

个人简历

苗旺

研究员
概率统计系
北京大学数学科学学院

北京市海淀区北京大学
理科一号楼，邮编：100871
mwfy@pku.edu.cn
www.math.pku.edu.cn/teachers/mwfy

教育和工作经历

研究员	数学科学学院	北京大学	2020.07 至今
研究员	光华管理学院	北京大学	2018.07–2020.06
博士后	生物统计系	哈佛大学	2017.07–2018.07
访问学者	生物统计系	哈佛大学	2014.09–2016.05
博士	统计学，导师：耿直教授	北京大学	2012.09–2017.07
本科	数学与应用数学	北京大学	2008.09–2012.07
	哲学辅修	北京大学	2009.09–2013.07

荣誉和奖励

优秀教案奖	北京大学第二十届青年教师教学基本功比赛	2020
钟家庆优秀论文奖	中国数学会概率统计分会	2016
校长奖学金	北京大学	2016
三好学生	北京大学	2015

教授课程

概率统计 (B)	本科生必修	2023 春季
高等统计学	研究生必修	2022 秋季
半参数模型	本研选修	2022 春季
高等统计选讲 I	本研选修	2021 春季
R 语言与数据可视化	商业分析硕士必修	2019 秋季
R 语言与数据可视化	商业分析硕士必修	2020 秋季
概率统计	本科生必修	2019 春季
概率统计	本科生必修	2020 春季
统计文化与实践	本科生选修	2018 秋季

短期课程

1. Proximal inference, synthetic control and missing data analysis, Zhejiang University, June 2023
2. The potential outcome framework for causal inference, the CCF Advanced Disciplines Lectures 130 "Causal discovery and decision" 因果学习与决策, September 2022.
3. Confounding analysis in causal inference, Beijing Technology and Business University, July 2022
4. Causal inference and observational studies, Capital Normal University, July 2022
Children's Hospital of Chongqing Medical University, July 2023
5. Confounding and nonresponse adjustment for observational studies, DMED, October 2021;
Beihang University, December 2021
6. Confounding adjustment for causal inference, Fudan University, July 2021

指导学生

博士生 李新宇, 2018 级; 李奕霖, 2019 级; 张平, 2022 级, 英乃文, 2023 级;
硕士生 高钰婧, 2018 级 2020 毕业; 何沛予, 2022 级

科研工作

研究兴趣

- 因果推断：代理推断，阴性对照；混杂因素；工具变量；中介分析；敏感性分析；
- 大数据和人工智能：因果网络；迁移学习；数据融合；元数据；
- 缺失数据分析：回调数据；非随机缺失数据；双稳健估计；半参数化方法；
- 流行病学、生物医药和经济学中的观察性研究问题

基金项目

国家重点研发计划

青年科学家项目，人工智能的因果数学理论、方法与应用，负责人

国家自然科学基金

面上项目，关于无对照研究和中介分析的因果建模与推断，主持
重大项目，融汇海量观测数据的大气系统建模与
预报中的关键数学问题与算法，参与

北京市自然科学基金

重点项目，人工智能的统计理论与算法基础，参与

北京智源人工智能研究院

重大专项，过参数化模型与因果学习的统计理论，参与

已发表期刊论文

1. Miao, W., P. Ding, and Z. Geng (2016). Identifiability of normal and normal mixture models with nonignorable missing data. *Journal of the American Statistical Association* 111, 1673–1683

Winner of the Zhong Jiaqing Award of Best Paper (to Miao) given by Chinese Society of Probability and Statistics.

2. Miao, W. and E. Tchetgen Tchetgen (2016). On varieties of doubly robust estimators under missingness not at random with a shadow variable. *Biometrika* 103, 475–482

3. Miao, W. and E. Tchetgen Tchetgen (2017). Invited commentary: Bias attenuation and identification of causal effects with multiple negative controls. *American Journal of Epidemiology* 185, 950–953
4. Miao, W., Z. Geng, and E. Tchetgen Tchetgen (2018). Identifying causal effects with proxy variables of an unmeasured confounder. *Biometrika* 105, 987–993
5. Miao, W. and E. Tchetgen Tchetgen (2018). Identification and inference with nonignorable missing covariate data. *Statistica Sinica* 28, 2049–2067
6. Sun, B., L. Liu, W. Miao, K. Wirth, J. Robins, and E. Tchetgen Tchetgen (2018). Semiparametric estimation with data missing not at random using an instrumental variable. *Statistica Sinica* 28, 1965–1983
7. Miao, W., C. Liu, and Z. Geng (2018). Statistical approaches for causal inference. *Scientia Sinica Mathematica* 48, 1753–1778
8. Geng, Z., Y. Liu, C. Liu, and W. Miao (2019). Evaluation of causal effects and local structure learning of causal networks. *Annual Review of Statistics and Its Application* 6, 103–124
9. Liu, L., W. Miao, B. Sun, J. Robins, and E. Tchetgen Tchetgen (2020). Identification and inference for marginal average treatment effect on the treated with an instrumental variable. *Statistica Sinica* 30, 1517–1541
10. Kuang, K., L. Li, Z. Geng, L. Xu, K. Zhang, B. Liao, H. Huang, P. Ding, W. Miao, and Z. Jiang (2020). Causal inference. *Engineering* 6, 253–263
11. Shi, X., W. Miao, J. C. Nelson, and E. Tchetgen Tchetgen (2020). Multiply robust causal inference with double negative control adjustment for categorical unmeasured confounding. *Journal of the Royal Statistical Society: Series B* 82, 521–540
12. Li, H., W. Miao, Z. Cai, X. Liu, T. Zhang, F. Xue, and Z. Geng (2020). Causal data fusion methods using summary-level statistics for a continuous outcome. *Statistics in Medicine* 39, 1054–1067
13. Shi, X., W. Miao, and E. Tchetgen Tchetgen (2020). A selective review of negative control methods in epidemiology. *Current Epidemiology Reports* 7, 190–202
14. Miao, W., W. Li, W. Hu, R. Wang, and Z. Geng (2022). Invited commentary: estimation and bounds under data fusion. *American Journal of Epidemiology* 191, 674–678

15. Li, X., W. Miao, F. Lu, and X.-H. Zhou (2021). Improving efficiency of inference in clinical trials with external control data. *Biometrics*, in press
Winner of the Best Paper Award (to Li) on the 2021 National Annual Biostatistics Conference.
16. Miao, W., W. Hu, E. L. Ogburn, and X. Zhou (2021). Identifying effects of multiple treatments in the presence of unmeasured confounding. *Journal of the American Statistical Association*, in press
17. Tchetgen Tchetgen, E., O. Dukes, X. Shi, W. Miao, and D. Richardson (2022). Errors-in-variables bias in synthetic controls: a cautionary note and a potential solution. *American Journal of Epidemiology*, in press
18. Sun, B. and W. Miao (2022). On semiparametric instrumental variable estimation of average treatment effects through data fusion. *Statistica Sinica* 32, 569–590
19. Shi, X., Z. Pan, and W. Miao (2021). Data integration in causal inference. *WIREs Computational Statistics*, e1581
20. Wang, R., Q. Wang, W. Miao, and X. Zhou (2020). Sharp bounds for variance of treatment effect estimators in the finite population in the presence of covariates. *Statistica Sinica*, in press
21. Wang, R., Q. Wang, and W. Miao (2022). A robust fusion-extraction procedure with summary statistics in the presence of biased sources. *Biometrika*, in press
22. Ying, A., W. Miao, X. Shi, and E. Tchetgen Tchetgen (2022). Proximal causal inference for complex longitudinal studies. *Journal of the Royal Statistical Society: Series B*, in press
Winner of the David P. Byar Award (to Ying) in Biometrics Section on JSM2022.
23. 苗旺, 耿直 (2022). 因果推断, 观察性研究和 2021 年诺贝尔经济学奖. 《系统科学第三卷》.
24. 英乃文, 苗旺, 耿直 (2022). 因果作用评价与因果关系发现. 《军事运筹与评估》 3, 10–19.
25. Zhang, J., W. Li, W. Miao, and E. Tchetgen Tchetgen (2022). Proximal causal inference without uniqueness assumptions. *Statistics and Probability Letters*, in press

26. Cui, Y., H. Pu, X. Shi, W. Miao, and E. Tchetgen Tchetgen (2023). Semiparametric proximal causal inference. *Journal of the American Statistical Association*, in press
27. Miao, W., L. Liu, Y. Li, E. Tchetgen Tchetgen, and Z. Geng (2023). Identification and semiparametric efficiency theory of nonignorable missing data with a shadow variable. *ACM/IMS Journal of Data Science*, in press
28. Li, K. Q., X. Shi, W. Miao, and E. Tchetgen Tchetgen (2022a). Double negative control inference in test-negative design studies of vaccine effectiveness. *Journal of the American Statistical Association*, in press
29. Li, W., W. Miao, and E. Tchetgen Tchetgen (2022). Identification and estimation of nonignorable missing outcome mean without identifying the full data distribution. *Journal of the Royal Statistical Society: Series B*, in press
30. Li, Y., W. Miao, I. Shpitser, and E. Tchetgen Tchetgen (2022). A self-censoring model for multivariate nonignorable nonmonotone missing data. *Biometrics*, in press

审稿中的论文

31. Tchetgen Tchetgen, E., A. Ying, Y. Cui, X. Shi, and W. Miao (2021). An introduction to proximal causal learning. *Revision invited by Statistical Science*
32. Shi, X., W. Miao, M. Hu, and E. Tchetgen Tchetgen (2021). Theory for identification and inference with synthetic controls: A proximal causal inference framework. *Revision invited by Journal of the American Statistical Association*
33. Miao, W., X. Li, and B. Sun (2022). A stableness of resistance model for non-response adjustment with callback. *Revision invited by Journal of the Royal Statistical Society: Series B*

该论文在第六届全国统计学博士研究生学术论坛获一等奖，李新宇获奖。

34. Hu, W., R. Wang, W. Li, and W. Miao (2022). Paradoxes and resolutions for semiparametric fusion of individual and summary data. *Revision invited by Biometrika*
35. Li, K. Q., X. Shi, W. Miao, and E. Tchetgen Tchetgen (2022b). Doubly robust proximal causal inference under confounded outcome-dependent sampling

36. Luo, S., W. Li, W. Miao, and Y. He (2022). Identification and estimation of causal effects in the presence of confounded principal strata

其他论文

37. Miao, W. (2023). Specificity analysis for causal inference in observational studies
38. Li, X., K. Li, X. Shi, and W. Miao (2023b). Correction for nonignorable nonresponse bias in turnout estimation using callback data
39. He, P., Y. Li, and W. Miao (2023). Identification and estimation of causal effects with synthetic controls in the presence of interference
40. Ying, N., S. Luo, and W. Miao (2023). A generalized tetrad constraint for causal discovery with nonparametric models
41. Li, K., X. Li, X. Shi, and W. Miao (2023a). Nonresponse bias adjustment using callback data under a novel continuum of resistance model
42. Qiu, H., X. Shi, W. Miao, E. Dobriban, and E. Tchetgen Tchetgen (2022). Doubly robust proximal synthetic controls
43. Zhang, P., R. Wang, and W. Miao (2023). Causal attribution with confidence

学术服务和交流

Guest Editor for Special issue “Causal Inference, Probability Theory and Graphical Concepts” in journal *Computation*.

Associate Editor for 《应用概率统计》

常务副理事长 中国现场统计研究会因果推断分会

副秘书长 中国现场统计研究会机器学习分会

理事 中国现场统计研究会旅游大数据分会, 全国工业统计学教学研究会

参与《中国大百科全书》第三版统计学学科部分词条的撰审工作

Chair for weekly seminar at Center for Statistical Science, Peking University. July 2018–July 2020, July 2021–July 2023.

Referee for *Biometrika*; *JASA*; *JRSSB*; *JRSSA*; *Statistics in Medicine*; *Biometrics*; *Statistica Sinica*; *Annals of Statistics*; *Epidemiologic Methods*; *Journal of Machine Learning Research*; *American Journal of Epidemiology*; *Journal of Statistical Planning and Inference*; *Statistical Papers*; *AI STAT*; *Management Science*; *Environmental Research*; *IEEE*; *Journal of Multivariate Analysis*; *Canadian Journal of Statistics*; *UAI 2022*; *Journal of Business & Economic Statistics*; *Scandinavian Journal of Statistics*; *Biostatistics & Epidemiology* *Statistics and Probability*; *Computational Statistics and Data Analysis*; *Epidemiology*; *Operations Research*; *Lifetime Data Analysis*; *Artificial Intelligence*; *Annals of Applied Statistics*;

Membership: Society for Causal Inference (SCI); 中国数学会; 中国现场统计研究会; International Chinese Statistical Association (ICSA)

组织会议

1. Program committee member, Machine Learning and Statistics (ML&STAT) Conference, August 2023.
2. Organizing committee member, China Joint Statistical and Data Science Meeting (CJSM), July 2023.
3. Program committee member, organizing committee member, Chinese Causal Inference Conference (CCIC), May 2023.
4. Session organizer for Missing data analysis and its application, 16th International Conference on Computational and Financial Econometrics, December 2022.
5. Organizing committee member, the 2022 Pacific Causal Inference Conference, September 2022.
6. Coordinator, 北京大学统计学首届校友学术论坛, July 2022.
7. Coordinator, 第六届北大-清华统计论坛, June 2022.
8. Session organizer, Atlantic Causal Inference Conference, May 2018. Causal inference with unobserved confounders.
9. Session organizer, Atlantic Causal Inference Conference, May 2017. Addressing unmeasured confounding using negative controls.

邀请报告

1. Introducing the specificity score: a measure of causality beyond P value.
The 12th National Conference on Probability and Statistics, 40 minutes talk, Qingdao, April 2023.
Renmin University of China, April 2023.
Peking University, May 2023.
Southwestern University of Finance and Economics, May 2023.
The 7th Conference on High-Dimensional Statistics, Changsha, May 2023.
University of Pennsylvania, May 2023.
Capital of Statistics, June 2023.
Zhejiang University of Finance and Economics, June 2023.
Shanghai Jiaotong University, June 2023.
ICSA China Conference, Chengdu, July 2023.
China Joint Statistical and Data Science Meeting (CJSM), July 2023.
The 9th International Forum on Statistics in Renmin University of China, July 2023.
2. Identification and Estimation of Causal Effects with Synthetic Controls in the Presence of Interference.
East China Normal University, April 2023,
American Causal Inference Conference, May 2023.
3. Paradoxes and resolutions for semiparametric fusion of individual and summary data.
16th International Conference on Computational and Financial Econometrics. King's College London, December 2022.
The 2022 Pacific Causal Inference Conference, September 2022.
Capital University of Economics and Business, October 2022
Northeast Normal University, November 2022
Fudan University, November 2022
Shanghai University of Finance and Economics, December 2022.
Zhejiang University, March 2023.
University College of London, April 2023.
4. Proximal causal inference with application to the test-negative design studies of vaccine effectiveness.
Renmin University of China, November 2022. Peking University Health Science Center, November 2022.

5. Proximal causal inference with application to synthetic control.
Xiamen University, October 2022.
Gouxionghui, March 2023
6. Auxiliary variables methods for missing data analysis under MNAR. Hubei University Of Economics, October 2022.
7. Confounding adjustment for causal inference in observational studies.
Wuhan University, September 2022.
Fudan University, December 2022.
8. Proximal inference for confounding adjustment and its application. SIGMAI seminar, August 2022.
9. A self-censoring model for multivariate nonignorable nonmonotone missing data.
Shanghai Jiaotong University, August 2022.
10. Paradoxes and solutions for semiparametric fusion learning with external summary statistics. 中国机器学习与科学应用大会, Beijing, August 2022.
11. Semiparametric data fusion with external summary statistics. 5th International Conference on Econometrics and Statistics, Ryokoku University, June 2022.
12. A stableness of resistance model for nonresponse adjustment with callback data.
Emerging Challenges for Statistics and Data Sciences Workshop, Banff International Research Station, May 2022.
统计学与数据科学前沿论坛, Xiamen University, April 2022.
13. Addressing selection and confounding bias in test-negative study designs for flu and COVID-19 monitoring. International Symposium on Probability Statistics and their Applications, Lanzhou University of Finance and Economics, August 2022.
14. Proximal inference for confounding adjustment. 第二十一次全国统计科学讨论会. Peking University, December 2021.
15. A stableness of resistance model for nonresponse adjustment with callback data.
IMS Workshop: Causal Inference with Big Data. National University of Singapore, December 2021;
The 2021 International Workshop on Statistical Theory and Related Fields. East China Normal University, December 2021.

16. Causal inference, observational studies, and the 2021 Nobel Prize in economics. Microsoft Research Asia, December 2021;
Peking University, November 2021;
Renmin University of China, October 2021;
East China Normal University, October 2021;
Beijing Academy of Artificial Intelligence, November 2021.
因果推断与机器学习研讨会, 中国科学院, April 2022.
17. The role of callback data in nonresponse adjustment. The Wharton School, October 2021.
18. Semiparametric inference for nonignorable nonresponse with paradata. The 2020 Pacific Causal Inference Conference, September 2021.
19. Proximal and Null Treatments Approaches for Confounding Adjustment. Carnegie Mellon University, July 2021.
20. An Introduction to Negative Control and Proximal Causal Learning. MRC Integrative Epidemiology Unit, University of Bristol, February 2021.
21. Identification of effects of multiple treatments in the presence of unmeasured confounding.
The 2020 Pacific Causal Inference Conference, September 2020;
Renmin University of China, October 2020;
The Wharton School, February 2021;
Capital Normal University, May 2021;
Southwestern University of Finance and Economics, May 2021;
Lorentz Center, Leiden University, December 2021;
人工智能的数学基础研讨会。Tongji University, October 2021,
CMStatistics, December 2021.
22. Auxiliary variable approaches for adjustment of confounding in causal inference. Huawei, August 2020.
23. Inference on effects of multiple causes with an unobserved confounder. Shanghai University of Finance and Economics, December 2019;
Sun Yat-Sen University, December 2019.
24. A shadow variable approach for analysis of nonignorable missing data. Nankai University, June 2019;
University of Hong Kong, July 2019;

Northeast Normal University, October 2019;
Xiamen University, November 2019.

25. Causal inference and missing data analysis methods. China Society for Industrial and Applied Mathematics, Foshan, September 2019.
26. Removing unmeasured confounding in air pollution studies with negative controls. International Chinese Statistical Association (ICSA) Applied Statistics Symposium, June 2018.
27. Alternatives to IV: Negative control, RUV, and synthetic control. 2018 International Conference on Data Science, Fudan University, December 2018.
28. A confounding bridge approach for double negative control inference of causal effects. Wharton School, May 2018.
29. Testing causative hypotheses in the presence of unmeasured confounding. Atlantic Causal Inference Conference (ACIC), University of North Carolina at Chapel Hill, May 2017.
30. Inference on Air Pollution Effects with Negative Controls. 中国现场统计研究会高维数据统计分会第三届学术研讨会, Xiamen University, April 2017.
31. Job talks: Negative control analysis and its application to air-pollution studies.
Peking University, January 2017
Tsinghua University, January 2017
The University of Hong Kong, March 2017
32. Identifying causal effects with negative controls.
10th International Chinese Statistical Association (ICSA) Conference, December 2016.
The 13th International Symposium on Econometric Theory and Applications (SETA), June 2017.
Atlantic Causal Inference Conference (ACIC), Carnegie Mellon University, May 2018.
33. Theory and implementation of doubly robust estimators with nonignorable missing data. Symposium on Statistics and Data Science for Young Scholars, Tsinghua University, December 2016.
34. Identification and inference of nonignorable missing covariate data. 3rd Taihu International Statistics Forum, July 2016.

35. Identifiability of normal and normal mixture models with nonignorable missing data. 20th Chinese Young Statisticians Conference, May 2016.
36. Restoration of causal effects with proxy variables of an unmeasured confounder. Harvard University, April 2016.
37. Identification and doubly robust estimation of data missing not at random. National Institute of Statistical Sciences Workshop on Data Not Missing at Random, November 2015.
38. Instrumental variable estimation of the marginal average effect of treatment on the treated. Eastern North Atlantic Region (ENAR) Meetings, March 2015.
39. Recent progress in the literature on direct and indirect effects. Center for Computational Systems Biology, Fudan University, December 2013.
40. Causal inference without ignorability. Jiangsu Normal University, November 2013.