Alexander Franks

Associate Professor
Department of Statistics and Applied Probability
University of California, Santa Barbara
amfranks@ucsb.edu
http://afranks.com

RESEARCH INTERESTS

Multivariate analysis; causal inference; covariance estimation; large p, small n; data integration; measurement error; missing data; high-throughput biology; sports statistics;

PREVIOUS POSITIONS

University of Washington, Seattle, WA 2015-2017
Moore/Sloan Data Science and WRF Innovation in Data Science Postdoctoral Fellow
Advisor: Peter Hoff

EDUCATION

Harvard University, Cambridge, MA 2010-2015
Ph.D., Statistics
Advisor: Edoardo Airoldi

Brown University, Providence, RI 2005-2010
ScM, Applied Math., 2010
BA, Computer Science and Applied Math, 2009
- Graduated with Honors

PAPERS

Select Publications

2025

Jiajing Zheng, Alexander D'Amour, and Alexander Franks. Copula-based sensitivity analysis for multi-treatment causal inference with unobserved confounding. *Journal of Machine Learning Research*, 26(36):1–60, 2025.

Alison Gemmill, Alexander M. Franks, Selena Anjur-Dietrich, Amy Ozinsky, David Arbour, Elizabeth A. Stuart, Eli Ben-Michael, Avi Feller, and Suzanne O. Bell. Us abortion bans and infant mortality. *JAMA*, 333(15):1315–1323, 04 2025.

Suzanne O. Bell, Alexander M. Franks, David Arbour, Selena Anjur-Dietrich, Elizabeth A. Stuart, Eli Ben-Michael, Avi Feller, and Alison Gemmill. Us abortion bans and fertility. *JAMA*, 333(15):1324–1332, 04 2025.

2024 27

Jiajing Zheng, Jiaxi Wu, Alexander DAmour, and Alexander Franks and. Sensitivity to unobserved confounding in studies with factor-structured outcomes. *Journal of the American Statistical Association*, 119(547):2026–2037, 2024.

2023 26

Ke Wang, Alexander Franks, and Sang-Yun Oh. Learning gaussian graphical models with latent confounders. *Journal of Multivariate Analysis*, 198:105213, 2023. Link to paper.

	25	Laurent Gatto, Ruedi Aebersold, Juergen Cox, Vadim Demichev, Jason Derks, Edward Emmott, Alexander M Franks, Alexander R Ivanov, Ryan T Kelly, Luke Khoury, et al. Initial recommendations for performing, benchmarking and reporting single-cell proteomics experiments. *Nature methods*, 20(3):375–386, 2023. Link to paper.
	24	David Arbour, Eli Ben-Michael, Avi Feller, **Alexander Franks**, and Steven Raphael. Using multitask gaussian processes to estimate the effect of a targeted effort to remove firearms. *Annals of Applied Statistics*, 17, 2023. Link to paper.
2022	23	Jiajing Zheng, Alexander D'Amour, and **Alexander Franks**. Bayesian inference and partial identification in multi-treatment causal inference with unobserved confounding. In Gustau Camps-Valls, Francisco J. R. Ruiz, and Isabel Valera, editors, *Proceedings of The 25th International Conference on Artificial Intelligence and Statistics*, volume 151 of *Proceedings of Machine Learning Research*, pages 3608–3626. PMLR, 28–30 Mar 2022. Link to paper.
	22	Nathan Hwangbo, Xinyu Zhang, Daniel Raftery, Haiwei Gu, Shu-Ching Hu, Thomas J. Montine, Joseph F. Quinn, Kathryn A. Chung, Amie L. Hiller, Dongfang Wang, Qiang Fei, Lisa Bettcher, Cyrus P. Zabetian, Elaine R. Peskind, Ge Li, Daniel E. L. Promislow, Marie Y. Davis, and **Alexander Franks**. Predictive modeling of alzheimer's and parkinson's disease using metabolomic and lipidomic profiles from cerebrospinal fluid. *Metabolites*, 12(4), 2022. Link to paper.
2021	21	**Alexander M. Franks**. Reducing subspace models for large-scale covariance regression. *Biometrics*, 2021. Link to paper.
	20	Nathan Hwangbo, Xinyu Zhang, Daniel Raftery, Haiwei Gu, Shu-Ching Hu, Thomas J. Montine, Joseph F. Quinn, Kathryn A. Chung, Amie L. Hiller, Dongfang Wang, Qiang Fei, Lisa Bettcher, Cyrus P. Zabetian, Elaine R. Peskind, Ge Li, Daniel E. L. Promislow, Marie Y. Davis, and **Alexander Franks**. A metabolomic aging clock using human cerebrospinal fluid. *The Journals of Gerontology: Series A*, 2021. Link to paper.
	19	Kelly M Thomasson, **Alexander Franks**, Henrique Teotónio, and Stephen R Proulx. Testing the adaptive value of sporulation in budding yeast using experimental evolution. *Evolution*, 75(7):1889–1897, 2021. Link to paper.
	18	Zachary Terner and **Alexander Franks**. Modeling player and team performance in basketball. *Annual Review of Statistics and Its Application*, 8, 2020. Link to paper.
2020	17	**Alexander M. Franks**, Edoardo M. Airoldi, and Donald B. Rubin. Nonstandard conditionally specified models for nonignorable missing data. *Proceedings of the National Academy of Sciences*, 2020. Link to paper.
2019	16	**Alexander M Franks** and Peter Hoff. Shared subspace models for multi-group covariance estimation. *Journal of Machine Learning Research*, 20(171):1–37, 2019. Link to paper.

	15	Albert Tian Chen, **Alexander Franks**, and Nikolai Slavov. Dart-id increases single-cell proteome coverage. *PLoS computational biology*, 15(7):e1007082, 2019. Link to paper.
	14	**Alexander M Franks**, Alexander DAmour, and Avi Feller. Flexible sensitivity analysis for observational studies without observable implications. *Journal of the American Statistical Association*, pages 1–33, 2019. Link to paper.
2018	12	**Alexander M Franks**, Florian Markowetz, Edoardo M Airoldi, et al. Refining cellular pathway models using an ensemble of heterogeneous data sources. *The Annals of Applied Statistics*, 12(3):1361–1384, 2018. Link to paper.
	11	Jessica M Hoffman, Kate E Creevy, **Alexander Franks**, Dan G O'Neill, and Daniel EL Promislow. The companion dog as a model for human aging and mortality. *Aging cell*, 17(3):e12737, 2018. Link to paper
2017	10	**Alexander Franks**, Edoardo Airoldi, and Nikolai Slavov. Post-transcriptional regulation across human tissues. *PLoS computational biology*, 13(5):e1005535, 2017. Link to paper.
2016	8	**Alexander Franks**, Alexander DAmour, Daniel Cervone, and Luke Bornn. Meta-analytics: tools for understanding the statistical properties of sports metrics. *Journal of Quantitative Analysis in Sports*, 12(4):151–165, 2016. Link to paper.
2015	7	Edward WJ Wallace, Jamie L Kear-Scott, Evgeny V Pilipenko, Michael H Schwartz, Pawel R Laskowski, Alexandra E Rojek, Christopher D Katanski, Joshua A Riback, Michael F Dion, **Alexander M Franks**, et al. Reversible, specific, active aggregates of endogenous proteins assemble upon heat stress. *Cell*, 162(6):1286–1298, 2015. Link to paper.
	6	Gábor Csárdi, **Alexander Franks**, David S Choi, Edoardo M Airoldi, and D. Allan Drummond. Accounting for experimental noise reveals that transcription dominates control of steady-state protein levels in yeast. *PLoS Genetics*, 2015. Link to paper.
	5	Lo-Hua Yuan, Anthony Liu, Alec Yeh, Aaron Kaufman, Andrew Reece, Peter Bull, **Alexander Franks**, Sherrie Wang, Dmitri Illushin, and Luke Bornn. A mixture-of-modelers approach to forecasting ncaa tournament outcomes. *Journal of Quantitative Analysis in Sports*, 11(1):13–27, 2015. Link to paper.
	3	**Alexander M. Franks**, Gábor Csárdi, D. Allan Drummond, and Edoardo M. Airoldi. Estimating a structured covariance matrix from multilab measurements in high-throughput biology. *Journal of the American Statistical Association*, 110(509):27–44, 2015. Link to paper.
	2	**Alexander Franks**, Andrew Miller, Luke Bornn, and Kirk Goldsberry. Characterizing the spatial structure of defensive skill in professional basketball. *Annals of Applied Statistics*, 2015. Link to paper.

2013 | 1 | Hygor Piaget M. Melo, **Alexander Franks**, André A. Moreira, Daniel Diermeier, José S. Andrade Jr, and Luís A. Nunes Amaral. A solution to the challenge of optimization on "golf-course"-like fitness landscapes. *PloS one*, 8(11):e78401, 2013. Link to paper.

FUNDING

2021 | National Institutes of Health. *Methods for Systematic Analysis of Post-transcriptional Regulation in Single Cells* (1R01GM144967-01, PI). 2021-2025.

2019 | Chan/Zuckerberg Initiative. *Mapping the single-cell proteome and transcriptome of human testis in 3D.* (Co-PI). 2019-2022.

2019 | National Science Foundation. *HDR DSC: Collaborative Research: Central Coast Data Science Partnership: Training a New Generation of Data Scientists* (Award #1924205, Co-PI). 2019-2022.

2016 | National Institutes of Health. *Multi-group covariance models for metabolomic analyses of neurodegenerative disease.* (R03 CA211160, Co-Investigator). 2016-2018

Other Publications

Luke Bornn, Daniel Cervone, **Alexander Franks**, and Andrew Miller. Studying basketball through the lens of player tracking data. In *Handbook of Statistical Methods for Design and Analysis in Sports*. Chapman and Hall/CRC, 2016.

Media

Dana Mackenzie and Barry Cipra. *What's happening in the mathematical sciences, Volume 10.* American Mathematical Society, 2015.

UNIVERSITY SERVICE

- **Chair of the Data Science Initiatives (2019-2022).** Participated in conversations around changes and updates to data science curricula, involved in the development of a proposal for a new data science major and helped develop program to introduce undergraduate learning assistants into our undergraduate statistics and data science classes.

- **DataLab Director (2019-2022)**. Oversees statistical and data science consultations with researchers in departments across campus.

- **Lead organizer of the UCSB Data Science Summit (2021)**. Organized summit to discuss, share and propose Data Science activities and initiatives at UCSB. The summit included talks from faculty in 12 different departments, a DEI panel discussion on creating a better culture and climate around data science at UCSB, and an introduction and discussion with leaders from diverse communities of practice. https://datascience.ucsb.edu/summit21.

- **Department Seminar Organizer (2018-2020).**

- **Member of the Department Computing Committee (2017).**

- **Department Recruiting Committee (2017-2022).** Participated in at least one search committee in each year since 2017.

- **Co-organizer - Distinguished Lecture Series in Data Science**. A quarterly campus-wide lecture by a leader in data science (academic or industry).

PUBLIC SERVICE

- **Data science outreach (2020-2022).** Supervised outreach presentations by undergraduate data science students to two Southern California high schools and a local community college.

- **Data Science Career Panel**, Santa Barbara City College (2020)

PROFESSIONAL ACTIVITIES

Appointments

- **Associate Editor** - Journal of Quantitative Analysis of Sports (2022-current)

- **Associate Editor** - Statistics and Data Mining (2018-current)

- **Executive Committee Member** - Academic Data Science Alliance Career Development Network (2020-2022).

Reviews and Organized Sessions

- **Session Organizer** - ISBA world meeting (2022)

- **Reviewing.** JRSS-B (2022), Statistical Science (2022), Biometrika (2022), Journal of Causal Inference (2021, 2022), JASA (2018, 2 in 2021), AISTATS (3 in 2021), JRSS-A (2021), NeurIps (4 in 2018, 3 in 2021), ICML workshop (2021), ICML (3 in 2019), Journal of Multivariate Analysis (2019), Biometrical Journal (2021), Scandinavian Journal of Statistics (2019), Knowledge and Information Systems (2019), Biometrics (2018), American Journal of Political Science (2020), SIAM Journal of Financial Mathematics (2020), BMC Bioinformatics (2018), Big Data (2017),