XIAO WU

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EDUCATION

Harvard University *Cambridge, MA*
Ph.D., Biostatistics *September 2017 - March 2021*
Dissertation: Causal Inference with Complex Exposures in Observational Studies
Committee: Dr. Francesca Dominici, Dr. Jose R. Zubizarreta, Dr. Danielle Braun

Harvard T.H. Chan School of Public Health *Boston, MA*
M.S., Biostatistics *September 2015 - May 2017*

Peking University *Beijing, China*
B.S., Mathematics *September 2011 - July 2015*
LL.B., Laws *September 2011 - July 2015*

ACADEMIC EXPERIENCE

Harvard T.H. Chan School of Public Health *Boston, MA*
Postdoctoral Researcher; Mentor: Dr. Francesca Dominici *March 2021 - Present*

Harvard T.H. Chan School of Public Health *Boston, MA*
Statistical Researcher; Mentor: Dr. Francesca Dominici *June 2017 - October 2020*

Harvard Business School *Boston, MA*
Research Associate; Mentor: Dr. Lauren Cohen *July 2016 - March 2017*

Stanford University School of Medicine *Stanford, CA*
Statistical Researcher; Mentor: Dr. Ying Lu *June 2014 - August 2014*

ACADEMIC AWARDS & HONORS

Barry R. and Irene Tilenius Bloom Fellowship *2021*
Harvard T.H. Chan School of Public Health

IMS Hannan Graduate Student Travel Award *2020*
Institute of Mathematical Statistics

American Statistical Association Scholarship Award *2020*
ASA Biopharmaceutical Section

ISEE Annual Conference Travel Award *2020*
International Society for Environmental Epidemiology

American Statistical Association Student Paper Award *2019*
ASA Statistics and the Environment Section

American Statistical Association Student Travel Award *2019*
ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop

Summer Institute in Statistics for Big Data Scholarship *2017*
University of Washington

1st Prize of the National Mathematics Contest *2009*
The Chinese Mathematical Society (CMS)

INDUSTRY EXPERIENCE

Facebook Inc *Menlo Park, CA*
Research Scientist Intern; Mentors: Drs. Abbas Zaidi, Will Bullock *June 2020 - August 2020*

- Developed a Bayesian meta-analytic framework that draws inferences from post-stratified user metrics data

Google LLC *Sunnyvale, CA*
Data Scientist Intern; Mentors: Drs. Li Pan, Meeyoung Park *May 2019 - August 2019*

- Designed an experimentation platform on user interference network using bipartite graph clustering randomization

Sanofi Genzyme *Cambridge, MA*
Biostatistician Intern; Mentor: Dr. Yi Xu *June 2017 - August 2017, February 2019 - May 2019*

- Developed a novel Bayesian adaptive commensurate design that borrows adaptively from historical trial information and optimizes the timing of interim analysis

McKinsey & Company *Beijing, China*
Part-time Analyst; Mentor: Dr. Jie Cheng *April 2015 - July 2015*

Peking University Clinical Research Institute *Beijing, China*
Data Analyst; Mentor: Prof. Chen Yao *February 2014 - June 2014*

TEACHING EXPERIENCE

Harvard T.H. Chan School of Public Health *Boston, MA*

Teaching Fellow, Bayesian Methodology in Biostatistics; Instructor: Dr. Jeffrey Miller *Spring 2020*
Teaching Fellow, Theory and Methods for Causality II; Instructor: Dr. Andrea Rotnitsky *Fall 2019*
Teaching Fellow, Introduction to Statistical Genetics; Instructor: Dr. Martin Aryee *Fall 2019*
Teaching Fellow, Applied Bayesian Analysis; Instructor: Dr. Lorenzo Trippa *Fall 2018*
Teaching Fellow, Applied Survival Analysis; Instructor: Dr. Rui Wang *Spring 2017*

Emory Rollins School of Public Health *Atlanta, GA*
Guest Lecturer, Air Quality in the Urban Environment *March 2021*

Massachusetts Institute of Technology *Cambridge, MA*
Guest Lecturer, Global Health Informatics to Improve Quality of Care *March 2021*

Harvard T.H. Chan School of Public Health *Boston, MA*
Guest Lecturer, Computing for Big Data - Working with Medicare Data *December 2018*

Harvard Medical School *Boston, MA*
Guest Lecturer, An Introduction to Propensity Score Methods *September 2018*

ADVISING EXPERIENCE

Sophie Woodward, Bachelor student, Harvard College *April 2021 - Present*
Zhewen Hou, Bachelor student, Peking University *April 2020 - March 2021*
Josh Villarreal, Bachelor student, Harvard College *May 2020 - August 2020*

TECHNICAL SKILLS

Programming Languages	R, Python, SAS, SQL
Software & Tools	Tensorflow, Stan, R Studio, Matlab, Github, Latex
Certificates	SAS Base and Advanced Programming

PROFESSIONAL ACTIVITIES

Journal Peer Reviewer
Biometrics, Statistics in Medicine, Biometrical Journal, International Journal of Biostatistics, Statistical Sinica, Journal of Statistical Computation and Simulation, American Journal of Preventive Medicine, Health Services and Outcomes Research Methodology, Annals of Transnational Medicine, BMC Public Health, Harvard Public Health Review, Environmental International, Environmental Research, Atmospheric Environment, International Journal of Biometeorology, Scientific Reports, Health Science Reports, Population and Environment (POEN)

Grant Peer Reviewer
The Tel Aviv University Center for Combatting Pandemics Research Grants

Mentor
MIT COVID-19 Datathon 2020

Invited Speaker/Panelist
Air Pollution, COVID-19 Pandemic, and Human Health: Connecting the Science with Statistics and Causal Inference. The Center for Statistical Science at Peking University
Pulmonary Health, ARDS, COVID-19 and Air Pollution: Connecting the Science. The Collaborative on Health and the Environment (CHE)
Air Pollution, Covid-19, and Communities of Color: What We Can Do About It. MetroWest Climate Solutions
Coronavirus Tracking Project for Rapid-prototyping Response. MIT Center for Bits and Atoms
Harvard Public Health Symposium 2019 for Young Leaders in China

Session Chair
Recent Advances in Nonparametric Statistical Methods, Joint Statistical Meeting (JSM) 2018

Biostatistics Consultant
Biostatistics Student Consulting Center, Harvard T.H. Chan School of Public Health

Legal Consultant
Legal Aid Association, Peking University Law School

PRESENTATIONS

1. The Intersection between Air Quality and COVID-19 Disease, American Thoracic Society (ATS) 2021 International Conference 2021 (**Panel Discussant**)
2. Historical Exposure to Air Pollution and COVID-19 Mortality in the United Sates, All-Party Parliamentary Group (APPG) on Air Pollution 2020, London, U.K. (**Remote**).
3. Historical Exposure to Air Pollution and COVID-19 Mortality in the United Sates, A Briefing at the U.S. House Select Committee on the Climate Crisis 2020, Washington, D.C (**Remote**).
4. Exposure to Air Pollution and COVID-19 Mortality in the United Sates, Annual Conference of the International Society for Environmental Epidemiology (ISEE) 2020, Washington, D.C (**Oral**).
5. Impacts of Long-term Exposure to Fine Particulate Matter on Mortality Among the Elderly, Annual Conference of the International Society for Environmental Epidemiology (ISEE) 2020, Washington, D.C (**E-Poster**).
6. Causal effects of long-term $PM_{2.5}$ exposure on all cause mortality, Harvard Data Science Initiative Conference 2019, Boston, MA.
7. Optimizing Interim Analysis Timing for Bayesian Adaptive Commensurate Designs, ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop (BIOP) 2019, Washington, D.C. (**Poster**).

8. Matching on generalized propensity scores with continuous treatments, Joint Statistical Meeting (JSM) 2019, Denver, CO.

9. Matching on generalized propensity scores with continuous treatments, Atlantic Causal Inference Conference (ACIC) 2019, Montreal, QC, Canada (**Invited**).

10. Causal Inference Challenges in Air Pollution Research, Atlantic Causal Inference Conference (ACIC) 2019, Montreal, QC, Canada (**Discussant**).

11. Statistical methods for pooling categorical biomarkers from multiple studies, Joint Statistical Meeting (JSM) 2018, Vancouver, BC, Canada.

12. Causal inference in air pollution epidemiology using generalized propensity score matching, Harvard/MIT ACE Center Science Advisory Committee (SAC) Meeting 2018, Boston, MA (**Invited**).

13. Matching on generalized propensity scores with continuous treatments, European Causal Inference Meeting (EuroCIM) 2018, Florence, Italy.

14. Causal inference in the context of an error prone exposure: air pollution and mortality, International Chinese Statistical Association (ICSA), Applied Statistics Symposium 2018, New Brunswick, NJ (**Invited**).

15. Causal inference in the context of an error prone exposure: air pollution and mortality, Eastern North American Region (ENAR) International Biometric Society Meeting 2018, Atlanta, GA.

16. Methods to estimate causal effects adjusting for confounding when an ordinal exposure is mismeasured in the context of air pollution, Harvard/MIT ACE Center Science Advisory Committee (SAC) Meeting 2017, Boston, MA (**Invited**).

PUBLICATIONS

Journal Articles

1. **Wu, X.**†, Nethery, R.C.†, Sabath, B.M., Braun, D. and Dominici, F., 2020. Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis. Science Advances, 6(45), p.eabd4049.

2. **Wu, X.**†, Braun, D.†, Schwartz, J., Kioumourtzoglou, M.A. and Dominici, F., 2020. Evaluating the impact of long-term exposure to fine particulate matter on mortality among the elderly. Science Advances, 6(29), p.eaba5692.

3. Shi, L.†, **Wu, X.**†, Yazdi, M., Braun, D., Liu, P., Awad, Y., Di, Q., Wei, Y., Wang, Y., Schwartz, J.D., Dominici, F., Kioumourtzoglou, M.A. and Zanobetti, A., 2020. Long-term effects of PM2 5 on neurological disorders in the American Medicare population: a longitudinal cohort study. The Lancet Planetary Health, 4(12), pp.e557-e565.
*** Runner-up of 2020 China Health Policy and Management Society (CHPAMS) Rising Scholar Best Paper Award**

4. **Wu, X.**, Xu, Y. and Carlin, B.P., 2020. Optimizing interim analysis timing for Bayesian adaptive commensurate designs. Statistics in Medicine, 39(4), pp.424-437.

5. **Wu, X.**, Braun, D., Kioumourtzoglou, M.A., Choirat, C., Di, Q. and Dominici, F., 2019. Causal inference in the context of an error prone exposure: air pollution and mortality. The Annals of Applied Statistics, 13(1), pp.520-547.

6. Klompmaker, J.O., Hart, J.E., Holland, I., Sabath, M.B., **Wu, X.**, Laden, F., Dominici, F. and James, P., 2021. County-level exposures to greenness and associations with COVID-19 incidence and mortality in the United States. Environmental research, p.111331.

7. Mendy, A., **Wu, X.**, Keller, J.L., Fassler, C.S., Apewokin, S., Mersha, T.B., Xie, C. and Pinney, S.M., 2021. Long-term exposure to fine particulate matter and hospitalization in COVID-19 patients. Respiratory medicine, 178, p.106313.

8. Wei, Y., Wang, Y., **Wu, X.**, Di, Q., Shi, L., Koutrakis, P., et al. Causal effects of air pollution on mortality in Massachusetts, 2020. American Journal of Epidemiology.

9. Zhang, Z., Li, X., **Wu, X.**, Qiu, H. and Shi, H., 2020. Propensity score analysis for time-dependent exposure. Annals of Transnational Medicine, 8(5).

10. Won, J.H., **Wu, X.**, Lee, S.H. and Lu, Y., 2017. Cross-sectional design with a short-term follow-up for prognostic imaging biomarkers. Computational Statistics & Data Analysis, 113, pp.154-176.

Submitted Manuscripts

1. **Wu, X.**, Weinberger, K.R., Wellenius, G.A., Dominici, F. and Braun, D., 2021. Assessing the causal effects of a stochastic intervention in time series data: Are heat alerts effective in preventing deaths and hospitalizations?. arXiv preprint arXiv:2102.10478.

2. **Wu, X.**, Mealli, F., Kioumourtzoglou, M.A., Dominici, F. and Braun, D., 2018. Matching on generalized propensity scores with continuous exposures. arXiv preprint arXiv:1812.06575.
*** Winner of 2019 American Statistical Association Student Paper Competition**

3. Ren, B., **Wu, X.**, Braun, D., Pillai, N. and Dominici, F., 2021. Bayesian modeling for exposure response curve via Gaussian processes: Causal effects of exposure to air pollution on health outcomes. arXiv preprint arXiv:2105.03454.

4. Yao, Y., Lv, X., Qiu, C., Li, J., **Wu, X.**, Zhang, H., Yue, D., Eshak, E., Anstey, K., Livingston, G. and Xue, T., 2021. Clean Air Act mitigate the cognitive deterioration in older adults.

In Preparation

1. **Wu, X.**, Li, X., Dominici, F. and DAmour, A., 2020+. Identifying and estimating heterogeneous causal effects of continuous exposures.

2. **Wu, X.**, Gail, M.H. and Wang, M., 2020+. Statistical method for pooling categorical biomarkers from multi-center matched/nested case-control studies.

†indicates co-first authorship