Better Decision Support for Better Urban Governance

BeDS for BUG

Advanced Models for Better Decision Support

Dr Nuno Pinto Dep. of Planning, Property and Environmental Management
Spatial and Policy Analysis Lab, and Manchester Urban Institute
University of Manchester

Agorantic
University of Avignon
13 November 2025

My Own Motivation

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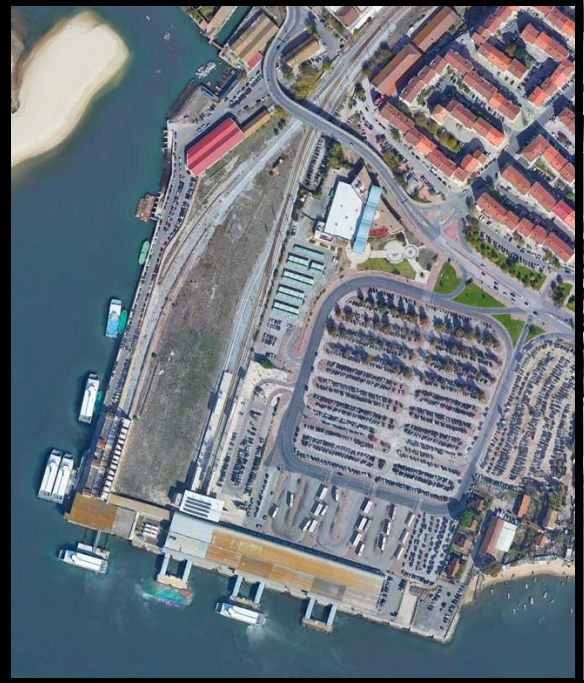
New train station 2008, Barreiro, Portugal



A Problem of All Contexts

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White Elephants, a bit all over the world

Montreal

Mirabel airport terminal, Trudeau's white elephant, to be torn down

Opened in 1975 and meant to replace airport in Dorval, Mirabel's now too outdated to be maintained

CBC News · Posted: May 01, 2014 12:09 PM EDT | Last Updated: May 2, 2014

Literacy in Decision Support

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An issue in both university curricula and professional practice

- The different careers associated with urban planning, public policy and public administration have a chronic deficit on decision-sciences/methods
  - An issue common to different regulatory, economic and national contexts
- The professional practice tends to crystallise around common practices due to multiple factors
  - Technical capacities
  - Financial capacities
  - Priorities in public agendas
  - Deficient decision-making protocols
  - Siloed decision-making areas
- This is a joint responsibility of all agents in the field: universities at education stage and stakeholders at the professional stage

Literacy in Decision Support

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The UK leading a new discussion

Literacy in Decision Support

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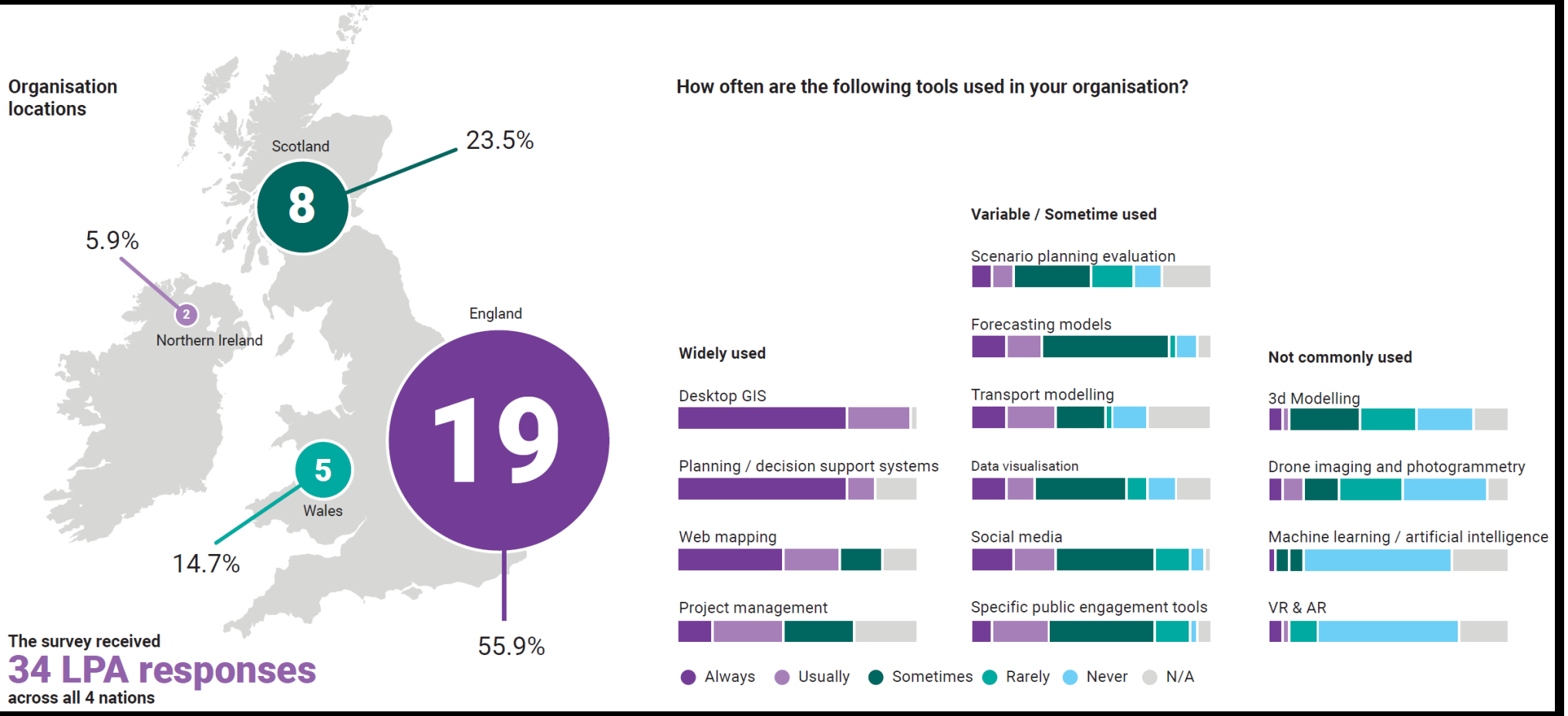
The UK leading a new discussion



A Digital Future for Planning Spatial Planning Reimagined (2022)

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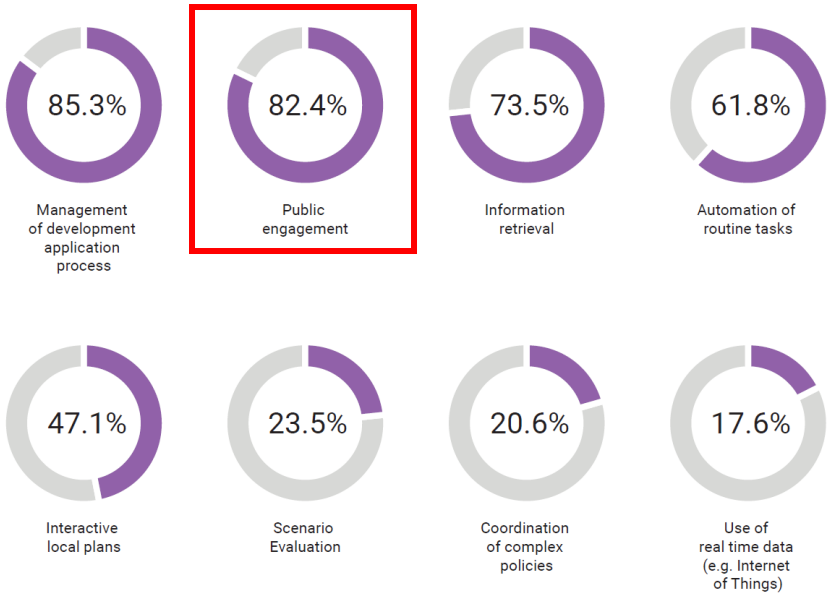
The UK leading a new discussion

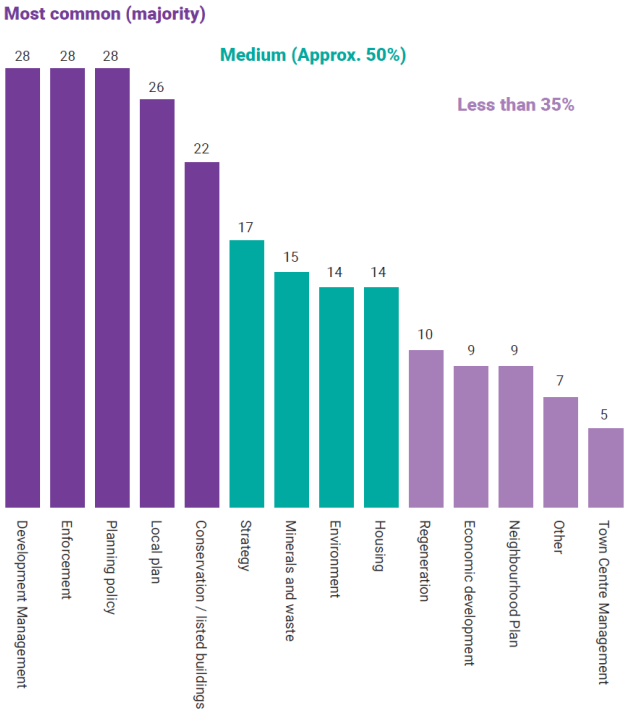
What barriers does your organisation face preventing adoption of digital planning tools?

1. Cost of tools / datasets **85.3% (29)**
2. Insufficient digital skills among planners **76.5% (26)**
3. Technical challenge of integrating solutions with existing systems **70.6% (24)**
4. Awareness of digital planning solutions **64.7% (22)**
5. Lack of training resources / providers **61.8% (21)**
6. Procurement challenges **61.8% (21)**
7. Software licensing **58.8% (20)**
8. Procedural challenge of integrating solutions within existing workflows **58.8% (20)**
9. Lack of consistent data standards **44.1% (15)**
10. Lack of fit-for-purpose technology **41.2% (14)**
11. Value of solutions not demonstrated sufficiently **38.2% (13)**
12. Barriers to understanding due to IT jargon **35.3% (12)**

How are digital planning tools used within your organisation?



Which areas of planning are those using digital techniques working in?



A Digital Future for Planning *Spatial Planning Reimagined* (2022)

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At UoM new syllabus in DS

beds4bug.info

Better Decision Support for Better Urban Governance

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Brasília	Brazil
São Paulo	
Suzano	
Cairo	Egypt
Guayaquil	Ecuador
Chennai	India
Guadalajara	Mexico
Coimbra	Portugal
Leiria	
Manchester	United Kingdom

English

The Research | Engaging with Stakeholders in DS | Developing DS | Teaching DS

Decision Sciences at the University of Manchester – A historical place for DS for planning

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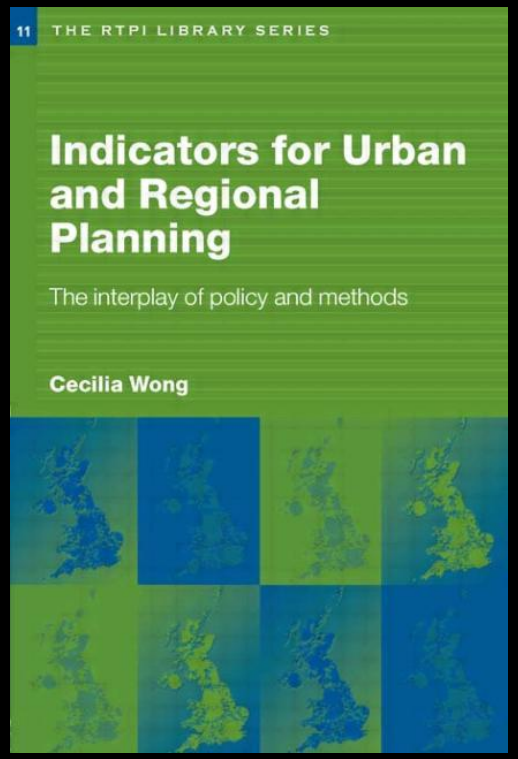

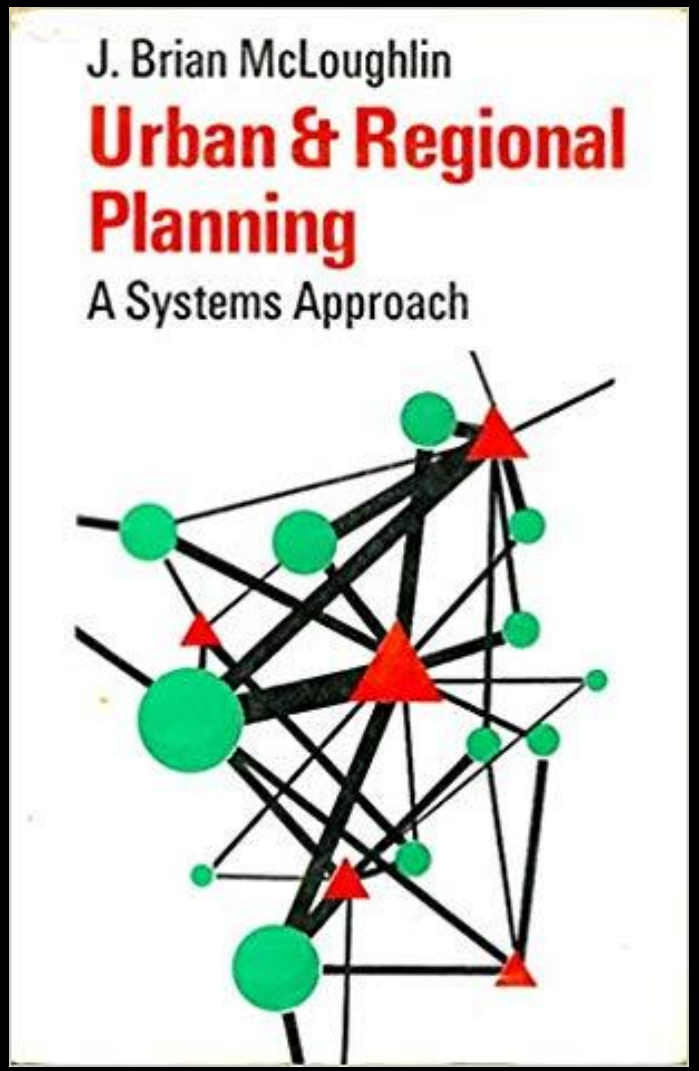

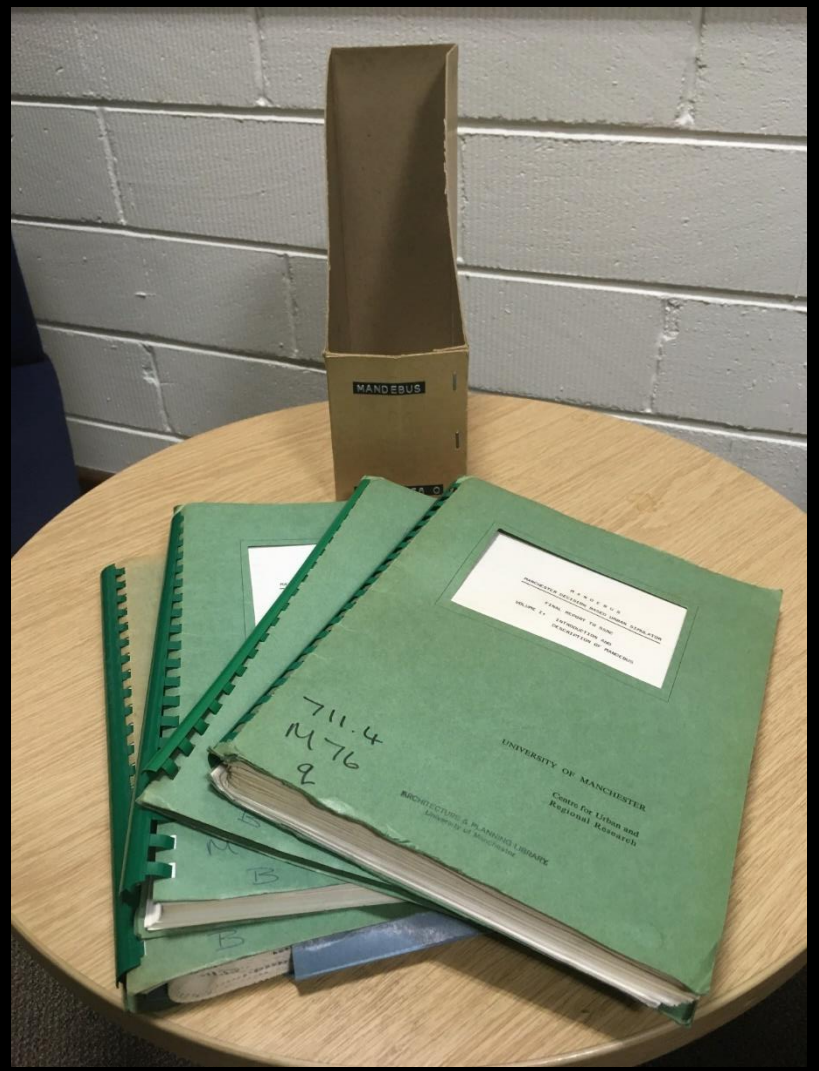

MANDEBUS

Manchester

Decision-Based

Urban Simulator

Decision Sciences at the University of Manchester – A historical place for DS for planning

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Procedural Utility in Urbanisation, ABM, Gamal, Iossifova, Pinto

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Table 3. ABM's land plots input based on Greater Cairo's context.

Parameter name	Value
Market 1 type	Fixed/supply-demand
Market 2 type	Supply-demand
Market 1 price variability	[1, 1.5]
Market 2 price variability	[0.6, 1]
Market 1 area	[300, 500]
Market 2 area	[100, 300]
Market 1 number of street exposure	[1, 3]
Market 2 number of street exposure	[1, 2]

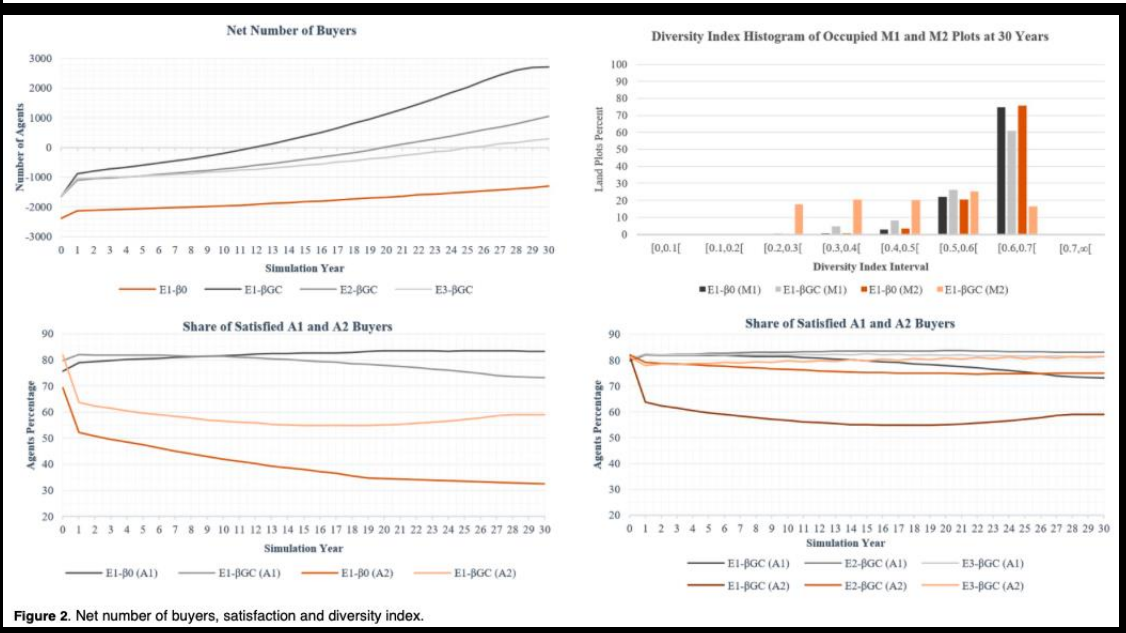

Figure 2. Net number of buyers, satisfaction and diversity index.

Table 4. Unique parameters in the GC ABM experiments.

Parameter name	Parameter value per experiment		
	Experiment 1	Experiment 2	Experiment 3
Market-1 variability factor	0	[1, 1.5]	[1, 1.5]
Market-2 variability factors	0	[0, 0.6]	[0, 0.6]
Market-1 dynamics factor	1	1	[1, 2]
Market-2 dynamics factor	[1, 1.5]	[1, 1.5]	[1, 1.5]

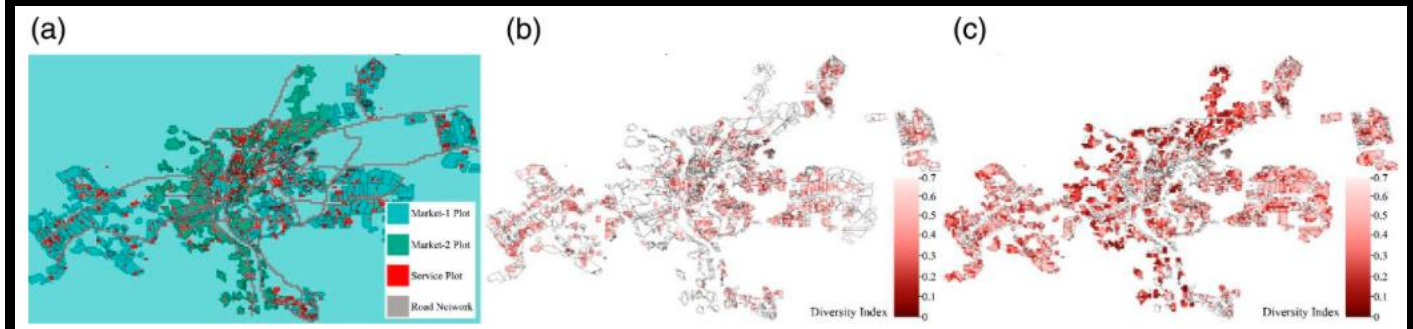

Figure 3. (a) ABM at initialisation and (b) diversity index map for E1-β_0 and (c) E1-β_{GC}.

Gamal, Y, Pinto, N & Iossifova, D 2024, 'The role of procedural utility in land market dynamics in Greater Cairo: an agent based model application', Environment and Planning B: Urban Analytics and City Science, vol. 51, no. 4, pp. 954-970. https://doi.org/10.1177/23998083231207077

Negotiation in Housing, ABM, Badawy, Kingston, Pinto [1]

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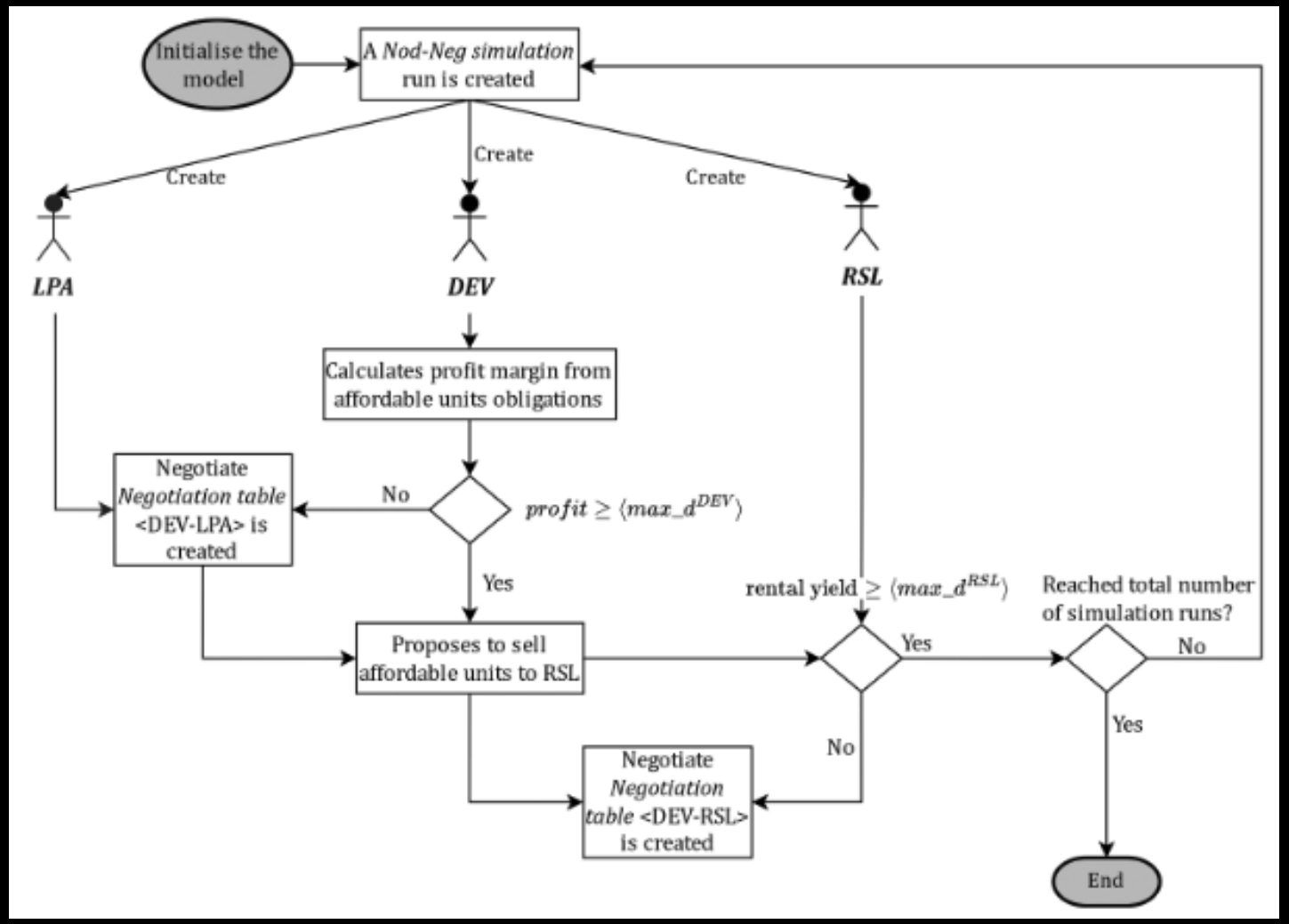

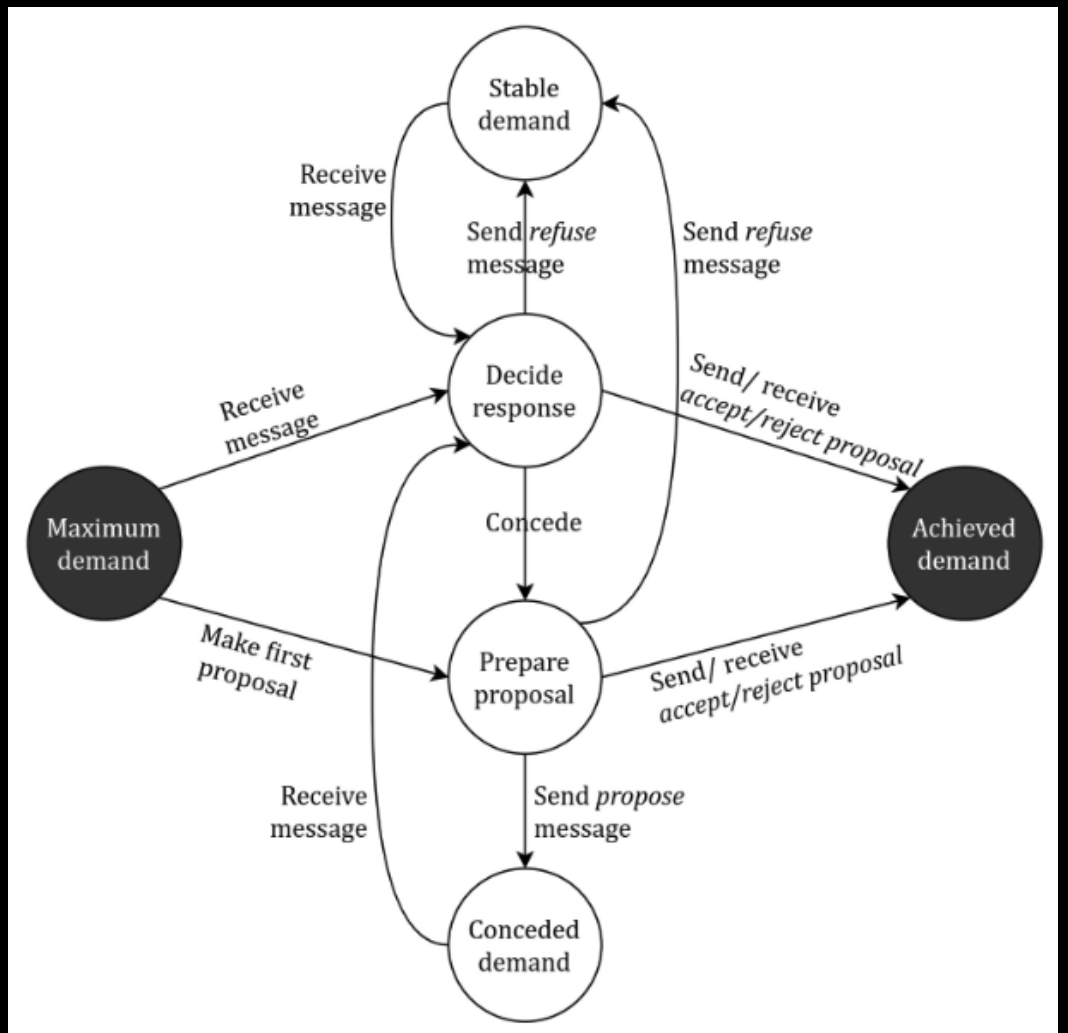

Badawy, A, Kingston, R & Pinto, N 2024, 'A simulation model of negotiations on affordable housing provision', Housing and Society . https://doi.org/10.1080/08882746.2024.2401736

Negotiation in Housing, ABM, Badawy, Kingston, Pinto [2]

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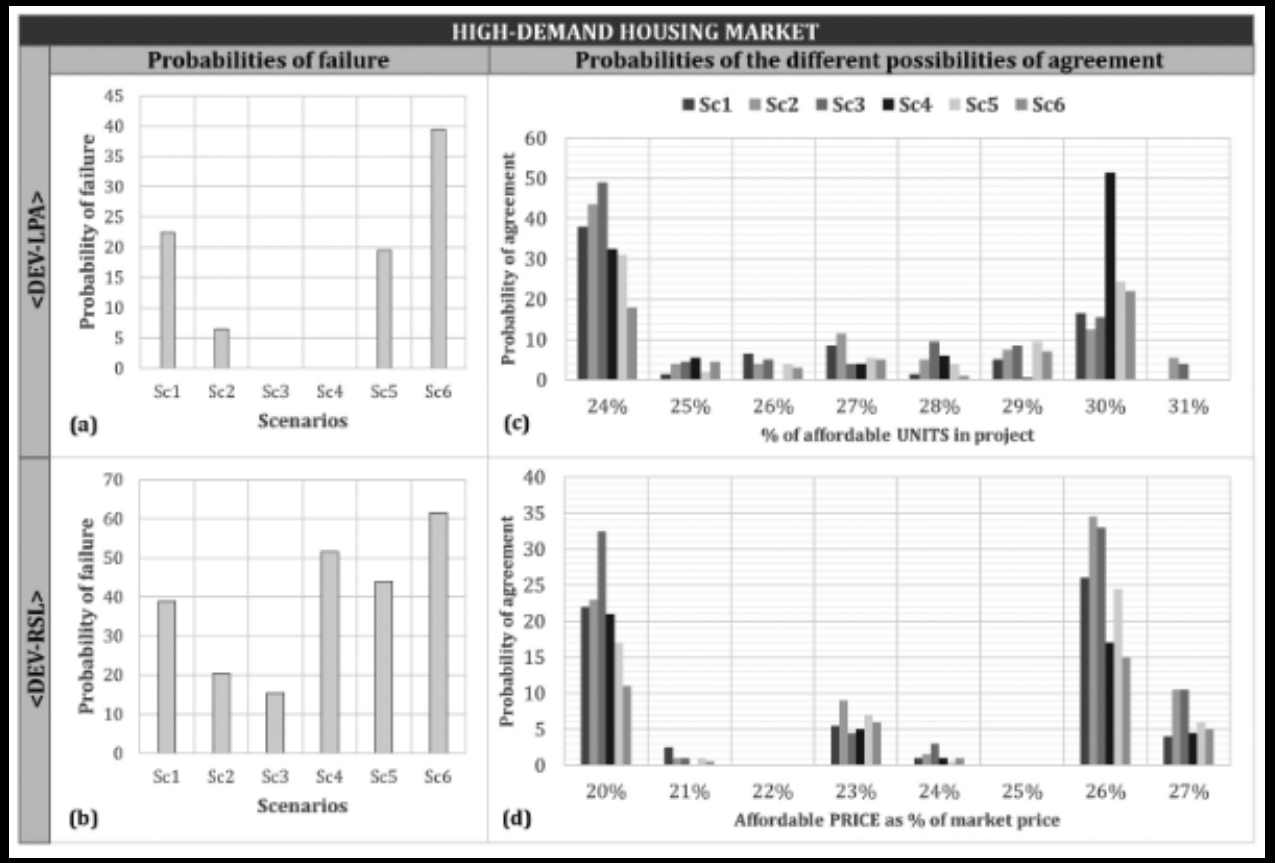

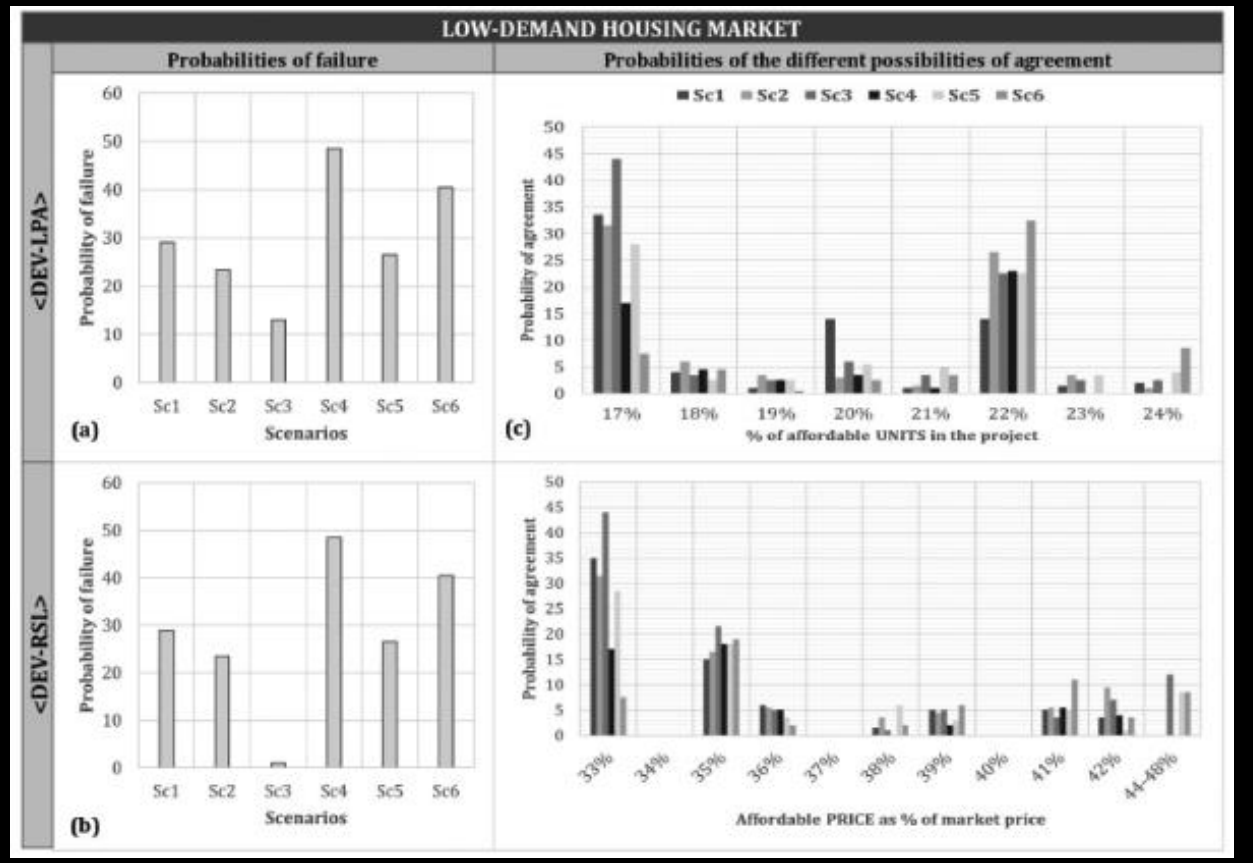

Badawy, A, Kingston, R & Pinto, N 2024, 'A simulation model of negotiations on affordable housing provision', Housing and Society . https://doi.org/10.1080/08882746.2024.2401736

Negotiation in Housing, ABM, Badawy, Kingston, Pinto [3]

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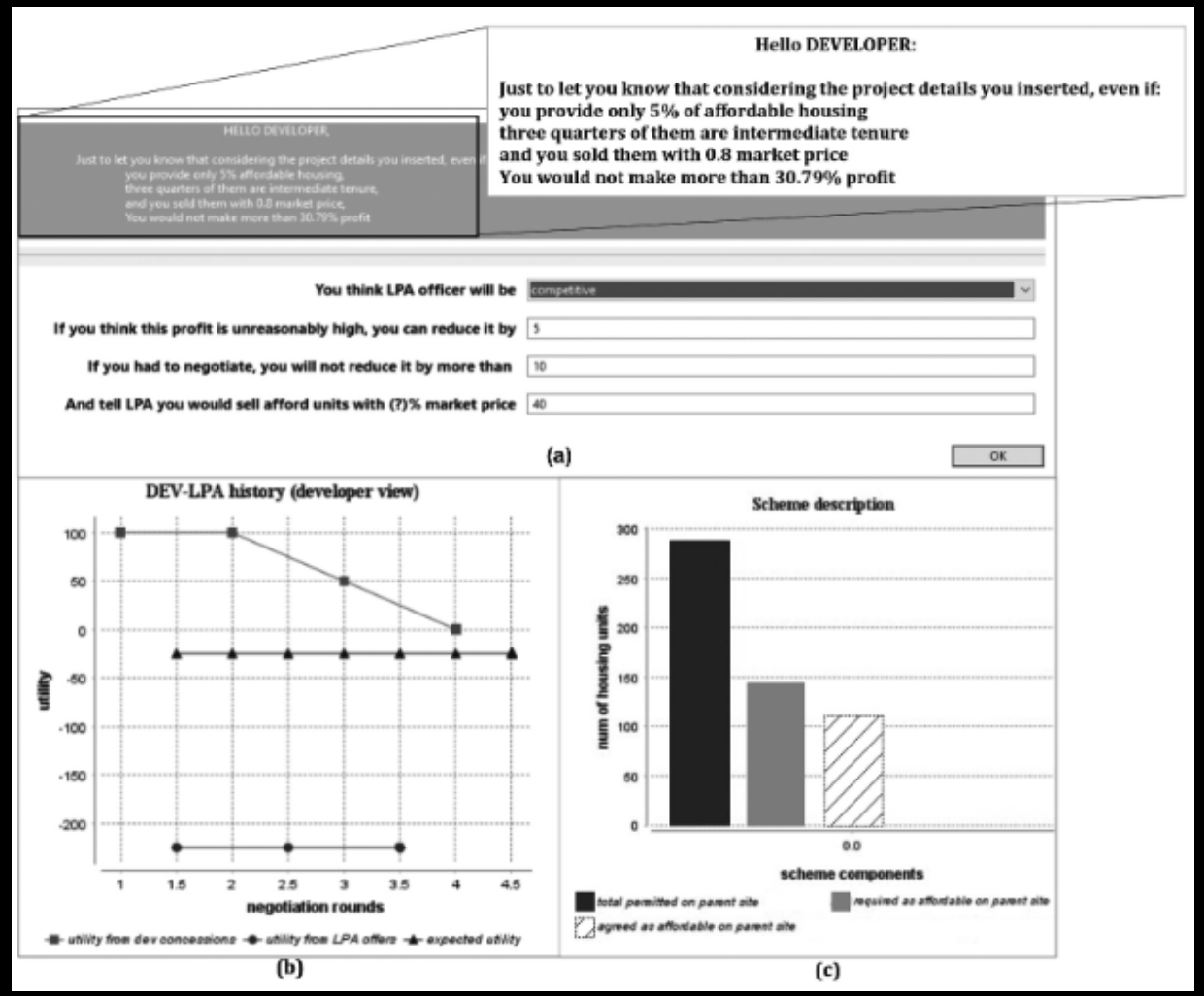

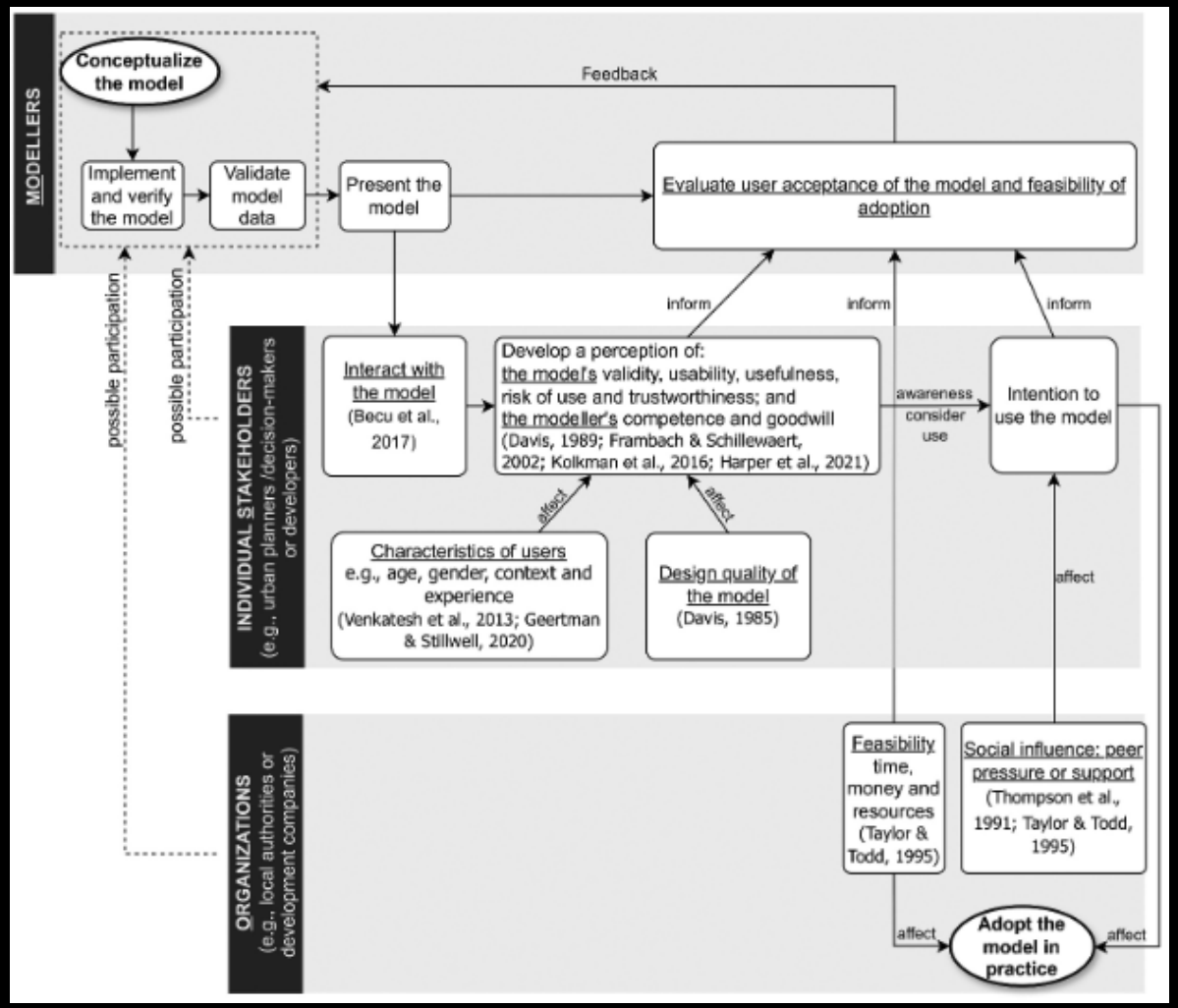

Badawy, A, Kingston, R & Pinto, N 2025, 'Guidelines for computational modelling of planning obligation negotiations', Planning Practice & Research, vol. 40, no. 4, pp. 869-888. https://doi.org/10.1080/02697459.2025.2506896

Inclusive NMS, ABM, Ross-Perez, Pinto, Walton [1]

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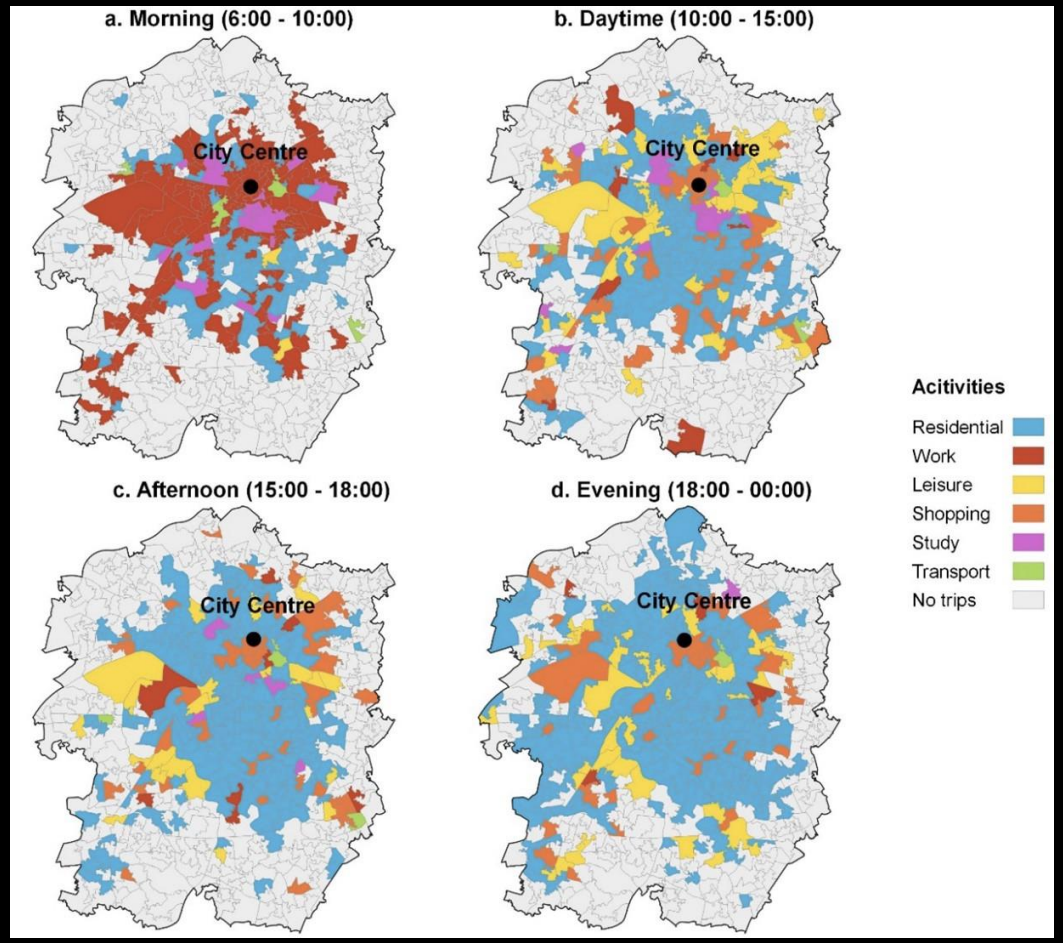
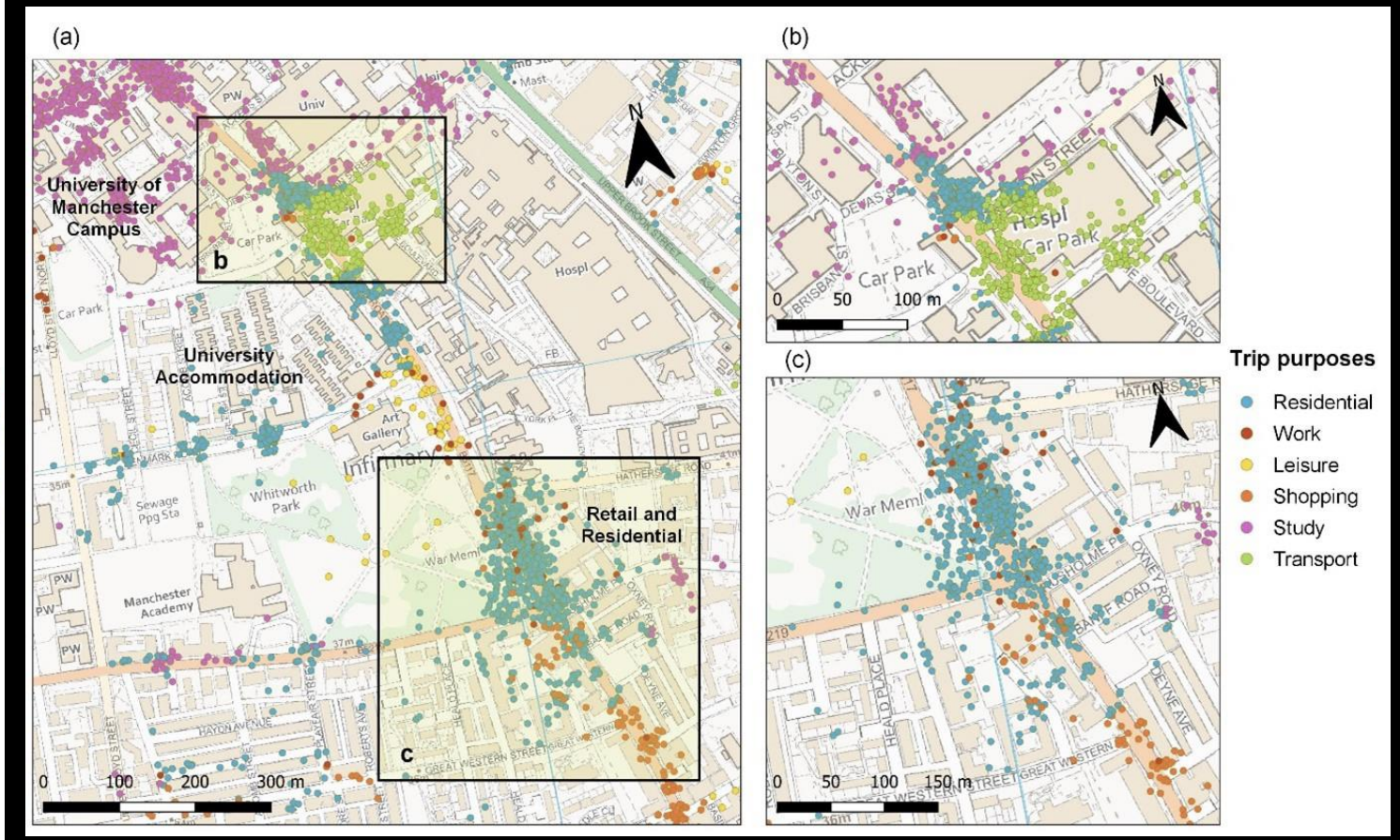
Estimation of bike trip purposes from dockless Mobike data





Ross-Perez, A, Walton, N & Pinto, N 2022, 'Identifying trip purpose from a dockless bike-sharing system in Manchester', *Journal of Transport Geography*, vol. 99, 103293. https://doi.org/10.1016/j.jtrangeo.2022.103293

Inclusive NMS, ABM, Ross-Perez, Pinto, Wisniowski [2]

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ABM Model of dockless bike share system testing inequality scenarios

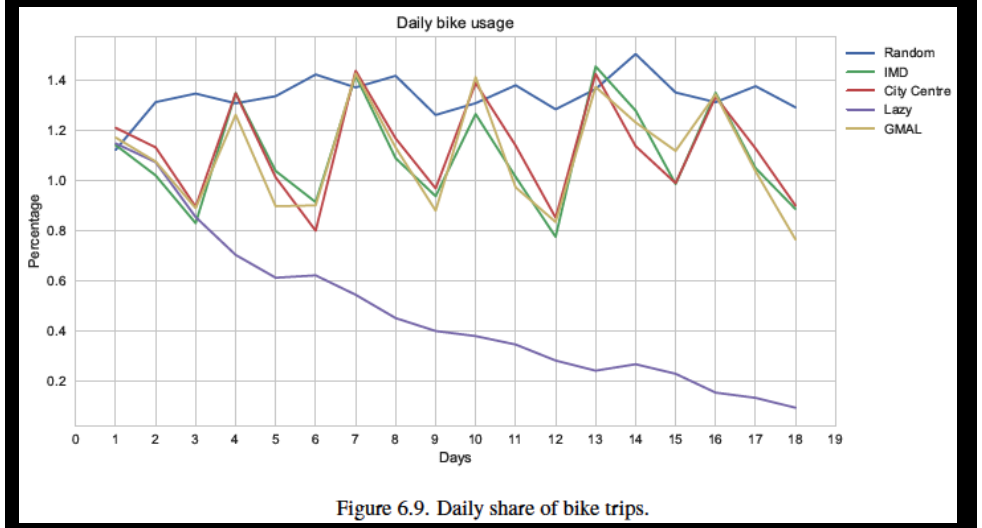
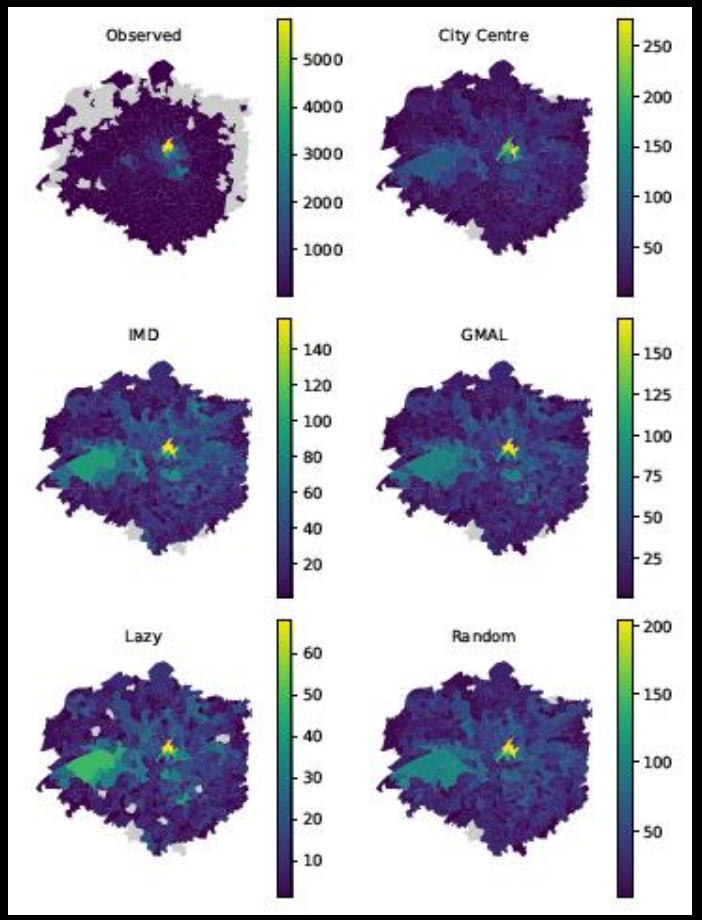


Figure 6.9. Daily share of bike trips.



Ross-Perez, A, Wisniowski, N & Pinto, N A data-driven Agent-Based Model to Simulate Bike-Sharing Deployment Strategies, in submission

Community Detection, Odell, Navarro-Lopez, Deas, Pinto [1]

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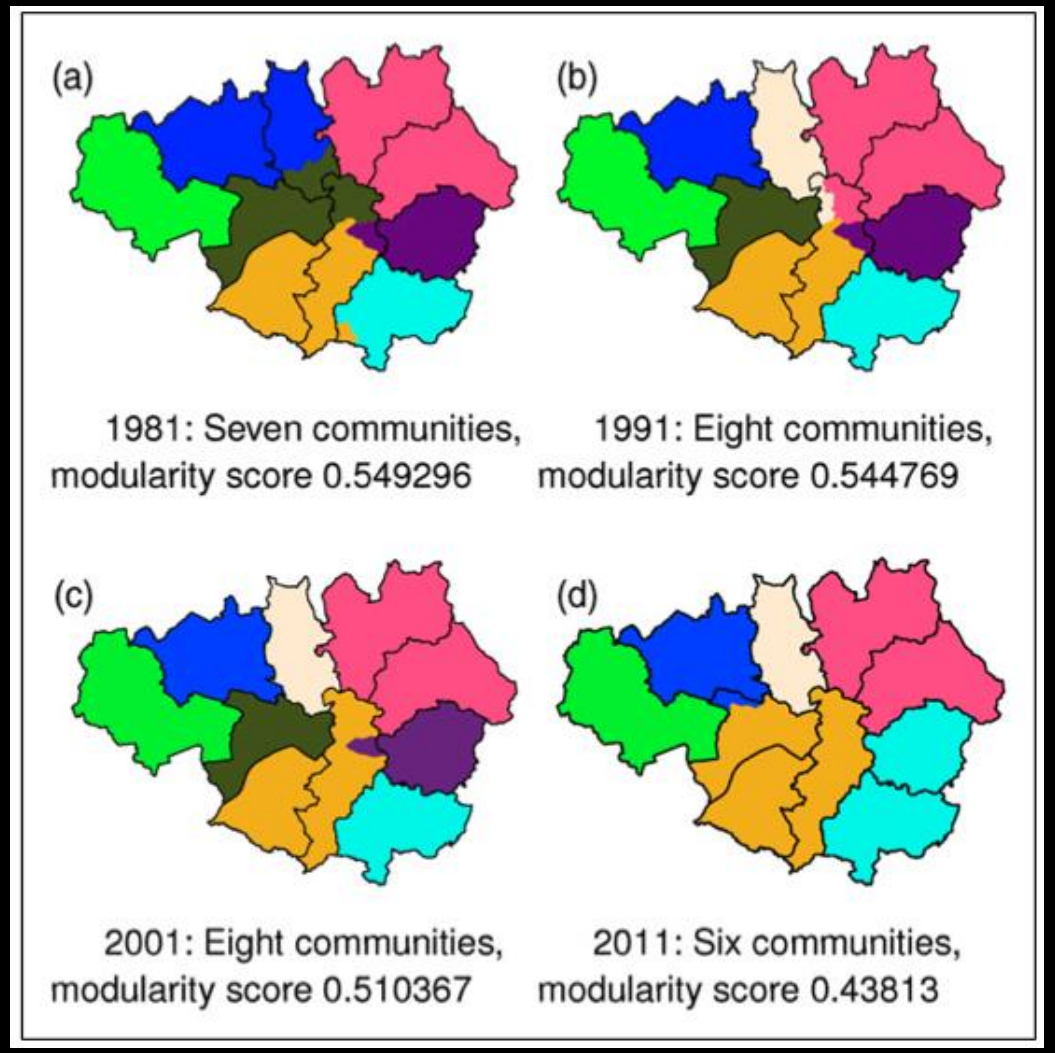
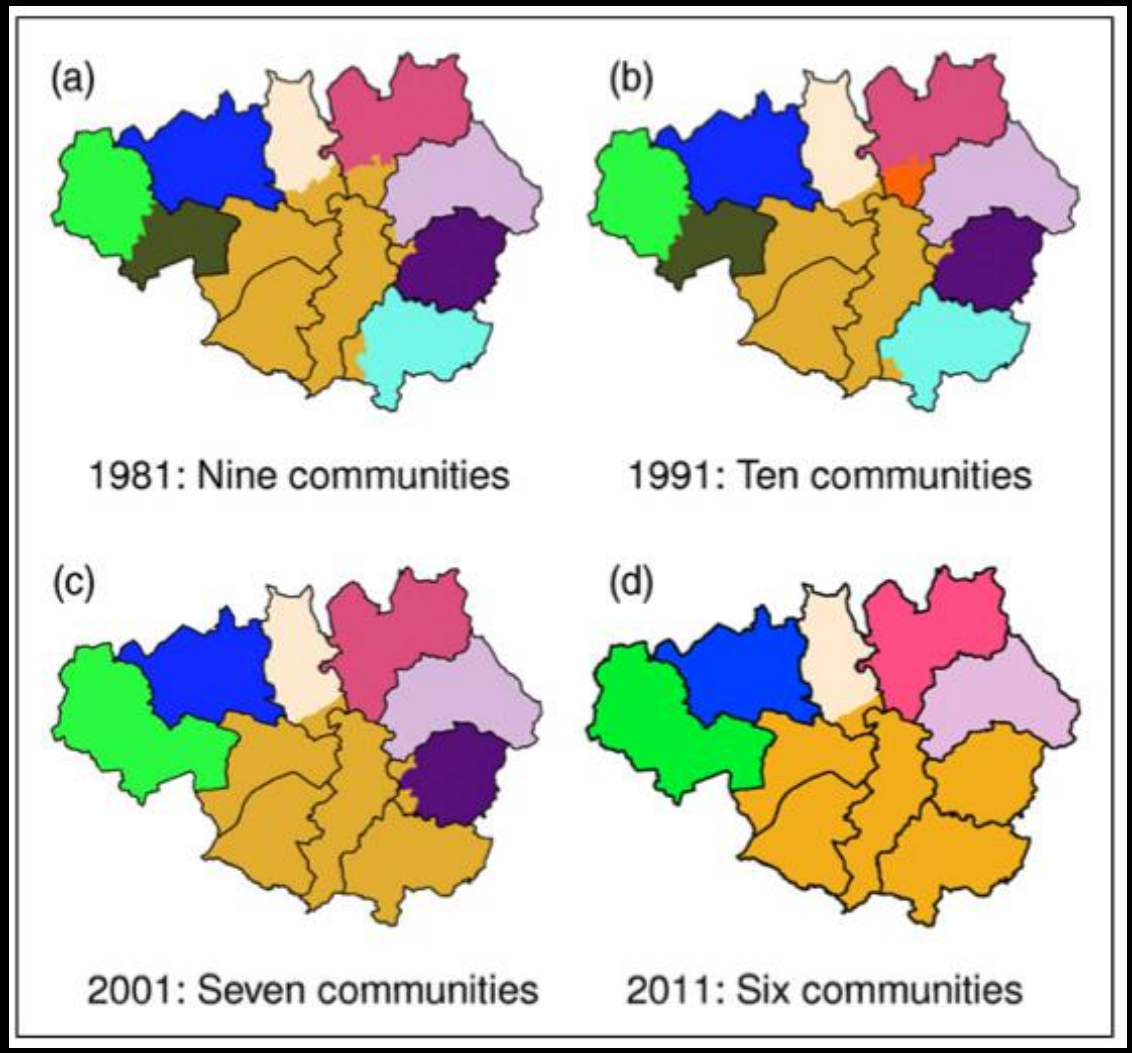
Combo



InfoMAP



Odell, H, Pinto, N, Navarro Lopez, E & Deas, I 2022, 'Detecting shifts in metropolitan structure: a spatial network perspective', Environment and Planning B: Planning & Design, vol. 49, no. 7, pp. 1912-1928. https://doi.org/10.1177/23998083211065767

Serious Board Games in Planning, Sousa, Antunes, Pinto, Zagalo

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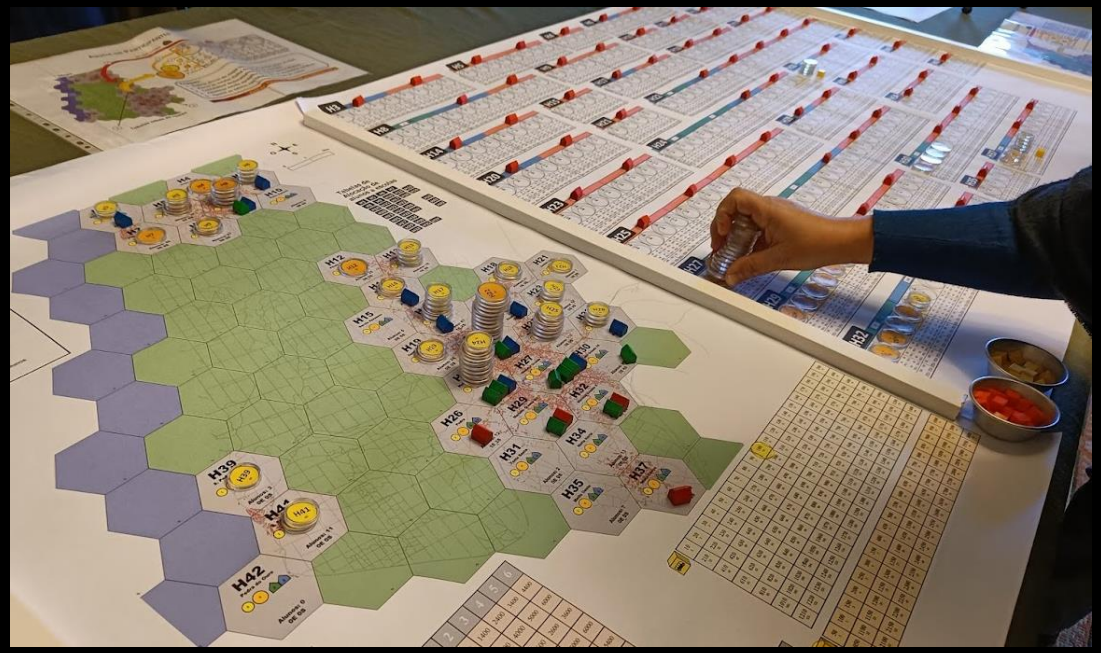

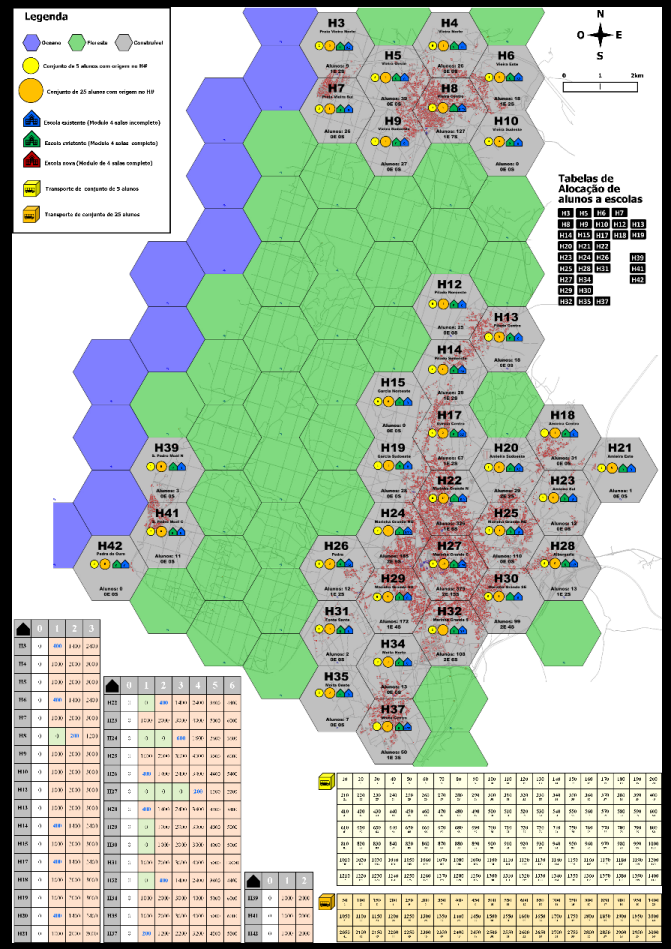

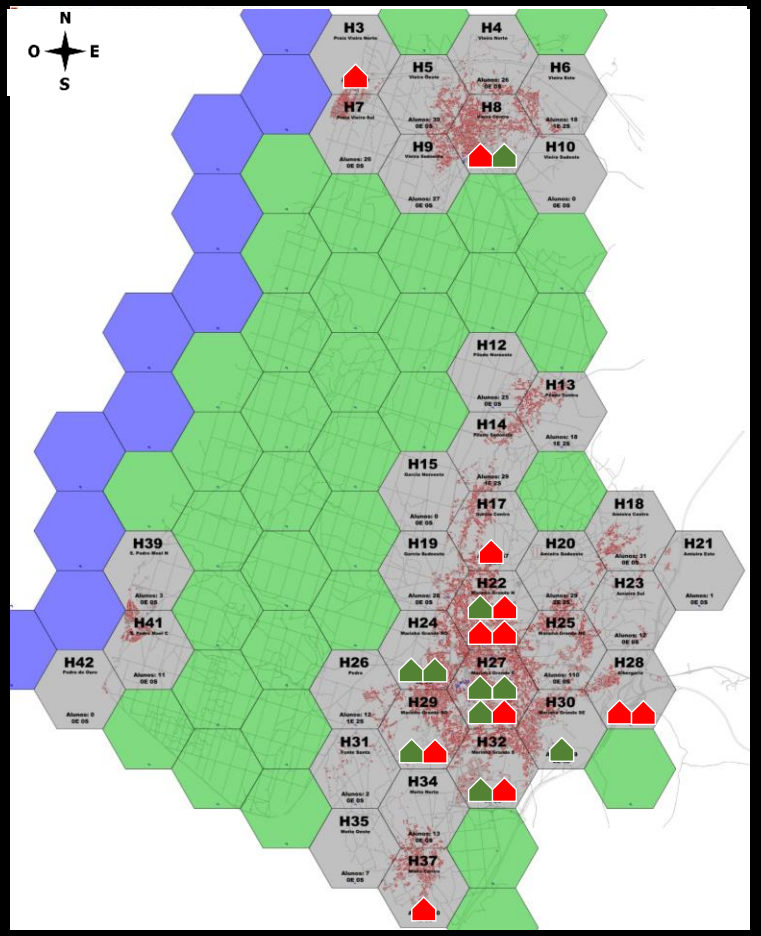

https://www.beds4bug.info/developing-ds/serious-games

Urbanisation Impacts, ABM, Carpio, Pinto

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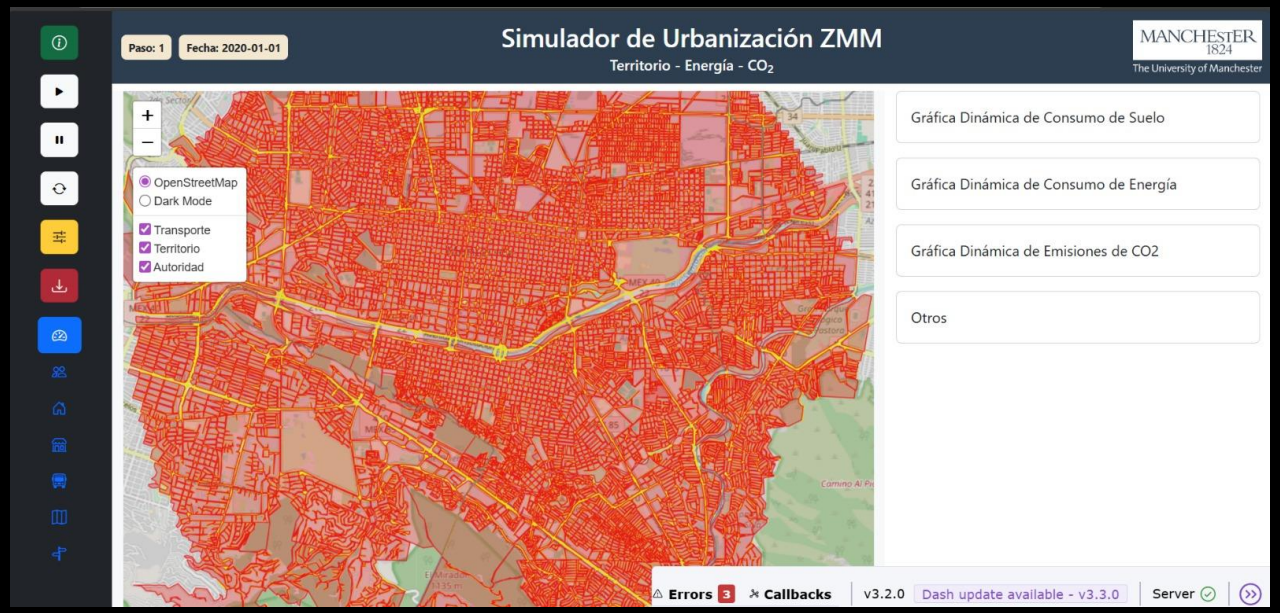

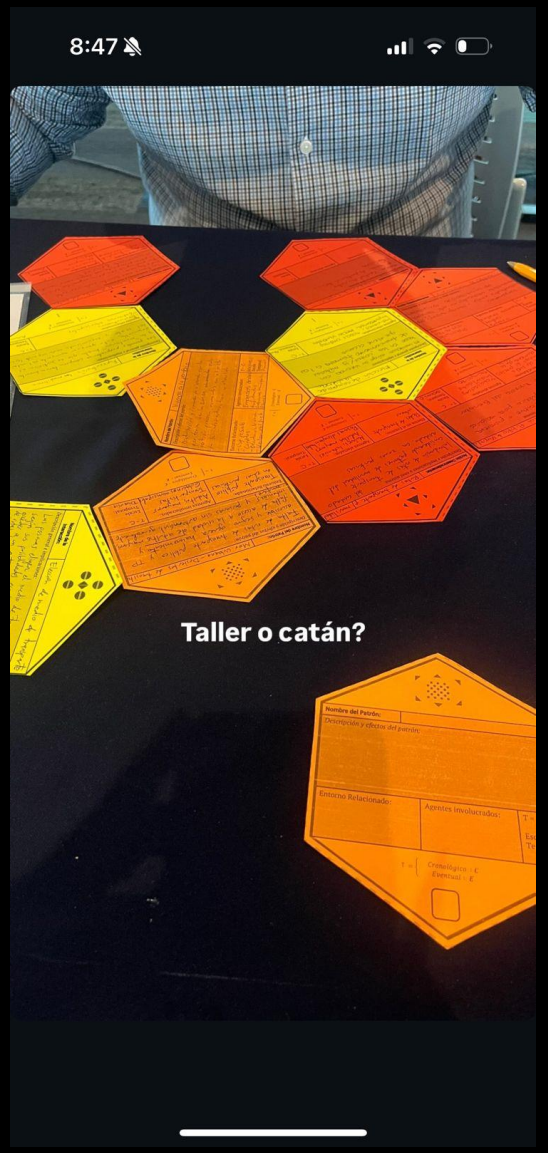

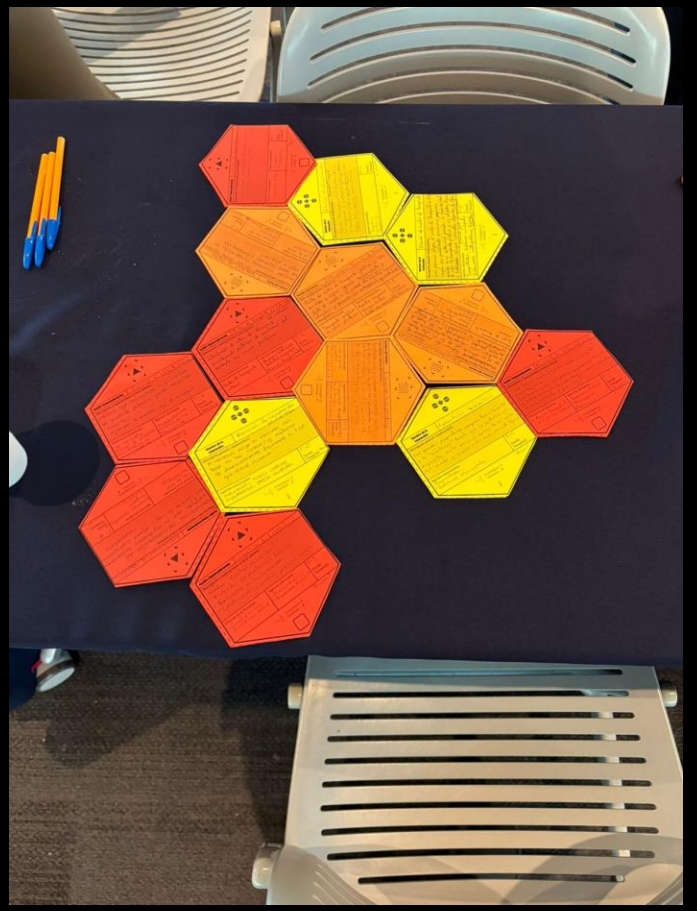

Carpio, Pinto, research in progress

Spatial Methods for Child Labour, Cunningham, Olsen, Pinto [1]

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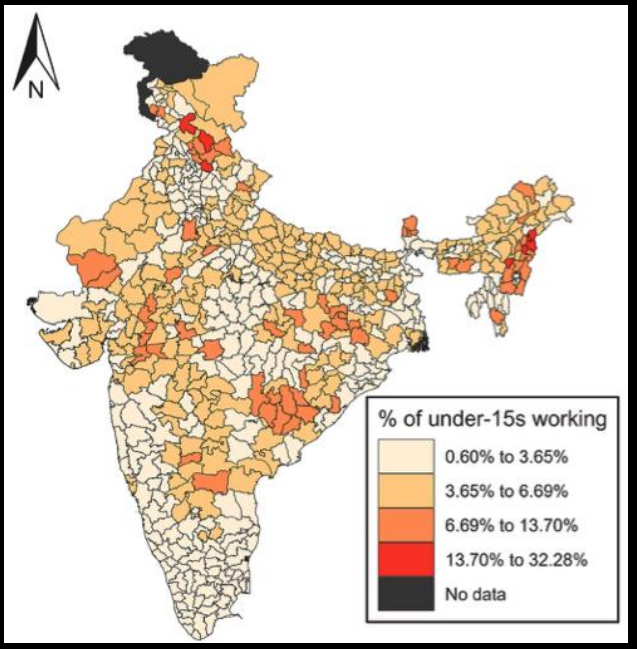
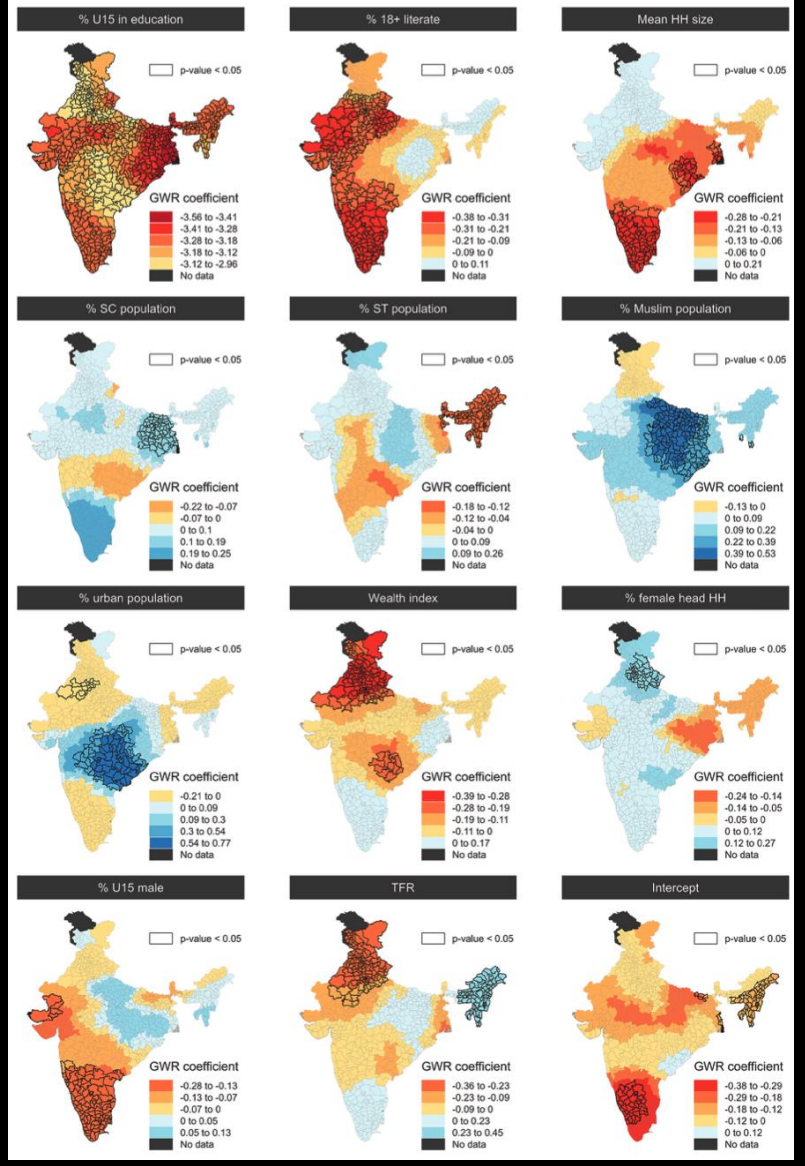


GWR



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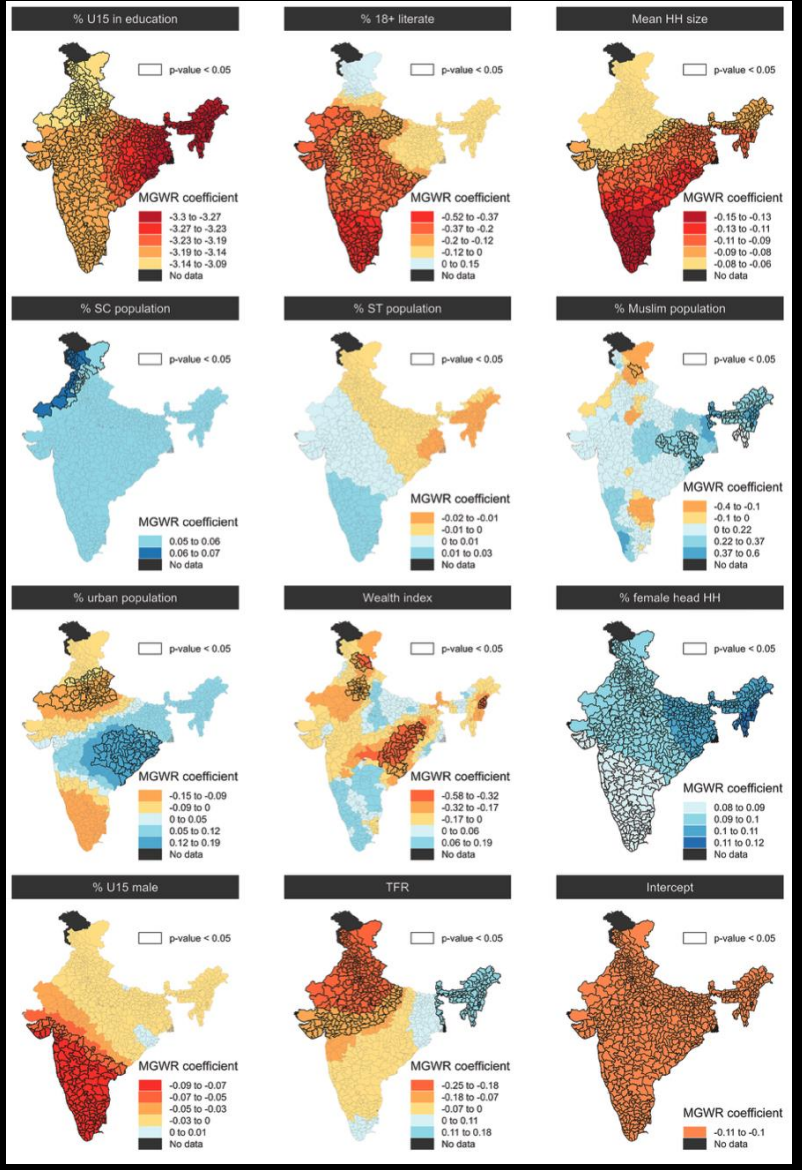

Cunningham, T, Olsen, W & Pinto, N 2024, 'Exploring spatial non-stationarity of child labour and its related factors: A multiscale geographically weighted regression study of India', Applied Geography, vol. 171, 103363. https://doi.org/10.1016/j.apgeog.2024.103363

BeDS4BUG - A Platform for Dialogue on DS for UG

BeDS for BUG

Better Decision Support **BeDS**
for **for**
Better Urban Governance **BUG**

Brasília	Brazil
São Paulo	
Suzano	
Cairo	Egypt
Guayaquil	Ecuador
Chennai	India
Guadalajara	Mexico
Coimbra	Portugal
Marinha Grande	
Manchester	United Kingdom
Boston	USA

English

The Research | Engaging with Stakeholders in DS | Developing DS | Teaching DS | Events DS

Better Decision Support for Better Urban Governance

BeDS for BUG is a research agenda composed of several international projects with the aim of understanding the role of and developing further decision-support methods and literacy for different stakeholders engaged in urban governance.

The research explores different scales and contexts where a wide range of stakeholders - institutional, community - take the leading role in designing and implementing governance models by using effective processes to achieve their common objectives.

The research is engaging with multiple stakeholders from several urban areas, with different nature, scope and activities involved in urban governance at all scales of the urban environment.

This is a research agenda led by Dr Nuno Pinto from the University of Manchester and **brings together academics from** the University of Manchester (UK), the University of Brasília and the Getúlio Vargas Foundation (Brazil), University of Guadalajara (Mexico), KTH (Sweden), IIT Madras (India), University of Coimbra (Portugal), University of Espiritu Santo (Ecuador) and Suffolk University (USA).

It collaborates with **technology partners** including Geodesignhub (Ireland).

ONGOING PROJECTS

Events DS - USFSS25.AI4UG

Developing DS - Modelling resilience

The BeDS4BUG research agenda aims at delivering on the United Nations SDGs

SUSTAINABLE DEVELOPMENT GOALS

11 SUSTAINABLE CITIES AND COMMUNITIES	13 CLIMATE ACTION	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS
11.3 | 11.a 11.b | 11.c	13.2 | 13.b	15.6 | 15.9	16.6 | 16.7 16.8

Contact the Team

Contact Dr Nuno Pinto for information on the project at
nuno.pinto@manchester.ac.uk

USF SS25AI4UG – Deconstructing AI for Urban Governance

BeDS for BUG

USF Seminar Series 2025.AI4UG - AI for Urban Governance
Seminar [Sx] + Training [Tx] + Webinar [Webx] + Policy Brief [PBx]

Responsible + Transparent AI
Decision Support I Urban Governance
Coproduction I Research Agenda

VISIT THE PROJECT WEBPAGE

APPLY FOR FINANCIAL SUPPORT TO CO-FUND ECR PARTICIPATION

[Web0] Launch of SS
Where: Online Meeting
When: 24 October 2025

Boston

Where: Suffolk University, Boston, USA I **When**: 8, 9 and 10 December 2025

[S1] What AI for Urban Governance

[T1] AI for advanced urban simulation methods

[Web1] What AI for Urban Governance

[PB1] What AI for Urban Governance

Brasília

Where: University of Brasília, Brasília DF, Brazil I **When**: 8, 9 and 10 April 2026

[S2] AI as a tool for inclusive DS

[T2] AI for participatory methods

[Web2] AI as a tool for inclusive DS

[PB2] AI as a tool for inclusive DS

Manchester

Where: University of Manchester, Manchester UK I **When**: 22, 23 and 24 July 2026

[S3] A coproduced research agenda for responsible and transparent AI for DS in urban governance

[T3] A methodological toolkit to include responsible and transparent AI in urban governance research

[Web3] Findings and outcomes of the Seminar Series

[PB3] Findings and outcomes of the Seminar Series

BeDS for BUG

MANCHESTER 1824 The University of Manchester

Universidade de Brasília

SUFFOLK UNIVERSITY | BOSTON

Urban Studies FOUNDATION

This research is supported by a Seminar Series Award from the Urban Studies Foundation, grant reference: USF-SSA-250604