

Cities Beyond Maps: Revealing the Invisible Geography of Urban Life

Esteban Moro

Network Science Institute, Northeastern University

Abstract: Cities are more than collections of places connected by roads. They are dynamic networks of people's movements, interactions, and decisions. Human behavior in cities generates intricate dependencies between businesses, neighborhoods, and infrastructures that rarely appear on maps but shape the resilience and equity of urban systems. In this talk, I will show how large-scale mobility data, AI, and network science can uncover these hidden connections and reveal the actual geometry of cities, a geometry defined not by physical distance, but by how people live, move, and interact. This perspective exposes invisible barriers that fragment accessibility, maps unexpected economic interdependencies across urban space, and uncovers the actual causal pathways through which shocks and policies propagate. Moving beyond static spatial models, our approach offers a behavioral, network-driven understanding of urban systems. That enables more equitable, connected, and adaptive cities in the face of growing social and environmental challenges.

Recent works:

- [Beyond Distance: Mobility Neural Embeddings Reveal Visible and Invisible Barriers in Urban Space](#), arXiv preprint arXiv:2506.24061
- [Behaviour-based dependency networks between places shape urban economic resilience](#), Nature Human Behavior 2025
- [Using human mobility data to quantify experienced urban inequalities](#), Nature Human Behavior 2025

Bio: Esteban Moro is a Full Professor at the Network Science Institute at Northeastern University, where he directs the Social Urban Networks (SUN) group. He is also affiliated faculty at the MIT Media Lab. Previously, he held academic positions at Universidad Carlos III de Madrid, the Sociotechnical Systems Research Center at MIT, and the University of Oxford. Esteban's research lies in the intersection of big data and computational social science, with particular attention to human dynamics, collective intelligence, social networks, and urban mobility in problems like natural disaster management, segregation, and economic resilience in cities. He has received numerous awards for his research, and his work has appeared in major journals and is regularly covered by media outlets.

168 SN
November 10,
2025
12pm - 1pm EST

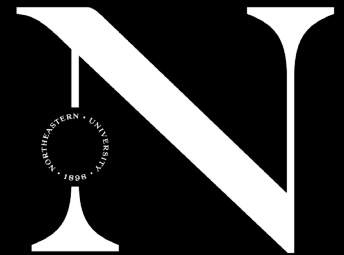


Photo via speaker