Matt Goldman

Office of the Chief Economist
Building 112, Office 4248
14865 NE 36th St
Redmond, WA 98052

Phone: 703-314-5850
email: mattgoldman5850@gmail.com
Website: http://www.matt-goldman.com
LinkedIn: https://www.linkedin.com/in/matt-goldman-aa56364a/

Professional Experience

2018-   *Economic Research Scientist*, Facebook Core Data Science: Economics & Computation Group

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2015-2018   *Research Economist*, Microsoft's Office of the Chief Economist

- Developed *Pricing Engine* software package to automate Double ML[1] method of causal inference for typical business/pricing contexts. Applied methodology to optimize price and promotion policy for Surface and Xbox products. Package was also deployed as part of a Cortana Intelligence Solution for use by Azure customers.

- Developed *Regression Discontinuity Bandit* methodology to dynamically optimize mainline reserve prices in sponsored search auctions. Absent any experimentation, the algorithm allows for efficient tuning of multiple auction parameters to efficiently trade-off auction objective functions (e.g. maximize revenue subject to a constraint on total number of ads).

2013   *Research Intern*, Microsoft Research New York

- Developed algorithm to re-purpose internal business experimentation on sponsored search auctions into an instrumental variables framework to measure downstream causal impacts of advertisement position.

- Results demonstrate clear departures from typical assumptions used to model search auctions (Edelman, Ostrovsky & Schwarz, 2008) and inefficiencies in the Generalized Second Price Auction used at Google and Bing.

Education

2015   Ph.D., University of California, San Diego, Economics
2011   MA, University of California, San Diego, Economics
2008   BS, College of William and Mary, Math & Economics

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[1]See Chernozhukov, Victor, et al. "Double/debiased machine learning for treatment and structural parameters." The Econometrics Journal 21.1 (2018): C1-C68. for more background on Double ML.

Technical Skills

- **Programming Languages:** Python (strongest), R, SQL, C#, MATLAB, Stata

- **Data Science/Econometrics:** Causal Inference, Structural/BLP models, Time-Series Forecasting, Machine Learning (LASSO, Forests, DNN, etc...)

Publications

Comparing distributions by multiple testing across quantiles (with David M Kaplan). **Journal of Econometrics**, XX(XX):XXX–XXX.

Goldman, Matt, and David M. Kaplan. "Fractional order statistic approximation for nonparametric conditional quantile inference." **Journal of Econometrics** 196.2 (2017): 331-346.

Goldman, Matt, and Justin M. Rao. "Optimal stopping in the NBA: Sequential search and the shot clock." **Journal of Economic Behavior & Organization** 136 (2017): 107-124.

Goldman, M. and Kaplan, D. M. (), Nonparametric inference on (conditional) quantile differences and interquantile ranges, using L-statistics. **The Econometrics Journal** 21(2):136–169

Wan, Mengting, et al. "Modeling Consumer Preferences and Price Sensitivities from Large-Scale Grocery Shopping Transaction Logs." **Proceedings of the 26th International Conference on World Wide Web.** International World Wide Web Conferences Steering Committee, 2017.

Goldman, Matthew, and Justin Rao. "Experiments as Instruments: Heterogeneous Position Effects in Sponsored Search Auctions." **EAI Endorsed Trans. Serious Games** 3.11 (2016): e2.

Working Papers[2]

Position Auctions in Practice (with Justin Rao)

Orthogonal Machine Learning for Demand Estimation: High Dimensional Causal Inference in Dynamic Panels (with Vira Semenova, Victor Chernozhukov, & Matt Taddy)

Pricing Engine: Estimating Causal Impacts in Real World Business Settings (with Brian Quistorff)
Loss Aversion Around a Fixed Reference Point in Highly Experienced Agents (with Justin Rao)

Holier than Thou? Testing Theories of Social Information in Charitable Giving using a Natural Field Experiment (with Jim Andreoni and Marta Maras)

Professional Activities

Refereeing: Econometrica, Review of Economics & Statistics, Journal of Economic & Behavioral Organization, Journal of Social Choice and Welfare, Journal of Quantitative Analysis in Sports

Memberships: American Economics Association, Economic Science Association, INFORMS

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[2]For most recently available versions of working papers please visit http://www.matt-goldman.com.

Conference Presentations

2017	NGET Conference at UCLA
2015-2017	MSR Economics Working Group
2016-2017	Microsoft's TechFest
2015	INFORMS Session on Empirical Market Design
2015	AMMA at Booth
2014	Stanford Institute for Theoretical Economics: session on Psychology and Economics
2014	NBER Summer Workshop on the Economics of Information Technology and Digitization
2014	Big Data Marketing Analytics Conference At Booth Business School
2014	12th ZEW Conference on Information and Communication Technologies
2014	Seminar at Microsoft Research, New York
2013-2014	Economic Science Association, North American Meeting
2013	San Diego State University, Sports Business Management MBA Program
2011-2013	MIT Sloan Sports Analytics Conference

Recent Teaching Activities

2017-2018:	Co-taught Microsoft Research Data Science Summer School at NYC Lab
2017-2018:	Guest Lecture on Double ML method for Causal Inference for *Industrial Organization and Data Science* at UW Econ
2016-2018:	Value Based Pricing Lectures & Microsoft's Research Week
2016:	Guest Lecture on Sponsored Search Auctions for Microeconomics class & Foster Business School