Alice J. Paul

alicepaul.github.io

CONTACT INFORMATION

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ACADEMIC APPOINTMENTS

Director, Undergraduate Concentration in Statistics
Brown University, 2024–Present.

Associate Director, Master's Program in Biostatistics
Brown University, 2023–Present.

Assistant Professor of Biostatistics, Teaching Scholar
Brown University, 2020–Present.

Assistant Professor of Applied Mathematics and Computer Science
Franklin W. Olin College of Engineering, 2019–2020.

Postdoctoral Research Associate
Department of Biostatistics and the Data Science Initiative, Brown University, 2017–2019.
Advised By: Pedro Felzenszwalb.

EDUCATION

Cornell University, Ithaca, NY.
Ph.D. Operations Research and Information Engineering, August 2017.
Advised By: David P. Williamson.

Harvey Mudd College, Claremont, CA.
B.S. Mathematics with High Distinction, May 2012.

HONORS AND AWARDS

Young Investigator Award, ASA Teaching Statistics in the Health Sciences (TSHS) Section, 2024.
Dean's Award for Excellence in Classroom Teaching in the School of Public Health, Spring 2022.
NDSEG Fellow

Students advised by me marked by * in publications below.

PEER-REVIEWED ARTICLES

1. Gaelen P. Adam*, Jay DeYoung, **Alice Paul**, Ian J. Saldanha, MBBS, Ethan M. Balk, Thomas A. Trikalinos, Byron C. Wallace, Literature Search Sandbox: a Large Language Model that generates search queries for systematic reviews, JAMIA Open, 2024 (forthcoming).
2. **Alice Paul** and Susan Martonosi. *The All-Pairs Vitality-Maximization (VIMAX) Problem*, Annals of Operations Research, 2024. `https://doi.org/10.1007/s10479-024-06022-4`.
3. Pedro Felzenszwalb, Caroline Klivans, and **Alice Paul**. *Clustering with Semidefinite Programming and Fixed Point Iteration*, Journal of Machine Learning Research, 2022. `http://jmlr.org/papers/v23/21-0402.html`.
4. Pedro Felzenszwalb, Caroline Klivans, and **Alice Paul**. *Iterated Linear Optimization*, Quaterly of Applied Mathematics, 2021. DOI: `DOI:https://doi.org/10.1090/qam/1594`.
5. **Alice Paul** and David Williamson. *Easy Capacitated Facility Location Problems, with Connections to Lot-Sizing*, Operations Research Letters, 2020. DOI: `https://doi.org/10.1016/j.orl.2019.12.006`.
6. **Alice Paul**, Daniel Freund, Aaron Ferber, David Shmoys, and David Williamson. *Budgeted Prize-Collecting Traveling Salesman and Minimum Spanning Tree Problems*, Mathematics of Operations Research, 2019. DOI: `https://doi.org/10.1287/moor.2019.1002`.
7. Amariah Becker and **Alice Paul**. *A Framework for Vehicle Routing Approximation Algorithms in Trees*, Algorithms and Data Structures Symposium, 2019.

8. Jacob Feldman, **Alice Paul**, and Huseyin Topaloglu. *Technical Note: Assortment Optimization with Small Consideration Sets,* Operations Research, 2019. DOI: https://doi.org/10.1287/opre.2018.1803.
9. Jacob Feldman and **Alice Paul**. *Relating the Approximability of the Fixed Cost and Space Constrained Assortment Problems*, Production and Operations Management, 2018. DOI: https://doi.org/10.1111/poms.12983
10. **Alice Paul**, Daniel Freund, Aaron Ferber, David Shmoys, and David Williamson. *Prize-Collecting Traveling Salesman with a Budget Constraint*, European Symposium on Algorithms, 2017.
11. **Alice Paul**, Jacob Feldman, and James Mario Davis. *Assortment Optimization and Pricing under a Nonparametric Tree Choice Model*, Manufacturing and Service Operations Management, 2017. DOI: https://doi.org/10.1287/msom.2017.0662.
12. **Alice Paul**, Matthias Poloczek, and David P. Williamson. *Simple Approximation Algorithms for Balanced MAX 2SAT*, Algorithmica, 2017. DOI: https://doi.org/10.1007/s00453-017-0312-6.
13. **Alice Paul**, Matthias Poloczek, and David P. Williamson. *Simple Approximation Algorithms for Balanced MAX 2SAT*, Latin American Theoretical Informatics Symposium, 2016.
14. **Alice Paul** and Nicholas Pippenger. *A Census of Vertices by Generations in Regular Tessellations of the Plane*, Electronic Journal of Combinatorics, 2011. DOI: https://doi.org/10.37236/574.

Books

1. **Alice Paul**. *Mastering Health Data Science Using R*, Under Contract with CRC Press, 2023.
2. **Alice Paul**. *Mastering Health Data Science Using R*, Online 2023. https://alicepaul.github.io/health-data-science-using-r/

Book Chapters

1. **Alice Paul** and Susan Martonosi. *Operations Research*, in Nathan Carter (ed.), *Data Science for Mathematicians*, 2020. DOI: https://doi.org/10.1201/9780429398292.
2. Daniel Freund, Ashkan Norouzi-Fard, **Alice Paul**, Shane Henderson and David B. Shmoys. *Data-Driven Rebalancing Methods for Bike-Share Systems*, in E. Chrisotomi et al. (ed.), *Analytics for the Sharing Economy: Mathematics, Engineering, and Business Perspectives*, 2020. DOI: https://doi.org/10.1007/978-3-030-35032-1

Software

1. Hannah Eglinton* and **Alice Paul**. R Package: riskscores, 2024.
2. **Alice Paul**, Hannah Eglinton*, Jialin Liu*, Joanna Walsh*, and Xinbei Yu*. R Package: R: HDSinRdata, 2023.

Preprints

1. Hannah Eglinton*, Silvia Chiang, Tongtong Zhao*, Yu Yan*, and **Alice Paul**. *A Computationally Efficient Algorithm for Producing Risk Score Models with Applications to Tuberculosis Diagnosis and Treatment Adherence*, In Submission, 2024.
2. **Alice Paul**, Kyran Flynn*, and Cassandra Overney*. *Estimating Censored Spatial-Temporal Demand with Applications to Shared Micromobility*, In Submission, 2024.

Invited Presentations

1. "Prescriptive Analytics In The Data Analysis Pipeline," Data-Driven Innovations in OR Education, INFORMS, 2023.
2. "Iterative Algorithms for Semidefinite Programming," American Mathematical Society Eastern Sectional Meeting, 2021.
3. "Prize-Collecting TSP with a Budget Constraint," International Symposium on Math Programming, 2018.

4. "Data-Driven Optimization for Bike-Share Systems," Data Science Initiative Colloquium, Brown University, 2017.
5. "Prize-Collecting TSP with a Budget Constraint," European Symposium on Algorithms, 2017.
6. "Assortment Optimization for Choosy Customers," INFORMS, 2016.
7. "Assortment Optimization for Choosy Customers," INFORMS Revenue Management and Pricing Conference, 2016.
8. "Simple Approximation Algorithms for Balanced MAX 2SAT," LATIN, 2016.
9. "Revenue Management under a Nonparametric Ranking-Based Choice Model," INFORMS, 2015.
10. "Detecting Covert Members of Terrorist Networks," Young Women in Discrete Math, 2013.
11. "Detecting Covert Members of Terrorist Networks," INFORMS, 2012.

Grants

1. Brown Data Science Institute Seed Grant (06/2024-08/2025)
   Building a Prescriptive Analytics Research Collaboration with the Rhode Island Public Transit Authority (RIPTA). Role: PI.
2. Brown Data Science Institute Seed Grant (06/2023-08/2024)
   Creating an Online R Resource with a Focus on Public Health. Role: PI.

Teaching Experience

1. PHP 2550: Practical Data Analysis, Brown University, FA 2020, FA 2021, FA 2022, FA 2023, FA 2024.
2. PHP 2650: Statistical Learning and Big Data, Brown University, SP 2021, SP 2022, SP 2023, SP 2024.
3. PHP 1511/2511: Applied Regression Analysis, Brown University, SP 2023, SP 2024.
4. PHP 1560/2560: Statistical Programming in R, Brown University, FA 2020, FA 2021, FA 2022, FA 2023.
5. DATA 2020: Statistical Learning, Brown University, SP 2018, SP 2019, SP 2022.
6. ENGR 3599: Data Structures and Algorithms, Olin College, SP 2020.
7. MTH 1111/SCI 1111: Modeling and Simulation of the Physical World, Olin College, FA 2019.
8. ENGRI 1101: Engineering Applications of Operations Research, Cornell University, FA 2016.
9. ORIE 3310: Optimization II, Cornell University, SU 2015.

Workshops (Designed and Led)

1. Building a Personal Portfolio Website, Brown University, FA 2022, SP 2024.
2. Intro to Python for R Users, Brown University, SP 2023, SP 2024.
3. Intro to R for Health Data Science, Brown University, SU 2023.

Advising and Mentoring (Thesis or Capstone)

1. Thomas Arnold, Biostatistics Masters Thesis, Brown University, Fall 2024-Spring 2025.
2. William Qian, Biostatistics Masters Thesis, Brown University, Fall 2024-Spring 2025.
3. Yingqiu Huang, Biostatistics Masters Thesis, Brown University, Fall 2024-Spring 2025.
4. Benjamin Moshes, Undergraduate Capstone Project in Statistics, Brown University, Fall 2024.
5. Nicolas Fernandez Baigun, Undergraduate Capstone Project in Statistics, Brown University, Fall 2024.
6. Hannah Eglinton, Biostatistics Masters Thesis, Brown University, Fall 2023-Spring 2024. **Biostatistics Masters Thesis Award**.
7. Yu Yan, Biostatistics Masters Thesis, Brown University, Fall 2023-Spring 2024.

8. Kameel Dossal, Undergraduate Senior Honors Thesis in Biostatistics, Brown University, Fall 2023-Spring 2024.
9. Shreyas Mishra, Undergraduate Senior Honors Thesis in Computer Science, Brown University, Fall 2023-Spring 2024.
10. John Chung, Undergraduate Capstone Project in Statistics, Brown University, Spring 2024.
11. Morgan Cunningham, Undergraduate Capstone Project in Statistics, Brown University, Fall 2023.
12. Kyla Finlayson, Biostatistics Masters Project, Brown University, Fall 2022-Spring 2023.
13. Antonella Basso, Biostatistics Masters Thesis, Brown University, Fall 2022-Spring 2023.
14. Kyran Flynn, Undergraduate Senior Honors Thesis in Applied Math and Computer Science, Brown University, Spring 2022-Spring 2023. **Finalist of the INFORMS Undergraudate Research Prize 2023.**
15. Gaelen Adam, PhD Independent Study on Sequence Models, Brown University, Fall 2022.
16. Tongtong Zhao, Data Science Masters Capstone, Brown University, Summer 2022.
17. Zhirui Li, Data Science Masters Capstone, Brown University, Summer 2022.
18. Kyran Flynn, Undergraduate Research Student, Brown University, Spring 2022.
19. Tobias Dekara, Biostatistics Masters Thesis, Brown University, Fall 2021-Spring 2022.
20. Cassandra Overney, Undergraduate Research Student, Olin College, Fall 2019-Spring 2021.
21. Manu Patil, Undergraduate Research Student, Olin College, Spring 2020.
22. Victoria McDermott, Independent Study, Olin College, Fall 2019.
23. Pravallika Dhulipalla, Independent Study, Olin College, Fall 2019.
24. Emily Jaekle, Data Science Masters Capstone Advisor, Brown University, Summer 2018.
25. Sibel Kadioglu, Data Science Masters Capstone Advisor, Brown University, Summer 2018.
26. Daniel Suh, Undergraduate Research Student, Brown University, Summer 2018.

Department Service

1. Data Science Advisory Board, Fall 2021-Current.
2. Online MPH Faculty Advisory Committee, Fall 2021 - Current.
3. Biostatistics Academic Program Committee, Fall 2021 - Current.
4. Masters in Biostatistics Admission Committee. Department of Biostatistics, Brown University, Spring 2021-Current.
5. Masters of Public Health Core Adviser, Brown University, Fall 2021-Current.
6. Biostatistics Introductory Course Committee, Fall 2022-Spring 2023.
7. Online MPH Teaching Scholar Search, Fall 2021-Spring 2022.
8. Biostatistics Teaching Scholar Search Committee, Fall 2021-Spring 2022.
9. Nora Kahn Piore Award Selection Committee. School of Public Health, Brown University, Spring 2022.
10. Masters of Public Health Admissions Committee. School of Public Health, Brown University, Spring 2021.

Professional Service

1. Board of Directors, Biostats4You, University of Minnesota's Clinical and Translational Science Institute, Fall 2024-Current.
2. External Advisor Board, NSF Artificial Intelligence Research Institute for Advances in Optimization (AI4OPT), Spring 2024-Current.
3. Judge, ASA Data Visualization Poster Competition for Grades K–12, Spring 2024.

Teaching Training

1. Sheridan Center Problem-Solving Course Design Institute, Spring 2023.
2. Sheridan Center Junior Faculty Teaching Fellows Program. Brown University, Fall 2020 - Spring 2021.
3. Sheridan Center Anchor Program. Brown University, Fall 2020.

Editorial Board Activities

1. INFORMS Transactions on Education Editorial Board, Fall 2022-Present.

Reviewer

INFORMS Transactions on Education, Production and Operations Management, Operations Research, Algorithmica, Operations Research Letters, Mathematical Programming, SIAM Journal of Discrete Mathematics, Probability in the Engineering and Informational Sciences.

Professional Societies

Institute for Operations Research and Management Sciences (INFORMS), American Statistical Association (ASA), ASA Section on Teaching of Statistics in the Health Sciences (TSHS).