

OVERVIEW

I am an experienced data scientist who's worked in a production environment with a strong background in causal inference, experimentation, and machine learning. I have a doctorate in Economics and expertise building experimentation platforms, estimating customer long-term value, and forecasting consumer demand. Additionally, I have designed experiments, calculated price elasticities, and estimated causal impacts of company initiatives.

EXPERIENCE

Data Scientist II, Gopuff

Los Angeles, CA, July 2022 - Present

- *Platform and System Design*
 - Developed an end-to-end in-house **switchback platform**, with a reusable metric infrastructure. Leveraged Streamlit for the front-end switchback registration, deployed with Docker on Azure using FastAPI, and MLflow.
 - Created a comprehensive test suite using **pytest** and conducted switchback training sessions, enabling non-data scientists to utilize the platform. Acted as delivery/dispatches main experimentation tool with over 80 successful switchbacks leading to a 40% reduction in delivery costs.
- *Predictive Modelling and Machine learning*
 - Averted several short-term positive long-term negative feature rollouts by creating the first **long-term value (LTV)** model of customers using **double machine learning**. Productionalized the LTV model for use in the A/B platform.
 - Provided education to stakeholders on interpreting LTV and presented the LTV impacts to leadership.
- *Causal Inference*
 - Assisted with **experiment design**, power analysis, & calculating price elasticities for geographic pricing leading to +4% margin, largest company wide margin positive initiative. Evaluated long-term impacts using LTV model and a long-term holdout group.
 - Evaluated the effectiveness of marketing initiatives using **diff-in-diffs and synthetic control** methods. Assessed the causal impact of price discounts on customer behavior using double ML.
- *Forecasting*
 - Reduced expiry costs by 3.5% and reduced manual workload by improving a **lightGBM forecasting model** by adding promotion features. Experimentally evaluated the improved model's impact on business metrics.
 - Assessed **forecasting experimentation** processes and added forecasting experiment tools to our platform.
- *Collaboration and Team Development*
 - **Conducted technical interviews** of potential new hires and assisted with evaluating the candidate quality.
 - Continuously assisted with team code review, education, and discussions. **Provided mentorship** to junior team members, guiding project scope, success definition, and offering hands-on support on a day-to-day basis.

Research Assistant, UCLA Economics Department

Los Angeles, CA, 2017 — 2019

- Assisted with empirical economics projects, responsible for data sourcing, data cleaning, creating graphs, and analysis.
- Developed the key empirical models using **panel, and logistic regression**, paper published in 2020.

Instructor & Teaching Assistant, UCLA Economics Department

Los Angeles, CA, 2017 — 2021

UCLA Economics Department

Los Angeles, CA

- Teaching Assistant for microeconomics, macroeconomics, investments and statistics/econometrics.

EDUCATION

PhD in Economics, University of California, Los Angeles

September 2016 - May 2022

Dissertation: Empirical Macroeconomics & Finance.

BA in Mathematics & Economics, Trinity College Dublin

September 2012 - June 2016

Double first class honors.

SKILLS

Languages

Highly proficient in Python, SQL, R, and \LaTeX . Working knowledge of Julia

Developer tools

Docker, Uvicorn, FastAPI, MLflow, Pyspark, Streamlit, Git, Azure, Databricks.

Libraries

pandas, poetry, PySpark, numpy, EconML, XGBoost, LightGBM, Statsmodels, scikit-learn, TensorFlow.

PAPERS & PROJECTS

The Heterogeneous Effect of Local Land-Use Restrictions Across US Households.

- Used **instrumental variables and PCA** to estimate housing supply elasticities and amenity quality.
- Estimated a **dynamic discrete choice** model using maximum likelihood and used it to evaluate policy counterfactuals.

Corporate Bond Liquidity During the COVID-19 Crisis.

Published in *The Review of Financial Studies*, 2021.

with Mahyar Kargar, Benjamin Lester, Shuo Liu, Pierre-Olivier Weill, and Diego Zúñiga

- Used a **diff-in-diff** to show that the Fed's interventions reduced corporate bond trading costs by 20%.
- Estimated a discrete choice model of investor demand to decompose the demand and supply shocks.