Patrick Staples

CONTACT INFORMATION

Website:	patrickstaples.com
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EXPERIENCE

Compass Pathways, San Francisco, CA — 2023 - present
Principal Data Scientist and Engineer
- Developing scalable AI agents with human-inspired psychological capacities
- Developing simulated patients and therapists in context of mental health
- Developing a general statistical method for aligning two set of timestamped intervals
- Designed a method for early detection of adverse outcomes given cost restraints

Alto Neuroscience, Los Altos, CA — 2021 - 2023
VP, Data Science
- Liaised between data science, data quality, engineering, and product orgs
- Ran agile project management and led a team of > 10 data scientists
- Established causal inference methods: propensity and counterfactual modeling
- Derived a method fitting unconfounded supervised model

Migo Money, San Francisco, CA — 2019 - 2021
Senior Data Scientist
- Created a method producing unsecured loan sequences that maximize customer LTV
- Replaced previous creditworthiness products, resulting in a net profitable loanbook
- Expanded customer base, offering tailored loans to a deeper customer pool

Mindstrong Health, Mountain View, CA — 2018 - 2019
Data Scientist
- Productionized mental health biomarkers using smartphone keystroke data
- Derived a statistical technique for supervised and kernelized dimension reduction for longitudinal data; wrote a paper and open-source code for public use
- Led development of the company's core modeling and data science infrastructure

Harvard University, Boston, MA — 2016 - 2018
Postdoctoral Fellow
- Built boilerplate codebase for storing, cleaning, and preprocessing raw sensor data
- Defined merge protocols between sensor data and highly heterogeneous clinical data
- Created pipelines for creating features informed by known biological mechanisms
- Translated high-level grant aims into tractable analyses and published papers
- Orchestrated lab-affiliated research between PIs, engineers, students, and medical professionals

HarvardX, Cambridge, MA — 2016 - 2018
Course Content Creator: Using Python for Research

KLAS Research, Provo, UT — 2009 - 2011
Statistician

EDUCATION	**Harvard University, Department of Biostatistics**, Boston, MA

Harvard University, Department of Biostatistics, Boston, MA
Ph.D., Biostatistics, 2013-2016. Advisor: Jukka-Pekka Onnela, D.Sc.
Dissertation: On the Statistical Properties of Epidemics on Networks.

Harvard University, Department of Biostatistics, Boston, MA
M.A., Biostatistics, 2011-2013

Brigham Young University, Provo, UT
B.A., Mathematics, 2010-2011, *Summa cum laude*
B.A., Statistics, 2008-2010, *Summa cum laude*

TEACHING AND
CONSULTING

Stanford University, Stanford, CA   2023 - Present
- Teaching a course on statistical inference, machine learning, and AI

LAMP Labs, Boston, MA   2018 - 2019
- Delivered an API for accessing digital phenotyping measurements of smartphone data, including mobility and social metrics
- Delivered a sleep estimation method using accelerometer data

UCSD, San Diego, CA   2013
- Delivered a method implementation and GUI for estimating clinical trial power while accounting for cluster structure in the presence of across-cluster interference

SELECTED
PUBLICATIONS
& CODE

H-index: 14

- **Staples P.**, Dougherty R., *et al.* "Building virtual patients for training mental health professionals." 2025. Preprint; code.
- Senders J, **Staples P.**, *et al.* "An online calculator for the prediction of survival in glioblastoma patients using classical statistics and machine learning." *Neurosurgery* 2020. App.
- **Staples P.**, Dagum P., *et al.* "Supervised kernel PCA for longitudinal data." 2018. Preprint; code.
- **Staples P**,* Torous J,* Onnela JP., *et al.* "A comparison of passive and active estimates of sleep in a cohort with schizophrenia." *NPJ Schizophrenia.* 2017.
- Balzer L., **Staples P.**, *et al.* "Using a network-based approach and targeted maximum likelihood estimation to evaluate the effect of adding pre-exposure prophylaxis to an ongoing test-and-treat trial." *Clinical Trials* 2017. Code.
- Bohren A, **Staples P.**, *et al.* "Power calculation software for randomized saturation experiments." *World Bank*, 2016. App.

SKILLS

AI	AI agent development, prompt engineering, novel RAG variants
Code	Python (advanced), R, C/C++, C#, LaTeX
Data Science	ML ops, feature engineering, predictive modeling, anomaly detection
Statistics	Causal inference, high-dimensional and longitudinal methods, epidemiology, network science