

SHUAI ZHOU

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EDUCATION

- 2023 Ph.D. Rural Sociology and Demography (dual title), The Pennsylvania State University
Dissertation: Environmental Migration in the United States: A Spatio-Temporal Perspective, 1970-2020.
- 2019 M.S. Rural Sociology and Demography (dual title), The Pennsylvania State University

RESEARCH INTERESTS

Environmental Migration; Environmental Health; Spatial Demography; Circular Economy; World Development; Computational and Geospatial Analysis.

ACADEMIC EXPERIENCE

- 2023 – present Postdoctoral associate, Global Development, Cornell University.
- 2017 – 2023 Research assistant, Department of AESE, Pennsylvania State University.
- 2015 Lecturer, Beijing City University.

PUBLICATIONS

Peer-reviewed articles

- 2024 Zhou, Shuai and Guangqing Chi. 2024. "How Do Environmental Stressors Influence Migration? A Meta-regression Analysis of the Environmental Migration Literature." *Demographic Research*. 50: 41–100.
- 2024 Chi, Guangqing, Shuai Zhou, Megan Mucioki, Jessica Miller, Ekrem Korkut, Lance Howe, Junjun Yin, Davin Holen, Heather Randell, Ayse Akyildiz, Kathleen E. Halvorsen, Lara Fowler, James Ford, and Ann Tickamyer. 2024. "Climate Impacts on Migration in the Arctic North America: Existing Evidence and Research Recommendations." *Regional Environmental Change*. 24: 47.
- 2024 Fu, Haiyue, Yating Li, Penghui Jiang, Shuai Zhou, and Chuan Liao. "Transition Towards Sustainable Diets: Multi-objective Optimization of Dietary Pattern in China." *Sustainable Production and Consumption*. 48: 14–28.

- 2023 Anderson, Cory, Shuai Zhou, and Guangqing Chi. 2023. "Population-Wide Vaccination Hesitancy among the Amish: A County-Level Study of COVID-19 Vaccine Adoption and Implications for Public Health Policy and Practice." *Population Research and Policy Review*. 42: 70.
- 2022 Zhou, Shuai and Guangqing Chi. 2022. "Farmland Rental: The Impacts of Household Demographics and Livelihood Strategies in China." *Land*. 11(8): 1318.
- 2022 Li, Yanling, Zita Oravecz, Shuai Zhou, Yosef Bodovski, Ian J. Barnett, Naomi P. Friedman, Guangqing Chi, Scott I. Vrieze, and Sy-Miin Chow. 2022. "Bayesian Forecasting with a Regime-Switching Zero-Inflated Multilevel Poisson Regression Model: An Application to Adolescent Alcohol Use with Spatial Covariates." *Psychometrika*. 87(2): 376–402.
- 2021 Zhou, Shuai, Yanling Li, Guangqing Chi, Junjun Yin, Zita Oravecz, Yosef Bodovski, Naomi P. Friedman, Scott I. Vrieze, and Sy-Miin Chow. 2021. "GPS2space: An Open-source Python Library for Spatial Measure Extraction from GPS Data." *Journal of Behavioral Data Science*. 1(2): 127–155.
- 2021 Moss, Jennifer L., Siddhartha Roy, Karl T. Clebak, Julie Radico, Jarrett Sell, Christina Scartozzi, Shuai Zhou, Guangqing Chi, and Tamara Oser. 2021. "Area- and Individual-Level Correlates of Self-Rated Health: Implications for Geographic Health Disparities." *Journal of Primary Care and Community Health*. 12: 1–8.

Book chapters

Zhou, Shuai and Guangqing Chi, 2023. "Old Data, Old Problems, New Data, New Challenges." In: *Research Handbook of Rural Sociology*, edited by Ann Tickamyer and Carolyn Sachs. Cheltenham, United Kingdom: Edward Elgar Publishing. [Under review]

Open-source package

- 2021 GPS2pace A Python library for constructing buffer- and convex hull-based activity space and shared space from raw GPS data, and performing the nearest distance query to user-specified landmarks.
<https://pypi.org/project/gps2space/> (On PyPI)
<https://github.com/shuai-zhou/gps2space> (On GitHub)
<https://gps2space.readthedocs.io/en/latest/index.html> (Documentation)

Under review

- 2024 Zhou, Shuai, Chuan Liao, Rebecca Nelson, Krisztina Mosdosy, Lucinda Li, and Johannes Lehmann. "Waste to Wroth: Unveiling a \$3.64 Billion Opportunity in Nutrient Recovery." *Proceedings of National Academy of Sciences*.
- 2024 Zhou, Shuai, Guangqing Chi, and Chuan Liao. "Spatial Perspective on Environmental Migration: Empirical Insights from a Spatio-temporal Approach in the United States, 1970 – 2010." *Population and Environment*.
- 2024 Liao, Chuan, Manuel Ruiz-Aravena, Elizabeth Ludwig-Borycz, Nabin Pradhan, Zhenxi Xu, Shuai Zhou, and Arun Agrawal. "Planetary Risk of Zoonotic Disease Outbreaks from the Global Land Rush." *Proceedings of National Academy of Sciences*.
- 2024 Liao, Chuan, Jenny Kao-Kniffin, Wendong Zhang, Precious Tshabalala, Erik Andrus, Zachary Butler-Jones, Shuai Zhou, Radine Rafols, and Susan McCouch. "Rice Farming for Climate Change Adaptation in the US Northeast." *Proceedings of National Academy of Sciences*.
- 2024 Zhou, Shuai, Guangqing Chi, Huanguang Qiu, Zhen Lei, Erica A.H. Smithwick, and Jiquan Chen. "Relocation preference and settlement: Lessons from the Poverty Alleviation Relocation Program in China." *PLOS One*.
- 2024 Ludwig-Borycz, Elizabeth, Ana Baylin, Cheryl A. Moyer, Noah Kochanski, Nabin Pradhan, Sue Anne Bell, Joseph Eisenberg, Pamela Jagger, Nazeeba Siddika, Peter Larson, Shuai Zhou, Chuan Liao, and Arun Agrawal. "Higher Temperatures Are Associated with Lower Birthweight in Bangladesh." *Environment International*.
- 2024 Sun, Yan, Lili Wu, Haiyue Fu, Shuai Zhou, and Chuan Liao, "Enhancing Urban Land Use Efficiency through Regional Economic Integration: A Network Synergy Analysis in the Yangtze River Delta." *Habitational International*.

Manuscripts in development

- 2024 Zhou, Shuai, Guangqing Chi, and Brian C. Thiede. "Climate Variability and County-Level Migration in the United States, 1970 – 2010." Preparing for *Demography*.
- 2024 Zhou, Shuai and Guangqing Chi. "Migratory Responses to Environmental Variability in the United States: A Multi-level Analysis of Microdata from the American Community Survey, 2010 – 2020." Preparing for *Population and Environment*.

- 2024 Anderson, Cory, George M. Hayward, Shuai Zhou, Guangqing Chi, and Mary Shen. "Persistently High Fertility in a Low Fertility Context: How Do America's Amish Heterogeneously Respond to Fertility-Reducing Structural Incentives?" Preparing for *Demography*.
- 2024 Zhou, Shuai, Chuan Liao, Ziqing Wei, and Guangqing Chi. "Beyond Pathogens: Unravelling Mortality through an Environmental Lens in the United States, 2000 – 2019." Preparing for *American Journal of Public Health*.
- 2024 Zhou, Shuai, Chuan Liao, Elizabeth Ludwig-Borycz, Seongmin Shin, Yujin Lee, Ziqing Wei, Jana Turner, Yulu Chen, Rodina Araia, Florence Cheung, and Arun Agrawal. "Navigating Environmental Health: A Comprehensive Synthesis and Future Prospects" Preparing for *Environmental Research*.
- 2024 Hou, Qing, Shuai Zhou, and Guangqing Chi. "The Factors Affecting Electric Vehicle Adoption in the United States, 2016 – 2021." Preparing for *Energy Policy*.

Other publications

- 2024 Hou, Qing, Shuai Zhou, and Guangqing Chi. 2024. "The Factors Affecting Electric Vehicle Adoption in the United States, 2016 – 2021." In: *Proceedings of the 7th International Conference on Economic Management and Green Development*, edited by Xiaolong Li, Chunhui Yuan, and John Kent. Singapore: Springer Nature Singapore.
- 2020 Zhou, Shuai and Matthew M. Brooks. 2020. "Pennsylvania Pomp and Circumstance: Trends in High School Drop Outs." *Pennsylvania Population Network Briefs*. 3: 1–4.
- 2018 Zhou, Shuai. "International Migration of China: Status, Policy and Social Responses to the Globalization of Migration" by Lu Miao and Huiyao Wang (Singapore: Springer, 2017. 135 pp. ISBN: 978-981-10-6073-1). *Rural Sociology*. 83(3): 700–702. [Book review]
- 2018 Zhou, Shuai. 2018. "An Inertia Model of Agricultural Production: Evidence from the Rural Household Operation in Henan, China." *Science, Economy, and Society*. 36(1): 57–63. [In Chinese]
- 2017 Zhou, Shuai. 2017. "Farmland Rental Contract and Its Driving Factors among Rural Households: Empirical Evidence from the China Family Panel Studies." *Modern Management Science*. 9: 115–117. [In Chinese]

- 2017 Zhou, Shuai. 2017. "Farmers' Mobility Influences Their Livelihood Arrangements in China." *Chinese Social Sciences Today*. 12 April 2017.
http://sscp.cssn.cn/xkpd/zxtj/201704/t20170412_3483300.html [In Chinese]

RESEARCH GRANTS

Funded grants

- 2024 **Co-PI.** "Agricultural Floodplain Rice Farming as Adaptation to Climate Change in NYS." Toward Sustainability Foundation Grant at Cornell University. (**PI:** Chuan Liao). 02/01/2024 – 01/31/2025. \$11,000.
- 2024 **Key personnel.** "Energy and Society Research Working Group 2024-2026." Polson Institute for Global Development. (**PI:** Chuan Liao and Stephan Schmidt). 2024 – 2026. \$3,000.

Unfunded grants

- 2024 **Co-PI.** "Modeling Socio-Political Systems to Advance the Circular Bionutrient Economy." Polson Institute for Global Development. (**PI:** Johannes Lehmann). 2024 – 2025. \$20,000.
- 2024 **Co-PI.** "Warming Planet, Unequal Burden: Chronic Kidney Disease Prevalence and Disparities among Elders in the United States" Cornell Center for Health Equity. (**PI:** Chuan Liao). 07/01/2024 – 06/30/2025. \$50,000.
- 2024 **Co-PI.** "Diversion of Organic Waste from Anaerobic Disposal to Regenerative Agricultural Products: Co-Benefits for Greenhouse Gas Emissions and Human Health." Environmental Defense Fund and the Cornell Atkinson Center for Sustainability. (**PI:** Chuan Liao and Veronica Southerland). 06/01/2024 – 05/31/2025. \$99,976.
- 2023 **Co-PI.** "Harnessing Agricultural Resilience through Visionary Eco-friendly Strategies (HARVEST): Promoting Rice Farming in New York State's Floodplains." Summer Undergraduate Mentored Research Grant at Cornell University. (**PI:** Chuan Liao). 05/20/2024 – 07/31/2024. \$25,832.
- 2022 **PI.** "Environmental Migration in the United States: A Spatio-temporal Perspective, 1970 – 2020." Russell Sage Foundation. (**Co-PI:** Guangqing Chi). 2022 – 2023. \$10,000.

PRESENTATIONS

Invited talks

- 2023 Zhou, Shuai. 2023. “Imbalanced Nutrient Supply and Demand for Regenerative Agriculture.” Share Research and Ideas with Syngenta, October 11, 2023, Cornell University, Ithaca, NY.
- 2022 Zhou, Shuai. 2022. “Migration due to Climate Change.” Geo-Resolution 2022—Geospatial Perspectives on Climate Change: Predicting and Mitigating Effects at Saint Louis University, September 28, 2022, St. Louis, MO.
- 2021 Zhou, Shuai and Yanling Li. 2021. “GPS2space: An Open-source Python Library for Spatial Measure Extraction from GPS Data.” QuantDev Brownbag at Social Science Research Institute at Pennsylvania State University, February 10, 2021, University Park, PA.
- 2020 Zhou, Shuai. 2020. “Introduction to GPS2space.” Intensive Longitudinal Health Behaviors Network Meeting (GPS Subgroup Meeting), October 21, 2020, University Park, PA.
- 2020 Zhou, Shuai. 2020. “Alaska Demographics and Data Sources.” Pursuing Opportunities for Long-term Arctic Resilience for Infrastructure and Society (POLARIS) Project, October 5, 2020, University Park, PA.

Conference presentations

- 2024 Zhou, Shuai, Chuan Liao, Ziqing Wei, and Guangqing Chi. 2024. “Environmental Impacts on Cause-specific Mortality in the United States, 2000 – 2019.” 2024 Annual Meeting of the Rural Sociological Society, July 24 – 30, 2024, Madison, WI.
- 2024 Zhou, Shuai, Chuan Liao, Elizabeth Ludwig-Borycz, Seongmin Shin, Yujin Lee, Ziqing Wei, Jana Turner, Yulu Chen, Rodina Araia, Florence Cheung, and Arun Agrawal. 2024. “A Comprehensive Synthesis and Future Prospects of Environmental Health Literature, 2010 – 2023.” 2024 Annual Meeting of the Rural Sociological Society, July 24 – 30, 2024, Madison, WI.
- 2024 Zhou, Shuai, Chuan Liao, Ziqing Wei, and Guangqing Chi. 2024. “Beyond Pathogens: Unravelling Mortality through an Environmental Lens in the United States, 2000 – 2019.” 2024 Annual Meeting of the Population Association of America, April 17 – 20, 2024, Columbus, OH. [Poster]

- 2024 Anderson, Cory, Shuai Zhou, and Guangqing Chi. 2024. "Which Way Does Religion Pull, and Why? Variation in COVID-19 Vaccination Rates among Major U.S. Religions." 2024 Annual Meeting of the Population Association of America, April 17 – 20, 2024, Columbus, OH. [Poster]
- 2024 Zhou, Shuai, Chuan Liao, Elizabeth Ludwig-Borycz, Seongmin Shin, Yujin Lee, Ziqing Wei, Jana Turner, Yulu Chen, Rodina Araia, Florence Cheung, and Arun Agrawal. 2024. "Navigating Environmental Health: A Comprehensive Synthesis and Future Prospects." 2024 Annual Cornell Center for Health Equity Symposium, April 11, 2024, Ithaca, NY. [Poster]
- 2023 Zhou, Shuai and Guangqing Chi. 2023. "Migratory Responses to Environmental Variability in the United States: A Multi-level Analysis of Microdata from the American Community Survey, 2010 – 2020." 2023 Annual Meeting of the Population Association of America, April 12 – 15, 2023, New Orleans, LA.
- 2022 Zhou, Shuai and Guangqing Chi. 2022. "Migratory Responses to Environmental and Sociodemographic Factors in the United States: A Multi-level Approach." 2022 Annual Meeting of the Rural Sociological Society, August 04 – 07, 2022, Westminster, CO.
- 2022 Anderson, Cory, George M. Hayward, Shuai Zhou, Guangqing Chi, and Mary K. Shenk. 2022. "Persistently High Fertility in a Low Fertility Context: How Do America's Amish Heterogeneously Respond to Fertility-Reducing Structural Incentives?" 2022 Annual Meeting of the Population Association of America, April 6 – 9, 2022, Atlanta, GA.
- 2022 Zhou, Shuai and Guangqing Chi. 2022. "Migratory Responses to Environmental and Sociodemographic Factors in the United States: A Multi-level Analysis, 2010 – 2020." Population and Climate Change: The Defining Relationship of the 21st Century, November 30 – December 2, 2022, Vienna, Austria. [Poster]
- 2022 Zhou, Shuai, Guangqing Chi, and Brian C. Thiede. 2022. "Migration and Climate Change and Variability in the Contiguous United States at the County Level, 1970 – 2010." 2022 Annual Meeting of the Population Association of America, April 6 – 9, 2022, Atlanta, GA. [Poster]
- 2021 Zhou, Shuai and Guangqing Chi. 2021. "How Do Environmental Changes and Variations Influence Migration? A Meta-regression Analysis of the Environmental Migration Literature." 2021 Annual Meeting of the Rural Sociological Society, July 29 – August 01, 2021. (Held online due to COVID-19).

- 2020 Zhou, Shuai and Matthew M. Brooks. 2020. "Disparities in Transition to High School: An Evaluation of Rurality, Race and Ethnicity Composition, and Mobility at the Unified School District Level in the US." 2020 Annual Meeting of the Rural Sociological Society. (Canceled due to COVID-19).
- 2020 Zhou, Shuai and Guangqing Chi. 2020. "Land Rental in Rural China: The Impacts of Demographics, Household Economy, Land Endowment, and Social Welfare, 2012 – 2016." 2020 Annual Meeting of the Population Association of America, April 22 – 25, 2020, Washington, DC. (Canceled due to COVID-19). [Poster]
- 2019 Zhou, Shuai and Guangqing Chi. 2019. "Land Rental in Rural China: The Impacts of Demographics, Household Economy, Land Endowment, and Social Welfare, 2012 – 2016." 2019 Annual Meeting of the Rural Sociological Society, August 07 – 10, 2019, Richmond, VA.
- 2019 Zhou, Shuai, Guangqing Chi, Brian C. Thiede, Zhen Lei, and Huanguang Qiu. 2019. "Subsidized Relocation and the Willingness to Move: Evidence from the Targeted Poverty Alleviation Project in China." 2019 Annual Meeting of the Population Association of America, April 10 – 13, 2019, Austin, TX.
- 2018 Zhou, Shuai, Guangqing Chi, Brian C. Thiede, Zhen Lei, and Huanguang Qiu. 2018. "Subsidized Relocation and the Willingness to Move: The First Look at the Targeted Poverty Alleviation Project in China." 2018 Annual Meeting of the Rural Sociological Society, July 26 – 29, 2018, Portland, OR.
- 2017 Zhou, Shuai. 2017. "Family Economy, Land Endowment, Social Security and Land Rent Behavior of Village Farmers: An Empirical Research Based on Logistic Model." 2017 Annual Rural Studies Conference, October 27 – 28, 2017, University Park, PA.

SELECTED MEDIA COVERAGE

- 2024 "Many people in the Arctic are staying put despite climate change, study reports." *Penn State News*. May 9, 2024. Available at:
<https://www.psu.edu/news/agricultural-sciences/story/many-people-arctic-are-staying-put-despite-climate-change-study-reports/>
- 2023 "Amish Found to Be Under-vaccinated for COVID-19 but not Unvaccinated." *Today Headline*. September 6, 2023. Available at:
<https://todayheadline.co/amish-found-to-be-under-vaccinated-for-covid-19-but-not-unvaccinated/>

- 2023 “Amish-populated Counties Tend to Have Lower Vaccination Rates, but Are not Unvaccinated.” *My Best Medicine*. July 9, 2023. Available at:
<https://mybestmedicine.com/health-news/amish-populated-counties-tend-to-have-lower-vaccination-rates-but-are-not-unvaccinated/>

AWARDS

- 2022 Francena L. Miller and Michael F. Nolan Graduate Scholarship in Agricultural Economics and Rural Sociology, The Pennsylvania State University.
- 2022 The College of Agricultural Sciences (CAS) Graduate Student Travel Awards, The Pennsylvania State University.
- 2022 Rural Sociological Society (RSS) Graduate Student Travel Award, The Rural Sociological Society.

TEACHING EXPERIENCE

Penn State University

- 2023 Guest lecture, Environmental Migration in the United States: A Spatio-temporal Perspective, April 20, 2023.
- 2021 Guest lecture, Using Social Explorer for Spatial Analyses, February 15, 2021.
- 2020 Guest lecture, Introductory Rural Sociology, January 28, 2020.
- 2020 Guest lecture, Introductory to Stata, September 28, 2020.

Beijing City University

- 2015 Lecturer, Social Survey Methods, February – July 2015.

STUDENT MENTORING

Undergraduate students

- | | | |
|-------------|-----------------|------------------------|
| 2023 – 2024 | Florence Cheung | Cornell University |
| 2023 – 2024 | Yulu Chen | Cornell University |
| 2023 – 2024 | Jana Turner | University of Michigan |
| 2023 – 2024 | Rodina Araia | University of Michigan |

PROFESSIONAL SERVICE

Editorship

- 2024 Guest Editor Special Issue “Urbanization and Ecological Sustainability” in *Land*.

Grant proposal review

2023 Cornell University. Cornell Atkinson Center for Sustainability. 2024 Graduate Research Grants.

Journal manuscript review

Spatial Demography (2024)

PLOS One (2024x2)

China Agricultural Economic Review (2024x2)

Socio-Economic Planning Sciences (2023)

Panel moderation

2022 Health Access and Outcomes, 2022 Annual Rural Studies Conference, October 13 – 14, 2022, University Park, PA.

2021 Agent-Based Modeling, 2021 Annual Population Research Institute Graduate Student Methodology Workshop, May 11, 2021, University Park, PA.

2019 Alternative Food Systems and Sustainable Agriculture, 2019 Annual Rural Studies Conference, November 7 – 8, 2019, University Park, PA.

PROFESSIONAL TRAINING

2024 The 10th Workshop on Formal Demography, June 3 – June 7, 2024, University of California, Berkeley, Berkeley, CA.

2023 – 2024 NextGen Professors Program, October 24, 2023 – June 20, 2024, Cornell University, Ithaca, NY.

2023 Data and Modeling Approaches to Assessing Climate-Conflict Impact on Population Dynamics, April 12, 2023, New Orleans, LA.

2023 Leveraging Linked Census Data: Resources and Opportunities from Full Count IPUMS Data, April 12, 2023, New Orleans, LA.

2022 Summer Institute in Migration Research Methods, July 25 – August 2, 2022, University of California, Berkeley, Berkeley, CA.

2019 Data Reproducibility Boot Camp, June 3 – 7, 2019, The Pennsylvania State University, University Park, PA.

PROFESSIONAL MEMBERSHIP

2019 – present Population Association of America.

2024 – present Cornell Center for Health Equity

2020 – present International Union for the Scientific Study of Population.

2018 – present Rural Sociological Society.

2017 – present Rural Sociology Graduate Association.

STATISTICAL/PROGRAMMING LANGUAGE

Python Advanced level

Stata Advanced level

R Intermediate level

REFERENCES

Available upon request.