Freddy Barragan

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EDUCATION

PhD, Biostatistics, University of Washington, Seattle **September 2022 - Present**

BA, Statistics, Macalester College, Saint Paul, *Magna Cum Laude* **August 2018 - May 2022**

Departmental Honor Thesis: *Statistical Genetics for Pediatric Leukemia: Characterizing racial disparities in pediatric acute lymphoblastic leukemia*

Selected Coursework: Bayesian Statistics, Statistical Machine Learning, Correlated Data, Epidemiology

WORK EXPERIENCE

Machine Learning Researcher

Research Consultant, Rose International | Kaiser Permanente, Seattle, WA **March 2023 - Present**

- Developing proprietary simulation functions to model and test the consequences of imbalanced outcomes upon racial bias and outcome misclassification of gradient-boosted suicide risk models with R.

Graduate Research Assistant, University of Washington , Seattle, WA **September 2022 - March 2023**

- Researching gradient-boosting techniques to develop a fairness-aware, intersectional boosting algorithm and minimize racial bias of suicide risk prediction models with Kaiser Permanente Washington Health Research Institute's Biostatistics Division.

Researcher 1, University of Minnesota, Minneapolis, MN **May 2022 - September 2022**

- Identified unique treatment and survival disparities by race/ethnicity in young, adult, and elderly patients with Osteosarcoma from National Cancer Database (NCDB) data in R. Publication pending.
- Integrating differential gene expression, penalized regression, and survival modeling to study sex-based disparities in acute lymphoblastic leukemia and acute myeloid leukemia.
- Routine technical manuscript writing and preparation.

Research Assistant, University of Minnesota, Minneapolis, MN **June 2020 - May 2022**

- Conducted survival analyses of intersectional survival disparities in 17 pediatric cancers using the National Cancer Institute's SEER program in R. Confirmed & published evidence of survival disparities by race & sex in 11 different pediatric cancers.
- Independently created an internal database of massive pediatric genomic data scraped from multiple public repositories for researcher use with Python, R, and BASH.
- Performed demographic and differential gene expression analysis in 5 major pediatric cancers using TARGET & PeCan datasets via linear regression, empirical Bayes, and random forest classification in R.

Mann-Hill Research Fellow, Macalester College, St. Paul, MN **June 2021 - August 2021**

- Developed bioinformatic and statistical pipelines with R, BASH, & Python to conduct first study of major survival disparities by race/ethnicity in pediatric leukemia using ancestral methods and gene expression.
- Awarded scholarship to attend the University of Washington Department of Biostatistics's Summer Institute in Statistical Genetics.

Preceptor, Macalester College, St. Paul, MN **August 2019 - May 2022**

- Helped instructors teach courses on Applied Multivariable Calculus (MATH 135), Introduction to Statistical Modeling (STAT 155), and Statistical Machine Learning (STAT 253).
- Hosted twice-weekly office hours, graded, and worked intimately with students to develop their fluency with study design, statistical modeling, and machine learning in R.

PROJECTS

Neighborhood Deserts: Transportation Access & Housing Disparities in NYC

- Harmonized spatial census data with geo-tagged information from the Departments of Transportation, Health, Education, and Housing to map transportation (in)access and study its relationship to rental prices, demographic change, & eviction rates using hierarchical Bayesian regression with R and ArcGIS.

Narcotic Arrests in Seattle: A Spatial Analysis

- Used geotagged SPD arrest records, shape files of police patrol boundaries, and census data to map narcotic arrests in Seattle, WA across the second wave of the US Opioid Epidemic (2011-2013) and identify neighborhood-level risk factors of opioid use with spatial regression in R.

AWARDS, GRANTS, AND FELLOWSHIPS

- **Bill & Melinda Gates Foundation ARCS Endowed Fellowship**, ARCS Foundation, Seattle **2022**
- **Excellence Award**, University of Washington, Department of Biostatistics **2022**
- **Pat Wahl Award**, University of Washington, Department of Biostatistics **2022**
- **Bressoud Prize**, Macalester College, Department of MSCS **2022**
- **Research Supplements to Promote Diversity in Health-Related Research** (**PA-21-071**), NCI **2022**
  Parent Grant: *Admixture Analysis of Acute Lymphoblastic Leukemia in African American Children: the ADMIRAL Study (NIH R01 CA239701-01A1S1)*
- **Mann-Hill Research Fellowship**, Macalester College **2021**
- **Best Video Poster**, Electronic Undergraduate Statistics Research Conference **2022**
- **Catharine-Lealtad Scholarship**, Macalester College **2018**

PUBLICATIONS

† = Indicates joint first-authorship

1. **Barragan, F.**, Mills, L., Raduski, A., Marcotte, E., Grinde, K., Spector, L., Williams, L., "Genetic Ancestry, differential gene expression, and survival in pediatric B-cell acute lymphoblastic leukemia", *Cancer Medicine (forthcoming)*
2. Moore, K.†, **Barragan, F.**†, Williams, L., "Survival disparities for childhood cancers exist when defined by race/ethnicity and sex." *Cancer Epidemiology* 81 (2022): 102262.

RESEARCH PRESENTATIONS

1. **Barragan, F.**, Mills, L., Raduski, A., Marcotte, E., Spector, L.,Grinde, K., Williams, L., "Genetic Ancestry, gene expression, and survival in children with B-cell acute lymphoblastic leukemia". Contributed poster at 2022 Pediatric Research, Education, & Scholarship Symposium, Virtual.
2. **Barragan, F.**, Mills, L., Raduski, A., Marcotte, E., Spector, L.,Grinde, K., Williams, L., "Gene Expression Differences by Race and Genetic Ancestry in in B-Cell Acute Lymphoblastic Leukemia". Contributed poster at American Society for Human Genetics 2021 Annual Meeting, Virtual.
3. **Barragan, F.**, Mills, L., Raduski, A., Marcotte, E., Spector, L.,Grinde, K., Williams, L., "Characterizing Racial Disparities in Pediatric Cancer: Ancestry, Gene Expression, and Survival Disparities in B-Cell Acute Lymphoblastic Leukemia". Contributed poster at Underrepresented Students in STEM Symposium 2021, Minneapolis, MN.
4. **Barragan, F.**, Mills, L., Raduski, A., Marcotte, E., Spector, L.,Grinde, K., Williams, L., "Statistical Methods for Pediatric Leukemia: Gene Expression & Ancestry in B-Cell Acute Lymphoblastic Leukemia". Contributed poster at Macalester Summer Research Showcase 2021, Saint Paul, MN.

5. **Barragan, F.**, Moore, K., Williams, L., "Survival disparities for some childhood brain tumors exist when defined by race/ethnicity and sex". Contributed poster at Neuro-Oncology Symposium Conference 2021, Minneapolis, MN.
6. **Barragan, F.**, Mills, L., Spector, L., Williams, L., "Gene Expression & Clinical Differences in Pediatric Neuroblastoma by Sex". Video presentation at Electronic Undergraduate Statistics Research Conference 2020.

SERVICE & LEADERSHIP

CGH Steering Committee Member, Macalester College, St. Paul, MN **September 2020 - April 2022**

- Senior student representative for 59 Community & Global Health (CGH) concentrators that advocated for student needs to the academic board.
- Organized and hosted academic panels and webinars and community outreach events to connect potential students with other CGH concentrators and CGH faculty.
- Presented at community outreach events, lectures, and new student orientations to help guide CGH concentrators through the internship process.

WMCN 91.7 FM Station Staff, Macalester College, St. Paul, MN **January 2019 - December 2021**

- Organize event-programming and trained shows dedicated to international music, as a senior staff member of a FM radio station.
- Independently designed and implemented new training programs in September 2019 for beginning DJs.

MACCESS Coordinator, MPIRG, St. Paul, MN **October 2018 - November 2020**

- Lead coordinator of an independent admissions and college counseling event for 50 first-generation, low-income, high school students of color from the Twin Cities' Public School District. 2019-2021 Sessions cancelled due to COVID-19.
- Collaborated with faculty to provide an introductory Computational Linear Algebra lecture on facial recognition software for 24 attendees interested in Computer Science and Mathematics.

SKILLS

Technical: Highly Proficient in R; Proficient in Git, SQL, & Excel; Familiar with Python, BASH, RShiny, & ArcGIS

Spoken Languages: English (Native), Spanish (Bilingual Proficiency)

CERTIFICATIONS AND COURSES

- **Computational Pipeline for WGS Data**, SISG, University of Washington **2021**
- **Bayesian Statistics for Genetics**, SISG, University of Washington **2021**
- **Association Mapping: GWAS and Sequencing Data**, SISG, University of Washington **2021**

PROFESSIONAL MEMBERSHIPS

- **American Statistical Association** (ASA)
- **International Society for Bayesian Analysis** (ISBA)
- **Society for Advancement of Chicanos/Hispanics and Native Americans in Science** (SACNAS)