

WENYU LYU

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Department of Architecture, National University of Singapore,

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Education

Ph.D. student, Architecture, National University of Singapore, 2026 – Present

M.Eng, Town and Country Planning, Tongji University, China, 2025

B.S., Physical Geography and Resource Environment, China University of Geosciences (Wuhan), China, 2022

Research Fields

Urban transportation policy and planning, urban analytics

Working Papers

Assessing the Impact of Urban Rail Transit on Urban Vitality: A Big-Data-Based Approach
Diao, Mi; **Lyu, Wenyu***; Wang Qixuan

Evaluating the Impacts of Urban Rail Transit on the Vitality of Station Areas: Perspectives on Labor, Visitor, and Job Sheds

Lyu, Wenyu; Diao, Mi*

Awards and Fellowships

NUS Research Scholarship, National University of Singapore, 2026

The 2024-2025 Dissertation Scholarship, Peking University-Lincoln Institute Center for Urban Development and Land Policy, 2024

*This prestigious scholarship is awarded nationwide to only 13 individuals, including 10 PhD students and 3 Master's students.

First Prize at University Level for Undergraduate Research Project, 2021, China University of Geosciences (Wuhan)

Conference

37th Annual Conference of the Association of European Schools of Planning (AESOP)
2025

Oral Presentation: Assessing the Impact of Urban Rail Transit on Urban Vitality
Diao, Mi; **Lyu, Wenyu*** (presenter and corresponding author)

64th Annual Conference of the Association of Collegiate Schools of Planning (ACSP)
2024

Oral Presentation: Assessing the Impact of Urban Rail Transit on Urban Vitality
Diao, Mi; **Lyu, Wenyu*** (presenter and corresponding author)

19th the International Association for China Planning (IACP) Conference
2025

Oral Presentation: Evaluating the Impacts of Urban Rail Transit on the Vitality of Station Areas:
Perspectives on Labor, Visitor, and Job Sheds
Lyu, Wenyu; Diao, Mi*

18th the International Association for China Planning (IACP) Conference
2024

Oral Presentation: Assessing the Impact of Urban Rail Transit on Urban Vitality
Diao, Mi; **Lyu, Wenyu*** (presenter and corresponding author)

Research Experience

Research Project: Mobility Inequality and Accessibility under Transport Subsidy Policies

Department of Architecture, National University of Singapore

2025 – Present

- Built a nationwide grid-level mobility dataset integrating mobile phone data with socioeconomic, built environment, and transport infrastructure indicators.
- Measured non-commuting travel behavior (trip frequency, distance, activity space) and analyzed changes following the €9 and €49 transport subsidy policies.
- Identified spatial heterogeneity using PCA and clustering based on income, car ownership, density, and accessibility.
- Assessed policy impacts on mobility inequality, revealing differential effects across socio-spatial groups.
- Examined accessibility and built environment effects through walkability indices and network-based measures.
- Methodologies: PCA, K-means/K-modes Clustering, Large-scale Spatial Data Analysis, Accessibility Modeling
- Contribution: This project leverages large-scale mobility data to assess the distributional impacts of transport subsidy policies. It provides new evidence on how pricing interventions reshape mobility behavior and inequality, offering policy insights for equitable and sustainable transportation planning.

Master's Thesis: Assessing the Impact of Urban Rail Transit on Urban Vitality: A Shanghai, China example

The College of Architecture and Urban Planning, Tongji University
2022 - 2025

Award: 2024-2025 PLC Scholarships for Dissertation Proposals

- Analyzed individual daily activities from mobile phone data to categorize activities and locations.

- Examined spatiotemporal patterns of urban vitality in Shanghai, relating them to rail transit and built environment factors using spatial autocorrelation and geographically weighted regression models.
- Employed a difference-in-differences modeling framework to assess the impact of rail transit on urban vitality in station areas, using the opening of Shanghai Metro Line 15 as a natural experiment. Urban vitality is measured by the number of residents, workers, and visitors near stations, as well as visit frequency, duration of stay, and travel distances, labor shed, visitor shed and job shed, utilizing a comprehensive mobile signaling dataset from 2017 to 2021.

- **Methodologies:** PSM-DID, DDD, GWR, Spatial Autocorrelation

- **Contribution:** This study combines big data and difference-in-differences analysis to assess the treatment effect of rail transit on urban vitality. The research findings have significant policy implications for TOD and initiatives to enhance the overall livability and attractiveness of urban spaces.

The Impact of Integrated Multi-Level Rail Networks on Land Price: A Case Study of the Yangtze River Delta in China

The College of Architecture and Urban Planning, Tongji University, China
2023 - 2025

Supported by Shanghai Municipal Natural Science Foundation

- This research investigates the multi-layer network effects of an integrated system of intra- and inter-city railways on land prices in the Yangtze River Delta, utilizing data from 2016, 2018, 2020, and 2022.
- The research process involves three key steps:
 1. Calculation of multi-layer network indexes at each station level.
 2. Analysis of the average price of land transactions within a 1 km buffer of each station, with a 1 km-2 km buffer as a control group.
 3. Calibration of a Difference-in-Differences (DID) model to assess the causal impact of multi-layer network accessibility on land prices at the station level.

- **Methodologies:** DID, Complex Networks Analysis

- **Contribution:** This study aims to contribute to the literature by assessing the multi-layer network effects of an integrated system of intra- and inter-city railways on land prices. It provides a detailed discussion of multi-layer railway network planning and recommendations for policymakers to maximise the benefits of the railway system in a region.

Undergraduate Research Project :Spatial Dynamics and Driving Factors of Urban Sprawl: A Case Study of Wuhan, China

The College of Geography and Information Engineering, China University of Geosciences, China
2020-2021

Award: First Prize at University Level

- This study investigates urban sprawl in Wuhan, Hubei Province, analyzing land use data from 2010, 2015, and 2020 to assess fragmentation, types of urban land expansion, and spatial heterogeneity of urban sprawl.
- Utilizing a multi-temporal land use classification, we employed the PLUS model, which comprises three modules: Land Expansion Analysis Strategy (LEAS), a Cellular Automata model based on multi-type random patch seeds (CARS), and a Markov Chain for land use simulation. LEAS performs rule mining based on sampling land expansion data, while CARS

simulates land use patches through competitive development patterns. The Markov Chain predicts land use demand, making the model effective for land use/land cover (LULC) simulation.

-Methodologies: Geographical Detector; Spatial Analysis; CA-MARCOV; Land Expansion Analysis Strategy; PLUS

-Contribution: This research provides a comprehensive analysis of urban sprawl by examining its spatial characteristics, direction, patterns, and future land use simulations. It addresses limitations of previous studies by utilizing the PLUS model for accurate predictions and emphasizing spatial correlations in data selection. Additionally, it evaluates the effectiveness of farmland protection policies in mitigating urban sprawl.

Academic and Professional Projects

Intern in Strategic Consulting Department

Sep.2023-Dec.2023

Jones Lang LaSelle (Shanghai)

- Conducted real estate market research, focusing on urban planning, regional economic development, and urban renewal.
- Engaged in field market research and customer interviews.
- Assisted with data collection, processing, and report writing.

Annual Report of the Study on Planning and Construction of International Metropolises

Sep.2023-Sep.2024

Shanghai Tongji urban planning & Design institute Co.,Ltd

- Analyzed public policies on master planning, zoning, housing, transport, and urban design in international metropolises like New York, proposing tailored development solutions for Chengdu.

Additional Information

Programming and Data Analysis: SQL, Stata, R, SPSS, Python

Geospatial Analysis: ArcGIS, GEODA, ENVI

Language: Chinese, English