# Mary M. Ryan

Curriculum Vitae

*Updated September 2022*

Postdoctoral Associate

Department of Biostatistics | Yale University School of Public Health | New Haven, CT 06511

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## RESEARCH INTERESTS

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

## EDUCATION

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

## ACADEMIC POSITIONS

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|---|---|
| 2021 - present | **Postdoctoral Associate** <br> Department of Biostatistics <br> Yale School of Publich Health (New Haven, CT) |
| 2017 - 2021 | **Graduate Research Assistant** <br> Department of Statistics <br> University of California, Irvine (Irvine, CA) |
| 2014 - 2016 | **Undergraduate Research Assistant** <br> Department of Statistics <br> University of Missouri (Columbia, MO) |

## COLLABORATIVE RESEARCH AFFILIATIONS & APPOINTMENTS

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

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

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

## ACADEMIC AWARDS & HONORS

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

2020              **Nominee to the 70$^{th}$ Lindau Nobel Laureate Meeting**
University of California System

2020              **Division of Teaching Excellence & Innovation Summer 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

## REFEREED JOURNAL PUBLICATIONS

*Copies of published papers & pre-publication manuscripts can be found here:* https://tinyurl.com/ykfe9anc

*"*" indicates mentored graduate student*

1. **Ryan, M.M.**, Gillen, D.L. (2022) "Sequential Sampling in Prospective Observational Studies." *Annals of Applied Statistics.* (Accepted).

2. **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.* doi.org/10.1002/acn3.51414

3. **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.* doi.org/10.1097/wad.0000000000000421

4. 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

5. **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.* doi.org/10.1002/sim.8522

6. **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.* doi.org/10.1186/s13195-019-0539-3

7. 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.* doi.org/10.1016/j.jagp.2018.10.016

*MANUSCRIPTS UNDER REVIEW/IN PROGRESS*

8. **Ryan, M.M.**, Esserman, D., Li, F. "Maximin optimal cluster randomized designs for assessing treatment effect heterogeneity." *Statistics in Medicine.* (In Revision).

9. **Ryan, M.M.**, Gillen, D.L. "Sequential Sampling for Studies Utilizing the Kappa Statistic." (In Preparation).

10. Dolmadjian, L.*, **Ryan, M.M.**, Gillen, D.L., Grill, J.D. "Impact of Study Partner Replacement in Mild Cognitive Impairment Clinical Trials." (In Preparation).

11. Liu, R*, Esserman, D., Li, F., **Ryan, M.M.** "Group sequential two-stage randomized preference trial designs." (In Preparation).

## SELECTED PRESENTATIONS, POSTERS, & SHORT COURSES

*INVITED PRESENTATIONS* ───────────────

April 2021 | 1. | **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 | 2. | **Department of Family Medicine, Oregon Health & Science University** (Virtual). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*

3. | **Department of Global & Community Health, George Mason University** (Virtual). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*

4. | **Department of Biostatistics, Wake Forest University** (Virtual). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*

5. | **Division of Biostatistics, University of Minnesota** (Virtual). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*

January 2021 | 6. | **Department of Mathematics & Statistics, Wake Forest University** (Virtual). Oral presentation on *"Sequential Sampling in Prospective Observational Studies"*

7. | **American Statistical Association Biopharmaceutical Section Webinar** (Virtual). Oral presentation on *"Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations"*

8. | **Department of Biostatistics, St. Jude Children's Research Hospital** (Virtual). Oral presentation on *"On Confounding, Efficiency, & Prospective Observational Study Design"*

December 2020 | 9. | **Department of Biostatistics, Vanderbilt University** (Virtual). Oral presentation on *"On Confounding, Efficiency, & Prospective Observational Study Design"*

November 2020 | 10. | **Orange County Biostatistics Symposium** (Virtual). Oral presentation on *"Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations"*

*CONTRIBUTED PRESENTATIONS* ───────────────

August 2022 | 11. | **Joint Statistical Meetings (JSM)** (Washington, D.C.). Oral presentation on *"Maximin Optimal Cluster Randomized Designs for Assessing Treatment Effect Heterogeneity"*

May 2022 | 12. | **Society for Clinical Trials** (San Diego, CA). Oral presentation on *"Maximin Optimal Cluster Randomized Designs Accounting for Treatment Effect Heterogeneity"*

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| July 2019 | 13. | **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* |
| | 14. | **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*

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| July 2022 | 15. | **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 | 16. | **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 | 17. | **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 | 18. | **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 | 19. | **REMIND Emerging Scientists Symposium** (Irvine, CA). Poster presentation on *"Scientific Necessity of Study Partners in Preclinical Alzheimer's Disease Trials"* |

*SHORT COURSES & WORKSHOPS*

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| March 2019 | 20. | **Computer-Assisted Reporting Conference** (Newport Beach, CA).Workshop on *"R: Models for Clustered and Correlated Data"* |
| | 21. | **Computer-Assisted Reporting Conference** (Newport Beach, CA). Workshop on *"Building Graphics in R"* |
| March 2018 | 22. | **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. 70 undergraduate students*
Department of Statistics
University of California, Irvine (Irvine, CA)

Winter 2020      __Teaching Assistant, Introduction to Biological Statistics__ (Face-to-Face)
*1-hour weekly lab; approx. 20 undergraduate students*
Department of Statistics
University of California, Irvine (Irvine, CA)

Fall 2019          __Teaching Assistant, Introduction to Probability & Statistics for Computer Science__ (Face-to-Face)
*1-hour weekly lab; approx. 20 undergraduate students*
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. 40 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)

## PEER REVIEW ACTIVITIES

2022 - present     Statistics in Medicine

Statistics in Biopharmaceutical Research

## SERVICE TO PROFESSION

2022 - present     __Social Media Manager, Instagram__
Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group

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

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) |
| 2018-2021 | **Co-Chair**, Research and Education in Memory Impairments and Neurological Disorders (REMIND) University of California, Irvine (Irvine, CA) |
| 2019 - 2021 | **Organizer**, Department of Statistics NSF GRFP Application Repository 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 | |