



Sustainable Regional Development Academy

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Module 1

Equity in Motion: Mobility Segregation in Portuguese and U.S. Cities

Goals

- Approach the complexity of segregation in real-time dynamics experienced by agents in their daily mobilities.
- Analyse two geographically distinct regions and develop relevant insights into fostering sustainable and inclusive urban mobility systems.

Competencies

- A more complex understanding of the role of mobility as a factor in social and urban segregation, as well as its potential for generating inter-group contact.
- How to assemble methods capable of dealing with urban phenomena in real time, including transportation networks, movement and displacement, income and other social factors.
- Obtain knowledge of the set of data necessary to deal with high-frequency urban and social phenomena.

Contents

Segregation is a pervasive phenomenon that takes multiple forms in urban life. Beyond usual concerns with residential segregation, recent works have identified a highly dynamic form of segregation in daily activities and trajectories of social groups over urban spaces. Mobility segregation involves the different capacities of people to move from residential spaces across the city and perform daily activities. Inherently related to residential location, access to transportation modes, and social features such as income levels, gender, and age, mobility segregation emerges in the disjunction of patterns of movement and activity performed by different social groups. Such disjunction installs and perpetuates segregation in daily life, reinforcing social differences and invisibility between social groups while reinforcing inequalities in the access to urban activities, also threatening conditions of social cohesion and urbanity of coexistence and intergroup contact. As such, mobility segregation represents a significant challenge to equitable and sustainable cities.

This lecture discusses how disparities in transportation access among socially diverse groups impact intergroup contact and inclusivity in urban life. Focusing on densely populated cities in Portugal and the United States, we shall explore an ongoing study that maps the relationships between residential segregation, mobility patterns, and transportation networks. By leveraging advanced analytical tools, including big data platforms and diagnostic mapping, the project identifies the geographic and socio-economic factors contributing to mobility segregation. The lecture shall explore the set of data necessary to grasp high-frequency urban processes such as the dynamics of daily movement. Finally, the lecture emphasizes the possibility of integrating dynamic mobility networks into urban planning as a means to reduce segregation, improve access to sustainable transportation, and promote equitable urban environments.

Applications

Evidence-based knowledge of mobility segregation is crucial to generate actionable recommendations for urban planners and policymakers, supporting strategies to reduce disparities in transportation access and integrate inclusive mobility solutions.

References

- Iyer, N., Ronaldo Menezes, and Hugo Barbosa (2024). Mobility and transit segregation in urban spaces. *Environment and Planning B: Urban Analytics and City Science*, 51(7):1496–1512.
- Liao, Y., Gil, J., Yeh, S., Pereira, R. H., & Alessandretti, L. (2024). Socio-spatial segregation and human mobility: A review of empirical evidence. arXiv preprint arXiv:2403.06641.
- Netto, V.M.; Pinheiro, M.; Paschoalino, R. (2015) Segregated networks in the city. *International Journal of Urban and Regional Research* 39(6) 1084–1102 <https://doi.org/10.1111/1468-2427.12346>
- Netto, V.M.; Meirelles, J.; Pinheiro, M.; Lorea, H. (2018) A temporal geography of encounters. *Cybergeog: European Journal of Geography*. 844, <https://doi.org/10.4000/cybergeog.28985>
- Park, Yoo Min and Mei-Po Kwan. Beyond residential segregation: A spatiotemporal approach to examining multicontextual segregation. *Computers, Environment and Urban Systems*, 71:98–108, 2018.
- Silver, K., André Lopes, David Vale, and Nuno Marques da Costa (2023). The inequality effects of public transport fare: The case of lisbon’s fare reform. *Journal of Transport Geography*, 112:103685.
- Silm, S. and Rein Ahas (2014). The temporal variation of ethnic segregation in a city: Evidence from a mobile phone use dataset. *Social Science Research*, 47:30–43.

Lecturer



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Biographical note

Vinicius M. Netto is a Principal Researcher at the Research Centre for Territory, Transports and Environment (CITTA) at the University of Porto (FEUP). He holds a PhD in Advanced Architectural Studies from The Bartlett, University College London (UCL), and was a Visiting Scholar at the Center for Urban Science and Progress, New York University (CUSP NYU). His research explores the formation and functioning of cities as networks of information and cooperation, as well as the multiple forms of segregation that shape urban life. Vinicius is the author of *The Social Fabric of Cities* (Routledge) and over a hundred scholarly articles and book chapters.

Research Interests:

- Morphogenesis, urban form and its information signatures as expressions of the diverse social and cultural forces that shape cities.
- Urban vitality, disentangling the effect of buildings on the social life of streets and neighbourhoods from the effect of street networks.
- Cities as large-scale cooperation systems, essential for how societies manage entropy, and the interplay of communication and space.
- Mobility segregation in cities, pioneering research on individual and dynamic segregation forms since 1999.
- The multidisciplinary landscape of segregation research and the development of an ontology of segregation forms.