# Eric M. Reyes

## Associate Professor | Statistician

### Contact Information

Eric Reyes
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Department of Mathematics
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### Education

**Ph.D. in Statistics (2012)**
North Carolina State University, Raleigh NC
- Dissertation Title: *Complete Least Squares: A New Variable Screening and Selection Method*
- Advisors: Dennis Boos and Len Stefanski

**Master of Statistics (2008)**
North Carolina State University, Raleigh NC
- Concentration: Biomedical Statistics

**B.S. in Mathematics and Economics (Summa Cum Laude, 2006)**
Rose-Hulman Institute of Technology, Terre Haute IN

### Academic Experience

**Associate Professor | August 2018 – Present**
Rose-Hulman Institute of Technology, Terre Haute IN
Department of Mathematics
- Teach lower- and upper-level statistics courses
- Direct senior capstone experiences in statistics

**Adjunct Clinical Assistant Professor of Biostatistics & Health Data Science | November 2023 – Present**
Indiana University School of Medicine at IUSM – Terre Haute, Terre Haute IN
- Contribute to an annual Journal Club with medical students
- Collaborate on community health projects

**Assistant Professor | August 2012 – August 2018**
Rose-Hulman Institute of Technology, Terre Haute IN
Department of Mathematics

**Teaching Assistant | January 2008 – August 2008**
North Carolina State University, Raleigh NC
Department of Statistics
- Full teaching responsibility for an introductory statistics course

## Computing Skills

Expertise: R, RMarkdown/Quarto, Moodle
Competency: SAS, Stan, Microsoft Office, Panopto, HTML, CSS

## Undergraduate Courses Taught

Engineering Statistics I (Multiple Terms Yearly)
Engineering Statistics II (Last Taught: Fall 2013)
Probability (Last Taught: Winter 2023)
Introduction to Statistics with Probability (Last Taught: Fall 2023)
Statistical Programming (Last Taught: Fall 2022)
Mathematical Statistics (Last Taught: Winter 2018)
Biostatistics (Last Taught: Spring 2024)
Bayesian Data Analysis (Last Taught: Winter 2023)
Applied Regression (Last Taught: Winter 2015)
Social Justice and Statistics Seminar (Last Taught: Winter 2021)
Social Justice and Statistical Concepts (Last Taught: Winter 2022)

## Research Interests

Alternate assessment techniques
Statistics education
Applications of statistics to the biological sciences

## Publications

(under revision) Danek R, **Reyes E.** "The Effect of Residence and Gender on Receipt of Prescription Medication." *Community Mental Health Journal*.

McCreary, B, Danek R, Ireland E, **Reyes E**. "Self-Stigma vs. Perceived Public Stigma Toward Mental Illness in Rural Adults." *Journal of Regional Medical Campuses*. Accepted June 2024, awaiting publication.

Curley B, Downey J, Kinnaird KM, Loy A, **Reyes E**. "Questions (and Answers) for Incorporating Nontraditional Grading in Your Statistics Courses." *Journal of Statistics and Data Science Education*. (2023)

Ratcliffe B, Danek R, Ireland E, **Reyes E**. "Rural and Urban EMS Level of Comfort with Overdose Treatment." *Journal of Regional Medical Campuses*. (2022) 5(1)

**Reyes E**. "Sharing in My Students' Struggles to Foster Their Success." *Journal for Research and Practice in College Teaching*. (2021) 6(2)

Popovic K, **Reyes E**, O'Connor J, Dee KC, Ingram EL. "Chapter 8: Creating Adaptable Courses: A Course Design Approach that Accommodates Flexible Delivery." in *Resilient Pedagogy: Practical teaching strategies to overcome distance, disruption, and distraction*. Editors: Thurston TN, Lundstrom K, and Gonzáles C. (2021) Utah State University.

**Reyes E**. "Specifications-Grading: An Example." *StatTLC: Statistics Teaching and Learning Corner*. Editors: Loy A, and Foti S. (2021 March)

**Reyes E**. "Specifications-Grading: An Overview." *StatTLC: Statistics Teaching and Learning Corner*. Editors: Loy A, and Foti S. (2021 February)

Small SR, Rogge RD, **Reyes EM**, Seale RB, Elliott JB, Malinzak RA. "Primary Stability in Cementless Rotating Platform Total Knee Arthroplasty." *Journal of Knee Surgery*. (2019) 34(2):192-199.

Small SR, Rogge RD, Malinzak RA, **Reyes EM**, Cook PL, Farley KA, Ritter MA. "Micromotion at the tibial plateau in primary and revision total knee arthroplasty: fixed versus rotating platform designs." *Bone & Joint Research*. (2016) 5:122-129.

Koshizaka M, Lopes RD, **Reyes EM**, Gibson CM, Schulte PJ, Hafley GE, Hernandez AF, Green JB, Kouchoukos NT, Califf RM, Ferguson TB, Peterson ED, Alexander JH. "Long-term clinical and angiographic outcomes in patients with diabetes undergoing coronary artery bypass graft surgery: Results from the PRoject of Ex-vivo Vein graft ENgineering via Transfection IV Trial." *American Heart Journal.* (2015) 169(1):175-184.

Thomas L, **Reyes EM**. "Tutorial: Survival Estimation for Cox Regression Models with Time-Varying Coefficients." *Journal of Statistical Software.* (2014) 61:1-23.

van Diepen S, Brennan JM, Hafley GE, **Reyes EM**, Allen KB, Ferguson TB, Peterson ED, Williams JB, Gibson CM, Mack MJ, Kouchoukos NT, Alexander JH, Lopes RD. "Endoscopic Harvesting Device Type and Outcomes in Patients Undergoing Coronary Artery Bypass Surgery." *Annals of Surgery*. (2014) 260(2):402-408.

Shen L, Shah BR, **Reyes EM**, Thomas L, Wojdyla D, Diem P, Leiter LA, Charbonnel B, Mareev V, Horton ES, Haffner SM, Soska V, Holman R, Bethel MA, Schaper F, Sun JL, McMurray JJV, Califf RM, Krum H. "Role of Diuretics, β Blockers, and Statins in Increasing the Risk of Diabetes in Patients with Impaired Glucose Tolerance: Reanalysis of Data from the NAVIGATOR Study." *British Medical Journal*. (2013) 347:f6745

**Reyes EM** and Thomas LE. "Chapter 15: Analytical Methods of Addressing Confounding." In: *Understanding Clinical Research*. Editors: Lopes RD and Harrington RA. McGraw-Hill Education. (2013)

**Reyes EM** and Ghosh SK. "Bayesian Average Error Based Approach to Sample Size Calculations for Hypothesis Testing." *Journal of Biopharmaceutical Statistics.* (2013) 23(3):569-588.

Kohli P, Wallentin L, **Reyes E**, Harrow J, Husted S, Angiolillo DJ, Ardissino D, Mauer G, Morais J, Nicolau JC, Oto A, Storey RF, James SK, Cannon CP. "Reduction in First and Recurrent Cardiovascular Events with Ticagrelor Compared with Clopidogrel in the PLATO Study." *Circulation*. (2013) 127:673-680.

**Reyes E**, Harrington RA, Pieper KS. "Chapter 17.1: Basic Statistics and Analysis for the Interventional Cardiologist." In: *Cardiac Catheterization and Interventional Cardiology Self-Assessment Program*. American College of Cardiology. (2013)

Lopes RD, Williams JB, Mehta RH, **Reyes EM**, Hafley GE, Allen KB, Mack MJ, Peterson ED, Harrington RA, Gibson CM, Califf RM, Kouchoukos NT, Ferguson TB, Lorenz TJ, Alexander JH. "Edifoligide and Long-Term Outcomes After Coronary Artery Bypass Grafting: PRoject of Exvivo Vein graft ENgineering via Transfection IV (PREVENT IV) 5-Year Results." *American Heart Journal*. (2012) 164(3):379-386.e1.

**Reyes EM**, Pieper KS, Harrington RA. "Chapter 41: Statistics Related to Interventional Cardiology Procedures." In: *1001 Questions: An Interventional Cardiology Board Review.* Editors: Mukherjee D, Cho L, Moliterno DJ. Lippincott Williams & Wilkins. (2011)

Kociol RD, Horton JR, Fonarow GC, **Reyes EM**, Shaw LK, O'Connor CM, Felker GM, Hernandez AF. "Admission, Discharge, or Change in BNP and Long-Term Outcomes: Data from OPTIMIZE-HF Linked to Medicare Claims." *Circulation: Heart Failure.* (2011) 4(5):628-636.

Koval KW, Setji TL, **Reyes E**, Brown AJ. "Higher High-Density Lipoprotein Cholesterol in African-American Women with Polycystic Ovary Syndrome Compared with Caucasian Counterparts." *Journal of Endocrinology and Metabolism*. (2010) 95(9):E49-53.

Pandya SB, Kim YH, Meyers SN, Davidson CJ, Flaherty JD, Park DW, Mediratta A, Pieper K, **Reyes E**, Bonow RO, Park SJ, Beohar N. "Drug-Eluting Versus Bare-Metal Stents in Unprotected Left Main Coronary Artery Stenosis: A Meta-Analysis." *Journal of the American College of Cardiology, Cardiovascular Interventions.* (2010) 3(6):602-611.

## Peer Reviewed Conference Abstracts

Sutterer B, **Reyes EM**, Berend ME, Small S, Rogge RD. "An Investigation of the Relationship between Plantar Weight Distribution and the Condition of Osteoarthritic Knees During Quiet Standing." Presented at Orthopaedic Research Society (2015)

Shen L, Shah BR, **Reyes EM**, Thomas L, Diem P, Leiter LA, Charbonnel B, Mareev V, Horton E, Haffner SM, Soska V, Holman R, Bethel A, Schaper F, Sun JL, McMurray J, Calif R, Krum H. "Do Diuretics, Beta-Blockers, and Statins Increase the Risk of Diabetes in Patients with Impaired Glucose Tolerance? Insights from the NAVIGATOR Study." *Circulation*. (2012) 126:A14642. Presented at AHA Scientific Sessions (2012).

Lucas BD, Broce M, Mehta RH, **Reyes EM**, Alexander JH. "No Evidence of Cardiovascular Harm of Nonsteroidal Anti-Inflammatory Use During Coronary Artery Bypass: Post-hoc Results from Two Large Multicenter Randomized Trials." *Circulation*. (2011) 124:A12945. Presented at AHA Scientific Sessions (2011).

## PRESENTATIONS

*Introducing Survival Analysis Through Eye Strength Exercises*
Joint Statistical Meetings (Aug 2024)

*Introducing Water Footprints in a Statistics Course*
RHIT Sustainability Network (May 2024)
with Jamie Reyes
Poster

*Developing a Vision*
RHIT Teaching Workshop (Aug 2023)
Rose-Hulman Institute of Technology

*Communicating Progress in a Statistics Course through Non-Traditional Grading*
US Conference on Teaching Statistics (June 2023)
with Brenna Curley and Adam Loy
Workshop

*Refocusing Students Toward Learning through Alternative Assessment Approaches*
Midwest Conference on the Scholarship of Teaching and Learning (Mar 2023)
with Emma Dosmar, Sylvia Carlisle, Rich House, and Julia Williams
Panelist

*Perspectives on Nontraditional Grading in Statistics Courses*
Joint Statistical Meetings (Aug 2022)
Panelist

*Developing a Vision*
RHIT Teaching Workshop (Aug 2022)
Rose-Hulman Institute of Technology

*Inclusive Classroom*
RHIT Teaching Workshop (Aug 2022)
Rose-Hulman Institute of Technology

*Backward Design and Learning Outcomes*
RHIT Teaching Workshop (Aug 2021)
Rose-Hulman Institute of Technology

*Thriving Across Modes of Delivery: Lessons from the Pandemic*
Indiana MAA Spring Meeting (Online, Mar 2021)
Invited Panelist

*Hot Topics: Using a Practicum as the Cumulative Assessment in Introductory Statistics*
Electronic Conference on Teaching Statistics (eCOTS, May 2020)
with Megan Heyman

*Using a Practicum as the Cumulative Assessment in Introductory Statistics*
Electronic Conference on Teaching Statistics (eCOTS, May 2020)
with Megan Heyman

*Analyzing and Visualizing Data*
Rose-Hulman Undergraduate Research Community (July 2019)
Rose-Hulman Institute of Technology

*Specifications Grading*
Faculty Workshop at Rose-Hulman Institute of Technology (Dec 2018)
with Sylvia Carlisle

*Introducing Data Science Elements through Parallel Courses in Statistics and Computing*
Electronic Conference on Teaching Statistics (eCOTS, May 2018)
with Megan Heyman

*Tuning Variable Selection via Noise when Prediction is Not the Primary Objective*
Joint Statistical Meetings (Aug 2017)

*Specifications Grading in a Statistics Classroom*
US Conference on Teaching Statistics (May 2017)
Workshop

*Life Lessons from a Young(ish) Professor*
Conference Celebrating 75 Years of the Statistics Department (Oct 2016)
North Carolina State University

*Choosing to be an Outlier in a Mathematics Department*
Joint Statistical Meetings (Aug 2016)
Panelist

*Specifications Grading in a Statistics Classroom*
Joint Statistical Meetings (Aug 2016)
Round Table Discussion

*Unified Approach to Variable Selection in Missing Data via Least Squares Approximation*
Joint Statistical Meetings (Aug 2015)

*Six Sigmas of Separation: Strategies for Making Inter-Disciplinary Connections*
US Conference on Teaching Statistics (USCOTS, May 2015)
With Diane Evans

*Engaging Intro Statistics Students with Activities*
US Conference on Teaching Statistics (USCOTS, May 2015)
Workshop, with Diane Evans

*Name-Brand vs. Off-Brand: A Twist on Taste Testing for a Mathematical Statistics Course*
Joint Statistical Meetings (Aug 2014)

*Engineering a Statistical Model: An Activity for an Engineering Statistics Course*
US Conference on Teaching Statistics (USCOTS, May 2013)
Poster

*Bayesian Average Error Based Approach to Sample Size Calculations (with an introduction to constructing R packages)*
Bayesian Seminar Series (Sep 2011)
North Carolina State University, Department of Statistics

*Bayesian Average Error Based Approach to Sample Size Calculations for Hypothesis Testing*
ENAR Spring Meeting (Mar 2011)

*Bayesian Average Error Based Approach to Hypothesis Testing and Sample Size Determination*
Midwest Biopharmaceutical Statistics Workshop (May 2010)
Charlie Sampson Poster Award

*Introduction to the Use of Inverse Probability Weighting via Propensity Scores*
Statistics Working Group Educational Meeting (Apr 2010)
Duke Clinical Research Institute

*Introduction to Principal Stratification*
Student Seminar Series (Oct 2009)
North Carolina State University, Department of Statistics

*Overview of Variable Selection Methods*
Statistics Working Group Educational Meeting (May 2009)
Duke Clinical Research Institute

*Do Dogs Really Know Calculus?*
Rose-Hulman Undergraduate Mathematics Conference (Mar 2006)

## Student Research Directed

*Substance Abuse Survey Analysis*
**Riya Bharamaraddi**, Biomathematics Senior Project (2024)

*Assessing the Varying Definitions of Metabolic Syndrome in African Americans*
**Lizzie Rhoads**, Biomathematics Senior Project (2022)

*Compare and Contrast Maximum Likelihood Method and Inverse Probability Weighting Method in Missing Data Analysis*
**Scott Sun**, Mathematics Senior Thesis (2021)

*Association of State Education and Homelessness*
**Adam Baker**, Mathematics Senior Project (2020)

*Ranking Division III Cross Country Teams*
**Mary Peterson** and **Alexa Kovacs**, Mathematics Senior Project (2020)

*Effects of Framing on the Performance of Students During Exams*
**Marianna Lane**, Mathematics Senior Project (2019)

*A Survey in Statistical Collaborations*
**Kennedy Schnieders**, Mathematics Senior Project (2019)

*Nonparametric Variable Selection via Distance Correlation*
**Ty Adams**, Mathematics Senior Thesis (2019)

*Overfitting with Deep Learning?*
**John Lambrecht**, Mathematics Senior Thesis (2018)

*Using Retailer Transaction Data to Assess the Benefit of Marketing*
**Marianna Lane**, PIC Math Project (2017)
with Dr. Christina Selby
Client: 84.51

*Statistical Methods for Market Research*
**Ruinan (Victor) Zhang**, Mathematics Senior Project (2017)
Client: SMARI

*Analysis of Tibial Micromotion, Phase 3*
**Amy Kamperman**, Mathematics Senior Project (2016)
Client: Joint Replacement Surgeons of Indiana

*Feature Screening in the Presence of Nonlinear Relationships*
**Wenjun (Kathy) Kong**, Computer Science Thesis (2016)
1st Place: CAUSE Undergraduate Research Project Competition (USRESP), Methodological Research Subcategory

*A Unified Approach to Variable Selection in the Presence of Missing Data*
**Cody Roberts**, Mathematics Senior Thesis (2015)

*Bayesian Analysis of Gender Bias in Jury Selection*
**Lorena Maxwell**, Class Project / Individual Research (2015)
2nd Place: CAUSE Undergraduate Class Project Competition (USCLAP)

*Nonlinear Modeling Framework for Estimating Young's Modulus from Stress-Strain Curves*
**Lorena Maxwell**, Mathematics Senior Project (2015)

*An Application of Nonlinear Mixed Effects Models to Cell Culturing Studies to Assess the Efficacy of Various Media*
**Devon Hardman**, Mathematics Senior Project (2013)
Honorable Mention: CAUSE Undergraduate Research Project Competition (USRESP)

## Committee Member, Master's Thesis

*Verification and Validation of Forces from Hippotherapy Rein Simulator*
**Sonia Sanchez**, Biomedical Engineering (2018)
Advisor: Renee Rogge

*A Comparative Evaluation of Cadaveric and Composite Femur Models for Total Hip Arthroplasty*
**Anderson Adams**, Biomedical Engineering (2015)
Advisor: Renee Rogge

*An Investigation of the Relationship Between Plantar Weight Distribution and the Condition of Osteoarthritic Knees During Quiet Standing*
**Brian Sutterer**, Biomedical Engineering (2014)
Advisor: Renee Rogge

*The Effects of Loading Orientation on the Structural Properties of the Anterior Cruciate Ligament*
**Cody Austin**, Biomedical Engineering (2013)
Advisor: Glen Livesay
Winner: Rose-Hulman Most Outstanding Master's Thesis

## Consulting Experience

**Statistical Reviewer for Student Research | May 2018 – Present**
Indiana University School of Medicine, Terre Haute
- Review student research proposals
- Collaborate in the development of data collection protocol
- Collaborate in the development of the statistical analysis plan
- Review manuscript drafts

**Independent Consultant | Summer 2021**
McGraw Hill
- Create video solutions for Schaum's Probability Outline

**Statistical Consultant | Fall 2019**
InterVarsity Christian Fellowship, Remote Sabbatical
- Identify predictors of chapter closure
- Identify characteristics associated with InterVarsity presence
- Present recommendations for growth initiatives

**Statistical Consultant | November 2015 – August 2019**
Joint Replacement Surgeons of Indiana, Rose-Hulman Lab
- Statistical consulting with biomedical engineers
- Analysis of clinical datasets collected at the JRSI lab at RHIT
- Analytical techniques: mixed effects models and estimations through generalized estimating equations for repeated measures
- Author statistical sections for articles and abstracts

**Independent Consultant | August 2013 – August 2014**
John Wiley & Sons, Inc., Higher Education
- Create video lectures on statistical concepts to be included with a textbook

**Statistical Consultant | February 2012 – December 2012**
Duke Clinical Research Institute
Clinical Trial Statistics, via Kelley Services
- Statistical collaboration with clinicians and statisticians
- Analysis of clinical datasets
- Analytical techniques: survival analysis, propensity scores, predictive modeling
- Author statistical sections for articles and abstracts

**Intern, Secondary Manuscripts | September 2006 – December 2011**
Duke Clinical Research Institute
Clinical Trial Statistics
- Statistical collaboration with clinicians and statisticians

## Grants

*Introducing Water Footprints in a Statistics Course*
Rose-Hulman Sustainability Network (AY 2023-2024)
Work completed with Jamie Reyes

*Transforming Cumulative Assessment in Engineering Statistics*
Rose-Hulman Microgrant (Spring 2019)
with Dr. Megan Heyman
Amount: $250

*Incorporating Entrepreneurial Minded Learning through Data Science in a Statistical Programming Course*
Rose-Hulman KEEN Course Development Grant (Summer 2016)
Amount: $5000

*Data to Decisions: A Video Series for Enhancing Engineering Statistics*
Rose-Hulman Multimedia Grant (Summer 2015)
Amount: $5000

## Honors, Professional Memberships

Member: American Statistical Association
Graduate School: Charlie Sampson Poster Award Winner (MBSW 2010)
Graduate School: Trainee in NHLBI Integrated Biostatistical Training Program for CVD Research
Undergraduate: Mu Sigma Rho

## Service Activities

**Departmental Service**
Chair: Mathematics Group for Program Improvement (AY 21-22, 22-23, 23-24)
Convener: Statistics and Operations Research Curriculum Group (AY 14-15, 15-16, 16-17, 17-18)
Advisor: Area Minor in Statistics (AY 15-16, 16-17, 17-18, 18-19, 19-20, 20-21, 21-22, 22-23, 23-24)
Member: Curriculum Review Committee (AY 23-24)
Member: Department Assessment Group (AY 19-20, 20-21)
Member: Data Science Curriculum Core Group (AY 15-16, 16-17, 17-18)
Member: Undergraduate Math Conference Committee (AY 14-15, 15-16, 16-17, 17-18, 18-19)
Member: Department Hiring Committee (AY 15-16)
Registration: High School Math Contest (AY 15-16, 16-17, 17-18, 18-19, 21-22, 22-23)

**Institutional Service**

Member: Academic Affairs Faculty Representative to the Board of Trustees (AY 22-23, 23-24)
Member: Planning Committee for Rose Show (AY 20-21, 21-22, 22-23, 23-24)
Member: Moodle Mentors (AY 17-18, 18-19, 19-20, 20-21, 21-22, 22-23, 23-24)
Member: Committee on Animal Care and Use (AY 15-16, 16-17, 17-18, 18-19, 19-20, 20-21, 21-22, 22-23, 23-24)
Member: CASO (AY 19-20, 20-21, 21-22, 22-23, 23-24)
Co-Coordinator: Teaching Workshop (Summer 2022, Summer 2023, Summer 2024)
Member: Innovation by Design, Alternative Program Actions Team (AY 24-25, 25-26)
Member: Tier 2 Strategic Plan Design Team: Affordability and Value (Spring 2023)
Coordinator: Peak Performing Professors Reading Group (AY 21-22)
Member: MA Department Head Search Consultants (AY 21-22)
Member: HSSA Economics Hiring Committee (AY 21-22)
Member: Peer Mentor for CAC and Y1 Course Development (AY 20-21)
Member: Faculty Affairs Committee (AY 18-19, 19-20, 20-21)
Chair: Faculty Affairs Committee (AY 19-20)
Member: Quality of Education Committee (AY 13-14, 14-15, 17-18)
Member: Subcommittee on Academic Misconduct (AY 14-15)
Faculty Advisor: Lilly Scholars Network (AY 18-19, 19-20)
Faculty Advisor: InterVarsity Christian Fellowship

**Professional Service**

Member: Planning Committee for USCOTS (2021)
Website Maintainer: Isolated Statisticians (Dec 2017 – Present)
Reviewer: Rose-Hulman Undergraduate Mathematics Journal (occasionally)
Reviewer: Journal for Statistics and Data Science Education (annually)
Member: ASA-MAA Joint Committee on Statistics Education (Jan 2016 – Dec 2019)