Mary M. Ryan

Curriculum Vitae

Updated January 2024

Assistant Professor
Departments of Population Health Sciences & Biostatistics and Medical Informatics
University of Wisconsin-Madison | Madison, WI 53726
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RESEARCH INTERESTS

Clinical trials, pragmatic clinical trials, cluster randomized trials, correlated data, group sequential design, epidemiology of Alzheimer's disease, Alzheimer's disease biomarker discovery

EDUCATION

2021	**Ph.D. (Statistics)** University of California, Irvine *Dissertation: Robustness and Efficiency in Modern Biostatistical Studies* *Advisor: Daniel L. Gillen, Professor and Chair of Statistics*
2019	**M.S. (Statistics)** University of California, Irvine
2016	**B.A. (Statistics); B.J. (Journalism)** *Minor, Mathematics* University of Missouri, Columbia

ACADEMIC POSITIONS

2023 - present	**Assistant Professor** Department of Population Health Sciences University of Wisconsin-Madison (Madison, WI)
2023 - present	**Assistant Professor** Department of Biostatistics and Medical Informatics University of Wisconsin-Madison (Madison, WI)
2021 - 2023	**Postdoctoral Associate** Department of Biostatistics Yale School of Publich Health (New Haven, CT)
2017 - 2021	**Graduate Research Assistant** Department of Statistics University of California, Irvine (Irvine, CA)
2014 - 2016	**Undergraduate Research Assistant** Department of Statistics University of Missouri (Columbia, MO)

COLLABORATIVE RESEARCH AFFILIATIONS & APPOINTMENTS

2023 - present   **Center for Demography and Healthy Aging**
University of Wisconsin-Madison (Madison, WI)

2017 - present   **Gillen/Grill Alzheimer's Disease Research Lab**
University of California, Irvine (Irvine, CA)

2021 - 2023   **Yale Center for Analytical Sciences**
Yale School of Public Health (New Haven, CT)

2014 - 2021   **Data Management and Statistics Core**
Alzheimer's Disease Research Center
University of California, Irvine (Irvine, CA)

REFEREED JOURNAL PUBLICATIONS

"" indicates mentored graduate student*

1. Liu, R.*, Esserman, D., Li, F., **Ryan, M.M.** (2024). "Group sequential two-stage randomized preference trial designs." *Statistics in Medicine.* http://dx.doi.org/10.1002/sim.9962. Preprint available on arXiv: https://doi.org/10.48550/arXiv.2310.11603

2. Nevins, P., **Ryan, M.M.**, Davis-Plourde, K., Ouyang, Y., Pereira Macedo, J., Meng,C., Tong, G., Wang, X., Ortiz-Reyes, L., Caille, A., Li, F., Taljaard, M. (2023). "Adherence to key recommendations for design and analysis of Stepped-Wedge Cluster Randomized Trials: A Review of trials published 2016-2022." *Clinical Trials.* https://doi.org/10.1177/17407745231208397

3. **Ryan, M.M.**, Esserman, D., Li, F. (2023). "Maximin optimal cluster randomized designs for assessing treatment effect heterogeneity." *Statistics in Medicine.* http://doi.org/10.1002/sim.9830. Preprint available on arXiv: https://doi.org/10.48550/arXiv.2302.09138

4. Meng, C., **Ryan, M.M.**, Rathouz, P.J., Turner, E.L., Preisser, J.S., Li, F. (2023). "ORTH.Ord: an R package for analyzing correlated ordinal outcome using GEE with orthogonalized residuals and small-sample bias correction." *Computer Methods and Programs in Biomedicine.* https://doi.org/10.1016/j.cmpb.2023.107567

5. Nevins, P., Davis-Plourde, K., Pereira Macedo, J., Ouyang, Y., Meng, C., **Ryan, M. M.**, Tong, G., Wang, X., Ortiz Reyes, L.A., Caille, A., Li, F. and Taljaard, M. (2023). "A scoping review described diversity in methods of randomization and reporting of baseline balance in stepped-wedge cluster randomized trials." *Journal of Clinical Epidemiology.* https://doi.org/10.1016/j.jclinepi.2023.03.010

6. **Ryan, M.M.**, Gillen, D.L. (2023) "Sequential Sampling in Prospective Observational Studies." *Annals of Applied Statistics.* https://doi.org/10.1214/22-AOAS1620

7. **Ryan, M.M.**, Gillen, D.L., Grill, J.D. (2021). "Reasons for Undergoing Amyloid Imaging Among Cognitively Unimpaired Older Adults with Elevated and Not Elevated Amyloid." *Annals of Clinical and Translational Neurology.* https://doi.org/10.1002/acn3.51414

8. **Ryan, M.M.**, Cox, C.G., Witbracht, M., Hoang, D., Gillen, D.L., Grill, J.D. (2020). "Using Direct-to-Consumer Genetic Testing Results to Accelerate Alzheimer's Disease Clinical Trial Recruitment." *Alzheimer Disease & Associated Disorders.* https://doi.org/10.1097/wad.0000000000000421

9. Cox, C.G., **Ryan, M.M.**, Gillen, D.L., Grill, J.D. (2020). "Is reluctance to share Alzheimer's disease biomarker status with a study partner a barrier to preclinical trial recruitment?" *The Journal of Prevention of Alzheimer's Disease.* dx.doi.org/10.14283/jpad.2020.36

10. **Ryan, M.M.**, Spotnitz, W.D., Gillen, D.L. (2020). "Variance estimation for the Kappa statistic in the presence of clustered data and heterogeneous observations." *Statistics in Medicine.* https://doi.org/10.1002/sim.8522

11. **Ryan, M.M.**, Grill, J.D., Gillen, D.L. (2019). "Participant and Study Partner Prediction and Identification of Cognitive Impairment in Preclinical Alzheimer's Disease: Study Partner vs. Participant Accuracy." *Alzheimer's Research & Therapy.* https://doi.org/10.1186/s13195-019-0539-3

12. Cox, C.G., **Ryan, M.M.**, Gillen, D.L., Grill, J.D. (2019). "A preliminary study of clinical trial enrollment decisions among people with Mild Cognitive Impairment and their study partners." *The American Journal of Geriatric Psychiatry.* https://doi.org/10.1016/j.jagp.2018.10.016

MANUSCRIPTS UNDER REVIEW/IN PROGRESS ———————————————

13. **Ryan, M.M.**, Esserman, D., Taljaard, M., Li, F. "Power calculation for cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints." (Under Review). Preprint available on arXiv: https://doi.org/10.48550/arXiv.2312.13097

SELECTED PRESENTATIONS, POSTERS, & SHORT COURSES

INVITED PRESENTATIONS ———————————————

October 2023	1.	**Being Significant: 60 Years of Mizzou Statistics** (Columbia, MO). Oral presentation on *"Power calculation for cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*
September 2023	2.	**2023 Orange County Biostatistics Symposium** (Irvine, CA). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*
	3.	**Department of Population Health Sciences, University of Wisconsin-Madison Seminar Series** (Madison, WI). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
March 2023	4.	**Department of Mathematics & Statistics, University of Massachusetts Amherst** (Amherst, MA). Oral seminar on *"Maximin optimal cluster randomized designs for assessing treatment effect heterogeneity"*

5. **Department of Biostatistics, Epidemiology and Informatics, University of Pennsylvania Perelman School of Medicine** (Philadelphia, PA). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

Feburary 2023

6. **Department of Biostatistics, University of Florida** (Gainesville, FL). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

January 2023

7. **Departments of Population Health Sciences and Biostatistics & Medical Informatics, University of Wisconsin-Madison** (Madison, WI). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

8. **Department of Epidemiology & Biostatistics, University of South Carolina** (Columbia, SC). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

9. **Rutgers Cancer Institute of New Jersey** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

10. **Department of Biostatistics, University of Washington** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

11. **Department of Epidemiology & Biostatistics, Michigan State University** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

12. **Department of Biostatistics & Health Data Science, Indiana University School of Medicine** (Indianapolis, IN). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

13. **Department of Biostatistics & Informatics, Colorado School of Public Health** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

14. **Department of Biostatistics & Data Science, Wake Forest University** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

November 2022

15. **Department of Mathematics & Statistics, University of Otago** (Virtual). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

16. **Department of Epidemiology & Biostatistics, Temple University** (Philadelphia, PA). Oral seminar on *"Design & analysis of cross-sectional stepped wedge cluster randomized trials with time-to-event endpoints"*

April 2021	17.	**ASQ Silicon Valley Section's Statistics & Reliability Discussion Group** (Virtual). Oral presentation on *"Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations"*
February 2021	18.	**Department of Family Medicine, Oregon Health & Science University** (Virtual). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
	19.	**Department of Global & Community Health, George Mason University** (Virtual). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
	20.	**Department of Biostatistics, Wake Forest University** (Virtual). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
	21.	**Division of Biostatistics, University of Minnesota** (Virtual). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
January 2021	22.	**Department of Mathematics & Statistics, Wake Forest University** (Virtual). Oral seminar on *"Sequential Sampling in Prospective Observational Studies"*
	23.	**American Statistical Association Biopharmaceutical Section Webinar** (Virtual). Oral seminar on *"Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations"*
	24.	**Department of Biostatistics, St. Jude Children's Research Hospital** (Virtual). Oral seminar on *"On Confounding, Efficiency, & Prospective Observational Study Design"*
December 2020	25.	**Department of Biostatistics, Vanderbilt University** (Virtual). Oral seminar on *"On Confounding, Efficiency, & Prospective Observational Study Design"*
November 2020	26.	**Orange County Biostatistics Symposium** (Virtual). Oral seminar on *"Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations"*

CONTRIBUTED PRESENTATIONS

May 2023	27.	**Society for Clinical Trials** (Baltimore, MD). Oral presentation on *"Power calculation for cross-sectional stepped wedge cluster randomized trials with a time-to-event endpoint"*
March 2023	28.	**Eastern North American Region International Biometric Society (ENAR) Annual Meeting** (Nashville, TN). Oral presentation on *"Power calculation for cross-sectional stepped wedge cluster randomized trials with a time-to-event endpoint"*
November 2022	29.	**Current Development in Cluster Randomised Trials and Stepped Wedge Designs** (Virtual/London, UK). Oral presentation on *"Power calculation for cross-sectional stepped wedge cluster randomized trials with a time-to-event endpoint"*

August 2022	30.	**Joint Statistical Meetings (JSM)** (Washington, D.C.). Oral presentation on *"Maximin Optimal Cluster Randomized Designs for Assessing Treatment Effect Heterogeneity"*
May 2022	31.	**Society for Clinical Trials** (San Diego, CA). Oral presentation on *"Maximin Optimal Cluster Randomized Designs Accounting for Treatment Effect Heterogeneity"*
July 2019	32.	**Joint Statistical Meetings (JSM)** (Denver, CO). Oral presentation on *"An Extension of Cohen's Kappa for Clustered Data and Group Sequential Testing"* ⋆ *Received JSM Contributed Presentation Honorable Mention Award from ASA Biopharmaceutical Section*
	33.	**Western North American Region International Biometric Society (WNAR) Annual Meeting** (Portland, OR). Oral presentation on *"An Investigation of the Kappa Statistic Under Clustered Data and Group Sequential Testing, with an Application to Surgical Rating"*

POSTERS

November 2023	34.	**Clinical Trials in Alzheimer's Disease (CTAD)** (Boston, MA). Poster presentation on *"Impact of study partner type on primary endpoint volatility in two phase 3 registration trials of mild-to- moderate Alzheimer's disease"*
July 2022	35.	**Alzheimer's Association International Conference (AAIC)** (Virtual/San Diego, CA). Poster presentation on *"Impact of Study Partner Type on Primary Endpoint Volatility in a Phase 3 Registration Trial of Mild-to-Moderate Alzheimer's Disease"*
November 2021	36.	**Clinical Trials on Alzheimer's Disease (CTAD)** (Virtual). Poster presentation on *"Perceptions of Amyloid Imaging Among Cognitively Normal Older Adults with Elevated and Not Elevated Amyloid"*
December 2019	37.	**Clinical Trials on Alzheimer's Disease (CTAD)** (San Diego, CA). Poster presentation on *"Using Direct-to-Consumer Genetic Testing Results in Alzheimer's Disease Clinical Trial Recruitment"*
July 2019	38.	**Alzheimer's Association International Conference (AAIC)** (Los Angeles, CA). Poster presentation on *"Participant and Study Partner Prediction and Identification of Cognitive Impairment in Preclinical Alzheimer's Disease: Study Partner vs. Participant Accuracy"*
March 2018	39.	**REMIND Emerging Scientists Symposium** (Irvine, CA). Poster presentation on *"Scientific Necessity of Study Partners in Preclinical Alzheimer's Disease Trials"*

SHORT COURSES & WORKSHOPS

March 2019	40.	**Computer-Assisted Reporting Conference** (Newport Beach, CA).Workshop on *"R: Models for Clustered and Correlated Data"*
	41.	**Computer-Assisted Reporting Conference** (Newport Beach, CA). Workshop on *"Building Graphics in R"*

March 2018   42. **Computer-Assisted Reporting Conference** (Chicago, IL). Workshop on
                "R: Machine Learning and Data Models"

TEACHING EXPERIENCE

Summer 2020   *★**Instructor of Record, Basic Statistics** (Virtual)
                3-hour, twice weekly lecture; approx. 80 undergraduate students
                Department of Statistics
                University of California, Irvine (Irvine, CA)

Winter 2020   **Teaching Assistant, Introduction to Biological Statistics** (Face-to-Face)
                Two, 1-hour weekly lab sections; approx. 35 undergraduate students each
                Department of Statistics
                University of California, Irvine (Irvine, CA)

Fall 2019   **Teaching Assistant, Introduction to Probability & Statistics for Computer Science** (Face-to-Face)
                Two, 1-hour weekly lab sections; approx. 50 undergraduate students each
                Department of Statistics
                University of California, Irvine (Irvine, CA)

Summer 2017   *★**Instructor of Record, Introduction to Biological Statistics** (Face-to-Face)
                1.5-hour, thrice weekly lecture; approx. 36 undergraduate students
                Department of Statistics
                University of California, Irvine (Irvine, CA)

Spring 2016   **Teaching Assistant, Advanced Data Journalism** (Face-to-Face)
                Missouri School of Journalism
                University of Missouri (Columbia, MO)

ACADEMIC AWARDS & HONORS

2021   **Carl W. Cotman Predoctoral Scholar Award**
                University of California, Irvine

2020   **Nominee to the 70th Lindau Nobel Laureate Meeting**
                University of California System

2020   **Division of Teaching Excellence & Innovation Summer Fellow**
                University of California, Irvine

2019 - 2020   **UCI Public Impact Fellow**
                University of California, Irvine

2019   **Honorable Mention: JSM Biopharmaceutical Section Contributed Presentation Award**
                American Statistical Association, Biopharmaceutical Section

2017 - 2019   **MIND Aging Fellow**

University of California, Irvine Institute for Memory Impairments and Neurological Disorders

| 2016 | **University Honors** |
| | University of Missouri |

| 2015 | **Excellence in Undergraduate Research Award** |
| | University of Missouri |

| 2013 - 2016 | **Albert Winemiller Scholar** |
| | Department of Statistics, University of Missouri |

PEER REVIEW ACTIVITIES

2023 - present	Nature Communications
	Communications in Statistics - Theory and Methods
	Alzheimer's Research & Therapy
2022 - present	Statistics in Medicine
	Statistics in Biopharmaceutical Research
	Clinical Trials

SERVICE TO PROFESSION

COMMITTEE SERVICE

| 2023 - present | **Editorial Board Member** |
| | *Significance* Magazine |

| 2022 - present | **Social Media Manager, Instagram** |
| | Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group |

| 2022 - present | **Organizing Committee Member** |
| | COPSS-NISS Leadership Webinar Series |

CONFERENCE SERVICE

| May 2023 | **Contributed Session Moderator** for the session *"Adaptive/Sequential"* |
| | Society for Clinical Trials (Baltimore, MD) |

| August 2022 | **Topic Contributed Session Chair** for the session *"New Models, Diagnostics and Considerations in Evaluating Intervention and Policy Effects"* |
| | Joint Statistical Meetings (Washington, D.C.) |

INSTITUTIONAL SERVICE

2023 - present	**Member**, Department of Population Health Sciences Curriculum Committee University of Wisconsin-Madison (Madison, WI)
2020 - 2021	**Student Representative**, Department of Statistics Seminar Committee University of California, Irvine (Irvine, CA)
2019 - 2021	**Department of Statistics Student Representative**, Diverse Educational Community and Doctoral Experience (DECADE) University of California, Irvine (Irvine, CA)
2019 - 2021	**Organizer**, Department of Statistics NSF GRFP Application Repository University of California, Irvine (Irvine, CA)
2018-2021	**Co-Chair**, Research and Education in Memory Impairments and Neurological Disorders (REMIND) University of California, Irvine (Irvine, CA)
2017 - 2018	**Student Representative & Liason**, Department of Statistics University of California, Irvine (Irvine, CA)

COMMUNITY INVOLVEMENT & OUTREACH

July - Aug 2022	**Statistics & R Instructor** for YCAS Young Scholars in Biostatistics Program (New Haven, CT)
July 2022	**Guest Lecturer** on the topic *"Introduction to Data Science"*. YCAS Young Scholars in Biostatistics Program (New Haven, CT)
July 2022	**Workshop Instructor** for the class *"STEM Meets Storytelling: Using Data Science to Tell Stories about Our Communities"*. Pathways to Science Summer Scholars (New Haven, CT)
March 2022	**Guest Lecturer** on the topic *"Data and Me: What is Biostatistics and How Do We Use It?"*. Exploring Science Seminar Series (New Haven, CT)

PROFESSIONAL ORGANIZATIONS

2022 - present	Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group, Member
2022 - present	Society for Clinical Trials, Member
2021 - present	Eastern North American Region of the International Biometrics Society (ENAR), Member
2020 - present	Caucus for Women in Statistics, Member
2019 - present	ISTAART, Alzheimer's Association, Member
2018 - present	American Statistical Association, Member
2019 - 2021	Western North American Region of the International Biometrics Society (WNAR), Member

STATISTICAL & PROGRAMMING LANGUAGES

R   Python   SAS
SQL   HTML/CSS