

Luyu Liu

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Engineering School of Sustainable Infrastructure & Environment
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Research interests

Sustainable transportation, geospatial data science, mobility equity, mobility resiliency

Education

The Ohio State University, Department of Geography
Ph.D. Geography
Columbus, OH
2019 – 2023

The Ohio State University, Department of Educational Studies
Graduate Certificate in College and University Teaching
Columbus, OH
2020 – 2021

The Ohio State University, Department of Geography
M.A. Geography
Columbus, OH
2017 – 2019

Peking University, College of Urban and Environmental Sciences
B.S. Environmental Science
Beijing, China
2013 – 2017

Peking University, School of Mathematical Sciences
B.S. Mathematics and Applied Mathematics
Beijing, China
2014 – 2017

Employment

University of Florida, Engineering School of Sustainable Infrastructure & Environment
Postdoctoral Researcher
Gainesville, FL
2023 - present

The Ohio State University, Center for Urban and Regional Analysis
Graduate Research Associate
Columbus, OH
2017 - 2022

Honors and Awards

Presidential Fellowship, The Ohio State University
2022 – 2023

TR Lakshmanan and Lata Chatterjee Award 2020
2020

Collaborative Achievement in Sustainability Award from Mid-Ohio Regional Planning Commission (as group)
2020

Scholarship of Tiehan, Peking University
2013 – 2016

Honorable mentioned by “Mathematical Contest in Modeling” sponsored by COMAP
2016

President of “Outstanding Class” award winner of PKU
2015

Publications

Published Journal Articles

Liu, L., Porr, A., & Miller, H. J. (2024). Measuring the impacts of disruptions on public transit accessibility and reliability. *Journal of Transport Geography*, 114, 103769.

Javanmard, R., Lee, J., Kim, J, **Liu, L.**, and Diab, E. (2023). The impacts of the modifiable areal unit problem (MAUP) on social equity analysis of public transit reliability. *Journal of Transport Geography*, 106, 103500.

Liu, L., Kar, A., Tokey, A. I., Le, H. T., & Miller, H. J. (2023). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. *Journal of Transport Geography*, 109, 103589.

Liu, L., Porr, A., & Miller, H. J. (2023). Realizable accessibility: evaluating the reliability of public transit accessibility using high-resolution real-time data. *Journal of Geographical Systems*, 25(3), 429-451.

Liu, L., & Miller, H. J. (2022). Measuring the impacts of dockless micro-mobility services on public transit accessibility. *Computers, Environment, and Urban Systems*, 98, 101885.

Liu, L., & Miller, H. J. (2021). Measuring risk of missing transfers in public transit systems using high-resolution schedule and real-time bus location data. *Urban Studies*, 58(15), 3140-3156..

Liu, L., & Miller, H. J. (2020). Does real-time transit information reduce waiting time? An empirical analysis. *Transportation Research Part A: Policy and Practice*, 141, 167-179.

Liu, L., Miller, H. J., & Scheff, J. (2020). The impacts of COVID-19 pandemic on public transit demand in the United States. *Plos one*, 15(11), e0242476.

Park, Y., Mount, J., **Liu, L.**, Xiao, N., & Miller, H. J. (2019). Assessing public transit performance using real-time data: spatiotemporal patterns of bus operation delays in Columbus, Ohio, USA. *International Journal of Geographical Information Science*, , 34(2), 367-392.

In-progress Publications

Ahmed, N., Lee, J., **Liu, L.**, Kim, J., Jang, K. M., & Wang, J. The cost of climate change: A general cost function approach for incorporating extreme weather exposure into public transit accessibility. *Computers, Environment, and Urban Systems* (Under review).

Liu, L., Lee, J., & Miller, H. J. Evaluating accessibility benefits and ridership of bike-transit integration through a social equity lens. *Computers, Environment, and Urban Systems* (Under revision).

Liu, L., & Miller, H. J. Accessibility derivative: measuring the accessibility contribution of public transit routes. *Environment and Planning B: Urban Analytics and City Science* (Under revision).

Tokey, A. T., **Liu, L.**, & Miller, H. J. (2024). Measuring the Impacts of Sidewalks on Public Transit First Mile/Last Mile Accessibility and their Association with Social and Demographic Factors (In preparation).

Liu, L., Li, X., Pereira, R. H., & Yan, X. Measuring extreme heat exposure in public transit systems in Florida, US (In preparation).

Liu, L., & Smith, M. Compare disparities in public transit accessibility of Black communities in 1910 and 2019 with historical transit data (In preparation).

Liu, L., Zhang, X., & Zhao, X. Measuring evacuees' behavior during Hurricane Ian using large-scale mobile phone GPS data (In preparation).

Liu, L., Dai, Y., Wang, K., Yan, X. Detecting and evaluating bus stop shelters across the United States in street view images (In preparation).

Lyu, D., **Liu, L.**, Campbell, C., Zhang, Y., & Yan, X. Potentials and limitations of large-scale mobile phone GPS data for food access analysis (In preparation).

Zhang, X., **Liu, L.**, Zhao, X., & Yan, X. Are mobile device location data biased for human mobility analysis? (In preparation).

Conference Presentations

Tokey, A. T., **Liu, L.**, & Miller, H. J. (2024). Measuring the Impacts of Sidewalks on Public Transit First Mile/Last Mile Accessibility and their Association with Social and Demographic Factors. *CAGIS – University Consortium for Geographic Information Science Symposium 2024*, Columbus, Ohio.

Liu, L., Yan, X., & Pereira, R. H. M. (2024). Measuring Extreme Heat Exposure in Public Transit Systems in Florida, US. *Gulf of Mexico Conference 2024*, Tampa, FL.

Zhao, X., Sun, Y., Huang, S., Lindell, M. K., Zhang, X., & **Liu, L.** (2024). Fusing Small and Big Data to Advance Understanding of Hurricane Evacuation. *Gulf of Mexico Conference 2024*, Tampa, FL.

Liu, L., & Miller, H. J. (2024). Accessibility derivative: measuring the accessibility contribution of public transit routes. *Transportation Research Board Annual Meeting 2024*, Washington, DC.

Liu, L., Kar, A., Tokey, A. I., Le, H. T., & Miller, H. J. (2023). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. *Transportation Research Board Annual Meeting 2023*, Washington, DC.

Liu, L., Porr, A., & Miller, H. J. (2023). Realizable accessibility: evaluating the reliability of public transit accessibility using high-resolution real-time data. *Transportation Research Board Annual Meeting 2023*, Washington, DC.

Liu, L., Miller, H. J., Schenk, J., Puranik, D. (2022). New data for understanding and planning public transit. *Ohio Public Transit Association Annual Meeting 2022*, Columbus, Ohio.

Liu, L., Zhang, X., Zhao, X. (2024). Assessing evacuation behavior during Hurricane Ian with large-scale GPS data. *American Association of Geographers Annual Meeting 2024.*

Liu, L., Miller, H. J. (2023). Accessibility derivative: measuring the accessibility contribution of public transit routes. *American Association of Geographers Annual Meeting 2023.*

Liu, L., Miller, H. J. (2022). Measuring the impacts of dockless micro-mobility services on public transit accessibility *American Association of Geographers Annual Meeting 2022.*

Liu, L., Miller, H. J. (2021). Revisiting the impacts of transit real-time information on waiting time reduction: an empirical analysis in Columbus, Ohio. *American Association of Geographers Annual Meeting 2021.*

Liu, L., Miller, H. J. (2019). Measuring public transit transfer risk using highresolution schedule and real-time location data. *American Association of Geographers Annual Meeting 2019, Washington, DC.*

Root, E. D., **Liu, L.,** Porr, A. (2019). Addressing birth outcomes with data analytics and spatial analysis. *18th International Medical Geography Symposium 2019, Queenstown, New Zealand.*

Conference Session

Liu, L., Lee, J., Jed, L., Miller, H. J., Xiao, N. (2023). Data-driven movement analytics. *American Association of Geographers Annual Meeting 2023, Denver, CO.*

Research Funding & Experiences

Analyzing transit-based evacuation demand in hurricanes 2023 - 2024

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao
- Amount: \$150,000
- Role: Lead researcher

Shared micromobility as a last-mile complement to public transit 2023 - 2024

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao
- Amount: \$225,000
- Role: Lead researcher

Downscaling Soil Moisture for Drought Monitoring with Machine Learning Methods 2020 - 2023

- Funder: Sharpe Innovation Commons Seed Grant Award, the Ohio State University
- Collaborators: Dr. Zack Leasor and Dr. Chen Zhao
- Role: Awardee and coauthor

MORPC sustainability dashboard	2019 – 2020
<ul style="list-style-type: none"> • Funder: Mid-Ohio Regional Planning Commission • Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao • Role: Lead programmer and first author 	
Columbus Urban & Regional Information Observatory (CURIO)	2017 – 2018
<ul style="list-style-type: none"> • Funder: Center for Urban and Regional Analysis, the Ohio State University • Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao • Role: Lead programmer 	
Infant Mortality Research Partnership (IMRP) online GIS platform	2018 – 2019
<ul style="list-style-type: none"> • Funder: Dr. Elisabeth Root • Collaborators: Dr. Elisabeth Root • Role: Lead programmer and coauthor 	
Neighborhood polygon algorithm based on network analysis	2017 – 2018
<ul style="list-style-type: none"> • Funder: Institute for Population Research, The Ohio State University • Collaborators: Dr. Christopher Browning and Dr. Catherine Calder • Role: Lead programmer 	

Teaching and Public Speaking

Primary Instructor

The Ohio State University GEOG 5210: Fundamental GIS, 3 credits 2021
 Student rating: 4.71/5 (University average: 4.48), 34 enrollments

University Consortium for Geographic Information Science (UCGIS) Workshop:
 Full-stack Geo-visualization 101: How to Make Productive Webmaps 2021
 Participants rating: 4.44/5, 19 enrollments

Harvard University Vizathon: Learn to Make Your First Web Map 2021
 Workshop organizer and instructor

Guest Lecturer

University of Florida: Sustainable Transportation and Public Transit 2023
 Guest lecture on GTFS data

University of Florida: Applied Data Science in Civil and Environmental Engineering 2023
 Guest lecture on database

The Ohio State University GEOG 5201: GeoVisualization 2022
 Guest lecture on web-based geo-visualization

The Ohio State University GEOG 2200: Mapping Our World 2020
 Guest lecture on geo-visualization

West Washington University ENV5 412: Environmental Journalism 2021
Speaker on COVID impact on public transit

Media

KCBS Radio: "Using new technology to observe real-time impacts on public transportation" 2023

Tech Times: "New Tech Shows How Public Transit Can Be Disrupted by a Major Sporting Event" 2023

Ohio State News: "Why buses can't get wheelchair users to most areas of cities" 2023

Reddit r/science: "Why buses can't get wheelchair users to most areas of cities" 2023
With 14.7k upvote as of Oct 2023.

ZME Science: "Wealth and race influenced public transportation in the pandemic" 2020

Study Finds: "Study: Transit apps are MORE likely to make you miss the bus than save you time!" 2020

Service

Peer Review for Journals

Sustainable Cities and Society

Transportation Research Part C: Emerging Technologies

Transportation Research Part D: Transport and Environment

Journal of Transport Geography

Journal of Geographical Systems

Public Transport

Transportation

International Journal of Geo-Information

Case Studies on Transport Policy

Travel Behavior and Society

Transactions in Urban Data, Science, and Technology

BioMedical Engineering OnLine

Transport Policy

Transaction in GIS

Journal of Public Transportation

Transportation Research Record

Data Science For Transportation

American Journal of Infection Control

Department/University Service

Graduate Geography Organization, Social Chair

2021 – 2022

Student Supervision

Xiaojian Zhang, Ph.D Civil Engineering, University of Florida	2023 - present
<ul style="list-style-type: none">• Supervising PhD dissertation projects on AI fairness	
Michael Smith, MCRP. Urban Planning, The Ohio State University	2022 - present
<ul style="list-style-type: none">• Supervising Master's thesis project on historical accessibility	
Duanya Lyu, Ph.D Civil Engineering, University of Florida	2023 - present
<ul style="list-style-type: none">• Supervising PhD dissertation project on food access	
Yiheng Qian, Ph.D Civil Engineering, University of Florida	2023 - present
<ul style="list-style-type: none">• Supervising PhD dissertation project on dockless scooters	
Anran Zheng, M.E. Civil Engineering, University of Florida	2023
<ul style="list-style-type: none">• Supervising Master's thesis on real-time public transit performance surveillance• Employed in AECOM	