

# Ryan A. Peterson

[Google Scholar](#) – [GitHub](#) – [LinkedIn](#) – [ORCID](#) – [Web of Science](#) – [Website](#)

## Current Position

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Associate Professor (2025-present) – University of Iowa

Division of Infectious Diseases, Department of Internal Medicine, Carver College of Medicine

Department of Biostatistics, College of Public Health

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## Education

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**St. Olaf College**, Northfield, MN

*Bachelor of Arts*, Economics (with Distinction); *Concentration*: Statistics

2014

**University of Iowa**, Iowa City, IA

*Master of Science*, Biostatistics

2016

**University of Iowa**, Iowa City, IA

*Doctor of Philosophy*, Biostatistics – Advisor: Joe Cavanaugh, PhD

2019

Dissertation: Ranked Sparsity Methods in Model Selection

## Previous Research Positions

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**University of Colorado – Anschutz Medical Campus**, Aurora, CO

*Assistant Professor*, Biostatistics & Informatics, Center for Innovative Design & Analysis

2019-2025

*Director of Biostatistics and Bioinformatics Core*, Pulmonary Translational Core (PTraC)

2022-2025

**St. Olaf College**, Northfield, MN

*CURI Health Care Researcher*, Economics Department

2012

*Mayo Innovation Scholar*, Mayo Innovation Scholars Program

2013

*Research Fellow*, Center for Interdisciplinary Research

2013-2014

**University of Iowa**, Iowa City, IA

*Graduate Research Assistant*, Stat-Epi Research Group

2015-2019

*Statistical Consultant*, College of Nursing

2017-2019

**Mayo Clinic**, Rochester, MN

*Biostatistics Intern (PhD)*, Cancer Center Statistics

2017-2018

## Honors and Awards

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- Magna Cum Laude and Distinction in Economics, St. Olaf College, 2014
- William R. Clarke Graduate Research Assistant Award, University of Iowa, 2017
- Advancing Graduate Student Success Award, University of Iowa, 2018
- College of Public Health Research Week Poster Award, University of Iowa, 2018
- Leon F. Burmeister Graduate Service Award, University of Iowa, 2018
- College of Public Health Board of Advisors Academic Award, University of Iowa, 2018
- Milford E. Barnes Award, University of Iowa, 2019
- Best Poster Award, International Biometric Conference 2020 (Virtual)
- Best Paper Award, Journal of Applied Statistics, 2020
- ACTStat Early Career Award in Clinical and Translational Science 2021
- Best Session Award, ASA Statistical Consulting Section (CSNL), Joint Statistical Meetings 2023

## Professional Affiliations

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- American Statistical Association (since 2013)
  - Sections: Biometrics, Statistical Consulting, Statistical Computing, Statistical Learning
  - Colorado-Wyoming Chapter (2019-2025); Iowa Chapter (2025+)
- International Biometric Society (IBS)
  - Eastern North American Region (2017-2020)
  - Western North American Region (since 2020)
- Statistics Without Borders (since 2019)
- Association of Clinical and Translational Science Statisticians (ACTStat; since 2022)

## Professional Leadership and Service

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### **University of Colorado School of Public Health (CSPH)**

*Department of Biostatistics (BIOS) & Informatics, Center for Innovative Design & Analysis (CIDA)*

- MS Exam Committee Member (2019-2020), Department of Biostatistics & Informatics (BIOS).
- Research Tools Committee Chair (2019-2025), Center for Innovative Design & Analysis (CIDA). Identify software and policy best practices for use in CIDA by faculty and students, and maintain an R package (CIDATools) to maximize CIDA efficiency.
- MS/PhD Biostatistics and Informatics Admissions Committee Member (2019-2025), BIOS.
- Student Research Assistant Meeting Co-chair (2020-2024), CIDA. Lead a group that facilitates the growth of CIDA's research assistants in statistical knowledge, opportunities for professional development, and the ability to present problems and projects amongst peers.
- Research Instructor Search Committee Chair (2022), CIDA.
- Adjunct Instructor Search Committee Member (2022), BIOS.
- Organizer (2022-2025), working group on explainable machine learning, BIOS.
- Seminar Committee Chair (2023-2025): BIOS.

*Colorado School of Public Health*

- Honor Code and Conduct Committee Member (2019-2025).
- Big Data Seminar Series Coordinator (2019-2022), Biostatistics, Epidemiology, and Research Design (BERD) and Colorado Clinical and Translational Sciences Institute (CCTSI). Develop and coordinate guest lecture series on various big data topics for free campus dissemination.
- Scientific Advisory Review Committee (SARC) Biostatistics Reviewer (2019-present), BERD/CCTSI. Review protocols submitted for clinical research that have not undergone prior peer review to ensure appropriate statistical design and analysis are proposed.

### **University of Iowa**

- Graduate Student Senator (2014-2015), Biostatistics Student Organization (BSO).
- Biostatistics Student Activity Coordinator (2015-2016), BSO.
- President (2016-2018), BSO.
- Member (2025-2026), BIOS Graduate Student Admissions and Student Recruitment Committee
- Member (Summer 2026), BIOS M.S. Core Exam Committee
- Member (2025-2026), BIOS Computing Committee

### **National + International Organizations**

- Committee on Membership Outreach and Diversity Member (2020-2024), Statistical Consulting Section (CSNL) of the American Statistical Association (ASA).

- Guest Author (2021), “Software Corner” in IBS quarterly bulletin concerning software available for the selection and estimation of interactions in linear models. Session Chair (2022), Symposium on Data Science and Statistics, American Statistical Association.
- Conference Planning Committee Member (2022-2024), ACTStat Annual Meeting.
- Student Paper Award Judge (2023), ASA Section on Bayesian Statistical Science.
- Statistical Review Committee Member (2022-present), Preventing Chronic Disease Journal of the Center for Disease Control.
- Voting Member (2023-2025), Colorado Clinical Site, APS Consortium Data Science Subcommittee
- Invited Poster Chair (2023-2024), JSM 2024 Program Committee, ASA.
- Chapter Representative (2024-2025), Colorado/Wyoming ASA Chapter
- Activity Coordinator (2024), ASA CNSL Section
- Chair (Elect) (2025-2027), ASA CNSL Section
- Chair (2025 – present), Glassbox Modeling Working Group

#### **Data Safety and Monitoring Board**

- Chair and Biostatistician (2022-present), Remote EEG Monitoring (REMI) Study, University of Utah School of Medicine.

### Scholarly Review Activities

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- Statistical Review Committee Member, Preventing Chronic Disease Journal of the Centers for Disease Control and Prevention (2022-2026)
- Statistical Editor, *Pulmonary Circulation* (2023)
- Paper reviewer for:
  - The BMJ Open (2016) – 2 manuscripts
  - American Statistician (2017)
  - Clinical Trials (2019-2024) – 4 manuscripts
  - Health Services Outcome Methodology (2021)
  - Aerosol and Air Quality Research (2022)
  - STAT Journal (2022, 2024) – 2 manuscripts
  - JAMA Network Open (2022)
  - JCTS (2022-2023)
  - Journal of Data Science (2022)
  - Preventing Chronic Disease (2023)
  - Statistics in Medicine (2023-2024) – 2 manuscripts
  - Bioengineering (2023)
  - International Journal of Biostatistics (2023) – 2 manuscripts
  - Pulmonary Circulation (2023)
  - Journal of Statistical Theory and Practice (2024)
  - Forecasting (2024)
- Invited grant reviewer for CCTSI TM-Pilot Award (2020)
- Protocol Review Committee Member (2024), NIH/NHLBI Lung Transplant Consortium PROMISE.
- Associate Editor for Reproducibility, Journal of the American Statistical Association (2025-2027)

## Invited Lectures/Presentations

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- *Interpretation of Machine Learning Models in Pulmonary Research*, Invited Seminar, Pediatric Asthma Research Seminar Series, Children's Hospital Colorado, Sept 2024.
- *Role Play for Training Effective Statistical Leadership, Communication, and Collaboration. Invited Panel: **Ryan Peterson** (panelist/organizer), **Julia Sharp** (panelist), **Emily Griffith** (panelist), **Heather Smith** (panelist), **Mario Davidson** (panelist), **Eric Vance** (chair).* Joint Statistical Meetings (JSM) 2024. Portland, OR, August 2024.
- *Training the next generation of statistical consultants: Strategies, resources, and best practices.* Invited Panel: **Ryan Peterson** (panelist/co-organizer), Alex Hanlon (panelist/co-organizer), Emily Griffith (panelist), Maggie Niu (panelist), Joseph Roith (panelist), Julia Sharp (chair). Conference on Statistical Practice (CSP) 2024. New Orleans, LA, February 2024.
- *Pragmatic Statistical Learning: From Data to Interpretable Insights*, Invited Seminar, Statistical Methods in Pragmatic Research Series, Adult & Child Center for Outcomes Research & Delivery Science (ACCORDS), March 2024.
- *Detecting Interactions in R*. Invited speed talk, National Center for Health Statistics and the Center for Disease Control, Virtual, May 2023.
- *Successful Approaches to Teaching Statistical Consulting*. Invited Panel Discussion led by Julia Sharp. The ASA Section on Teaching of Statistics in the Health Sciences Webinar, Virtual, May 2023.
- *Selection tools for handling suspected signal heterogeneity in covariates with applications to interactions and high-dimensional time series*, Invited Seminar, Department of Biostatistics and Data Science, Wake Forest University School of Medicine, March 2023.
- *Mixed Signals in Model Selection and Development*, Invited Seminar, National Jewish Health Research in Progress Forum, March 2023.
- *The Sparsity-Ranked Lasso*, Invited Seminar, Department of Biostatistics and Informatics, University of Colorado, February 2023.
- *Reaping What You SOW*, Invited Panel Session, Conference on Statistical Practice, San Francisco, CA, February 2023.
- *An Introduction to Biomedical Applications of Big Data, Machine Learning, and Artificial Intelligence*. Invited Seminar. Big Data Seminar Series, Colorado Clinical and Translational Science Institute, University of Colorado, November 2022.
- *Predictive Modeling: From Simple to Complex and Transparent to Opaque, A Debate of Two Extremes*. Department of Biostatistics & Informatics, Colorado School of Public Health, University of Colorado Anschutz Medical Campus, November 2019.

- *Aggregating penalized regression coefficients after multiple imputation for urgent and effective prediction of intubation in patients with severe COVID-19.* ACTStat 2021 Annual Meeting, Virtual. Early Career Award winner.
- *(The Making of) The Multistate Simulation Designer.* SUMIT Departmental Seminar, Mayo Clinic, Rochester, MN, 2017.
- *Multistate Modeling in Clinical Trials: how to plan, power, and analyze multistate studies using the Multistate Simulation Designer.* Cancer Center Special Topics Seminar, Mayo Clinic, Rochester, MN, 2017.
- *Parkinson's Progression Markers Initiative: filtering noisy outcomes and prediction-guided inference.* Departmental Seminar, University of Iowa. Iowa City, IA. December 2016.

## National Workshops

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- *Collaborator Phenotyping.* ACTStat 2022 Annual Meeting. Developed and led two 1.5-hour sessions with 25 participants. Washington, D.C., August 2022.
- *Statistical Leadership and Communication.* Applied Biostatistical Sciences Network 2-day Workshop with 42 collaborative biostatistician participants. Ann Arbor, Michigan, November 2023.
  - Developed curriculum and led second day of workshop with assistance from Mary Sammel; Paula Caproni developed day-one curriculum.
  - After the workshop, 97% of participants reported satisfaction with training experience, and 92% would recommend workshop to colleagues.
- *Identifying and addressing research misconduct as a collaborative statistician.* ACTStat 2024 Annual Meeting. Developed and led a 90-minute workshop for all collaborative statisticians attending the ACTStat annual meeting. Portland, Oregon, August 2024.
- *Statistical Leadership and Communication: A web-based short course.* A short-form, web-based course sponsored by the Applied Biostatistical Sciences Network. Virtually led in November 2024.

## Teaching – Courses

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### University of Colorado, Department of Biostatistics and Informatics, Aurora, CO

- BIOS 6621 Statistical Consulting I, 2 credits  
 Role: *Developer/Sole Instructor*  
 Description: Students gain experience with statistical consulting and common statistical problems encountered in consulting through a combination of examples and consultations with investigators. Emphasis will be on methods for effective consulting and communication with investigators.  
 Audience: MS/PhD (10-30 enrollment/course)  
 Offered: Annually in Fall, 2020-2024
- BIOS 6602 Applied Biostatistics II 001, 3 credits  
 Role: *Developer/Sole Instructor*  
 Description: This course extends basic principles of descriptive and inferential statistics (BIOS 6601) to examine more complex relationships/models, including linear regression, logistic regression, model selection, survival analysis, and more.  
 Audience: MPH (20-25 enrollment/course)  
 Offered: Spring 2021, Spring 2022
- BIOS 7722 Model Selection, 2 credits  
 Role: *Developer/Sole Instructor*  
 Description: This course is intended as a survey of methods for choosing an optimal statistical model in the context of biostatistical and public health applications. Topics include Occam's Razor,

information theoretic measures, asymptotic efficiency vs consistency, prediction vs description, overfitting, the bias/variance tradeoff, model evaluation, model validation, variable selection algorithms, model averaging/ensembles, and computer-intensive model evaluation.

Audience: PhD (12 enrolled)

Offered: Spring 2023

**University of Iowa**, Department of Biostatistics, Iowa City, IA

- BIOS 4120 Introduction to Biostatistics, 3 credits

Role: *Sole Instructor*

Description: An introductory course that covers basic statistical concepts and methods used in medicine, public health, and the biological sciences

Audience: MPH (10-20 enrollment/course)

Offered: Summer 2015, Summer 2018

## Teaching – Additional Activities

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### Advising

- PhD thesis advisor:
  - Jared Rieck (co-advising with Julia Wrobel; 2023-present)
  - Sarah Bird (co-advising with Julia Wrobel; 2023-present)
- MS thesis advisor:
  - Matthew Bolt (2021). Inference Following Multiple Imputation for Generalized Additive Models: An Investigation of the Median P-Value Rule.” Resulted in publication.
  - Alyse Winchester (2021). “Impact of COVID-19 Social Distancing Policies on Traffic Congestion, Mobility, and NO<sub>2</sub> Pollution.” Resulted in publication.
  - Raymond Pomponio (2022-2023). “Handling missing identifiers in matched data.” Resulted in paper submission and preprint.
  - Sarah Bird (2023-2024).
  - Amy Dye-Robinson (2023-2024).
  - Jinal Shah (2024).
- MS Examination Committee member:
  - Cameron Severn (2019)
  - Samantha Bothwell (2021)
  - Kaitlin Olsen (2023)
  - Johnathan (Trent) VanHawkins (2023)
  - Nathan Grove (2023)
- PhD Committee member:
  - Yaxu Zhuang (2022-2023)
  - Jess Wild (2023-2024)
- Project Mentor, Colorado Summer Institute of Biostatistics (CoSIBS), 2022 – 2024.

### Other Teaching Activities

- Teaching Assistant, Game Theory, St. Olaf College, 2012.
- Math Clinic Instructor, Academic Support Center, St. Olaf College, 2013.
- Graduate Teaching Assistant, Introduction to Biostatistics, University of Iowa, 2014-2015.
- Graduate Teaching Assistant, PhD Categorical Data Analysis, University of Iowa, 2018.
- Hackathon Judge, CoSIBS, 2022.
- Guest Lecturer, Applications and Challenges in Personalized Medicine, Department of Biomedical Informatics, University of Colorado, Fall 2022.

## Other Mentoring

- Primary GRA supervisor
  - Ying Jin (2019-2022)
  - Raymond Pomponio (2021-2023)
  - Moses Owusu (2024)
  - Jared Rieck (2024)
- Student Research Assistant Meeting Co-chair; led mentoring and training sessions for 10-12 CIDA graduate students (2020-2023).

## Research Record – Funding

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**NIH R21AG089278 (Moss)** **09/24-08/26**  
**Randomized Trial of Corticosteroids for Post-Extubation Aspiration**

A randomized trial of corticosteroids for acute respiratory failure (ARF) survivors with documented post-extubation laryngeal edema to improve their swallowing function.

Yearly Award: \$225,076; **Role: Co-I**

**NIH R01 NR019989-01 (Moss)** **07/21-06/26**  
**Aspiration in Acute Respiratory Failure Survivors**

This proposal will identify modifiable factors, determine the optimal screening tool, and classify specific groups of patients who may have different rates of recovery of their swallowing difficulties. Overall, this research will improve the care of patients recovering from critical illnesses and pave the way for the discovery of novel treatments for their swallowing dysfunction.

Yearly Award: \$627,626; **Role: Co-I**

**NIH/NCATS UM1TR004399 (Sokol)** **09/2023-07/2030**  
**Colorado Clinical and Translational Sciences Institute**

Advance clinical and translational science (CTS) by developing, demonstrating, and disseminating innovative programs to improve the efficiency and impact of translation across the entire T0.5 to T4 spectrum. Promote collaboration, team and data science, and partnerships to accelerate CTR locally, regionally and nationally. Partner with institutions, stakeholders and communities to develop innovative research programs to address health inequities and disparities, develop operational efficiencies to increase the quality, safety, efficiency, effectiveness and informativeness of clinical research. Promote a safe and nimble research environment that can rapidly respond to urgent public health needs. Develop and disseminate CTS training programs that educate and sustain a resilient, diverse team of clinical research professionals.

Total Award: \$53,728,356; **Role: Co-I** (through 2025)

**NIH/NHLBI U01 HL168145-01 (Moss, Janssen)** **07/24-06/2028**  
**Colorado APS Clinical Center**

ARDS, pneumonia, and sepsis are common critical illness disorders with significant associated morbidity and mortality. There is substantial heterogeneity in these critical illness disorders, and the mechanisms of injury and recovery are not well understood. The goal of this consortium is to unravel this heterogeneity and identify commonality in subgroups of patients with ARDS, pneumonia, or sepsis. Once common subgroups or phenotypes are identified, personalized therapies can be discovered that will be effective for specific groups, ultimately resulting in improved outcomes for patients with these three disorders.

Total award: \$3,344,628; **Role: Co-I** (through 2025)

**DoD W81XWH2110677 (Holguin)**

**08/21-08/26**

**Study to Improve Deployment-Related Asthma by Using L-Citrulline Supplementation**

A crossover fixed-dose clinical trial to evaluate the effects of L-Citrulline supplementation on asthma control and lung function in asthmatics.

Yearly Award: \$670,035; **Role: Co-I** (through 2025)

**NIH R61 HL157069 (Holguin)**

**05/24-04/27**

**LIMA: Lipid anti-Inflammatory Mediators in Asthma to reduce airway hyperresponsiveness in obese asthmatics**

A Phase 2 evaluation of the therapeutic effects of CXA-10 in subjects with obesity-associated asthma.

Yearly Award: \$242,416; **Role: Co-I** (through 2025)

**NIH R01 AA029855 (Burnham)**

**09/21-08/25 (completed)**

**Impact of Alcohol Misuse on Cognitive and Respiratory Outcomes in COVID-19-associated Acute Respiratory Failure**

We will evaluate available EMR data to explore relationships between alcohol use disorder and outcomes in COVID-19 respiratory failure, and obtain short- and long-term clinical outcomes among patients with COVID-19 in both the inpatient and outpatient environments, and how these are influenced by alcohol misuse.

Yearly Award: \$242,416; **Role: Co-I**

**NIH R01 HL146542 (Chu/Holguin)**

**09/20-08/25 (completed)**

**Parkin in mitochondrial dysfunction and airway inflammation of obese asthma**

This grant aimed to 1) determine the mechanisms by which Parkin is up-regulated in obese asthma; 2) determine how Parkin enhances airway mtDNA release and neutrophilic inflammation; 3) determine if the Parkin/mtDNA/STING signaling axis enhances eosinophilic inflammation.

Yearly Award: \$771,182 (\$302,456 subcontract); **Role: Co-I**

**ASI/DoD ID07200010-301-7 (Lindberg)**

**09/21-09/23 (completed)**

**Routine Child Abuse Screening to Prevent Serious Physical Abuse – ESCAPE Trial**

We propose to test routine screening of young Emergency Department (ED) patients as a tool to prevent severe physical abuse and exposure to intimate partner violence (IPV) and determine the impact of routine screening on racial and economic disparities in abuse evaluation and reporting.

Yearly Award: \$169,755; **Role: Co-I**

**Translational-Methods Pilot Award (Peterson/Goerg)**

**05/21-04/22 (completed)**

**Colorado Clinical and Translational Sciences Institute**

Using a multi-institutional asthma cohort study as a use-case, we propose to build a visual interactive tool for model selection and dimension reduction that will facilitate context-specific, collaborative decision making for observational studies. The software will help statisticians and their collaborators throughout the CCTSI build interpretable and predictive models which tell a cohesive story about the data and decisions made throughout the analytic process.

Total Award: \$20,000; **Role: Co-PI**

**CareDX IIT (Gray)**

**01/20-12/22 (completed)**

**A Study of Donor-Derived Cell Free DNA in Lung Transplant**

The purpose of this study is to determine to what extent monitoring of donor-derived cell free DNA in lung transplant recipients can be used as a marker of lung injury and stability.

Total Award: \$129,000; **Role: Biostatistician**

**NIH R61 MH125754-01 (Betz)**

**09/20-09/22 (completed)**

**Online Storage Maps to Facilitate Voluntary Firearm Storage: Mixed Methods Evaluation**

The goal of this study is to use mixed methods to examine the perspectives of suppliers (ranges, retailers, and law enforcement agencies in Colorado and Washington) and users (firearm owners and family members in Colorado and Washington) about statewide voluntary firearm storage maps, including participation, usage, and preferred dissemination.

Yearly Award: \$499,532; **Role: Co-I**

**NIH/NCATS UL1 TR002535 (Sokol)**

**05/18-04/24 (completed)**

**Colorado Clinical and Translational Sciences Institute**

The Colorado Clinical and Translational Sciences Institute (CCTSI) is a collaboration between University of Colorado (Denver and Boulder), Colorado State University, 6 hospitals and 20 community groups aimed at translating discoveries into better public health and patient care. Through the CCTSI, I develop educational programming, mentor students, head an education initiative, and provide grant writing support in the Biostatistics, Epidemiology, and Research Design (BERD) core. Total Award: \$7,927,217; **Role: Co-I**

**NIH R01 AG059613-03 (Betz)**

**05/19-02/24 (completed)**

**Decision Making Among Older Adults: the AUTO study**

The goals of this project are to (1) test the efficacy of a web-based driving decision aid (DDA) in improving decision quality, (2) determine the DDA's effects in specific subpopulations of older adults, and (3) identify the best settings for future DDA use.

Yearly Award: \$569,854; **Role: Co-I**

**NIH R01 AG076364-01 (Betz)**

**09/21-08/24 (completed)**

**Safety in Dementia: An Online Caregiver Intervention.**

The online decision support tool called Safety in Dementia (SiD) has been developed to help caregivers address firearm safety. The goals of this study are to (1) test the efficacy of SiD on firearm safety decision quality and behaviors among a national sample of informal caregivers; (2) compare varied methods (social media/internet versus via relevant organizations) in reaching informal caregivers; and (3) explore stakeholder longitudinal experiences with SiD and firearm-related decisions.

Yearly Award: \$500,000; **Role: Co-I**

## Peer-Reviewed Publications

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1. Roula Zahr, **Ryan Peterson**, ..., Philip Polgreen (2016). Diabetes as an increasingly common comorbidity among patient hospitalizations for tuberculosis in the USA. *BMJ Open Diabetes Research & Care*, 4(1): e000268.
2. Ashley Hodgson, Dorothy Morgan, **Ryan Peterson** (2016). Does better nurse staffing improve detection of depression and anxiety as secondary conditions in hospitalized patients with pneumonia? *Nursing Economics*, 34(3): 134-43.
3. Chris Anthony, **Ryan Peterson**, Linnea Polgreen, Daniel Sewell, Philip Polgreen (2017). The Seasonal Variability in Surgical Site Infections and the Association With Warmer Weather: A Population-Based Investigation. *Infection Control & Hospital Epidemiology*, 38, no. 7: 809–16.

4. Chris Anthony, **Ryan Peterson**, Daniel Sewell, Linnea Polgreen, Jacob Simmering, John Callaghan, Philip Polgreen (2017). The Seasonal Variability of Surgical Site Infections in Knee and Hip Arthroplasty. *The Journal of Arthroplasty*, 33, 510 - 514.e1.
5. **Ryan Peterson**, Linnea Polgreen, Joseph Cavanaugh, Philip Polgreen (2017). Increasing Incidence, Cost, and Seasonality in Patients Hospitalized for Cellulitis. *Open Forum Infection Diseases*, 4(1): ofx008.
6. **Ryan Peterson**, Linnea Polgreen, Daniel Sewell, Philip Polgreen (2017). Warmer Weather as a Risk Factor for Cellulitis: A Population-based Investigation. *Clinical Infection Diseases*, 65(7): 1167-1173.
7. Jennifer Le-Rademacher, **Ryan Peterson**, Terry Therneau, Ben Sanford, Richard Stone, Sumithra Mandrekar (2018). Using Multistate Models in Cancer Clinical Trials. *Clinical Trials*, 15(5), 489-498.
8. **Ryan Peterson**, Joseph Cavanaugh (2019). Ordered Quantile Normalization: A Semiparametric Transformation Built for the Cross-Validation Era. *Journal of Applied Statistics*, 47(13-15): 2312-2327. (won annual best paper award)
9. **Ryan Peterson**, Joseph Cavanaugh (2019). Discussion of prior-based Bayesian information criterion (PBIC) by M.J. Bayarria, James O. Berger, Woncheol Jang, Surajit Ray, Luis R. Pericchi, and Ingmar Visser. *Statistical Theory and Related Fields*, 3:1, 32-34.
10. Kirstin Manges, ..., **Ryan Peterson**, Joanna Harton, Ryan Greysen (2019). A Mixed Methods Study Examining Teamwork Shared Mental Models of Interprofessional Teams During Hospital Discharge. *BMJ Quality & Safety*, 29(6): 499-508.
11. Aaron Miller, **Ryan Peterson**, Inder Singh, Sarah Pilewski, Philip Polgreen (2019). Improving State-Level Influenza Surveillance by Incorporating Real-Time Smartphone-Connected Thermometer Readings Across Different Geographic Domains. *Open Forum Infection Diseases*, 6(11): ofz455.
12. Richard Broadhurst\*, **Ryan Peterson\***, ..., Fernando Holguin (2020). Asthma in COVID-19 Hospitalizations: An Overestimated Risk Factor? *Annals of the American Thoracic Society*, 17(12): 1645-1648. (\*co-first author)
13. Shoaib Fakhri, ..., **Ryan Peterson**, ..., David Badesch (2020). Residence at moderately high altitude and its relationship with WHO Group 1 pulmonary arterial hypertension symptom severity and clinical characteristics: the Pulmonary Hypertension Association Registry. *Pulmonary Circulation*, 10(4): 2045894020964342.
14. Dempsey Hughes, ..., **Ryan Peterson**, ..., Michael S Kriss (2020). Presence of any degree of coronary artery disease among liver transplant candidates is associated with increased rate of post-transplant major adverse cardiac events. *Clinical Transplantation*, 34(11): e14077.

15. **Ryan Peterson** (2020). A Simple Aggregation Rule for Penalized Regression Coefficients after Multiple Imputation. *Journal of Data Science*. 19(1): 1-14.
16. Leah Bettner, **Ryan Peterson**, Dylan Bergstedt, ..., Kevin Deane (2021). Combinations of Anticyclic Citrullinated Protein Antibody, Rheumatoid Factor, and Serum Calprotectin Positivity Are Associated With the Diagnosis of Rheumatoid Arthritis Within 3 Years. *ACR Open Rheumatology*, 3(10): 684-689.
17. **Ryan Peterson** (2021). Finding Optimal Normalizing Transformations via bestNormalize. *The R Journal*. 13(1): 310-329.
18. Alyse Winchester (mentee), **Ryan Peterson\***, Ellison Carter, Mary Sammel (2021). Impact of COVID-19 Social Distancing Policies on Traffic Congestion, Mobility, and NO<sub>2</sub> Pollution. *Sustainability*. 13(13): 7275. (\*primary thesis mentor)
19. Samuel Windham, Kellen Hirsch, **Ryan Peterson**, ..., Kristine Erlandson (2021). The Predictive Potential of Elevated Serum Inflammatory Markers in Determining the Need for Intubation in COVID-19 Patients. *Journal of Critical Care Medicine*. 8(1): 14-22.
20. Scott Matson, Seoyeon Lee, **Ryan Peterson**, ..., Joyce Lee (2021). The prognostic role of matrix metalloproteinase-7 in scleroderma-associated interstitial lung disease. *European Respiratory Journal*. 58(6): 2101560.
21. Trevor Lane, Peter D. Sottile, **Ryan Peterson**, Ying Jin, Marc Moss (2021). Significant Variability in Surrogate Informed Consent Rates in ARDS and Prevention and Early Treatment of Acute Lung Injury Network Multicenter Trials. *CHEST*, S0012-3692(21): 03904-0.
22. Alicia Rizzo, ..., **Ryan Peterson**, ..., Eric Schmidt (2022). Alveolar epithelial glycocalyx degradation mediates surfactant dysfunction and contributes to acute respiratory distress syndrome. *JCI Insight*. 7(2): e154573.
23. **Ryan Peterson**, Joseph Cavanaugh (2022). Ranked Sparsity: A Cogent Regularization Framework for Selecting and Estimating Polynomials and Interactions in Modeling Applications. *AStA Advances in Statistical Analysis*. 106: 427-454.
24. Timothy Amass, ..., **Ryan Peterson**, ..., Randall Curtis (2022). Stress-Related Disorders of Family Members of Patients Admitted to the Intensive Care Unit With COVID-19. *JAMA Internal Medicine*. 2022;182(6):624-633.
  - Quote from Dr. Amass: The results would not have been nearly as powerful or well displayed/explained without Ryan and Ying... As an example, Randy Curtis was on a call with us when Ryan and Ying were first presenting our early results. He commented, "I have been doing this for decades, and I have never seen such a well put together or thoughtful report."
25. Marian Betz, ..., **Ryan Peterson**, Carolyn DiGuiseppi (2022). Impact of the COVID-19 Pandemic on Older Adult Driving in the US. *Journal of Applied Gerontology*. 41(8):1821-1830.

26. Marian Betz, ..., **Ryan Peterson**, Daniel Matlock (2022). “Is it time to stop driving?”: A randomized clinical trial of an online decision aid for older drivers. *J Am Geriatr Soc.* 2022; 70(7): 1987- 1996.
27. Catherine Flaitz, Lonnie Johnson, **Ryan Peterson**, ..., Denise Kassebaum (2022). COVID-19 Risk Assessment of Dental School Patients for Safe Clinical Care Strategies. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology.* 133(5): e119-e120.
28. Marian Betz, ..., **Ryan Peterson**, ..., Ali Rowhani-Rahbar (2022). Voluntary, temporary out-of-home firearm storage: a survey of law enforcement agencies in two states. *Inj. Epidemiol.* 9:24.
29. Meghan Althoff, Guillermo Jimenez, **Ryan Peterson**, ..., Fernando Holguin (2022). Differences in L-arginine metabolism and asthma morbidity among asthma patients with and without obstructive sleep apnea. *Respiratory Research.* 23(1):230.
30. Matthew Bolt, ..., **Ryan Peterson\*** (2022). Inference following multiple imputation for generalized additive models: an investigation of the median p-value rule with applications to the Pulmonary Hypertension Association Registry and Colorado COVID-19 hospitalization data. *BMC Medical Research Methodology.* 22: 148. (\*thesis mentor)
31. Bryan Park, ..., **Ryan Peterson**, .... Sarah Jolley (2022). Relationship Between a State-Directed Lockdown on Non-COVID-19-related ICU Admissions and Mortality in a Multicenter Colorado Healthcare System. *Crit Care Explor.* 4(12):e0791.
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## Manuscripts in Development + Preprints

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- **Ryan Peterson**, Joseph Cavanaugh. An Information Criterion for Ranked Sparsity. (in prep)
- Ying Jin, Carsten Goerg, Fernando Holguin, **Ryan Peterson**. Visual Interactive Model Selection with VisX. (in prep)
- Raymond Pomponio, Bailey Fosdick, Julia Wrobel, **Ryan Peterson** (2023+). Mistaken identities lead to missed opportunities: Testing for mean differences in partially matched data. (in submission; preprint: [arxiv.org/abs/2312.14689](https://arxiv.org/abs/2312.14689))
- Jared Rieck, Julia Wrobel, ..., **Ryan Peterson**. Identifying Neural Signatures from fMRI using Hybrid Principal Components Regression. (in submission; preprint: [arxiv.org/abs/2509.07300](https://arxiv.org/abs/2509.07300))

## Contributed Abstracts/Presentations

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1. **Ryan Peterson**, Ashley Hodgson. The effect of a California nursing/patient ratio mandate on patient treatment patterns. Social Sciences Conference, St. Olaf College. Northfield, MN. February 2013. (Contributed oral presentation)
2. **Ryan Peterson**, Matthew Hultgren, Andrew Switzer. Drivers of increasing student tuition price for private non-profit liberal arts colleges. *National Conferences on Undergraduate Research*, University of Kentucky. Lexington, KY. April 2014. (Contributed poster)
3. **Ryan Peterson**, Jennifer Le-Rademacher, Sumithra Mandrekar, Terry Therneau. Power and Type I Error Rate Estimation via Simulation for Multistate Endpoints; an Introduction to MSDshiny. *Eastern North American Region Spring Meeting*, Atlanta, GA. March 2018. (Contributed poster)
4. **Ryan Peterson**, Jennifer Le-Rademacher, Sumithra Mandrekar, Terry Therneau. Power and Type I Error Rate Estimation via Simulation for Multistate Endpoints. *College of Public Health Research Week Poster Competition*, Iowa City, IA. April 2018. (Contributed poster; received college-wide Student Poster Award)
5. **Ryan Peterson**, Brandon Butcher, Stephanie Lussier, Brian Smith. Prediction-guided Inference in Statistical and Machine-Learning Models for the Progression of Parkinson's Disease. *Conference on Predictive Inference*, Ames, IA. May 2018. (Contributed poster; received NSF student travel grant)
6. **Ryan Peterson** and Joseph Cavanaugh. Ranked Sparsity Methods for Transparent Model Selection. *Joint Statistical Meetings*, Vancouver, British Columbia, Canada. August 2018. (lightning presentation; funded by Advancing Graduate Student Success Award)
7. **Ryan Peterson**. “But what about interactions, are any of those significant?” Resolving the collaborative nightmare of covariate interactions using regularization. *Joint Statistical Meetings*, Philadelphia, PA, USA. August 2020.

8. **Ryan Peterson.** “But what about interactions, are any of those significant?” Resolving the collaborative nightmare of covariate interactions using regularization. *International Biometric Conference*. Virtual conference, 2020. (Poster; won Best Poster Award)
9. **Ryan Peterson.** Penalized Regression and Multiple Imputation: A Simple Aggregation Rule That Works Surprisingly Well. *Joint Statistical Meetings*, Virtual Conference, 2021. (Lightning presentation)
10. Ying Jin (mentee), Fernando Holguin, **Ryan Peterson**, Carsten Görg. Visual Interactive Model Selection for Determining Predictors of Lung Function. *iSCB Rocky Bioinformatics Conference*, Aspen CO, 2021. (Poster)
11. **Ryan Peterson.** Can a new transparent algorithm predict better than its black-box counterparts? *Symposium on Data Science and Statistics*, Annual Conference, Pittsburgh, PA. June 2022. (Lightning session and poster)
12. Ray Pomponio (mentee), **Ryan Peterson.** Modeling complex longitudinal registry data using GEEs. *Symposium on Data Science and Statistics*, Annual Conference, Pittsburgh, PA. June 2022. (Lightning session and poster)
13. Ying Jin (mentee), **Ryan Peterson**, Fernando Holguin, Carsten Görg. Visual Interactive Model Selection for Determining Predictors of Lung Function. *ColoradoSPH Research Exchange*, Aurora, CO. September 2022. (Poster)
14. **Ryan Peterson.** Integrating public-use data for policy research: modeling city-specific trends in pollution and mobility through the COVID-19 pandemic. *ColoradoSPH Research Exchange*, Aurora, CO. September 2022.
15. **Ryan Peterson.** Fast, effective, and coherent time series modeling with the sparsity-ranked lasso: the `srTS` R package. *ASA Colorado/Wyoming Chapter Annual Meeting*. Aurora, CO. November 2022.
16. **Ryan Peterson**, Emily Slade, Walter Ambrosius. Working with statisticians: Perceptions of practicing statisticians on successful collaborations. *ACTStat Annual Meeting*, Toronto, CA, 2023.
17. **Ryan Peterson**, Julia Sharp, Emily Griffith, Alex Hanlon. Strategies for Successfully Scoping and Tracking Collaborative Statistical Work. *Joint Statistical Meetings*, Toronto, CA, 2023. Topic-Contributed Session (won best session award from the ASA CSNL Section).
18. **Ryan Peterson.** Fast, effective, and coherent time series modeling with the sparsity-ranked lasso: the `fastTS` R package. *ASA Western North American Region Meetings (WNAR) Annual Meeting*, Fort Collins, CO, 2024. Contributed presentation.

## Software Dissemination

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- Estimating Optimal Normalization Transformations with **bestNormalize**. ([CRAN](#)) ([GitHub](#)). (270,000+ downloads as of 12/15/2025; in the top 10% most downloaded packages on CRAN).
- Implementing ranked sparsity methods in **sparseR**. Available on [GitHub](#), [CRAN](#).
- Fast seasonal time series modeling with **fastTS**. ([GitHub](#))
- The Multistate Simulation Designer [shiny Application](#). ([GitHub](#))
- Parkinson's Progression Markers Initiative (Michael J. Fox Foundation). A Decision Support System for Parkinson's Clinical Trials Design and [shiny Application](#). ([GitHub](#)) (co-creator)
- Parkinson's Disease Rate Predictor [shiny Application](#). ([GitHub](#))
- The **selectInferToolkit** Package: Tools for model selection and post-selection inference ([GitHub](#))

## Additional Activities

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- Creator/Maintainer: The Statistical Consulting Training Repository Initiative (StatCTR.com)
- Creator/Contributor: Data-diction.com.

## Research Interests

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<ul style="list-style-type: none"><li>• Model Selection</li><li>• Data Preprocessing</li><li>• Model Transparency</li><li>• High-Dimensional Regression Methods</li></ul>	<ul style="list-style-type: none"><li>• Predictive Inference and Machine Learning</li><li>• Methods for Missing Data</li><li>• Simulation Optimization for Clinical Trials</li><li>• Statistical Computing</li></ul>
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