Meng, Yuan

Postdoctoral Associate

Department of Population Health Sciences

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Research Metrics

- ORCID: https://orcid.org/0000-0002-0963-0581
- H-index: 14
- Total Peer-Reviewed Publications: 27
- First-Authored Publications: 12 (including co-first author)
- Corresponding Author Publications: 10

Education

The Hong Kong Polytechnic University, Hong Kong _2020-2023_

Ph.D. in Department of Land Surveying and Geo-Informatics

Dissertation title: Assessing the impact of air pollution and human activities associated with urban morphological features on COVID-19 mortality

Advisor: Man Sing Wong

University of Edinburgh, UK _2022_

Visiting Scholar in the School of GeoSciences

Advisor: Jamie Pearce

Shandong Normal University, China _2017-2019_

Master in College of Geography and Environment

Shandong Normal University, China _2013-2017_

BSc in College of Geography and Environment

Positions and Employment

Postdoctoral Associate, Weill Cornell Medicine, United States _2023-Present_

Department of Population Health Sciences

Advisor: Yunyu Xiao

- Modeled 4285 adolescents' addictive use trajectories and investigated the associations with follow-up's suicidal behaviors and mental health conditions using the Adolescent Brain Cognitive Development (ABCD) cohort data in US.

o *This work resulted in a co-first-author publication in JAMA (Impact Factor: 55). Our findings have been featured in prominent media outlets such as The New York Times, CNN, and The Washington Post.*

- Categorized county clusters of multidimensional social determinants of health (SDOH) using unsupervised machine learning in 3018 US counties and estimated the associations with suicide rates.

  o *This work resulted in a co-first-author publication in Nature Mental Health.*

Research Interests

Social and Environmental Determinants of Health, Air Pollution, Green Space, Land Use and Land Cover Mapping, Urban Landscape Characterization, Spatiotemporal Modelling, Mental Health, Suicide, Cognitive Health, Public Health, Dementia

Research Grants

Contributions to Funded Research

September 2023 – August 2026	Leveraging Longitudinal Survey and EHR data to Dissect the Impact of COVID-19 related Stressors and Infections on Child Mental Health and Suicide Risks
	Principal Investigator: Yunyu Xiao, PhD
	NIH R01 award, $3,231,590
	Role: Contributor. My work on identifying patterns of social determinants of health using machine learning models and modeling mental health trajectories was the basis for this award.

Publications

Journal Articles

1. Yunyu Xiao, **Yuan Meng (co-first author)**, Timothy T. Brown, Katherine M Keyes, J. John Mann. "Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths", JAMA (2025), doi: 10.1001/jama.2025.7829.

2. Yunyu Xiao, **Yuan Meng (co-first author)**, Timothy T. Brown, Alexander C. Tsai, Lonnie R Snowden, Julian Chun-Chung Chow, Jyotishman Pathak, J. John Mann. "Machine learning to investigate policy-relevant social determinants of health and suicide rates in the United States." Nature Mental Health (2025): 1-10.

3. **Meng, Yuan,** Hung Chak Ho, and Man Sing Wong. "Changing associations of built environment with usage of urban space due to the COVID-19 pandemic in the United States." *Cities* 152 (2024): 105205.

4. **Meng, Yuan**, Man Sing Wong, Mei-Po Kwan, Jamie Pearce, and Zhiqiang Feng. "Assessing multi-spatial driving factors of urban land use transformation in megacities: a case study of Guangdong–Hong Kong–Macao Greater Bay Area from 2000 to 2018." *Geo-spatial Information Science* (2023): 1-17.

5. **Meng, Yuan**, Man Sing Wong, Mei-Po Kwan, and Rui Zhu. "Association between Global Air Pollution and COVID-19 Mortality: A Study of Forty-Six Cities in the World." *Annals of the American Association of Geographers* (2022): 1-17.

6. **Meng, Yuan**, Man Sing Wong, Hanfa Xing, Rui Zhu, Kai Qin, Mei-Po Kwan, Kwon Ho Lee, Coco Yin Tung Kwok, and Hon Li. "Effects of urban functional fragmentation on nitrogen dioxide (NO2) variation with anthropogenic-emission restriction in China." *Scientific Reports* 11, no. 1 (2021): 1-15.

7. **Meng, Yuan**, Man Sing Wong, Hanfa Xing, Mei-Po Kwan, and Rui Zhu. "Assessing the country-level excess all-cause mortality and the impacts of air Pollution and human activity during the COVID-19 Epidemic." *International Journal of Environmental Research and Public Health* 18, no. 13 (2021): 6883.

8. **Meng, Yuan**, Man Sing Wong, Hanfa Xing, Mei-Po Kwan, and Rui Zhu. "Yearly and daily relationship assessment between air pollution and early-stage covid-19 incidence: evidence from 231 countries and regions." *ISPRS International Journal of Geo-Information* 10, no. 6 (2021): 401.

9. **Meng, Yuan**, Hanfa Xing, Yuan Yuan, Man Sing Wong, and Kaixuan Fan. "Sensing urban poverty: From the perspective of human perception-based greenery and open-space landscapes." *Computers, Environment and Urban Systems* 84 (2020): 101544.

10. **Meng, Yuan**, and Hanfa Xing. "Exploring the relationship between landscape characteristics and urban vibrancy: A case study using morphology and review data." *Cities* 95 (2019): 102389.

11. **Meng, Yuan**, Dongyang Hou, and Hanfa Xing. "Rapid detection of land cover changes using crowdsourced geographic information: a case study of Beijing, China." *Sustainability* 9, no. 9 (2017): 1547.

12. Xing, Hanfa, **Yuan Meng (corresponding author)**, Zixuan Wang, Kaixuan Fan, and Dongyang Hou. "Exploring geo-tagged photos for land cover validation with deep learning." *ISPRS Journal of Photogrammetry and Remote Sensing* 141 (2018): 237-251.

13. Xing, Hanfa, and **Yuan Meng (corresponding author)**. "Integrating landscape metrics and socioeconomic features for urban functional region classification." *Computers, Environment and Urban Systems* 72 (2018): 134-145.

14. Xing, Hanfa, and **Yuan Meng (corresponding author)**. "Revealing deep semantic commercial patterns: Insights from urban landscape depiction." *Computers, Environment and Urban Systems* 79 (2020): 101404.

15. Xing, Hanfa, **Yuan Meng (corresponding author)**, and Yan Shi. "A dynamic human activity‑driven model for mixed land use evaluation using social media data." *Transactions in GIS* 22, no. 5 (2018): 1130-1151.

16. Xing, Hanfa, and **Yuan Meng (corresponding author)**. "Measuring urban landscapes for urban function classification using spatial metrics." *Ecological Indicators* 108 (2020): 105722.

17. Xing, Hanfa, **Yuan Meng (corresponding author)**, Jun Chen, Jie Song, and Kaixuan Fan. "Employing incremental outlines for OpenStreetMap data updating." *ISPRS International Journal of Geo-Information* 7, no. 7 (2018): 277.

18. Xing, Hanfa, **Yuan Meng (co-first author)**, Dongyang Hou, Fangjie Cao, and Haibin Xu. "Exploring point-of-interest data from social media for artificial surface validation with decision trees." *International Journal of Remote Sensing* 38, no. 23 (2017): 6945-6969.

19. Xing, Hanfa, **Yuan Meng (corresponding author)**, Dongyang Hou, Jie Song, and Haibin Xu. "Employing crowdsourced geographic information to classify land cover with spatial clustering and topic model." *Remote Sensing* 9, no. 6 (2017): 602.

20. Song, Jie, Hanfa Xing, Huanxue Zhang, Yuetong Xu, and **Yuan Meng (corresponding author)**. "An Adaptive Network-Constrained Clustering (ANCC) Model for Fine-Scale Urban Functional Zones." *IEEE Access* 9 (2021): 53013-53029.

21. Sun, Zhiming, Xianglong Chen, Hanfa Xing, Hongtao Ma, and **Yuan Meng (corresponding author)**. "Regional differences in socioeconomic trends: The spatiotemporal evolution from individual cities to a megacity region over a long time series." *Plos One* 15, no. 12 (2020): e0244084.

22. Hu, Feng, Wei Liu, Junyu Lu, Chengpeng Song, **Yuan Meng (corresponding author)**, Jun Wang, and Hanfa Xing. "Urban function as a new perspective for adaptive street quality assessment." *Sustainability* 12, no. 4 (2020): 1296.

23. Ma, Hongtao, **Yuan Meng**, Hanfa Xing, and Cansong Li. "Investigating road-constrained spatial distributions and semantic attractiveness for area of interest." *Sustainability* 11, no. 17 (2019): 4624.

24. Xing, Hanfa, **Yuan Meng**, Dongyang Hou, Haibin Xu, and Jinran Liu. "A Land-Cover Classification Method Using Point of Interest." *Geomatics and Information Science of Wuhan University* 44, no. 5 (2019): 758-764.

25. Wang, Song, Yishu Wei, Haotian Ma, Max Lovitt, Kelly Deng, **Yuan Meng**, Zihan Xu et al. "A multi-stage large language model framework for extracting suicide-related social determinants of health." *Communications Medicine* 5, no. 1 (2025): 404.

26. Li, Bin, Yefei Liu, Hanfa Xing, **Yuan Meng**, Guang Yang, Xiaoding Liu, and Yaolong Zhao. "Integrating urban morphology and land surface temperature characteristics for urban functional area classification." Geo-Spatial Information Science 25.2 (2022): 337-352.

27. Cao, Duanguang, Hanfa Xing, Man Sing Wong, Mei-Po Kwan, Huaqiao Xing, and **Yuan Meng**. "A stacking ensemble deep learning model for building extraction from remote sensing images." Remote Sensing 13.19 (2021): 3898.

Conference Articles

1. Wang, Yixuan, Yue Wang, **Yuan Meng**, Yunyu Xiao, and Xiaofu He. "White Matter Integrity in Youth with Suicide Ideation/Suicide Attempt, Major Depressive Disorder, and Comorbidities: A Diffusion Tensor Imaging Study." International Conference on Brain Informatics. Singapore: Springer Nature Singapore, 2024.

Conference Abstracts

1. Xiao, Yunyu, **Yuan Meng**, Timothy T. Brown, Katherine M. Keyes, and J. John Mann. "Associations of Data-Driven Longitudinal Digital Media Use Patterns and Youth Mental Health, Suicidal Ideation and Attempts." Biological Psychiatry 97, no. 9 (2025): S10-S11.

2. Xiao, Yunyu, **Yuan Meng,** Mark S. Kaplan, Charles Branas, Timothy Brown, and J. John Mann. "Variation in firearm suicide rates across US counties: Relationship to within-state

social determinants of health (SDOH) heterogeneity." In APHA 2024 Annual Meeting and Expo. APHA, 2024.

3. Xiao, Yunyu, **Yuan Meng**, Timothy Brown, Alexander Tsai, Lonnie Snowden, Julian Chow, Jyotishman Pathak, and J. John Mann. "Using Machine Learning to Study Novel Measures of Social Determinants of Health and Their Associations with Suicide Rates in the USA from 2009-2019." In 2024 Annual Research Meeting. AcademyHealth, 2024.

Conferences & Presentations

1. Yunyu Xiao, **Yuan Meng (presenter),** Timothy Brown, Katherine Keyes, & John Mann. (2024). Data-Driven Social Media Trajectories and Associations with Child Suicidal Behaviors. Poster presented at The 2024 Thomas R. Ten Have Symposium on Statistics in Mental Health, New York, NY, USA, June 2024. (https://sambanlab.weill.cornell.edu/news/wcm-host-2024-thomas-r-ten-have-symposium-statistics-mental-health-june-28th)

2. **Yuan Meng (presenter)**, Man Sing Wong. (2023). Association between global air pollution and COVID-19 mortality. Presented at the 2023 American Association of Geographers (AAG) Annual Meeting, March 2023.

   (https://aag.secure-platform.com/aag2023/solicitations/39/sessiongallery/6357)

Professional Service

Completed a total of 35 reviews for the following journals:

- International Journal of Geographical Information Science
- Landscape and Urban Planning
- Annals of the American Association of Geographers
- Cities
- Computers, Environment and Urban Systems
- Applied Geography
- Geo-spatial Information Science
- City and Environment Interactions
- Geo-spatial Information Science
- Remote Sensing
- ISPRS International Journal of Geo-Information
- Sensors
- Land
- Sustainability