

Joseph Lawrence Antonelli, Ph.D.

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| CONTACT INFORMATION | University of Florida Department of Statistics 206 Griffin-Floyd Hall, P.O. Box 118545 Gainesville, FL 32611-8545 | Office phone: +1 352-273-4638 jantonelli@ufl.edu |
| CURRENT POSITION | Assistant Professor, Department of Statistics University of Florida, Gainesville, FL | 2018 - present |
| EDUCATION | Ph.D. Biostatistics, Harvard University <i>Thesis:</i> Statistical methods for analyzing complex spatial and missing data <i>Advisors:</i> Professors Francesca Dominici and Brent Coull | 2015 |
| | M.A. Biostatistics, Harvard University | 2013 |
| | B.S. Statistics, The University of Florida | 2011 |
| RESEARCH AND PROFESSIONAL EXPERIENCE | Postdoctoral Research Fellow, Department of Biostatistics Harvard T.H. Chan School of Public Health, Boston, MA | 2015 - 2018 |
| | Statistical Consultant, Brigham and Women's Hospital Boston, MA | 2015 - 2018 |
| | Decision Support Analyst Intern, Google Inc. Mountain View, CA | 2013 |
| | Environmental Statistics Trainee, National Institutes of Health Boston, MA | 2011 - 2015 |
| | Statistical Programming Intern, Department of Pharmaceutical Outcomes and Policy Gainesville, FL | 2010 - 2011 |
| | Actuarial Intern, Tower Hill Insurance Company Gainesville, FL | 2009 |
| TEACHING EXPERIENCE | Professor, University of Florida Department of Statistics <i>Course:</i> Advanced topics in causal inference | 2022 |
| | Professor, University of Florida Department of Statistics <i>Course:</i> Statistical learning in R | 2020-2022 |
| | Professor, University of Florida Department of Statistics <i>Course:</i> Categorical data analysis | 2020-2021 |
| | Professor, University of Florida Department of Statistics <i>Course:</i> Introduction to Statistical Inference | 2019 |
| | Professor, University of Florida Department of Statistics <i>Course:</i> Introduction to Probability | 2018-2019 |

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| Course Developer, Harvard Department of Biostatistics <i>Course:</i> Applied Bayesian Methodology | 2016 |
| Teaching Assistant, Harvard Department of Biostatistics <i>Course:</i> Advanced Topics in Clinical Trials | 2014 |
| Teaching Assistant, Harvard Department of Biostatistics <i>Course:</i> Bayesian Methodology in Biostatistics. | 2013 - 2014 |
| Teaching Assistant, Harvard Department of Biostatistics <i>Course:</i> Statistical Programming in R | 2012 |
| Teaching Assistant, Harvard Department of Biostatistics <i>Course:</i> Introduction to Python | 2012 |

ADVISING EXPERIENCE

STATISTICS AND BIOSTATISTICS

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|---|--------------|
| Zhuochao Huang, PhD student | 2023-present |
| Suyeon Kang, Postdoctoral research fellow | 2022-present |
| Ruixuan Dong, Master's student | 2022 |
| Saurabh Bhandari, Master's student | 2021 |
| Tingting Wang, Master's student | 2021 |
| Zhongyue Zhang, Master's student | 2021 |
| Heejun Shin, PhD student | 2020-present |
| Caleb Wong, Undergraduate student | 2020-2022 |
| Partha Sarkar, Master's student | 2020-2021 |
| Shiyu li, Master's student | 2020-2021 |
| Emmett Kendall, Undergraduate student (current PhD student at NC State) | 2019-present |
| Gary Wu, Undergraduate student | 2019 |
| Srijata Samanta, Research assistant | 2018 - 2021 |
| Armando Turchetta, Master's student (Co-advisor) | 2017 |

ADDITIONAL DISSERTATION COMMITTEE MEMBERSHIP

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| Woojung Bae, Ph.D, Statistics | 2023-present |
| Shangchen Song, Ph.D, Biostatistics | 2023-present |
| Simon Codjo, Ph.D, Agricultural Economics | 2022-present |
| Maoran Xu, Ph.D, Statistics | 2021-2022 |
| Xueyin Bai, Ph.D, Urban and Regional Planning | 2021-2022 |
| Ayobami Edun, Ph.D, Electrical and Computer Engineering | 2020-2022 |
| Chuji Luo, Ph.D, Statistics | 2019-2021 |
| Rodrigo Rompazo Amadeu, Ph.D, Horticultural Sciences | 2019-2021 |
| Franjo Ivankovic, Ph.D, Genetics and Genomics | 2018-2022 |

HONORS AND AWARDS

2020 Health Effects Institute Walter A. Rosenblith young investigator award

2020 Journal of Speech, Language, and Hearing Research editors award for “Parental language input to children with hearing loss: does it matter in the end?”

2017 JSM Biometrics section young investigators award for “Doubly robust matching estimators for high dimensional confounding adjustment”

2016 International Society for Bayesian Analysis (ISBA) young investigator travel award

2015 Harvard Biostatistics award for excellence in teaching

2015 International Conference on Health Policy Statistics (ICHPS) student travel award

2014 ENAR distinguished student paper award for “Mitigating bias in generalized linear mixed models: The case for Bayesian nonparametrics”

Recipient of Harvard scholarship to attend a course on environmental genetics in Cyprus, 2012

Phi Beta Kappa, 2010

GRANT FUNDING

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| Health Effects Institute | 2021 – 2024 |
| Robust statistical approaches to understanding the causal effect of air pollution mixtures. | |
| Role: Principal Investigator. | |
| National Institutes of Health, R01 DC015992 | 2018 – 2021 |
| Spoken Language in Adolescents with Hearing Loss | |
| Role: Key personnel (PI: Susan Nittrouer) | |
| National Institutes of Health, R01 | 2023 – 2027 |
| Poverty-Related Risk Factors for Auditory and Language Deficits in Children | |
| Role: Co-I (PI: Susan Nittrouer) | |

PUBLICATIONS AND SUBMITTED MANUSCRIPTS

STATISTICAL METHODOLOGY AND EPIDEMIOLOGY

Antonelli JL, Zigler C. Causal Analysis of Air Pollution Mixtures: Estimands, Positivity, and Extrapolation. Under revision. *The American Journal of Epidemiology*

Shin H, Braun D, Irene K, **Antonelli JL**. A spatial interference approach to account for mobility in air pollution studies with multivariate continuous treatments. *arXiv: 2305.14194*

Kendall E, Beck B, **Antonelli JL**. Robust inference for geographic regression discontinuity designs: assessing the impact of police precincts. *arXiv: 2106.16124*.

Rudolph K, Williams N, Miles C, **Antonelli JL**, Diaz I. All models are wrong, but which are useful? Comparing parametric and nonparametric estimation of causal effects in finite samples. *arXiv: 2211.10310*. To appear. *The Journal of Causal Inference*.

Antonelli JL, Beck B. Heterogeneous causal effects of neighborhood policing in New York City with staggered adoption of the policy. *arXiv: 2006.07681*. *Journal of the Royal Statistical Society: Series A*.

Shin H, **Antonelli JL**. Improved Inference for Doubly Robust Estimators of Heterogeneous Treatment Effects. *arXiv: 2111.03594*. *Biometrics*. (Winner of the 2022 Van Ryzin Award for best overall student paper submitted to the 2022 ENAR conference.)

Antonelli JL, Wilson A, Coull B. Multiple exposure distributed lag models with variable selection. *arXiv: 2107.14567*. *Biostatistics*.

Samanta S, **Antonelli JL** Estimation and false discovery control for the analysis of environmental mixtures. *arXiv: 2103.10563. Biostatistics*.

Linero A, **Antonelli JL**. The How and Why of Bayesian Nonparametric Causal Inference. *WIREs Computational Statistics*. (2022): e1583.

Antonelli JL, Papadogeorgou G, Dominici F. Causal Inference in high dimensions: A marriage between Bayesian modeling and good frequentist properties. *Biometrics*. 78.1 (2022): 100-114.

Bai R*, Moran G*, **Antonelli JL* (Co-first author)**, Chen Y, Boland M. Spike-and-slab group lassos for grouped regression and sparse generalized additive models. *Journal of the American Statistical Association*. 117.537 (2022): 184-197.

Antonelli JL, Cefalu M. Averaging causal estimators in high dimensions. *Journal of Causal Inference*. 8.1 (2020): 92-107.

Antonelli JL, Mazumdar M, Bellinger D, Christiani D, Wright R, Coull B. Estimating the health effects of environmental mixtures using Bayesian semiparametric regression and sparsity inducing priors. *The Annals of Applied Statistics*. 14.1 (2020): 257-275.

Antonelli JL, Parmigiani G, Dominici F. High dimensional confounding adjustment using continuous spike and slab priors. *Bayesian Analysis*. 14.3 (2019): 805.

Antonelli JL, Cefalu M, Palmer N, Agniel D. Doubly robust matching estimators for high dimensional confounding adjustment. *Biometrics*. 74.4 (2018): 1171-1179.

Antonelli JL, Han B, Cefalu M. A synthetic estimator for the efficacy of clinical trials with all-or-nothing compliance. *Statistics in Medicine*. 36.29 (2017): 4604-4615.

Makar M*, **Antonelli JL* (Co-first author)**, Di Q, Cutler D, Schwartz J, Dominici F. Estimating the causal effect of low levels of fine particulate matter on hospitalization. *Epidemiology*. 28.5 (2017): 627-634.

Antonelli JL, Zigler CM, Dominici F. Guided Bayesian imputation to adjust for confounding when combining heterogeneous data sources in comparative effectiveness research. *Biostatistics*. 18.3 (2017): 553-568.

Antonelli JL, Schwartz J, Kloog I, Coull B. Spatial multiresolution analysis of the effect of PM_{2.5} on birth weights. *The Annals of Applied Statistics* 11.2 (2017): 792.

Antonelli JL, Cefalu M, Bornn L. The positive effects of preferential sampling in environmental epidemiology. *Biostatistics* 17.4 (2016): 764-778.

Antonelli JL, Trippa L, Haneuse S. Mitigating bias in generalized linear mixed models: The case for Bayesian nonparametrics. *Statistical Science* 31.1 (2016): 80.

COLLABORATIVE PUBLICATIONS

Beck B, **Antonelli JL**, LaScala-Gruenewald A. Chokehold Bans, Law Enforcement Officer Unions, and Police Killings. Under revision. *Criminology and Public Policy*.

Nitttrouer S, **Antonelli JL**, Lowenstein J. The Emergence of Bifurcated Structure in Children's Language. *Journal of Experimental Psychology*. (2022).

Henglin M, Claggett B, **Antonelli JL**, Alotaibi M, Magalang G, Watrous J, Lagerborg K, Ovsak G, Musso G, Demler O, Ramachandran V, Larson M, Jain M, Cheng S. Quantitative Comparison of Statistical Methods for Analyzing Human Metabolomics Data. *Metabolites*. 12.6 (2022): 519.

Beck B, **Antonelli JL**. Effects of New York City's Neighborhood Policing Policy. *Police Quarterly*. (2020): 10986111211046991.

Nitttrouer S, Lowenstein J, **Antonelli JL**. Parental language input to children with hearing loss: does it matter in the end? *Journal of Speech, Language, and Hearing Research*. 63.1 (2020): 234-258.

Antonelli JL*, Claggett B* (Co-first author), Henglin M, Watrous J, Demler O, Hushcha P, Demler O, Mora S, Pereira A, Jain M, Cheng S. Statistical Workflow for Feature Selection in Human Metabolomics Data. *Metabolites*. 9.7 (2019): 143.

Henglin M, Niiranen T, Watrous J, Lehmann K, **Antonelli JL**, Claggett B, Demosthenes E, Von Jeinsen B, Ramachandran V, Larson M, Jain M, Cheng S. A single visualization technique for displaying multiple metabolite-phenotype associations. *Metabolites*. 9.7 (2019): 128.

BOOK CHAPTERS

Antonelli JL. Bayesian propensity score methods and related approaches for confounding adjustment. *Handbook of multivariate matching and weighting for causal inference*. Chapman and Hall (CRC Press). Editors E. Stuart, J. Zubizarreta, D. Small, P. Rosenbaum. (2023).

Antonelli JL, Dominici F. Bayesian Model Averaging in Causal Inference. *Handbook of Bayesian Variable Selection*. Chapman and Hall (CRC Press). Editors M. Tadesse and M. Vanucci. (2022).

INVITED DISCUSSIONS

Antonelli JL. Invited discussion of “Causal inference under mis-specification: adjustment based on the propensity score.” *Bayesian Analysis*. (2023).

Antonelli JL, Daniels M. Invited discussion of ”Penalized spline of propensity methods for treatment comparison”. *Journal of the American Statistical Association*. (2019).

INVITED PRESENTATIONS AND CONFERENCE PARTICIPATION

Invited conference speaker. RAND Center for Causal Inference Symposium. Online. 2023.

Invited seminar speaker. University of Copenhagen, Section of Biostatistics. Denmark. 2023.

Invited seminar speaker. European University Institute. Italy. 2023.

Invited seminar speaker. Inria Research Institute. France. 2023.

Invited conference speaker. ASA Florida Chapter Meeting. Gainesville, FL. 2023.

Invited conference speaker. CMStatistics. London, England. 2022.

Invited conference speaker. IMS International Conference on Statistics and Data Science. Florence, Italy. 2022.

Invited seminar speaker. Colorado State University, Department of Statistics. 2022.

Invited seminar speaker. Emory University, Department of Biostatistics. 2022.

Invited conference speaker. International Society for Bayesian Analysis (ISBA). Montreal, Canada. 2022.

Invited seminar speaker. University of Copenhagen, Department of Mathematical Sciences. 2022.

Invited seminar speaker. Università di Firenze, Department of Statistics. 2022.

Invited conference speaker. Eastern North American Regional (ENAR) Biometrics Conference. Houston, TX. 2022.

Invited seminar speaker. Center for Causal Inference at the University of Pennsylvania and Rutgers University. 2022.

Invited seminar speaker. Boston University, Department of Mathematics and Statistics. 2022.

Special invited session speaker. CMStatistics. Virtual. 2021.

Session organizer. CMStatistics. Virtual. 2021.

Invited seminar speaker. RAND Corporation. 2021.

Invited seminar speaker. The University of Glasgow, Department of Economics. 2021.

Invited seminar speaker. The Online Causal Inference Seminar. 2021.

Invited conference speaker. International Society for Environmental Epidemiology. Virtual. 2021.

Short course instructor. International Society for Bayesian Analysis (ISBA). Virtual. 2021.

Invited conference speaker. International Society for Bayesian Analysis (ISBA). Virtual. 2021.

Invited seminar speaker. The University of South Carolina, Department of Statistics. 2021.

Invited seminar speaker. Columbia University Causal Inference Seminar, Department of Biostatistics. 2021.

Session organizer. Eastern North American Regional (ENAR) Biometrics Conference. Virtual. 2021.

Invited conference speaker. CMStatistics. Virtual. 2020.

Session organizer. CMStatistics. Virtual. 2020.

Invited seminar speaker. Johns Hopkins University Causal Inference Seminar, Department of Biostatistics. 2020.

Invited seminar speaker. Eastern North American Regional (ENAR) Biometrics Conference. Nashville, TN. 2020.

Invited seminar speaker. Yale University. Department of Biostatistics. 2020.

Session organizer. CMStatistics. London. 2019.

Invited seminar speaker. University of Texas at Austin. Department of Statistics and Data Science. 2019.

Invited seminar speaker. Florida State University Department of Statistics. 2019.

Invited conference speaker. Atlantic Causal Inference Conference (ACIC). Montreal, Canada. 2019.

Invited seminar speaker. University of Tampa, Department of Mathematics. 2019.

Invited conference speaker. Eastern North American Regional (ENAR) Biometrics Conference. Philadelphia, PA. 2019.

Invited seminar speaker. University of Athens, Department of Mathematics. 2018.

Invited seminar speaker. University of Florida, Department of Biostatistics. 2018.

Invited seminar speaker. Boston Bayesians. 2018.

Invited conference speaker. International Indian Statistical Association Conference. Florida. 2018.

Invited seminar speaker. Yale University, Department of Biostatistics. 2017.

Invited seminar speaker. McGill University, Department of Biostatistics. 2017.

Invited seminar speaker. University of Florida, Department of Statistics. 2017.

Invited seminar speaker. New York University, Division of Biostatistics. 2017.

Invited conference speaker. CMStatistics. London. 2017.

Topic contributed talk. Joint Statistical Meetings. Baltimore, MD. 2017.

Invited webinar. EPA STAR Webinar. Virtual. 2017.

Invited seminar speaker. Georgetown University, Department of Mathematics. 2017.

Invited lecture. Georgetown University. 2017.

Invited webinar. Health Effects Institute Webinar Series. Virtual. 2016.

Invited seminar speaker. RAND corporation. 2016.

Invited seminar speaker. Harvard University Department of Biostatistics Environmental Health Seminar, 2014.

CONTRIBUTED
PRESENTATIONS

Contributed talk. HBS/IMS New Researchers Conference. Boston, MA. 2021

Contributed poster. NIEHS PRIME Program Meeting. Durham, NC. 2019.

Contributed talk. European Causal Inference Conference. Florence, Italy. 2018

Contributed poster. IMS New Researchers Conference. Baltimore, MD. 2017

Contributed poster. Bayesian Nonparametric Conference. Paris, France. 2017

Contributed poster. Atlantic Causal Inference Conference. Raleigh, NC. 2017

Contributed talk. Eastern North American Region Conference. Washington DC. 2017

Contributed talk. Joint Statistical Meetings. Chicago, IL, 2016.

Contributed poster. International Society for Bayesian Analysis Conference. Sardinia, Italy, 2016.

Contributed talk. Eastern North American Region Conference. Austin, Texas, 2016.

Contributed poster. International Conference on Health Policy Statistics. Providence, RI, 2015.

Contributed talk. Joint Statistical Meetings. Seattle, WA, 2015.

Contributed talk. Eastern North American Region Conference. Miami, FL, 2015.

Contributed poster. New England Statistics Symposium. Boston, MA, 2014.

SOFTWARE

DoublyRobustHD: An R package for doubly robust estimation of causal effects in high dimensions (available at github.com/jantonelli111/DoublyRobustHD)

SSGL: An R package to implement the spike and slab group lasso model (available at github.com/jantonelli111/SSGL)

HDconfounding: An R package for high-dimensional confounding adjustment for continuous or binary exposures (available at github.com/jantonelli111/HDconfounding)

NLinteraction: An R package for flexible Bayesian estimation of interaction models (available at github.com/jantonelli111/NLinteraction)

Irregular2dWavelets: An R package for two-dimensional wavelet decompositions on unequally spaced grids (available at github.com/jantonelli111/Irregular2dWavelets)

JOURNAL REFEREE

Journal of the American Statistical Association; Biometrics; Annals of Applied Statistics; Journal of the Royal Statistical Society Series A; Bayesian Analysis; Biostatistics; Epidemiology; American Journal of Epidemiology; Journal of Causal Inference; Statistics in Medicine; Statistical Methods in Medical Research; Econometrics and Statistics; Data Science in Science; Briefings in Bioinformatics; Journal of Behavioral and Educational Statistics; Pharmaceutical Statistics; International Journal of Environmental Science and Technology; Multivariate Behavioral Research; Medical Decision Making; Journal of Air and Waste Management Association

DEPARTMENTAL
SERVICE

University of Florida Department of Statistics PhD Curriculum Committee

2018 - 2020

Harvard Biostatistics Environmental Statistics Seminar organizer

2016 - 2017

Harvard Biostatistics Computing Committee

2015 - 2016

PROFESSIONAL
SERVICE

Associate Editor, Bayesian Analysis
Member, ENAR Regional Advisory Board

2023 - present
2020 - 2022