

# Patrick Vossler

---

**Address** 3670 Trousdale Pkwy,  
Los Angeles, CA 90089

**Email** pvossler@usc.edu  
**Website** www.patvoss.me

## Research Interests

My research focuses on developing new statistical methodologies for high-dimensional data and expanding our theoretical understanding of commonly-used machine learning methods in high-dimensional settings. I am particularly interested in developing non-parametric methods with rigorous statistical guarantees for causal inference problems.

## Education

**2017-** **University of Southern California**, Los Angeles, CA  
Ph.D. in Business Statistics  
Thesis: “High-Dimensional Random Forests and Causal Inference”  
Advisors: Prof. Yingying Fan, Prof. Jinchi Lv  
Expected Completion: May 2022

**2013-2017** **University of Southern California**, Los Angeles, CA  
B.S. Economics and Mathematics  
Graduated with Honors, Magna Cum Laude

## Employment

**2015-2017** **Omaze**, Los Angeles, CA  
*Data Science Intern*

- Liased with senior members of the marketing and product teams to create automated reports of social media ad conversion.
- Built connected data science pipeline with user analytics data.
- Deployed Javascript user interface A/B tests and analyzed subsequent data from the Apache Spark cluster with Scala and Python to optimize website layout for increasing user conversion rate.

## Honors / Awards

- 2020**      **Hannan Graduate Student Travel Award**, Institute of Mathematical Statistics
- Awarded for the paper “Asymptotic properties of high-dimensional random forests.”
  - Funds the travel expenses of students who are graduate students statistics or probability to present their research at an IMS sponsored or co-sponsored meeting. One of 16 students worldwide to receive this award.
- 2020**      **James S. Ford Award**, USC Marshall School of Business
- Awarded to third year Ph.D. students based upon their scholastic performance and the quality of their dissertation abstract. One recipient per year.
- 2014-2016**      **Student Opportunities for Academic Research (SOAR)**, USC Dornsife
- Funding for undergraduates for participation as a research assistant in a faculty member’s project during the spring or fall semester. Received the award for five different semesters.

## Publications

- 2021**      Phillips, C., Shah, P. and Vossler, P. (2021) **Immigrants, Intersectionality and the Politics of Substantive Representation**. *Journal of Women, Politics & Policy*.
- To appear.

## Working Papers

- 2021**      Chi, C.-M., Vossler, P., Fan, Y. and Lv, J. (2021). **Asymptotic properties of high-dimensional random forests**. *The Annals of Statistics*.
- Under 2nd review for revision.
- Demirkaya, E., Fan, Y., Gao, L., Lv, J., Vossler, P. and Wang, J. (2021). **Nonparametric inference of heterogeneous treatment effects with two-scale distributional nearest neighbors**. *Journal of the American Statistical Association*.
- Under 2nd review for revision.
- Du, X., Fan, Y., Lv, J., Sun, T. and Vossler, P. (2021). **High-dimensional average treatment effect inference with deep neural networks**. *Journal of Econometrics*.
- Under review.

## Works in Progress

- 2021** Vossler, P., Fan, Y. and Lv, J. (2021). **TSI: high-dimensional nonparametric inference of heterogeneous treatment effects.**
- In preparation and to be submitted to *Journal of the American Statistical Association*.
- Vossler, P., Fan, Y. and Lv, J. (2021). **FLINK: feature selection in causal inference with knockoffs.**
- In preparation and to be submitted to *Journal of the Royal Statistical Society Series B*.
- Vossler, P., Jones, C., Lv, J. and Wang, J. (2021). **High-dimensional option return inference with deep learning.**
- In preparation and to be submitted to *Journal of Financial Economics*.

## Research Experience

- 2021-** **Graduate Research Assistant**, USC Viterbi
- Developed a web application to test the effectiveness of a preference elicitation algorithm based on robust optimization.
  - Worked with Los Angeles Homeless Services Authority to use the web application to help achieve their strategic goals.
- 2018-** **Statistical Consultant**, USC Political Science Department
- Modeled the types of legislation sponsored by immigrant legislators using a latent topic model trained from legislative bill text from all 50 state legislatures.
- 2014-2016** **Senior Research Lab Manager**, SPEC Research Lab, USC School of Intl. Relations
- Taught 20 junior lab members skills such as data cleaning and visualization in R in weekly team meetings.
  - Developed a curriculum of the R skills necessary for working in the research lab.

## Teaching Experience

- 2019, 2020** **Instructor and Teaching Assistant**, BUAD 312: Statistics and Data Science for Business

- Core class for business undergraduate students that is an advanced alternative to the regular business statistics core class.
- Instructor rating of 4.2 out of 5 (averaged over two sections).
- Developed a buad312data R package to make it easier to share data sets with students.
- Built a tool for grading RMarkdown problem set submissions. Used by teaching assistants in spring 2020.

## Skills

- **Programming Languages:** R, Python, Javascript, SQL, C++, Scala, STATA, Apache Spark