VITA / BIOGRAPHICAL SKETCH

Harrison Katz

Education

• Doctor of Philosophy (Ph.D.) in Statistics, University of California, Los Angeles (UCLA)
Dissertation: 'Advancing Bayesian Forecasting: A Bayesian Dirichlet Auto-Regressive Conditional Heteroskedasticity Model, a Bayesian Dirichlet Auto-Regressive Moving-Average Model, and Other Innovations.'
Advisors: Robert E. Weiss (Co-Chair), Ying Nian Wu (Co-Chair)

• Master of Science (M.S.) in Mathematics & Statistics, Georgetown University

• Bachelor of Arts (B.A.) in Political Science, University of California, Los Angeles (UCLA)

Professional Experience

• Research Analyst (Risk Analysis), Federal Reserve, 2016–2018
Conducted rigorous data analytics, mathematical modeling, and research on credit-default-swap markets.

• Senior Data Scientist, Airbnb, 2019–2024
Lead developer of company-wide forecast models (e.g., Nights Booked, Revenue); created the Bayesian Compositional Time-Series framework (B-DARMA, B-DARCH) to forecast lead times during COVID-19.

• Staff Data Scientist, Airbnb, 2024–2025
Extended B-DARMA framework to handle time-varying volatility (B-DARCH); led production automation of forecasting models across thousands of time series.

• Tech Lead Manager, Forecasting Data Science, Airbnb, 2025–present
Manage team of data scientists developing Bayesian forecasting methods for Finance; serve as technical advisor to VP Finance on forecasting strategy across 21 country groups.

Publications

1. Katz, H., K. T. Brusch, and R. E. Weiss (2024). "A Bayesian Dirichlet Auto-Regressive Moving Average Model for Forecasting Lead Times." *International Journal of Forecasting*, 40(4), 1556–1567.

2. Katz, H., E. Savage, and K. T. Brusch (2025). "Two-Part Forecasting for Time-Shifted Metrics." *Foresight: The International Journal of Applied Forecasting*, 77, 26–33.

3. Katz, H., and R. E. Weiss (2025). "A Bayesian Dirichlet Auto-Regressive Conditional Heteroskedasticity Model for Forecasting Currency Shares." *International Journal of Forecasting* (forthcoming).

4. Katz, H., P. Coles, and E. Savage (2025). "Lead Times in Flux: Analyzing Airbnb Booking Dynamics During Global Upheavals (2018–2022)." *Annals of Tourism Research: Empirical Insights*.

5. Katz, H., L. Medina, and R. E. Weiss (2025). "Sensitivity Analysis of Priors in the Bayesian Dirichlet Auto-Regressive Moving Average Model." *Forecasting*, 7(3), 32.

6. Katz, H., and R. E. Weiss (2025). "Bayesian Shrinkage in High-Dimensional VAR Models: A Comparative Study." *International Journal of Statistics and Probability*.

7. Katz, H., and T. Maierhofer (2025). "Forecasting the U.S. Renewable-Energy Mix with a Bayesian Dirichlet ARMA Model." *Renewable Energy Forecasting: Innovations and Breakthroughs* (MDPI).

8. Katz, H., and E. Savage (2025). "Slomads Rising: Structural Shifts in U.S. Airbnb Stay Lengths During and After the Pandemic (2019–2024)." *Tourism & Hospitality* (MDPI), 6(4), 182.

9. Katz, H. (2025). "Centered MA Dirichlet ARMA for Financial Compositions." Working paper, arXiv:2510.18903.

10. Katz, H. (2025). "Impact by Design: Translating Lead Times in Flux into an R Handbook." Technical note, arXiv:2511.12763.

11. Katz, H., J. Needleman, and L. Medina (2025). "Distributional Fitting and Tail Analysis of Lead-Time Compositions: Nights vs. Revenue on Airbnb." Working paper.

12. Katz, H. (2025). "Directional-Shift Dirichlet DARMA Models for Compositional Time Series with Structural Break Intervention." Working paper.

13. Katz, H. (2025). "Forecasting the Evolving Composition of Inbound Tourism Demand: A Bayesian Compositional Time Series Approach Using Platform Booking Data." Working paper.

Selected Presentations

• "Forecasting Dynamics at Airbnb." Invited seminar, UCLA Fielding School of Public Health, Master of Data Science in Health (MDSH) Seminar Series, November 2024.

• Guest Lecturer, Data Analysis (MBA). UCLA Anderson School of Management, 2024–2025. Two lectures on applied forecasting methods.

• Internal Technical Talks. Airbnb, 2019–present. Multiple presentations on B-DARMA, B-DARCH, and two-part forecasting methods to cross-functional teams including Finance, Product, and Engineering.