

Irineo Cabrerros

RAND Corporation, 20 Park Plaza # 920, Boston, MA 02116

+1 (310) 393-0411, x6361 | cabrerros@rand.org

Education

Ph.D. Princeton University	2014 - 2019
Applied Mathematics	
M.M. (Master of Music) New England Conservatory	2013 - 2014
Music Performance, Pi Kappa Lambda	
A.B. Harvard College	2009 - 2013
Physics, Cum Laude	
Interlochen Arts Academy	2005 - 2009
Valedictorian	

Professional Experience

RAND Corporation	2019 - present
Associate Statistician	
Bank of America Machine Learning	2018 - 2019
Contracted statistician for development of experimentation platform	
Slate Magazine	2018
Contributing science writer for Slate Magazine	

Research Experience

Associate Statistician, RAND	2019 – Present
Performed statistical analyses and provided statistical consultation in a wide array of policy domains, including healthcare, education, fairness and equity, military personnel, substance use, incarceration, and insurance industries. Methodological focuses include survey statistics, causal inference, and algorithmic equity.	

PhD Research	2014 - 2019
Princeton University. Advised by Professor John D. Storey.	
Thesis Title: Latent Variable Modeling and Causal Inference in Population-Structured Genetics.	

Research involved both building practical tools for analyzing genetic datasets and studying theoretical questions. Topics include:

- Efficient algorithms for fitting high-dimensional latent variable models.
- Hypothesis testing in high dimensions.
- Rigorous methods for causal inferences from Mendelian randomization.
- Grounding causal inference in classical probability theory.

Program for Research in Science and Engineering (PRISE) Fellow 2012 - 2013

Harvard University. Advised by Professor Ariel Amir.

- Developed mathematical models of structural colors in disordered systems.
- Created physical realizations of multilayer structural color phenomena.

US Naval Observatory Intern 2010

US Naval Observatory. Advised by Dr. Rachel Dudik.

- Conducted optics research for the Joint-Mili Arcsecond Pathfinder Mission.

Awards and Fellowships

Commentary Fellowship 2021-2022

RAND Corporation, Santa Monica, CA.

ISBA@NIPS Award 2018

NeurIPS Conference, Montreal, Quebec.

AAAS Mass Media Fellowship 2018

Slate Magazine, Brooklyn, NY.

NASW Diversity Fellowship 2018

National Association of Science Writers, Berkeley, CA.

Derek Bok Award for Distinction in Teaching 2014

Harvard University, Cambridge, MA.

PRISE Fellow 2012

Harvard University, Cambridge, MA.

Research Publications

Barred from employment: More than half of unemployed men in their 30s had a criminal history of arrest. Shawn Bushway, **Irineo Cabrerros**, Jessica Welburn Paige, Daniel Schwam, Jeffrey B. Wenger. Science Advances (Forthcoming).

Advancing Equitable Decision-Making for the Department of Defense through Fairness in Machine Learning. **Irineo Cabrerros**, Joshua Snoke, Osonde Osoba, Inez Khan, Marc Elliott. Santa Monica, CA: RAND Corporation (Forthcoming).

Buprenorphine prescriber monthly patient caseloads: An examination of 6-year trajectories. **Irineo Cabrerros**, Beth Ann Griffin, Brendan Saloner, Adam J. Gordon, Rose Kerber, Bradley D. Stein. *Drug and Alcohol Dependence*, Volume 228, 2021, 109089, ISSN 0376-8716.
<https://doi.org/10.1016/j.drugalcdep.2021.109089>.

Developing an Air Force retention early warning system: concept and initial prototype. Schulker, David; Harrington, Lisa M.; Walsh, Matthew.; Evans, Sandra Kay; **Cabrerros, Irineo**; Udwin, Dana; Lawrence, Anthony.; Maerzluft, Christopher E.; Setodji, Claude Messan. Santa Monica, CA: RAND Corporation, 2021.

Evaluation of the Military Spouse Employment Partnership program. Posard, Marek, Gonzalez, Gabriella C.; Christianson, Karen; Matthews, Luke Joseph.; Ryan, Jamie.; Ross, Shirley M.; **Cabrerros, Irineo**. Santa Monica, CA: RAND Corporation, 2020.

Appropriate analyses of bimodal substance use frequency outcomes: a mixture model approach. Burgette LF, **Cabrerros I**, Han B, Paddock SM. *Am J Drug Alcohol Abuse*. 2021 Aug 9:1-10. doi: 10.1080/00952990.2021.1946070. Epub ahead of print. PMID: 34372719.

Substance Use and Mental Health Outcomes from a Text Messaging-Based Intervention for Smoking Cessation Among Young People Experiencing Homelessness. Eric R Pedersen, PhD, Sebastian Linnemayr, PhD, William G Shadel, PhD, Rushil Zutshi, MS, Maria DeYoreo, PhD, **Irineo Cabrerros**, PhD, Joan S Tucker, PhD. *Nicotine & Tobacco Research*, 2021;; ntab160, <https://doi.org/10.1093/ntr/ntab160>

Pilot Randomized Clinical Trial of a Text Messaging-Based Intervention for Smoking Cessation Among Young People Experiencing Homelessness. Joan S Tucker, PhD, Sebastian Linnemayr, PhD, Eric R Pedersen, PhD, William G Shadel, PhD, Rushil Zutshi, MS, Maria DeYoreo, PhD, **Irineo Cabrerros**, PhD. *Nicotine & Tobacco Research*, 2021: <https://doi.org/10.1093/ntr/ntab055>

Linking Statistics with Testing Policy to Manage COVID-19 in the Community. L. Hilborne, Z. Wagner, I. **Cabrerros**, and R. Brook. *American Journal of Clinical Pathology*. 2020:
<https://doi.org/10.1093/ajcp/aqaa099>

Latent Variable Modeling and Causal Inference in Population-Structured Genetics. **I. Cabrerros**. PhD thesis, Princeton University, Princeton, NJ.

A likelihood-free estimator of population structure bridging admixture models and principal components analysis. (**I. Cabrerros** and J. D. Storey). *Genetics*. 2019:
<https://doi.org/10.1534/genetics.119.302159>

A nonparametric Bayes approach to multiple hypothesis testing. (A. Bass, **I. Cabrerros**, B. Engelhardt and John D. Storey). Presented in the 2018 NeurIPS Bayesian Nonparametrics Workshop: <https://sites.google.com/view/nipsbnp2018/accepted-papers?authuser=0>.

Causal models on probability spaces. (**I. Cabrerros** and J. D. Storey). <https://arxiv.org/abs/1907.01672>.

Inferring Causal Gene-Phenotype Relationships from Population-Sampled Trios. (I. **Cabreros** and J. D. Storey). Manuscript in preparation.

Detecting community structures in Hi-C genomic data. (I. **Cabreros**, E. Abbe, and A. Tsirigos). 2016 Annual Conference on Information Science and Systems (CISS).

Commentary and Non-Academic Publications

Why an algorithm can never truly be 'fair.' **Irineo Cabreros**. Los Angeles Times, 03/27/2022, <https://www.latimes.com/opinion/story/2022-03-27/algorithms-unfair-racial-bias-math>.

Racism is a Modifiable Risk Factor: Relationships Between Race, Ethnicity, and Colorectal Cancer Outcomes. Carolyn M. Rutter, Folasade P. May, Gloria D. Coronado, Toyya A. Pujol, Emma G. Thomas, **Irineo Cabreros**. *Gastroenterology*, 2021, ISSN 0016-5085, <https://doi.org/10.1053/j.gastro.2021.12.251>.

Side-stepping safeguards—data journalists are doing science now. **Irineo Cabreros**. *Undark*, 04/22/2021, <https://undark.org/2021/04/22/data-journalists-are-doing-science>.

Slate Magazine: http://www.slate.com/authors.irineo_cabreros.html

Massive Science: <https://massivesci.com/people/irineo-cabreros/>

Software

alstructure: <https://github.com/StoreyLab/ALStructure>

qmix: <https://github.com/StoreyLab/qmix>

Invited Presentations

A Statistician's Perspective on Data Journalism (Keynote). Netzwerk Recherche, SciCAR. Dortmund, Germany, 2021.

SciComm & Stats: Communicating Statistics to the Public in the New Decade (Panelist). Joint Statistical Meetings. Seattle, Washington, 2021.

Teaching Experience and Outreach

Prison Teaching Initiative

2017

Math 030: Algebra (East Jersey State Penitentiary)

Princeton University Assistant Instructor

2015 - 2018

- Operations Research 309: Probability and Stochastic Systems
- Operations Research 405: Regression and Time Series Analysis

Harvard College Teaching Fellow

2011 - 2014

- Physics 15a: Classical Mechanics
- Math 25a: Proof-Based Linear Algebra
- Math 25b: Proof-Based Real Analysis
- Applied Math 115: Introduction to Mathematical Modeling
- Applied Math 105: Applied Ordinary and Partial Differential Equations

MIT SPLASH Instructor: Statistics and the Rubber Band

2013

- Designed and taught a course for the MIT SPLASH program to teach high school students the basic principles of statistical mechanics.

WorldTeach Namibia: Volunteer Teacher

2011

- Taught 8th and 10th grade physical sciences and mathematics at Dibasen Junior Secondary School (Okombahe, Namibia).