

# Matthew Harding

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Contact  
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[www.DeepDataLab.org](http://www.DeepDataLab.org)

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Matthew Harding is an Econometrician and Data Scientist who develops techniques at the intersection of machine learning and econometrics to answer Big Data questions related to individual consumption and investment decisions in areas such as health, energy, and consumer finance. He is a Professor of Economics and Statistics at UC Irvine. He holds a PhD in Economics from MIT and an MPhil in Economics from Oxford University. He directs the *Deep Data Lab* which conducts research into cutting edge methods, inspired by recent advances in machine learning, for the analysis of “*deep data*”, large and information-rich data sets derived from many seemingly unrelated sources to provide novel economic insights to economics and business. Causal inference is at the core of the economics profession and this is reflected in the lab’s approach to problem solving. Professor Harding advised a number of companies and agencies on economics and data science problems, including Apple, US Commodity Futures Commission, World Bank, Franklin Energy, and the Department of Justice.

<https://scholar.google.com/citations?user=BiEu8UcAAAAJ&hl=en>.

## Academic Positions

### **University of California – Irvine, Department of Economics (2016-)**

*Professor of Economics and Statistics*

*Associate Professor (with tenure) of Economics and Statistics*

### **Duke University, Sanford School of Public Policy and Department of Economics (2014-2016)**

*Associate Professor (with tenure) of Public Policy and Economics*

*Assistant Professor of Public Policy and Economics*

*Founding Director, Duke-UNC USDA Center for Behavioral Economics and Healthy Food Choice Research*

*Founding Co-Director, Duke Energy Data Analytics Lab*

*Associate Director, Information Initiative @ Duke*

### **Stanford University, Department of Economics, Assistant Professor (2007-2014)**

*Visiting Assistant Professor (sabbatical), Department of Economics, Georgetown University (2012-2014)*

*Research Fellow, Georgetown Center for Economic Research (2012-2014)*

*Faculty Fellow, Stanford Institute for Economic Policy Research (2008-2014)*

### **University of Oxford, Merton College, Lecturer (2001-2002)**

## Education

### **Massachusetts Institute of Technology, Cambridge, MA**

Ph.D. Economics, Robert L. Bishop Fellowship (2002-2007)

Dissertation: *Essays in Econometrics and Random Matrix Theory*

Committee: Jerry Hausman, Whitney Newey, Victor Chernozhukov, Ricardo Caballero

### **University of Oxford, Merton College, United Kingdom**

M.Phil. Economics (2000-2002)

### **University College London, United Kingdom**

B.A. Economics and Philosophy, First Class Honours (1997-2000)

## **Institutional Committees**

Academic Senate: Council on Research, Computing and Libraries (2020-2023)

### *Other University Service and Administration*

Education analytics search committee (UC Irvine); Graduate admissions (Duke); Energy Initiative Faculty Committee (Duke); Junior Faculty Recruitment Committee (Stanford); Associate Director of Undergraduate Studies, Economics Department (Stanford); Commencement Committee Member (Stanford)

## **Service to the Profession**

Associate Editor

*Journal of Economic and Business Statistics*, 2017-

*Journal of Applied Econometrics*, 2014-2019

*International Journal of Statistics and Management Systems*, 2010-2018

## **Major Grants**

(\* indicates joint awards and involves additional co-PIs)

NIH R01 "Designing Food Voucher Programs to Reduce Disparities in Healthy Diets" (2018-2021) \$784,413 \*

AWS Cloud Credits for Research, (2018-2019) \$35,000

Robert Wood Johnson Foundation "Evaluating a USDA pilot program to incentivize the purchase of fresh produce among SNAP beneficiaries in supermarkets", (2016-2019) \$69,150 \*

Microsoft Research, Data Science and Public Health (2016-2017) \$20,000 \*

USDA Grant "Understanding the Statistical Properties of IRI Store-based Scanner Data and the Health and Prescription Use Modules of the Consumer Panel" (2015-2016): \$101,947

Robert Wood Johnson Foundation "Price promotions, health claims, and nutrient profile of food purchases" (2015-2016): \$75,000 \*

USDA "Center for Behavioral Economics and Healthy Food Choice Research" (2014-2017): \$1,900,000

Sea Change Foundation/ NRDC Grant (2012-2013): \$150,000

USDA Grant "Understanding the Impact of Nutrition" (2012-2013): \$30,000

Robert Wood Johnson Foundation Healthy Eating Grant (2011-2012): \$170,000 \*

UPS Foundation Endowment Fund (2009-2011): \$40,000

Robert Wood Johnson Foundation Public Health Law Fellowship (2010-11): \$140,000 \*

Precourt Energy and Efficiency Center (2010-12): \$108,878

Precourt Energy and Efficiency Center (2008-09): \$74,000

Institute for Research in the Social Sciences Seed Grant (2010, 2012): \$10,000

Presidential Fund for Innovation in International Studies - Middle East (2008-2011): \$300,000 \*

## **Honors and Awards**

- Senior Fellow, Rimini Center for Economic Analysis, Italy (2020-)
- Klaus Liebscher Economic Research Scholarship, Central Bank of Austria (2020)
- Durham Children's Data Center, Core Faculty (2015-2016)
- Sanford Innovation and Impact Fund Award (2015) "The State of Food Assistance in the USA"
- Sanford Pilot Grant Award (2015) "Local food taxes"
- US Chamber of Commerce Data Driven Innovation Fellow (2014)
- Outstanding Author Contribution Award, *Advances in Econometrics* (2013) for "Quantile Regression Estimation of Panel Duration Models with Censored Data"
- Runner-up: Economics Teacher of the Year 2011-2012 (Stanford University)
- VPUE Award, Stanford University (2008, 2010)

- MIT World Economy Lab Merit Fellowship (2006)
- Russell Sage Summer Behavioral Institute Fellowship (2004)

### **Scientific Committees**

- IEEE Big Data: Third Workshop for Economic and Business Forecasting (2019)
- International Association for Applied Econometrics (2016, 2017, 2018)
- The Sackler Institute for Nutrition Science at the New York Academy of Sciences (2016)
- Computational and Methodological Statistics (2016)
- Computational and Financial Econometrics (2016)
- Robert Wood Johnson Foundation Healthy Eating Research Annual Meeting (2014)
- Western Finance Association (2009, 2010, 2011, 2012)

### **Invited Keynote Talks**

- University of Illinois Urbana-Champaign, Heartland Conference (2018) “Small Steps with Big Data: Using Machine Learning in Resource Economics”

### **Short Courses**

- Central Bank of Austria: Big Data for Central Banks: Introduction, Methods, and Applications (2019)
- University of Geneva: Big Data and Machine Learning in Economics (2019)
- Humboldt University: Workshop on Machine Learning and Deep Learning (2018)
- National Association for Business Economics: Machine Learning and Data Science (2017-)
  - 2017: Seattle
  - 2018: Washington, DC; Boston; San Francisco
  - 2019: Houston, Toronto
- Dalian University: Econometrics Summer School, Session on Machine Learning and Deep Learning (2018)
- Xiamen University: Econometrics Summer School, Session on Machine Learning and Big Data (2017)
- Association of Environmental and Resource Economists Annual Summer Conference: Workshop on Big Data (2016)

### **Invited Academic Visits**

- Scuola Superiore Sant’Anna, Pisa (2019)
- Federal Reserve Bank of Kansas (2017)
- Garrison Institute for Climate, Mind and Behavior Retreat (2013)
- Centre for Microdata Methods and Practice, Institute for Fiscal Studies, June, London (2006, 2007)
- Institute for Mathematical Studies, Singapore National University (2005).

### **Workshops Organized**

- Chinese Academy of Sciences-UCI-Xiamen University Workshop on Econometrics and Big Data (2018)
- California Econometrics Conference (2018)
- UCI Symposium on Machine Learning and Human Behavior (co-organizer, 2017)
- Centro Interuniversitario di Econometria, Italy: Summer School on Big Data and Machine Learning (2016)
- WIC Food-Cost Management Roundtable, Washington, DC (2015)
- Stanford Institute for Theoretical Economics: “Advances in Environ. and Energy Economics” (2011, 2013)
- California Econometrics Conference (2010)
- Stanford Institute for Theoretical Economics: “Advances in Nonparametric Econometrics” (2009)
- Stanford Institute for Theoretical Economics: “Complex Data in Economics and Finance” (2008)
- Department of Mathematics, MIT, “Stochastic Eigenanalysis and its Applications” (2006)

## **Academic Publications**

### **Textbooks**

*Modern Business Analytics: Making Decisions with Big Data & Machine Learning*, McGraw-Hill, joint textbook project with Matt Taddy and Leslie Hendrix, forthcoming in 2021.

### **Econometrics, Machine Learning/AI:**

*Big Data, Finance, Choice Models; Quantiles, Bayesian Nonparametrics, Random Matrices*

1. "Managers vs. Machines: Do Algorithms Replicate Human Intuition in Credit Ratings", with G. Vasconcelos, 2020.
2. "Predicting Mortality from Credit Reports", with G. De Giorgi and G. Vasconcelos, submitted, 2020.
3. "Common Correlated Effects Estimation of Heterogeneous Dynamic Panel Quantile Regression Models", with C. Lamarche and H. Pesaran, *Journal of Applied Econometrics*, 2020.
4. "A Panel Quantile Approach to Attrition Bias in Big Data: Evidence from a Randomized Experiment", with C. Lamarche, *Journal of Econometrics*, 2019.
5. "Penalized Estimation of a Quantile Count Model for Panel Data", with C. Lamarche, *Annals of Economics and Statistics*, 134, 2019.
6. "Estimation of a Factor-Augmented Linear Panel Data Model with Applications Using Student Achievement Data", with C. Lamarche and C. Muris, submitted, 2019.
7. "Deep Autoencoder for Pattern Identification in High-Dimensional Consumer Purchase Data", with A. Parret and Y. Xue, working paper, 2018.
8. "Improving Convergence in the Bayesian Mixed Logit Choice Model", with J. Hausman and Y. Xue, working paper, 2018.
9. "Penalized Quantile Regression with Semiparametric Correlated Effects: An Application with Heterogeneous Preferences", with C. Lamarche, *Journal of Applied Econometrics*, 32(2), 342-358, 2017.
10. "Scalable Bayesian Non-Negative Tensor Factorization for Massive Count Data", with C. Hu, P. Rai, C. Chen and L. Carin, *Machine Learning and Knowledge Discovery in Databases*, Vol. 9285, 2015.
11. "Scalable Probabilistic Tensor Factorization for Binary and Count Data", with P. Rai, C. Hu and L. Carin, *Proceedings European Conference on Machine Learning (ECML)*, 2015.
12. "Finite Sample Bias Corrections for IV Estimation with Weak and Many Instruments", with J. Hausman, and C. Palmer, *Advances in Econometrics*, 2015.
13. "Strong Limit of the Extreme Eigenvalues of a Symmetrized Auto-Cross Covariance Matrix", with Wang, C., B. Jin, Z.D. Bai, K. Nair. *Annals of Applied Probability*, 2015, 25(6), 3624-3683.
14. "A Bayesian Semi-Parametric Competing Risk Model with Unobserved Heterogeneity", with Burda, M. and J. Hausman, *Journal of Applied Econometrics*, 2014.
15. "Estimating the Number of Factors in Large Dimensional Factor Models", working paper, 2014.

16. "Limiting Spectral Distribution of a Symmetrized Auto-Cross Covariance Matrix", with Jin, B., C. Wang, Z.D. Bai, K. Nair. *Annals of Applied Probability*, 2014, 24(3), 1199-1225.
17. "Estimating and Testing a Quantile Regression Model with Interactive Effects", with C. Lamarche, *Journal of Econometrics*, 2013.
18. "Panel Probit with Flexible Correlated Effects: Quantifying Technology Spillovers in the Presence of Latent Heterogeneity", with Burda, M. *Journal of Applied Econometrics*, 2013.
19. "A Poisson Mixture Model of Discrete Choice", with M. Burda and J. Hausman, *Journal of Econometrics*, 2012.
20. "Quantile Regression Estimation of Panel Duration Models with Censored Data," with C. Lamarche, *Advances in Econometrics*, 2012.
21. "Least Squares Estimation of a Panel Data Model with Multifactor Error Structure and Endogenous Covariates", with C. Lamarche, *Economics Letters*, 2011.
22. "Quantile Regression for Time-Series-Cross-Section Data", with Alexander, M. and C. Lamarche. *International Journal of Statistics and Management Science*, 2011.
23. "A Quantile Regression Approach for Estimating Panel Data Models Using Instrumental Variables," with C. Lamarche, *Economics Letters* 104(3), 2009.
24. "A Bayesian Mixed Logit Probit Model for Multinomial Choice", with M. Burda and J. Hausman. *Journal of Econometrics*, 147(2), 232-246, 2008.
25. "Explaining the Single Factor Bias of Arbitrage Pricing Models in Finite Samples", *Economics Letters* 99(1), 2008.
26. "Using a Laplace Approximation to Estimate the Random Coefficients Logit Model by Non-linear Least Squares", with J. Hausman, *International Economic Review* 48(4), 2007.

### **Health Economics**

#### *Food and Nutrition; Mortality; Crime*

27. "Emotional Eating in Adults: The role of Socio-Demographics, Lifestyle Behaviors, and Self-Regulation- Findings from a US National Study", with R. Barak, K. Shuval, Q Li, R Oetjen, J. Drope, A. Yaroch, B. Fennis, submitted, 2020.
28. "Heterogeneity in the Effects of Food Vouchers on Nutrition Among Low-Income Adults: A Quantile Regression Analysis", with J. White, G. Vasoncelos, M. Carroll, C. Gardner, S. Basu, H. Seligman, *American Journal of Health Promotion*, 2020.
29. "Evaluating a USDA pilot program to incentivize the purchase of fresh produce among SNAP beneficiaries in supermarkets", with P. Rummo, D. Noriega, A. Parret, O. Hesterman and B. Elbel, *Health Affairs*, 2019.
30. "The Sales Impact of Featuring Healthy Foods, Indulgent Foods, or Both: Findings from a Large-Scale Retail Field Study", with G. Fitzsimons and P. Liu, *Journal of the Association for Consumer Research*, 2018.

31. "The intergenerational transmission of obesity: The role of time preferences and self-control", with Michal Stoklosa, Kerem Shuval, Jeffrey Drope, Rusty Tchernis, Mark Pachucki, Amy Yaroch, *Economics and Human Biology*, 28, 92-106, 2018.
32. "The Effect of Prices on Nutrition: Comparing the Impact of Product- and Nutrient-Specific Taxes", with M. Lovenheim, *Journal of Health Economics*, 53, 53-71, 2017.
33. "No Fat, No Sugar, No Salt... No Problem? Prevalence of "Low-Content" Nutrient Claims and Their Associations with the Nutritional Profile of Food and Beverage Purchases in the United States", with L. Tailie, S. Ng, Y. Xue, and E. Busey, *Journal of the Academy of Nutrition and Dietetics*, 117(9), 1366-13674, 2017.
34. "Deal or no deal? The prevalence and nutritional quality of price promotions among US food and beverage purchases", with L. Tailie, S. Ng and Y. Xue, *Appetite*, 117, 365-372, 2017.
35. "Does Breastfeeding Duration Decrease Childhood Obesity? An Instrumental Variables Analysis of Births in Oregon in 2009", with S. Basu, M. Bartick, E. Rodriguez, J. White, *Pediatric Obesity*, 12(4), 304-311, 2017.
36. "Time Preferences and Physical Activity: Insights from Behavioral Economics", with K. Shuval, J. Drope, M. Stoklosa, A. Yaroch and M. Pachucki, *Health Behavior and Policy Review* 4(1), 53-59, 2017.
37. "Economic Preferences and Fast Food Consumption in US adults: Insights from Behavioral Economics", with K. Shuval, M. Stoklosa, M. Pachucki, A. Yaroch, J. Drope, *Preventive Medicine* 93, 204-210, 2016.
38. "The Effect of Statutory Rape Laws on Teen Birth Rates", with M. Frakes, *American Law and Economics Review*, 2015.
39. "Within-Family Obesity Associations: Evaluation of Parent, Child, and Sibling Relationships," Pachucki, M., M. Lovenheim, and M. Harding. *American Journal of Preventive Medicine*, 47 (4), 2014.
40. "The Heterogeneous Geographic and Socioeconomic Incidence of Cigarette Taxes: Evidence from Nielsen HomeScan Data", with E. Leibtag and M. Lovenheim, *American Economic Journal: Economic Policy*, 2012.
41. "Quantifying the Impact of Economic Crises on Infant Mortality in Advanced Economies", with M. Alexander and C. Lamarche, *Applied Economics*, 2010.
42. "The Deterrent Effect of Expansions in Death-Penalty Eligibility Criteria", with M. Frakes, *American Law and Economics Review*, 2009.

### **Sustainability and Energy Economics**

#### *Energy Policy and Environment, Behavioral Nudges, Commodity Markets*

43. "Economic Benefits and Environmental Costs of Time of Use Pricing", with K. Kettler and C. Lamarche, working paper, 2020.
44. "Small Steps with Big Data: Using Machine Learning in Resource Economics", with C. Lamarche, accepted *Annual Review of Resource Economics*, 2020.
45. "Does Absolution Promote Sin? A Conservationist's Dilemma", with D. Rapson, *Environmental and Resource Economics*, 2019.

46. "Household Response to Time-Varying Electricity Pricing", with S. Sexton, *Annual Review of Resource Economics*, 2017.
47. "Empowering Consumers through Data and Smart Technology: Experimental Evidence on the Consequences of Time-of-Use Electricity Pricing Policies", with C. Lamarche, *Journal of Policy Analysis and Management*, 35(4), 906-931, 2016.
48. "Goal Setting and Energy Conservation", with A. Hsiaw, *Journal of Economic Behavior and Organization*, 2014.
49. "Environmental Justice: Evidence from Superfund Cleanup Durations", with M. Burda, *Journal of Economic Behavior and Organization*, 2014.
50. "Measurement & Verification for Behavioral Programs: Evaluating Programs That Have Gone Full-Scale", EPRI, Palo Alto, CA: 3002001269, 2014.
51. "Split Incentives in Residential Energy Consumption", with K. Gillingham and D. Rapson, *Energy Journal*, 33(2): 37-62, 2012.

#### **Book Chapters and other works**

52. "Big Data in Economics", with J. Hersh, *IZA World of Labor*, 2018.
53. "Good Data Public Policies", in *The Future of Data-Driven Innovation*, US Chamber of Commerce, 2014.
54. "Enforcing Regulation: The Impact of Violating Drinking Water Standards on Infant Health at Birth in the US", SIEPR Stanford University, 2013.
55. "Agreement beyond Polarization: Spectral Network Analysis of Congressional Roll Call Votes", working paper, 2008.
56. "Endogenous and Schumpeterian Growth (Chapter 14)", Carlin, W., D. Soskice, and M. Harding in *Macroeconomics: Imperfections, Institutions and Policies*, OUP, 2006.
57. "Exogenous Growth Theory (Chapter 13)", Carlin, W., D. Soskice, and M. Harding in *Macroeconomics: Imperfections, Institutions and Policies*, OUP, 2006.

#### **Seminars, Conferences, and Invited Talks**

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| 2020 | Central European University (Budapest, Hungary); Vienna University of Business and Economics (Vienna, Austria); Hamburg University (Hamburg, Germany); Melbourne Business School (Melbourne, Australia); University of California – Riverside (CA); Austrian Central Bank (Vienna, Austria)   |
| 2019 | University of California – Los Angeles (CA); University of California – Riverside (CA); Claremont McKenna College (Claremont, CA); University of California – Santa Cruz (CA); Scuola Superiore Sant'Anna (Pisa, IT); Federal Reserve Bank of New York (NY); Central Bank of Austria (Vienna); International Workshop on Empirical Methods in Energy Economics (Quebec City); Yale University (CT); Cornell University (NY) |
| 2018 | Michigan State University (Lansing, MI); Southern California Association of Governments (Indian Wells, CA); University of St. Gallen (St. Gallen, Switzerland); Toulouse School of Economics (Toulouse, France); Humboldt University (Berlin, Germany); Econometrics in the Castle – Machine Learning in Economics and  |

- Econometrics (Munich, Germany); Cambridge University (Cambridge, UK); CEMMAP Workshop on Econometrics and Machine Learning, University College London (London, UK); Ingram Micro, Inc. (Irvine, CA); University of Illinois Urbana-Champaign (Urbana, IL); California Econometrics Conference (Irvine, CA); Google, Inc. (CA)
- 2017 Federal Reserve Bank of Kansas (Kansas City, MO); Imperial College London (London, UK); University of Geneva (Geneva, Switzerland); University of California, Riverside (Riverside, CA); University of California, Los Angeles (Los Angeles, CA); USC (Los Angeles, CA); International Association of Applied Econometrics Annual Meeting (Sapporo, Japan); Xiamen University (Xiamen, China); California Econometrics Conference (Stanford, CA); Claremont McKenna College (Claremont, CA)
- 2016 CDC-NCCOR (Washington, DC); University of Illinois (Urbana-Champaign, IL); University of California, Irvine (Irvine, CA); El Colegio de Mexico (Mexico); AERE Summer Meeting (Breckenridge, CO); American Society of Health Economists (Philadelphia, PA); New York Academy of Science (NY); Federal Reserve Bank of New York (NY); Microsoft Research (NY); CalState LA (Los Angeles, CA); Georgia State University (Atlanta, GA); USC (Los Angeles, CA)
- 2015 ASSA/AERE Annual Meeting (Boston, MA); Healthy Eating Research/Robert Wood Johnson Foundation (Baltimore, MD); Ohio State University (Columbus, OH); Georgia State University (Atlanta, GA); Yale University (New Haven, CT); CEMMAP Economic and Econometric Applications of Big Data (Cambridge, UK); International Association for Applied Econometrics Annual Conference (University of Macedonia, Thessaloniki, Greece); International Panel Data Conference (Budapest, Hungary); Ecole Polytechnique (Paris, France); National Bureau of Economic Research (Cambridge, MA); Econometric Society World Congress (Montreal, Canada); Virginia Tech (Blacksburg, VA); MIT Hausman Conference (Cape Cod, MA); New York Academy of Sciences (NY); Columbia University (NY); APPAM Meeting: Special Workshop on Big Data (Miami, FL); Bank of Italy (Rome, IT); University of Turin (IT); International Conference on Computational and Methodological Statistics (London, UK); Bank of England (London, UK)
- 2014 ASSA/AERE Annual Meeting (Philadelphia, PA); CA Econometrics Conference (Stanford, CA); NC State (Raleigh, NC); Emory University (Atlanta, GA); University of Minnesota (Twin Cities, MN); Georgetown University (Washington, DC); Behavior, Energy & Climate Change Conference (Washington, DC); Duke University (Durham, NC); US Department of Agriculture (Washington, DC); National Bureau of Economic Research (Cambridge, MA); Action Design Network (Washington, DC)
- 2013 ASSA Annual Meeting (San Diego, CA); Applied Times Series Workshop (St. Louis Fed); University of Virginia Econometrics Seminar (Charlottesville, VA); US Environmental Protection Agency Invited Talk (DC); US EPA Superfund Office Invited Talk (Arlington, VA); NBER Environmental and Energy Spring Meeting (Cambridge, MA); NBER Summer Institute (Cambridge, MA); University of Tennessee Workshop on Causal Identification in Environmental Economics (Knoxville, TN); AERE Annual Meeting (Banff, Canada); Yale University Environmental Economics Seminar (New Haven, CT); International Panel Data Conference (London, UK); Caltech Workshop on Bayesian Microeconometrics (Pasadena, CA); University of Minnesota Environmental Economics Seminar (Minneapolis, MN); California Econometrics UCLA (CA); Columbia University Econometrics Seminar (NY); George Washington University Econometrics Seminar (DC); UC Irvine Econometrics Seminar (CA); UC Riverside Econometrics Seminar (CA); CEMMAP Workshop on Big Data (London, UK); Universitat Autònoma de Barcelona (Spain); University of Kentucky Econometrics Seminar (KY)
- 2012 ASSA Meeting (Chicago, IL); Advances in Econometrics Conference in Honor of Jerry Hausman, LSU (Baton Rouge, LA); Georgetown University Econometrics Seminar (DC); University of Pennsylvania (Philadelphia, PA); University of Wisconsin at Madison Econometrics Seminar (Madison, WI); Robert Wood Johnson Healthy Eating Meeting (Austin, TX); Georgia State University Experimental and Theory Seminar (Atlanta, GA); UC San Diego Applied Economics Seminar (CA); NBER Summer Institute (Cambridge, MA); Midwest Econometrics Group (University of Kentucky); Global Economic and Financial Outlook



- Workshop (Quantitative Fundamental Research Capital Management, New York); Behavior, Energy and Climate Change Conference (DC); Workshop on Scanner Data, Toulouse (France)
- 2011 ASSA Meeting (Denver, CO); CFTC Workshop on Carbon Market Design (DC); Robert Wood Johnson Foundation Public Health Law Research Meeting (Tempe, AZ); Applied Time Series Workshop (St. Louis Fed.); NBER Summer Institute (Cambridge, MA); Harvard University Environmental and Energy Economics Workshop (Cambridge, MA); Boston College Econometrics Seminar (Boston, MA); UC Berkeley University Environmental Economic Seminar (Berkeley, CA); Cornell University Applied Economics Workshop (Ithaca, NY)
- 2010 ASSA Meeting (Atlanta, GA); American Mathematical Society Talk on Random Matrix Theory (Albuquerque, NM); USC (Los Angeles, CA); NBER Summer Institute (Cambridge, MA); CFTC Talk on Speculation and Oil Prices (DC); Behavior, Energy, and Climate Change Conference (Sacramento, CA); International Symposium on the Econometrics of Specification Tests (Xiamen, China); Society for Nonlinear Dynamics and Econometrics (Milan, Italy); Conference on Interconnections in Financial Markets (Cambridge, UK); CEMMAP Econometric Analysis of Scanner Data (London, UK); Workshop on Sparse Random Structures: Analysis and Computation (Banff, CA)
- 2009 ASSA Meeting (San Francisco, CA); Behavior, Energy and Climate Change Conference (DC); UC Riverside; NSF-NBER Time Series Conference (Davis, CA); Annual Meeting of the American Law and Economics Association (San Diego, CA); University of Toronto Econometrics Seminar (Toronto, Canada); CIREQ Conference on Economic Interactions (Montreal, Canada); University of Chicago Booth Seminar (Chicago, IL)
- 2008 ASSA Meeting (New Orleans, LA); All-UC Econometrics Conference (Berkeley, CA); Harvard Applied Statistics Workshop (Cambridge, MA); UC Davis Econometrics Seminar (Davis, CA); USC Econometrics Seminar (Los Angeles, CA); Society for Nonlinear Dynamics (San Francisco, CA); UC Irvine Econometrics Seminar (CA); UC Riverside Econometrics Seminar (CA)

### **Current and Past Teaching**

ECON199: Machine Learning for Economists (BA, UC Irvine)  
 ECON219: Big Data Science for Economics (PhD, UC Irvine)  
 ECON299: Panel Data Econometrics (PhD, UC Irvine)  
 ECON123A: Econometrics I for Quantitative Economics (BA, UC Irvine)  
 BANA201A: Statistics for Data Science, Merage School of Business (MA, UC Irvine)  
 PUBPOL 304: Economics of the Public Sector (BA, Duke)  
 PUBPOL 590: Applied Big Data Science: Energy Analytics and Policy (BA/MA, Duke)  
 PUBPOL 813: Quantitative Evaluation Methods (MA/PhD, Duke)  
 Econ 122: Introduction to Econometrics (BA, Georgetown)  
 Econ 553: Econometrics for Applied Economics (MA, Georgetown)  
 Econ 992: Panel Data for Applied Economists (Professional Education, Georgetown)  
 Econ 250: Energy, Environmental and Resource Economics (PhD, Stanford)  
 Econ 102B: Introduction to Econometrics (BA, Stanford)  
 Econ 276: Limited Dependent Variables (PhD, Stanford)  
 Econ 221: Political Economy II: Empirical Research Methods (PhD, Stanford)  
 Econ 320: Political Economy Workshop (PhD, Stanford)  
 Econ 370: Econometrics Workshop (PhD, Stanford)

### **PhD Students and Postdocs Advised and First Placement**

Giuseppe Brandi (Imperial College)  
James O'Brien (Gettysburg College)  
Wyatt Clarke (IBM)  
Anna Gomez Meyer (Amazon)  
Kenneth Gillingham (Yale University)  
Danton Noriega-Goodwin (Apple)  
Alex Parret (Google)  
Marcel Pribsch (Federal Reserve Board)  
Shirlee Lichtman (Ben-Gurion University)  
Arthur Van Benthem (University of Pennsylvania)  
Lucy Yueming Qiu (Arizona State)  
K. Krishnan Nair (PIMCO)  
Nikki Tavasoli (FDA)  
Gabriel Vasconcelos (Bank of Communications BBM)

### **Industry and Government Service**

*Consulting*      Franklin Energy; Department of Justice; Electric Power Research Institute (EPRI); World Bank;  
Apple Inc.; US Commodity Futures Trading; Commission (CFTC); C3 Energy Inc.; Recycle Rewards,  
Inc.; Pitney Bowes, Inc.; Sealed, Inc.