

Benjamin Scott Manning

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RESEARCH INTERESTS

Computational Social Sciences; Machine Learning Applications, Impact & Fairness; Behavioral Science & Economics

EDUCATION

- Harvard University** Aug 2019 - May 2021
- Master in Public Policy at the Harvard Kennedy School, GPA: **3.87/4.00**
 - Thesis: [Interactive Voice Response Systems for Low-Literate Farmers](#) - *High Pass Honors*
- Washington University in St. Louis** Aug 2013 - May 2017
- Bachelor of Arts in Applied Mathematics, GPA: **3.79/4.00**
 - *College Honors*, Minor in Writing

RESEARCH EXPERIENCE

- University of Pennsylvania & California Institute of Technology** - *Researcher* Apr 2021 - Present
- Coded reinforcement learning algorithm to model teacher effort and student learning as a four-armed bandit problem in R and STAN
 - Scraped online news platforms and library archives using Python to create a representative corpora to analyze changes in the formality of English over the past 100 years
 - Analyzed the relationship between certain personality traits in the U.S. workforce and wages to examine how the rise of AI and automation over the past 15 years is displacing the need for certain interpersonal skills
 - Developed hypothesis and performed statistical analysis in R for a 17-condition mega study on the effect on student learning of email nudges sent to over 400,000 American elementary school teachers
 - Created hypotheses and developed surveys using Javascript and Qualtrics to investigate how individuals make different choices depending on how those choices are presented
- Harvard University** - *Research Associate* May 2020 - Jul 2021
- Collaborated with Professor Jon Rogowski Performing exploratory analysis of 19th and 20th century U.S. government records; scraped, cleaned, visualized, and analyzed data for millions of employees
 - Identified trends in salary, demography, department size, and hiring bias through text analysis and statistical tests
- Dartmouth College** - *Research Associate & Producer* Oct 2018 - Sep 2019
- Contributed to research through qualitative interviews of notable societal figures focused on leadership and management with Prof. Sydney Finkelstein that developed into a podcast (The Sydcast) with over 20,000 downloads to date

TEACHING EXPERIENCE

- University of Pennsylvania** - *Course Lead* Aug 2021 - Present
- Undergraduate Honors Research Seminar in Psychology with Prof. Angela Duckworth - *8 Students* - (Fall 2021)
- Harvard University** - *Graduate Tutor* Jan 2020 - May 2021
- Tutored masters and doctoral students across multiple graduate departments in statistics, research methods, and microeconomics
- Harvard Kennedy School** - *Course Assistant* Jan 2020 - May 2021
- Applied Intensive Policy Seminar with Profs. Joe Aldy & Jack Donahue - *50 Students* - (Spring 2021)
 - Econometrics II with Prof. Teddy Svoronos - *50 Students* - (Spring 2021)
 - Markets and Market Failure with Prof. Christopher Avery - *40 Students* - (Fall 2020)
 - Big Data for Politics with Prof. Benjamin Schneer - *35 Students* - (Spring 2020)

- Taught mathematics courses from pre-algebra to trigonometry in classes of up to 50 students (over 500 total) at a public school in rural Thailand
- Redeveloped curriculum in conjunction with Thai teachers that upheld the provincial standards of mathematical education, which were updated during my tenure, while maximizing exposure to English and mathematical concepts
- Coached varsity basketball team for high school traveling to tournaments around Thailand

- Tutored peers in Multivariable Calculus, Linear Algebra, Probability & Statistics, Differential Equations, and Biostatistics

ARTICLES IN PREPARATION

1. Makridis, C., Hickman, L., **Manning, B.**, & Duckworth, A. Wage Returns on Intrapersonal Occupational Personality Requirements Are Increasing.
2. Ghandi, L., **Manning, B.**, Duckworth, A., & Kahneman, D. Systematic Overconfidence in Psychological Hypothesis Development. [\[code\]](#)
3. Duckworth, A., & **Manning, B.**, Effects of Email Nudges on Elementary School Math Teachers. [\[code\]](#)
4. Gallo, M., **Manning, B.**, & Camerer, B. Applications in Reinforcement Learning: Teacher Effort and Student Learning As a Multi-Armed Bandit Problem. [\[code\]](#)
5. **Manning, B.**, Duckworth, A., Ungar, L., Ellenberg, J. Changes in The Formality of English through the 20th and 21st Centuries. [\[code\]](#)
6. Rogowski, J., **Manning, B.**, Historical Employment Changes in the Composition of the U.S. Government.

PERSONAL SOFTWARE & CODING SAMPLES

1. [Research Methods in R Course Materials](#) - Cleaning, visualization, regression, factor analysis, mediation, and group testing
2. [Automatic Differentiation Package](#) - Computes exact derivatives with machine precision for any function with n-variables
3. [Linear & Ridge Regression Implementation](#) - Regression classes built from scratch with [visualization](#) and [scoring](#)
4. [Microbiome Analysis](#) - Predicting the relative abundances of bacteria in microbiomes from Ulcerative Colitis patients

HONORS & AWARDS

- High Pass Honors - [Master's Thesis](#) (2021)
- Kosciuszko Foundation Tuition Scholarship - Supports American students of Polish descent for graduate studies (2019)
- College Honors - Cumulative Undergraduate GPA Award (2017)
- Order of Omega - Honor society recognizing high standards of undergraduate leadership (2016)
- Dean's List - Semester Undergraduate GPA Award (Multiple Years)
- United Valley Micah Hero Award - For projects helping to "heal the world" in Uganda over the course of 10 years (2015)

SERVICE & ADDITIONAL WORK

- Pennsylvania Department of Transportation - Volunteer data scientist analyzing the efficacy of speed cameras put on streets in Philadelphia in order to lower rates of death and injury from vehicle crashes (2021 - Present)
- COVID Response Team - Volunteer helping Vermont residents get COVID vaccines and other necessities (2020 - Present)
- Big Brothers Big Sisters - Volunteer mentor for underprivileged students who aspire to attend college (2019 - 2021)
- VIPKID - Tutor teaching over 300 Chinese children English through online platform (2017 - 2020)
- Village2Village Project - Sponsor & Volunteer for program supporting orphans in rural Uganda (2009 - Present)

SKILLS

Programming:

Python, R, SQL, LaTeX, Version Control - Git, STAN, Command Line/Bash, Javascript, CSS, Qualtrics, C, Matlab

Languages:

Spanish - Limited Working Proficiency; Thai - Elementary Proficiency

Extracurricular:

Travel: 41 countries on 6 continents; soccer; guitar; ukulele; saxophone; basketball; yoga; hiking; and Catan.