

# Mary M. Ryan

## Curriculum Vitae

Updated September 2022

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

## ACADEMIC POSITIONS

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|----------------|---|
| 2021 - present | <b>Postdoctoral Associate</b><br>Department of Biostatistics<br>Yale School of Public Health (New Haven, CT)    |
| 2017 - 2021    | <b>Graduate Research Assistant</b><br>Department of Statistics<br>University of California, Irvine (Irvine, CA) |
| 2014 - 2016    | <b>Undergraduate Research Assistant</b><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<sup>th</sup> 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

"\*" 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](https://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](https://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](https://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](https://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](https://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](https://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

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| April 2021    | 1. <b>ASQ Silicon Valley Section's Statistics &amp; Reliability Discussion Group</b> (Virtual). Oral presentation on " <i>Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations</i> " |
| February 2021 | 2. <b>Department of Family Medicine, Oregon Health &amp; Science University</b> (Virtual). Oral presentation on " <i>Sequential Sampling in Prospective Observational Studies</i> "  |
|               | 3. <b>Department of Global &amp; Community Health, George Mason University</b> (Virtual). Oral presentation on " <i>Sequential Sampling in Prospective Observational Studies</i> "   |
|               | 4. <b>Department of Biostatistics, Wake Forest University</b> (Virtual). Oral presentation on " <i>Sequential Sampling in Prospective Observational Studies</i> "  |
|               | 5. <b>Division of Biostatistics, University of Minnesota</b> (Virtual). Oral presentation on " <i>Sequential Sampling in Prospective Observational Studies</i> "   |
| January 2021  | 6. <b>Department of Mathematics &amp; Statistics, Wake Forest University</b> (Virtual). Oral presentation on " <i>Sequential Sampling in Prospective Observational Studies</i> "   |
|               | 7. <b>American Statistical Association Biopharmaceutical Section Webinar</b> (Virtual). Oral presentation on " <i>Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations</i> "         |
|               | 8. <b>Department of Biostatistics, St. Jude Children's Research Hospital</b> (Virtual). Oral presentation on " <i>On Confounding, Efficiency, &amp; Prospective Observational Study Design</i> "   |
| December 2020 | 9. <b>Department of Biostatistics, Vanderbilt University</b> (Virtual). Oral presentation on " <i>On Confounding, Efficiency, &amp; Prospective Observational Study Design</i> "   |
| November 2020 | 10. <b>Orange County Biostatistics Symposium</b> (Virtual). Oral presentation on " <i>Variance Estimation for the Kappa Statistic in the Presence of Clustered Data and Heterogeneous Observations</i> "                                     |

### CONTRIBUTED PRESENTATIONS

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|-------------|---|
| August 2022 | 11. <b>Joint Statistical Meetings (JSM)</b> (Washington, D.C.). Oral presentation on " <i>Maximin Optimal Cluster Randomized Designs for Assessing Treatment Effect Heterogeneity</i> " |
| May 2022    | 12. <b>Society for Clinical Trials</b> (San Diego, CA). Oral presentation on " <i>Maximin Optimal Cluster Randomized Designs Accounting for Treatment Effect Heterogeneity</i> "        |

- 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	<b>*Instructor of Record, Basic Statistics</b> (Virtual) <i>3-hour, twice weekly lecture; approx. 70 undergraduate students</i> Department of Statistics University of California, Irvine (Irvine, CA)
Winter 2020	<b>Teaching Assistant, Introduction to Biological Statistics</b> (Face-to-Face) <i>1-hour weekly lab; approx. 20 undergraduate students</i> Department of Statistics University of California, Irvine (Irvine, CA)
Fall 2019	<b>Teaching Assistant, Introduction to Probability &amp; Statistics for Computer Science</b> (Face-to-Face) <i>1-hour weekly lab; approx. 20 undergraduate students</i> Department of Statistics University of California, Irvine (Irvine, CA)
Summer 2017	<b>*Instructor of Record, Introduction to Biological Statistics</b> (Face-to-Face) <i>1.5-hour, thrice weekly lecture; approx. 40 undergraduate students</i> Department of Statistics University of California, Irvine (Irvine, CA)
Spring 2016	<b>Teaching Assistant, Advanced Data Journalism</b> (Face-to-Face) Missouri School of Journalism University of Missouri (Columbia, MO)

## PEER REVIEW ACTIVITIES

2022 - present	Statistics in Medicine Statistics in Biopharmaceutical Research Clinical Trials
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## SERVICE TO PROFESSION

2022 - present	<b>Social Media Manager, Instagram</b> Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group
August 2022	<b>Topic Contributed Session Chair</b> for the session " <i>New Models, Diagnostics and Considerations in Evaluating Intervention and Policy Effects</i> " Joint Statistical Meetings (Washington, D.C.)

## INSTITUTIONAL SERVICE

2020 - 2021	<b>Student Representative</b> , Department of Statistics Seminar Committee University of California, Irvine (Irvine, CA)
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2019 - 2021	<b>Department of Statistics Student Representative</b> , Diverse Educational Community and Doctoral Experience (DECADE) University of California, Irvine (Irvine, CA)
2018-2021	<b>Co-Chair</b> , Research and Education in Memory Impairments and Neurological Disorders (REMIND) University of California, Irvine (Irvine, CA)
2019 - 2021	<b>Organizer</b> , Department of Statistics NSF GRFP Application Repository University of California, Irvine (Irvine, CA)
2017 - 2018	<b>Student Representative &amp; Liason</b> , Department of Statistics University of California, Irvine (Irvine, CA)

## COMMUNITY INVOLVEMENT & OUTREACH

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