on Statistics, June 1-4

2022 “Undergraduate Statistical Education of Scientists and Engineers,” School of Statistics 50th Anniversary, October 7-8

2020 “Using Practicum as the Cumulative Assessment in Introductory Statistics,” eCOTS. Voted by attendees to present during the Hot Topic Session, May 22.

2019 “Bootstrap in Linear Models: A Comprehensive R Package,” New England Statistical Symposium, May 15-17

2018 “Using Wavelets to Discover Relationships Among Tree-Ring Records,” IISA International Conference on Statistics, May 17-20

2018 “Wavelets in Analysis of Climate Time Series,” IRSA Statistics and Data Science for Earth Systems, May 3 – 5

**Conference Presentations**

2021 “Fostering critical thinking needed to get started with spatio-temporal data analysis,” US-COTS, June 28- July 1 (Poster)

2020 “Using a Practicum as the Cumulative Assessment in Introductory Statistics,” eCOTS, May 18-22 (Breakout Session)

2019 “Bootstrap in the Linear Model: A Comprehensive R Package,” JSM, July 27-Aug. 1 (SPEED Poster)

2018 “Navigating Math Departments,” Women in Statistics and Data Science, October 18-20 (Panel)

2018 “Female student and Faculty Experiences at a STEM Institution,” Women in Statistics and Data Science, October 18-20 (SPEED Poster)

2018 “Introducing Data Science Elements through Parallel Courses in Statistics and Computing,” eCOTS, May 21 (Breakout session)

2017 “Evaluation of Climate Models Using the Wild Scale-Enhanced Bootstrap,” Joint Statistical Meetings, Jul. 29 – Aug. 3 (Topic Contributed session)

2016 "Using Wavelets to Discover Relationships Among Tree-Ring Records," Joint Statistical Meetings, Jul. 30 – Aug. 4 (SPEED Poster)

2015 "Using the Wild Bootstrap Method on Wavelet-Decomposed Climate Time Series," Joint Statistical Meetings, Aug. 8 – 13 (Contributed session)

2015 “The WiSE Bootstrap for Climate Model Evaluation,” Workshop on Understanding Climate Change, Aug. 4-5 (Poster)

2014 "Predicting Corn Yield via Partial Linear Model with Bootstrap," Climate Informatics, Sept. 25 – 26 (Poster, funded travel award)

2014 "Bootstrapping in the Partial Linear Model," Joint Statistical Meetings, Aug. 2-7 (Contributed session)

2012 “Statistical Dimension Reduction Analysis,” Workshop on Understanding Climate Change, Aug. 6 – 7 (Poster)

**Select Work in Progress**

**Heyman, M.** and Guan, S. “A comparison of bootstrap, randomization tests, and parametric tests.”

**Heyman, M.**, Reyes, E. “Transforming Cumulative Assessment in Undergraduate Statistics Courses.”

**Rose-Hulman Senior Capstones**

24-25 E. Bernstein

 L. Czarnecki

 A. Frisk

 J. Norris

 G. Sheridan

 A. Wagner

 (co-advised with E. Reyes)

23-24 J. Mestemacher, “Analysis of New York City Real Estate Prices”

20-21, 21-22 M. Robertson, “Time Series Analysis on PDSI values in Western United States and Eastern Australia”

19-20 D. Saadatnezhadi, “Rose-Hulman Basketball Statistical Analysis of Victory Margin and Logistic Regression Prediction of Next Game Result”

18-19 B. Lyu, “Time Series Analysis on Satellite Observed CO2”

18-19 C.i Illian, “Time Series Analysis of Traffic Fatalities in IL”

**Other Rose-Hulman Student Research**

Su. 22 S. Guan, R-SURF project "Which statistical method should I use to analyze my data?"

**Consulting**

2023 Michelle Wong (ME Capstone). I met with her several times regarding design of experiments and subsequent data analysis.

2021 Nolan Dexter-Brown (Rose-Hulman Alum completing a PhD at WPI). Emailing to discuss project design and data analysis techniques.

2019 Controlled Chaos Consulting. Recommended visualizations for their data and presented qualitative trends in member enrollment.

2019 Brandon Rudolph (ME Masters Student). I met with him multiple times to discuss his project design and analysis techniques.

2014 WileyPLUS Error Checking. Checked question answers and formatting for Montgomery & Runger Engineering Statistics questions.

**GRANTS**

**Rose-Hulman Institute of Technology**

W 16-17 Proposal submitted (*not awarded*) with NASA Jet Propulsion Laboratory for Wild-Scale-Enhanced bootstrap evaluation of climate models

**University of Minnesota (*Research Assistantships*)**

F 14-15 National Aeronautics and Space Administration (NASA) Grant #1502546

S 13-14 National Science Foundation (NSF) Grant #IIS-1029711

F 13-14 National Science Foundation (NSF) Grant #IIS-1029711

**AWARDS AND HONORS**

**Rose-Hulman Institute of Technology**

2023-24 Rose-Hulman Luoma Endowment for Department Innovation, “Recognition Of Statistical Experience: STATistics major and credentials (ROSE STAT)”

S 18-19 Rose-Hulman L&T Microgrant for implementing a new research-based active/collaborative learning practice in MA223

Su 16-17 Macmillan Learning Travel Award, Summer Institutes on Scientific Teaching

Su 16-17 Rose-Hulman Dean’s Summer Professional Development Grant – “Extracting Signals from Tree-Ring Chronologies”

Su 16-17 KEEN Summer Course Development Grant – MA 487 Design of Experiments

**University of Minnesota**

S 14-15 Graduate Research Partnership Program (GRPP) Fellowship

S 14-15 U-Spatial Mapping Prize – “Graduate Student – Most Provocative/ Transformative”

Su 13-14 Martin-Buehler Fellowship in Statistics

Su 12-13 Lynn Y. S. Lin Fellowship in Statistics

S 11-12 Honorable Mention, National Science Foundation Graduate Research Fellowship

**SERVICE**

**On-Campus Service (*Current*)**

23-24 - Student Community and Engagement Committee (Chair, MA)

24-25 - ME freshman advisor (8 advisees)

24-25 - International student advisor (2 advisees)

21-22 - Tri-Delta Operations Advisor

16-17 - Stat-OR CDG (Mathematics Department. Convener since 2018.)

**On-Campus Service (*Past*)**

23-24 Dean of Faculty Search Consultant Committee

23-24 Short-term task force: recommend peer institutions for faculty compensation study

18-19 - IP/ROP Director

 23-24

23-24 New Faculty Mentor (Institute)

23-24 - ME freshman advisor (6 advisees)

20-21, Mathematics Associate Department Head

 21-22,

 22-23

Su. 22 RHIT Teaching Workshop Panel Member (Technology in the Classroom)

21-22 BSB3 Women in STEM Alumni Panel Member (March)

21-22 Noblitt Scholar selection

 23-24

21-22 Committee to review different software for FAR reports

20-21 MA freshman advisor (Ashka Dalal)

20-21 UGMC committee chair (online conference)

22-23 UGMC committee chair

19-20, Hiring Committee (MA)

 20-21, Hiring Committee (MA)

 21-22, Hiring Committee for 3 TT lines (MA)

 21-22, Chaired hiring committee for 1 Visitor (MA)

 21-22 Chaired hiring committee for Administrative Assistant (MA)

 22-23 Chaired hiring committee for 2 TT lines (MA)

 22-23 Chaired hiring committee for 4 Visiting lines (MA)

19-20 Honors & Awards Committee (Royse & Moench awards)

18-19 Teaching Effectiveness Committee (MA)

18-19 Student Affairs Committee

18-19 Data Science Committee (MA)

18-19 Rose Show Judge

17-18 Updated MA223 curriculum with E. Reyes

17-18, 18-19 ME freshman advisor (Approx. 15 advisees each year)

22-23 ME female freshman advisor (12 advisees)

**External Service**

2022 Judge: ASA High School AP Statistic Project Competition (8 round 1; 5 round 2)

2019 Review: Grant proposals (3) for NASA AIST/ESTO

2018 – 2019 Review: Paper for *Climatic Change*

2018 – 2019 Review: Paper for *IEEE Transactions on Big Data*

2017 – 2020 Judge: ASA High School AP Statistics Project Competition (Approx. 9 projects per round)

2017 - 2018 Judge: USPROC, USCLAP category (Approx. 11 projects per round)

2017 Review: Textbook Ch. 7, 11, 12, 14 *Statistics in Engineering* 2nd ed.

2017 Judge: USPROC, USRESP category (Approx. 11 projects per round)

2016 - 2017 Session Chair: Joint Statistical Meetings

2016, 2018 AP Statistics Reader

**PROFESSIONAL MEMBERSHIPS**

2015 - American Statistical Association

2018 - Caucus for Women in Statistics

**MISCELLANEOUS COURSEWORK**

2014 - 2015 Preparing Future Faculty, *University of Minnesota*

2014 Introduction to Web Mapping, *University of Minnesota*

2014 Analyzing Data and Creating Maps, *University of Minnesota*

2009 - 2010 Applied Statistics M.S.*, Texas A&M University* (exited to start PhD before degree completed)