Curriculum Vitae

Panpan Zhang

Last update: June 2, 2025

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Education

- M.A. in **Mathematics**, Wake Forest University, Winston-Salem, NC 08/2010 – 05/2012
  Thesis: Statistical self-similarity in time series from financial data & chaotic dynamical systems
  Advisor: Miaohua Jiang
- Ph.D. in **Statistics**, George Washington University, Washington, DC 08/2012 – 05/2016
  Dissertation: On properties of several random networks
  Advisor: Hosam M. Mahmoud

Postgraduate training: Department of Biostatistics, Epidemiology and Informatics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA 08/2018 – 08/2022
Mentor: Sharon X. Xie (Sharon Xie Lab)

Academic Appointments

- **Visiting Assistant Professor of Statistics,** Department of Statistics, University of Connecticut, Storrs, CT 08/2016 – 08/2018
- **Postdoctoral Researcher,** Department of Biostatistics, Epidemiology and Informatics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA 08/2018 – 08/2022
- **Assistant Professor of Biostatistics (tenure track),** Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN 09/2022 – present
- **Assistant Professor of Biostatistics (affiliate faculty),** Vanderbilt Memory & Alzheimer's Center, Vanderbilt University Medical Center, Nashville, TN 09/2022 – present
- **Assistant Professor of Neurology (secondary),** Department of Neurology, Vanderbilt University Medical Center, Nashville, TN 09/2022 – present
- **Co-Leader,** Data Management & Statistics Core, Vanderbilt Memory & Alzheimer's Center, Vanderbilt University Medical Center, Nashville, TN 09/2024 – present

Other Appointments

- **Teaching Assistant,** Department of Mathematics & Statistics, Wake Forest University, Winston-Salem, NC 09/2010 – 05/2012
- **Graduate Teaching Assistant,** Department of Statistics, George Washington University, Washington, DC 01/2013 – 05/2015
- **Graduate Student Instructor,** Department of Statistics, George Washington University, Washington, DC 05/2015 – 05/2016
- **Publications Officer,** ASA Statistics in Imaging Section 06/2023 – 12/2025
- **Early Career Representative,** Data Core Steering Committee, National Alzheimer's Coordinating Cetner 05/2024 – 04/2026
- **Member,** Scientific Review Committee, Parkinson Study Group 07/2024 – 06/2027

Honors and Awards

- **Washington Statistical Society's Outstanding Graduate Student Award,** Washington Statistical Society, Washington, DC 2015
- **First Prize,** Graduate Student Oral Presentations, The 9th Annual Probability & Statistics Day, University of Maryland, Baltimore County, Baltimore, MD 2015
- **Kullback Award,** George Washington University, Washington, DC 2016
- **Excellence in Teaching Award,** University of Connecticut, Storrs, CT, Fall 2017
- **Excellence in Teaching Award,** University of Connecticut, Storrs, CT, Spring 2018

Professional Organizations

- **Member,** American Statistical Association (ASA) 2012 – present
- **Member,** International Biometric Society Eastern North American Region (ENAR) 2018 – present
- **Member,** International Chinese Statistical Association (ICSA) 2022 – present
- **Member,** Institute of Mathematical Statistics (IMS) 2022 – present
- **Member,** Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART) 2022 – present

Professional Activities

Intramural Committees

- **Faculty coordinator**, Weekly Biostatistics Seminar Series, Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN 2023 – 2024
- **Comprehensive exam committee**, Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN 2024 – present
- **Biostatistics admission committee**, Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN 2024 – present
- **Executive committee**, Vanderbilt Alzheimer's Disease Research Center, Vanderbilt University Medical Center, Nashville, TN 2024 – present
- **Operations committee**, Vanderbilt Alzheimer's Disease Research Center, Vanderbilt University Medical Center, Nashville, TN 2024 – present
- **Scientific review committee**, Vanderbilt Alzheimer's Disease Research Center, Vanderbilt University Medical Center, Nashville, TN 2024 – present

Extramural Committees

- **Student paper/poster competition committee,** New England Statistical Symposium (NESS 2019), Hartford, CT 2019
- **Program committee,** New England Statistical Symposium (NESS 2022), Storrs, CT 2022
- **Local committee (co-chair),** ICSA 2024 Applied Statistics Symposium, Nashville, TN 2024
- **Program committee,** New England Statistical Symposium (NESS 2024), Storrs, CT 2024
- **Student paper award committee**, ASA Section on Statistical Computing (JSM 2025), Nashville, TN 2025
- **Early career award committee**, ASA Section on Statistics in Epidemiology (JSM 2025), Nashville, TN 2025
- **Scientific program committee,** ICSA 2025 Applied Statistics Symposium, Storrs, CT 2025
- **Organizing committee (co-chair),** IMS Meeting of New Researchers in Statistics and Probability (a.k.a. New Researchers Conference, NRC 2025), Nashville, TN 2025
- **Local committee (co-chair)**, IMS Workshop on Frontiers in Statistical Machine Learning (FSML 2025), Nashville, TN 2025

Conference Organizations

- **Organizer and Chair,** an invited session for NESS 2019, Storrs, CT
- **Organizer and Chair,** an invited session for NESS 2022, Storrs, CT
- **Organizer and Chair,** an invited session for ENAR 2023 Spring Meeting, Nashville, TN
- **Organizer and Chair,** an invited session for ICSA 2023 Applied Statistics Symposium, Ann Arbor, MI
- **Organizer and Chair,** an invited session for WNAR 2023, Anchorage, AK
- **Organizer,** an invited session for NESS 2023, Boston, MA
- **Organizer and Chair,** an invited session for ENAR 2024 Spring Meeting, Baltimore, MD
- **Organizer and Chair,** three invited sessions for NESS 2024, Storrs, CT
- **Organizer and Chair,** two invited sessions for ICSA 2024 Applied Statistics Symposium, Nashville, TN
- **Chair,** a topic-contributed paper session (sponsored by the ASA Statistics in Imaging Section) for JSM 2024, Portland, OR
- **Organizer and Chair**, an invited session for CMStatistics 2024, Longdon, UK
- **Organizer and Chair**, an Invited session for 2025 Lifetime Data Science (LiDS) Conference, Brooklyn, NY
- **Organizer**, two invited sessions for ICSA 2025 Applied Statistics Symposium, Storrs, CT

Editorial Boards

- **Associate Editor,** Journal of Data Science 2020 – present
- **Guest Editor,** "Advances in Network Data Science", Journal of Data Science 2021
- **Associate Editor,** Methodology and Computing in Applied Probability 2023 – present

Review Services

Scientific Journals

1. Alcohol: Clinical and Experimental Research
2. Alzheimer's & Dementia
3. Annals of Applied Statistics
4. Applied Artificial Intelligence
5. Annals of the Institute of Statistical Mathematics

6. Applied Probability Trust
    - Advances in Applied Probability
    - Journal of Applied Probability
7. Biostatistics
8. BMJ Open
9. Communications in Statistics—Theory and Methods
10. Contemporary Clinical Trials Communications
11. Environmental and Ecological Statistics
12. Epidemiology & Infection
13. Frontiers in Neuroscience
14. Human Brain Mapping
15. Journal of Alzheimer's Disease
16. Journal of Applied Statistics
17. Journal of Computational and Graphical Statistics
18. Journal of Computational Science
19. Journal of Data Science
20. Methodology and Computing in Applied Probability
21. Nature Aging
22. Networks and Spatial Economics
23. Physica A: Statistical Mechanics and its Applications
24. Probability in Engineering and Informational Sciences
25. Random Structure & Algorithms
26. Statistics and Its Interface
27. Statistics in Biosciences
28. Statistics in Medicine
29. Statistics & Probability Letters
30. Stochastic Systems
31. The Lancet Psychiatry
32. WIREs Computational Statistics

Dissertation/Thesis Defense Committees

1. Yelie Yuan, Ph.D. candidate, Department of Statistics, University of Connecticut, 2023
2. Siwei Zhang, Ph.D. candidate, Department of Biostatistics, Vanderbilt University Medical Center, 2025 (expected)
3. Sydney Louit, Ph.D. candidate, Department of Statistics, University of Connecticut, 2025 (expected)

Teaching Activities

George Washington University

- Introduction to Statistics in Social Science (STAT 1053) (Summer 2015)
- Introduction to Business and Economic Statistics (STAT 1051) (Fall 2016, Spring 2017)

University of Connecticut

- Mathematical Statistics I (STAT 3375Q) (Fall 2016/2017, Spring 2018)
- Mathematical Statistics II (STAT 3445Q) (Spring 2017)
- Introduction to Statistics II (STAT 2215Q) (Spring 2018)

Vanderbilt University Medical Center

- Biostatistics I (MSCI 5009) (Fall 2022)
- Advanced Concepts in Probability and Real Analysis for Biostatisticians (BIOS 7361) (Fall 2024)

Research Programs

Present Funding

1. 1R01AG089200-01 (NIA) 09/23/2024 – 05/31/2029
   PI: Terrin L. Tamati
   Title: Social Networks for Optimizing Communication Ability in Adult Cochlear Implant Users
   Role: Co-Investigator
2. 5R01AG034962-09 (NIA) 06/01/2020 – 03/31/2026
   PI: Angela L. Jefferson
   Title: Vanderbilt Memory & Aging Project
   Role: Co-Investigator

3. 5U24AG074855-02 (NIA) 10/01/2021 – 08/31/2026
   PI: Timothy J. Hohman
   Title: Alzheimer's Disease Sequencing Project Phenotype Harmonization Consortium
   Role: Biostatistician
4. 5R01EB017230-06 (NIBIB) 09/20/2015 – 06/30/2025
   PI: Bennett A. Landman
   Title: Controlling Quality and Capturing Uncertainty in Advanced Diffusion Weighted MRI
   Role: Biostatistician

Completed Funding

1. 1P20AG068082-01 (NIA) 08/15/2020 – 07/31/2024
   PI: Angela L. Jefferson
   Title: Vanderbilt Alzheimer's Disease Research Center
   Role: Co-Investigator
2. 5R01AG062826-03 (NIA) 02/01/2020 – 01/31/2025
   PI: Katherine A. Gifford
   Title: Subjective Cognitive Decline in Older Adults
   Role: Biostatistician

Publications

Peer-Reviewed Journal Publications

(∗ refers to the corresponding author)
(† refers to my students, postdocs or trainees)

1. **Zhang, P.***, Chen, C. and Mahmoud, H. M. (2015). Explicit characterization of moments of balanced triangular Pólya urns by an elementary approach. *Statistics & Probability Letters*, **96**, 149–153. MR3281759 DOI
2. **Zhang, P.*** and Mahmoud, H. M. (2016). Distributions in a class of Poissonized urns with an application to Apollonian networks. *Statistics & Probability Letters*, **115**, 1–7. MR3498362 DOI
3. **Zhang, P.*** and Mahmoud, H. M. (2016). The degree profile and weight in Apollonian networks and k-trees. *Advances in Applied Probability*, **48**(1), 163–175. MR3473572 DOI
4. Chen, C. and **Zhang, P.*** (2019). Characterizations of asymptotic distributions of continuous-time Pólya processes. *Communications in Statistics—Theory and Methods*, **48**(21), 5308–5321. MR4007715 DOI
5. **Zhang, P.*** and Dey, D. K. (2019). The degree profile and Gini index of random caterpillar trees. *Probability in Engineering and Informational Sciences*, **33**(4), 511–527. MR4010508 DOI

6. Ouyang, G., Dey, D. K. and **Zhang, P.*** (2020). Clique-based method for social network clustering. *Journal of Classification*, **37**(1), 254–274. MR4111894 DOI

7. **Zhang, P.*** and Mahmoud, H. M. (2020). On nodes of small degrees and degree profile in preferential dynamic attachment circuits. *Methodology and Computing in Applied Probability*, **22**(2), 625–645. MR4104007 DOI

8. Mahmoud, H. M. and **Zhang, P.*** (2020). Distributions in the constant-differentials Pólya process. *Statistics & Probability Letters*, **156**, 108592. MR3996837 DOI

9. **Zhang, P.*** (2020). On several properties of a class of preferential attachment trees—plane-oriented recursive trees. *Probability in Engineering and Informational Sciences*, **35**(4), 839–857. MR4320478 DOI

10. Robinson, J. L., Porta, S., Garrett, F. G., **Zhang, P.**, Xie, S. X., Sun, E., Van Deerlin, V. M., Abner, E. L., Jicha, G. A., Barber, J. M., Lee, V. M.-Y., Lee, E. B., Trojanowski, J. Q. and Nelson, P. T.* (2020). Limbic-predominant age-related TDP-43 encephalopathy differs from frontotemporal lobar degeneration. *Brain*, **143**(9), 2844–2857. DOI PMID: 32830216 PMCID: PMC7526723

11. **Zhang, P.***, Wang, T. and Xie, S. X. (2020). Meta-analysis of several epidemic characteristics of COVID-19. *Journal of Data Science*, **18**(3), 536–549. DOI PMID: 33088292 PMCID: PMC7575205

12. **Zhang, P.*** (2020). Characterizing several properties of high-dimensional random Apollonian networks. *Journal of Complex Networks*, **8**(4), cnaa038. MR4189631 DOI

13. Galarza, C. E., **Zhang, P.** and Lachos, V. H.* (2021). Logistic quantile regression for bounded outcomes using a family of heavy-tailed distributions. *Sankhya B*, **83**(2), 325–349. MR4332185 DOI

14. Yuan, Y., Yan, J. and **Zhang, P.*** (2021). Assortativity measures for weighted and directed networks. *Journal of Complex Networks*, **9**(2), cnab017. MR4266155 DOI

15. Wang, T., Xiao, S., Yan, J. and **Zhang, P.*** (2021). Regional and sectoral structures and their dynamics of Chinese economy: A network perspective from multi-regional input-output tables. *Physica A: Statistical Mechanics and its Applications*, **581**, 126196. DOI

16. Tang, C., Wang, T. and **Zhang, P.*** (2022). Functional data analysis: An application to COVID-19 data in the United States. *Quantitative Biology*, **10**(2), 172–187. DOI **(equal contribution)**

17. **Zhang, P.*** and Wang, X. (2022). Several topological indices of random caterpillars. *Methodology and Computing in Applied Probability*, **24**(3), 1773–1789. MR4457565 DOI

18. Ren, Y., **Zhang, P.*** and Dey, D. K. (2022). Investigating several fundamental properties of random lobster trees and random spider trees. *Methodology and Computing in Applied Probability*, **24**(1), 431–447. MR4379497 DOI

19. **Zhang, P.***, Wang, T. and Yan, J. (2022). PageRank centrality and algorithms for weighted, directed networks. *Physica A: Statistical Mechanics and its Applications*, **586**, 126438. DOI

20. Wang, T.* and **Zhang, P.** (2022). Directed hybrid random networks mixing preferential attachment with uniform attachment mechanisms. *Annals of the Institute of Statistical Mathematics*, **74**(5), 957–986. MR4467842 DOI

21. Li, X., **Zhang, P.*** and Feng, Q. (2022). Exploring COVID-19 in Mainland China during the lockdown of Wuhan via functional data analysis. *Communications for Statistical Applications and Methods*, **29**, 103–125. DOI

22. **Zhang, P.*** (2022). The Zagreb index of several random models. *Journal of Stochastic Analysis*, **3**(1), article no. 1. MR4385450 DOI

23. Chen, J. and **Zhang, P.*** (2022). Clustering US states by time series of COVID-19 new case counts with non-negative matrix factorization. *Journal of Data Science*, **20**(1), 79–94. DOI

24. Weinshel, S., Irvin, D. J., **Zhang, P.**, Weintraub, D., Shaw, L. M., Siderowf, A. and Xie, S. X.* (2022). Appropriateness of applying CSF biomarker cutoffs from Alzheimer's disease to Parkinson's disease. *Journal of Parkinson's Disease*, **12**(4), 1155–1167. DOI PMID: 35431261 PMCID: PMC9934950

25. Wang, T., Yan, J., Yuan, Y. and **Zhang, P.*** (2022). Generating directed networks with predetermined assortativity measures. *Statistics and Computing*, **32**(5), article no. 91. MR4493723 DOI **(equal contribution)**

26. Xiao, S.*, Yan, J. and **Zhang, P.** (2022). Incorporating auxiliary information in betweenness measure for input-output networks. *Physica A: Statistical Mechanics and its Applications*, **607**, 128200. MR4497328 DOI

27. Domicolo, C., **Zhang, P.*** and Mahmoud, H. M. (2022). The degree Gini index of several classes of random trees and their poissonized counterparts—Evidence for duality. *Journal of Stochastic Analysis*, **3**(4), article no. 1. MR4527142 DOI

28. **Zhang, P.*** (2023). On several properties of a class of hybrid recursive trees. *Methodology and Computing in Applied Probability*, **25**(1), 16. MR4547421 DOI

29. Chen, Y., Sewell, D., **Zhang, P.*** and Zhu, X. (2023). Editorial: Advances in network data science. *Journal of Data Science*, **21**(3), 443–445. DOI

30. Ouyang, G., Dey, D. K. and **Zhang, P.*** (2023). A mixed-membership model for social network clustering. *Journal of Data Science*, **21**(3), 508–522. DOI

31. Yuan, Y.*, Wang, T., Yan, J. and **Zhang, P.** (2023). Generating general preferential attachment networks with R package `wdnet`. *Journal of Data Science*, **21**(3), 538–556. DOI

32. Liu, J., Ye, Z., Chen, K. and **Zhang, P.*** (2024). Variational Bayesian inference for bipartite mixed-membership stochastic block model with applications to collaborative filtering. *Computational Statistics & Data Analysis*, **189**, 107836. MR4636722 DOI

33. Mechanic-Hamilton, D.*, Lydon, S., Xie, S. X., **Zhang, P.**, Miller, A., Rascovsky, K. Rhodes, E. and Massimo, L. (2024). Turning apathy into action in neurodegenerative disease: Development and pilot testing of a goal-directed behaviour app. *Neuropsychological Rehabilitation*, **34**(4), 469–484. DOI PMID: 37128648 PMCID: PMC10600325

34. Yuan, Y., Yan, J. and **Zhang, P.*** (2024). A Strength and sparsity preserving algorithm for generating weighted, directed networks with predetermined assortativity. *Physica A: Statistical Mechanics and its Applications*, **638**, 129634. MR4711177 DOI

35. Neal, J. E., **Zhang, P.** and Liu, D.* (2024). Predictive partly conditional models for longitudinal ordinal outcomes with application to Alzheimer's disease progression. Accepted for publication in *Statistics in Biosciences*, **17**, 233–250. DOI

36. **Zhang, P.*** and Mahmoud, H. M. (2024). The Sackin index and depth of leaves in generalized Schröder trees. *Stochastic Models*, **41**(2), 208–226. DOI

37. Kim, M. E.*, Gao, C., Cai, L. Y., Yang, Q., Newlin, N. R., Ramadass, K., Jefferson, A., Archer, D., Shashikumar, N., Pechman, K. R., Gifford, K. A., Hohman, T. J., Held-Beason, L. L., Resnicki, S. M., Winzeck, S., Schilling, K. G., **Zhang, P.**, Moyer, D. and Landman, B. A. (2024). Empirical assessment of the assumptions of ComBat with diffusion tensor imaging. *Journal of Medical Imaging*, **11**(2), 024011. DOI PMID: 38655188 PMCID: PMC1034156

38. Gao, C.*, Yang, Q., Kim, M., Khairi, N. M., Cai, L. Y., Newlin, N., Kanakaraj, P., Remedios, L. W., Krishnan, A. R., Yu, X., Yao, T., **Zhang, P.**, Schilling, K. G., Moyer, D., Shafer, A. T., Resnick, S. M. Landman, B. A., The Alzheimer's Disease Neuroimaging Initiative (ADNI) and The BIOCARD Study team. (2024). Characterizing patterns of DTI variance in aging brains. *Journal of Medical Imaging*, **11**(4), 044007. DOI PMID: 39185477 PMCID: PMC11344569

39. Peterson, A., Sathe, A., Zaras, D., Yang, Y., Durant, A., Deters, K. D., Shashikumar, N., Pechman, K. R., Kim, M. E., Gao, C., Khairi, N. M., Li, Z., Yao, T., Huo, Y., Dumitrescu, L., Gifford, K. A., Wilson, J. E., Cambronero, F. E., Risacher, S. L., Beason-Held, L. L., An, Y., Arfanakis, K., Erus, G., Davatzikos, C., Tosun, D., Toga, A. W., Thompson, P. M., Mormino, E. C., Habes, M., Eang, D., **Zhang, P.**, Schilling, K., The Alzheimer's Disease Neuroimaging Initiative (ADNI), The BIOCARD Study Team, The Alzheimer's Disease Sequencing Project (ADSP), Albert, M., Kukull, W., Biber, S. A., Landman, B. A., Johnson, S. C., Schneider, J., Barnes, L. L., Bennett, D. A., Jefferson, A. L., Resnick, S. M., Saykin, A. J., Hohman, T. J. and Archer, D. B.* (2024). Sex, racial, and APOE-ε4 allele differences in longitudinal white matter microstructure in multiple cohorts of aging and Alzheimer's disease. *Alzheimer's & Dementia*, **21**(1), e14343. DOI PMID: 39711105 PMCID: PMC11781133

40. **Zhang, P.*** (2025). Impact of early alcohol consumption on adolescent development: Commentary on a longitudinal study conducted by Ferariu et al. (2024). *Alcohol, Clinical and Experimental Research*, **49**(1), 99–101. DOI

41. Vivek, N., Clark, E., Gao, L., Xu, S., Baskauf, S., Nguyen, K., Goldin, M., Prasad, K., Miller, A., **Zhang, P.**, Yang, S., Rohde, S., Topf, M. and Gelbard, A.* (2025). Social network analysis as a new tool to measure academic impact of physicians. *Laryngoscope Investigative Otolaryngology*, **10**(1), e70060. DOI PMID: 39780864 PMCID: PMC11705531

42. **Zhang, P.*** (2025). Discussion of "Power priors for leveraging historical data: Looking back and looking forward". *Journal of Data Science*, **23**(1), 62–63. DOI

43. Shen, A., Feng, Q., Yan, J. and **Zhang, P.*** (2025). Rank-based assortativity for weighted, directed networks. *Journal of Complex Networks*, **13**(2), cnaf002. MR4879460 DOI

44. Louit, S., Clark, E. A., Gelbard, A. H., Vivek, N., Yan, J. and **Zhang, P.*** (2025). CALF-SBM: A covariate-assisted latent factor stochastic block model. *Physica A: Statistical Mechanics and its Applications*, **667**, 130536. MR4884303 DOI.

An earlier version of this paper was selected as one of the winners of the student paper competition for the ASA Sections on Physical and Engineering Sciences (SPES) and Quality and Productivity (Q&P) in 2025.

45. Zhong, K., Castro, L. M.*, **Zhang, P.** and Lachos, V. H. (2025+). Autoregressive Bayesian modeling of censored HIV longitudinal data using the multivariate student's-t distribution. *Japanese Journal of Statistics and Data Science* (in press). DOI

46. Lorenz, A., Sathe, A., Zaras, D., Yang, Y., Durant, A., Kim, M. E., Gao, C., Newlin, N. R., Ramadass, K., Kanakaraj, P., Khairi, N. M., Li, Z., Yao, T., Huo, Y., Dumitrescu, L., Shashikumar, N., Pechman, K. R., Jackson, T. B., Workmeister, A. W., Risacher, S. L., Beason-Held, L. L., An, Y., Arfanakis, K., Erus, G., Davatzikos, C., Habes, M., Wang, D., Tosun, D., Toga, A. W., Thompson, P. M., Mormino, E. C., **Zhang, P.**, Schilling, K. G., The Alzheimer's Disease Neuroimaging Initiative (ADNI), The BIOCARD Study Team, The Alzheimer's Disease Sequencing Project (ADSP), Albert, M., Kukull, W., Biber, S. A., Landman, B. A., Johnson, S. C., Bendlin, B., Schneider, J., Barnes, L. L., Bennett, D. A., Jefferson, A. L., Resnick, S. M., Saykin, A. J., Hohman, T. J. and Archer, D. B.* (2025+). The effect of Alzheimer's disease genetic factors on limbic white matter microstructure. *Alzheimer's & Dementia*, **21**(4), e70130. DOI PMID: 40219815 PMCID: PMC11992597

47. Peter, C., Sathe, A., Zaras, D., Yang, Y., Durant, A., Shashikumar, N., Pechman, K. R., Workmeister, A. W., Jackson, T. B., Kanakaraj, P., Kim, M. E., Gao, C., Newlin, N. R., Ramadass, K., Khairi, N. M., Li, Z., Yao, T., Huo, Y., Mukherjee, S., Choi, S.-E., Klinedinst, B., Lee, M. L., Scollard, P., Trittschuh, E. H., Sanders, E. A., Mez, J., Dumitrescu, L. C., Gifford, K. A., Bolton, C. J., Gaynor, L. S., Risacher, S. L., Beason-Held, L. L., An, Y., Arfanakis, K., Erus, G., Davatzikos, C., Tosun, D., Habes, M., Wang, D., Toga, A. W., Thompson, P. M., **Zhang, P.**, Schilling, K. G., The Alzheimer's Disease Neuroimaging Initiative (ADNI), The BIOCARD Study Team, The Alzheimer's Disease Sequencing Project (ADSP), Albert, M., Kukull, W., Biber, S. A., Landman, B. A., Bendlin, B. B., Johnson, S. C., Schneider, J., Barnes, L. L., Bennett, D. A., Jefferson, A. L., Resnick, S. M., Saykin, A. J., Crane, P. K., Cuccaro, M. L., Hohman, T. J. and Archer, D. B.* (2025+). White matter abnormalities and cognition in aging and Alzheimer's disease. *JAMA Neurology* (in press).

48. Gogniat, M. A., Khan, O. A., Li, J., Park, C., Robb, W. H., **Zhang, P.**, Sun, Y., Moore, E. E., Houston, M. L., Pechman, K. R., Shashikumar, N., Davis, L. T., Liu, D., Landman, B. A., Cole, K. R., Bolton, C. J., Gifford, K. A., Hohman, T. J., Full, K. and Jefferson, A. L.* (2025). Increased sedentary behavior is associated with neurodegeneration and worse cognition in older adults over a 7-year period despite high levels of physical activity. *Alzheimer's & Dementia*, **21**(5), e70157. DOI

49. Kresge, H. A., Patterson, K. L., Libby, J., Sun, Y., **Zhang, P.**, Liu, D., Robb, W. H., Peterson, A. J., Cole, K. R., Arul, A. B., Choi, M. J., Oliver, N. C., Whitaker, M. D., Pechman, K. R., Dumitrescu, L., Bolton, C. J., Hohman, T. J., Robinson, R. A. S. and Jefferson, A. J.* (2025+). LC-MS/MS proteomics identifies plasma proteins related to cognition over 9-year follow-up. *Alzheimer's & Dementia* (in press).

50. Kang, K., **Zhang, P.**, Mukherjee, S., Lee, M. L., Choi, S.-E., Trittschuh, E. H., Mez, J., Gifford, K. A., Buckley, R. F., Gao, X., Di, J., Crane, P. K., Hohman, T. J. and

Liu, D.* (2025+). The Dynamics of Cognitive Decline towards Alzheimer's Disease Progression: Results from ADSP-PHC's Harmonized Cognitive Composites. *Alzheimer's & Dementia* (in press). **(co-first authorship: Kang, K. and Zhang, P.)**

51. **Zhang, P.** and Xie, S. X.* (2025+). Bias and efficiency comparison between multiple imputation and available-case analysis for missing data in longitudinal models. Accepted for publication in *Statistics in Biosciences* (in press).

52. Nolan, E., Sun, Y., Shi, H., Perry, A., Pechman, K., Shashikumar, N., Landman, B., Gogniat, M., Liu, D., **Zhang, P.**, Hohman, T. J., Jefferson, A. L. and Full, K. (2025+). The association between poor sleep health and Alzheimer's disease structural neuroimaging biomarkers. *Alzheimer's & Dementia* (in press).

Peer-reviewed Conference Proceedings

1. **Zhang, P.*** (2016). On terminal nodes and the degree profile of preferential dynamic attachment circuits. In *Proceedings of SIAM: Thirteenth Workshop on Analytic Algorithmics and Combinatorics (ANALCO 16)*, 80–92. Arlington, VA. MR3480250 DOI

Book Chapters

1. **Zhang, P.*** and Glaz, J. (2024). "Scan statistics on graphs and networks." In: Glaz, J. and Koutras, M. (Eds.) *Handbook of Scan Statistics*, 507–542. Springer, New York, NY. MR4841264 DOI

Software

1. Xiao S., Yan J. and **Zhang, P.** (2022). ionet: Network analysis for input-output tables. `R` package version 0.2.2, https://github.com/Carol-seven/ionet.

2. Yuan, Y., Wang, T., Yan, J. and **Zhang, P.** (2024). wdnet: Weighted and Directed Network. `R` package version 1.2.3, https://cran.r-project.org/web/packages/wdnet/index.html.

   This package was selected as one of the "honorable mentions" for the John M. Chambers Statistical Software Award (ASA Section on Statistical Computing) in 2023.

Preprints

1. Gogniat, M. A., Khan, O. A., Ratangee, B., Bolton, C. J., **Zhang, P.**, Liu, D., Pechman, K. R., Yates, A., Gaynor, L., Eaton, J., Peterson, A., Gifford, K. A., Hohman, T. J., Blennow, K., Zetterberg, H. and Jefferson, A. L.* (2025+). Neighborhood disadvantage is adversely associated with biomarkers of inflammation cross-sectionally and longitudinally. Revision invited by *Neurology*.

2. Vivek, N., Clark, E., Gao, L., Nguyen, K., Du, L., Xu, S., Baskauf, S., Prasad, K., Miller, A., Goldin, M., **Zhang, P.**, Yang, S., Rohde, S. Topf, M. C. and Gelbard, A.* (2025+). The social network of otolaryngology: Collaborative publishing relationships by gender. Revision invited by *Laryngoscope Investigative Otolaryngology*.

3. Suttner, L. H., **Zhang, P.** and Xie, S. X.* (2025+). Nonparametric estimation for time-varying missing covariates in longitudinal models. Submitted to *Statistics in Medicine*. **(co-first authorship: Suttner, L. H. and Zhang, P.)**

4. Bolton C. J., **Zhang, P.**, Nair, D., Liu, D., Davis, L. T., Pechman, K. R., Shashikumar, N., Wihoite, S., Roby, D., Corey, C., Komorowski, H., Giffort, K. A., Hohman, T. J. and Jefferson, A. L.* (2025+). Mild kidney dysfunction affects the predictive accuracy of blood-based biomarkers for neuropsychological and neuroimaging outcomes over a 9-year follow-up period. Submitted to *Alzheimer's & Dementia*.

5. Kim, M. E.*, Gao, C., Ramadass, K. Newlin, N. R., Kanakaraj, P., Bogdanov, S., Rudravaram, G., Archer, D., Hohman, T. J., Jefferson, A. L., Morgan, V. L., Roche, A., Englot, D. J., Resnick, S. M., Beason-Held, L. L., Cutting, L., Barquero, L. A., D'archangel, M. A., Nguyen, T. Q., Humphreys, K. L., Niu, Y., Vinci-Booher, S., Cascio, C. J., The HABS-HD Study Team, Alzheimer's Disease Neuroimaging Initiative, The BIOCARD Study Team, Li, Z., Vandekar, S. N., **Zhang, P.**, Gore, J., Landman, B. A. and Schilling, K. G. (2025+). White matter microstructure and macrostructure brain charts across the human lifespan. Submitted to *Nature*.

Manuscripts in Preparation

1. **Zhang, P.** and Xie, S. X.* (2023+). An efficient approach for handling missing data in nonlinear longitudinal models.

2. **Zhang, P.***, Xiao, S., Robb, W. H., Yan, J. and Liu, D. (2023+). Application of Gaussian graphical models to functional connectivity analysis: A statistical review and application.

3. **Zhang, P.***, Wang, X., Robb, W. H. and Liu, D. (2023+). Bayesian model for network models with the emergence of measurement errors.

Presentations and Posters

1. Poster presenter at the 12th Graduate Student and Postdoctoral Research Day, Wake Forest University, Winston Salem, NC, 2012.

2. Invited speaker at the Probability Seminar, George Washington University, Washington, DC, 2014.

3. Invited speaker at the GWU STAT Student Seminar, George Washington University, Washington, DC, 2014.

4. Invited speaker at the Seminar in Probability, Catholic University of America, Washington, DC, 2015.

5. Contributed speaker at the 9th Annual Probability & Statistics Day, University of Maryland at Baltimore County, Baltimore, MD, 2015.

6. Invited speaker at the Mathematics Department Colloquium, Wake Forest University, Winston-Salem, NC, 2015.

7. Contributed speaker at the 11th Annual UNCG Regional Mathematics and Statistics Conference, University of North Carolina at Greensboro, Greensboro, NC, 2015.
8. Invited speaker at the 13th Workshop on Analytic Algorithmics and Combinatorics (ANALCO 16), Arlington, VA, 2016.
9. Invited speaker at the Statistics Department Colloquium, University of Connecticut, Storrs, CT, 2016.
10. Poster presenter at the SouthEastern Probability Conference, Duke University, Durham, NC, 2017.
11. Invited speaker at the International Workshop of on Applied Probability (IWAP 2018), Budapest, Hungary, 2018.
12. Invited speaker at the New England Statistical Symposium (NESS 2019), Hartford, CT, 2019.
13. Invited speaker and short course instructor at the Virtual Conference on Data Science in Action (organized by Shanxi University of Finance and Economics), online, 2020.
14. Contributed speaker at the Joint Statistical Meetings (JSM 2020), online, 2020.
15. Invited speaker at Data Science in Action in Response to the Outbreak of COVID-19 (jointly sponsored by Korea Food & Drug Administration and Korean Region of International Biometric Society), online, 2020.
16. Invited speaker at the Brown Bag Forum (organized by DBEI at Penn Medicine), online, 2021.
17. Contributed speaker at the spring meeting of the Eastern North American Region (ENAR 2021), online, 2021.
18. Poster presenter at the Research Day 2021 (organized by DBEI at Penn Medicine), online, 2021.
19. Invited speaker at the School of Statistics Seminar, Renmin University of China, online, 2021.
20. Guided poster presenter at the MDS Virtual Congress 2021 (sponsored by International Parkinson and Movement Disorder Society), online, 2021.
21. Invited speaker at the Biostatistics Seminar, Vanderbilt University Medical Center, Nashville, TN, 2021.
22. Invited speaker at the Epidemiology and Biostatistics Seminar, Temple University, online (Philadelphia, PA), 2022.
23. Invited speaker at the Applied Mathematics Webinar (jointly sponsored by Imam Abdulrahman Bin Faisal University, King Saud University, Université de Tunis EI Manar and University of Jeddah), online, 2022.
24. Invited speaker at the Brown Bag Forum (organized by DBEI at Penn Medicine), online, 2022.
25. Poster presenter at the New Researchers Conference 2022 (NRC 2022, sponsored by IMS), George Mason University, Fairfax, VA, 2022.
26. Poster presenter at the MDS International Congress 2022 (sponsored by International Parkinson and Movement Disorder Society), hybrid (Madrid, Spain), 2022.

27. Invited speaker at the 4th International Conference on Statistical Distributions and Applications (ICOSDA 2022), Huntington, WV, 2022.

28. Invited speaker at the Statistical Methods in Imaging Conference (SMI 2023), Minneapolis, MN, 2023.

29. Invited speaker at the 32nd Annual Applied Statistics Symposium for the International Chinese Statistical Association (ICSA 2023), Ann Arbor, MI, 2023.

30. Invited speaker at the annual meeting of the Western North American Region (WNAR/IMS 2023), Anchorage, AK, 2023.

31. Invited speaker at the 6th International Conference on Econometrics and Statistics (EcoSta 2023), hybrid (Tokyo, Japan), 2023.

32. Invited speaker at the 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023), hybrid (Berlin, Germany), 2023.

33. Invited speaker at the Applied Mathematics Seminar, Shanghai Center for Mathematical Sciences (Fudan University), Shanghai, China, 2023.

34. Invited speaker at the Statistics and Data Science Seminar, Auburn University, hybrid (Auburn, AL), 2024.

35. Invited speaker at the 37th New England Statistics Symposium (NESS 2024), Storrs, CT, 2024.

36. Invited speaker at the Statistical Methods in Imaging Conference (SMI 2024), Indianapolis, IN, 2024.

37. Invited speaker at the 33rd Annual Applied Statistics Symposium for the International Chinese Statistical Association (ICSA 2024), Nashville, TN, 2024.

38. Invited speaker at the 7th International Conference on Econometrics and Statistics (EcoSta 204), hybrid (Beijing, China), 2024.

39. Invited speaker at the Advancing Brain Network Research Workshop (UNC-EPIC: NeuroConnect 2024), hybrid (Blowing Rock, NC), 2024.

40. Invited speaker at the Statistical Computing Series, Vanderbilt University Medical Center, hybrid (Nashville, TN), 2024.

41. Invited speaker at the Bioinformatics and Biostatistics Seminar, University of Louisville, hybrid (Louisville, KY), 2024.

42. Contributed speaker at the IMS International Conference on Statistics and Data Science (ICSDS 2024), Nice, France, 2024.

43. Invited speaker at the Statistical Computing Series, Vanderbilt University Medical Center, hybrid (Nashville, TN), 2025.

44. Invited speaker at the Joint Statistical Meetings (JSM 2025), Nashville, TN, 2025.