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GEOSPATIAL
SYSTEMS
CENTRE FOR DOCTORAL TRAINING

Cities in shape:

Assessing the impact of urban form on accessibility

Clara Peiret-García

Prof. Rachel Franklin

Dr. Alistair Ford

Dr. Joe Matthews

Introduction

Research question

Methods

Results

Conclusions

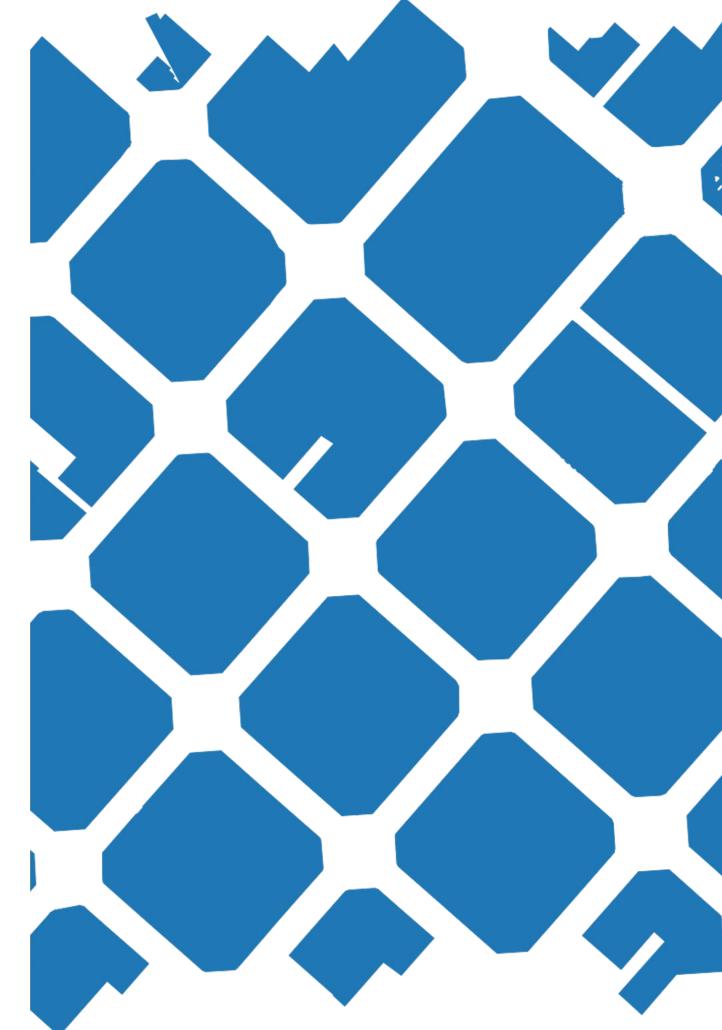
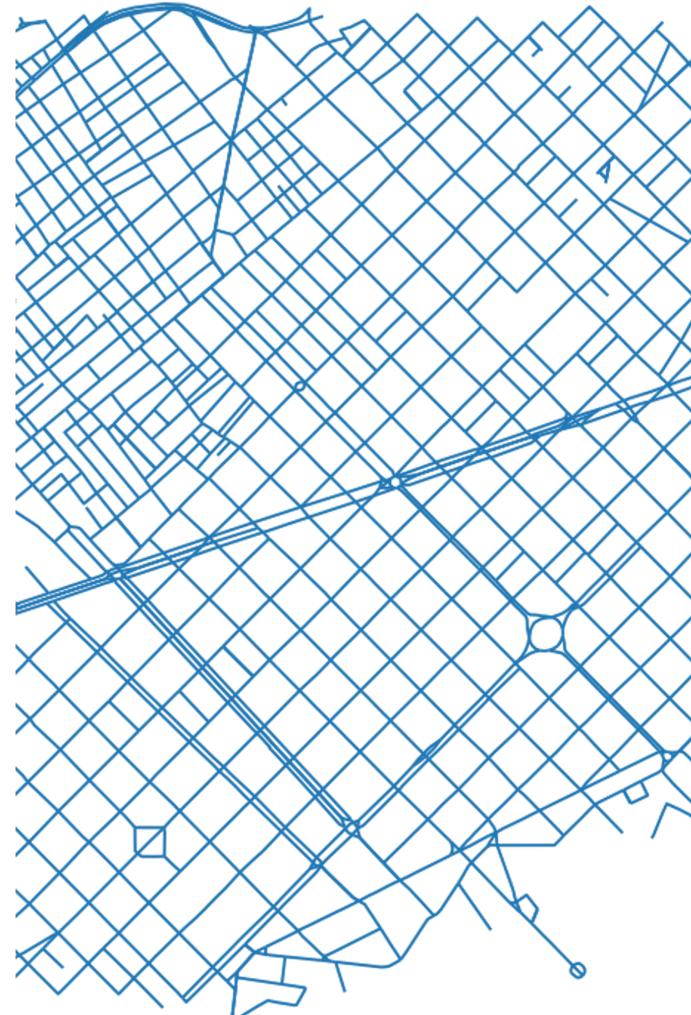
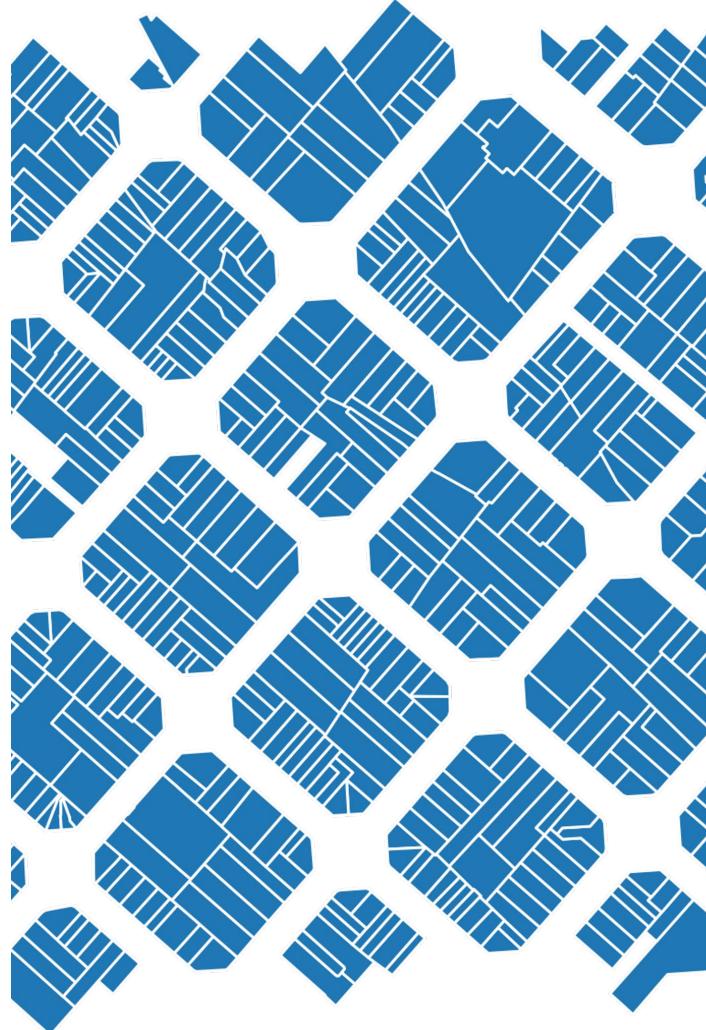
Accessibility & urban form

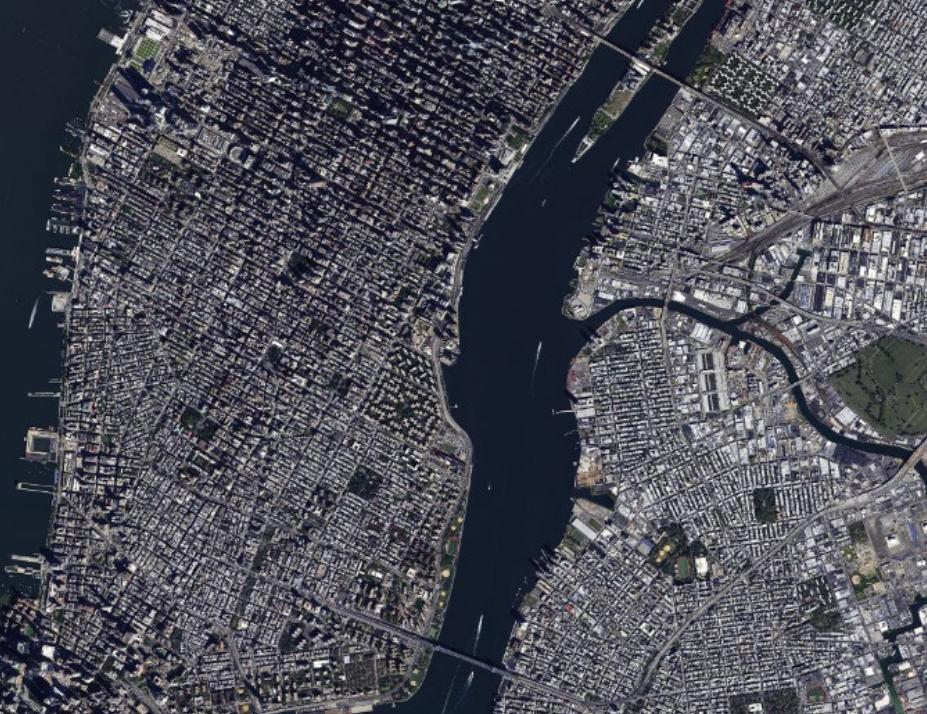
Accessibility

Accessibility is the ease with which opportunities can be reached from an origin [1]

[1] Páez, A., Scott, D.M. and Morency, C., 2012. Measuring accessibility: positive and normative implementations of various accessibility indicators. *Journal of Transport Geography*, 25, pp.141-153.

Urban form





Research question

Research question

What does an accessible city look like to
different people?

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Urban design is key to healthy environments for all

Thiago Herick de Sa  • Abraham Mwaura • Cristina Vert • Pierpaolo Mudu • Nathalie Roebbel • Nhan Tran • et al.

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Articles

Many Pathways from Land Use to Health: Associations between Neighborhood Walkability and Active Transportation, Body Mass Index, and Air Quality

Lawrence D. Frank, James F. Sallis, Terry L. Conway, James E. Chapman, Brian E. Saelens & William Bachman

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10.1080/01944360608976725



ELSEVIER

Journal of Urban Economics

Volume 65, Issue 1, January 2009, Pages 91-98

The impact of residential density on vehicle usage and energy consumption ★

David Brownstone ^a  , Thomas F. Golob ^b

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The impact of res
and energy consu

David Brownstone , Thomas F. Gol

Job Accessibility as an Indicator of Auto-Oriented Urban Structure: A Comparison of Boston and Los Angeles with Tokyo

Mizuki Kawabata , Qing Shen

First Published February 1, 2006 | Research Article
<https://doi.org/10.1068/b31144>

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Future of cities

Housing

Levelling up

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Measuring up: Comparing public transport in the UK and Europe's biggest cities

This report examines whether intra-urban public transport plays a role in the underperformance of big British cities and sets out the implications that transport has for the levelling up agenda.

The in
and en

Report published on 3 November 2021 by [Guilherme Rodrigues](#), [Anthony Breach](#) and [James Evans](#)

Boston and Los Angeles with Tokyo

David Brownstone  , Thomas F. Gol

Mizuki Kawabata  , Qing Shen

First Published February 1, 2006 | Research Article

<https://doi.org/10.1068/b31144>

Research question

Multi-city comparisons

Detailed urban form characterisation

Comprehensive routing algorithm

Demographic profiling

Innovative destination selection method

Research question

Multi-city comparisons

Detailed urban form characterisation

Comprehensive routing algorithm

Demographic profiling

Innovative destination selection method

**Identify best practices
and explore their
potential
implementation in
different contexts**

Methods

Accessibility score



Morphometric analysis



Socioeconomic analysis

Accessibility score

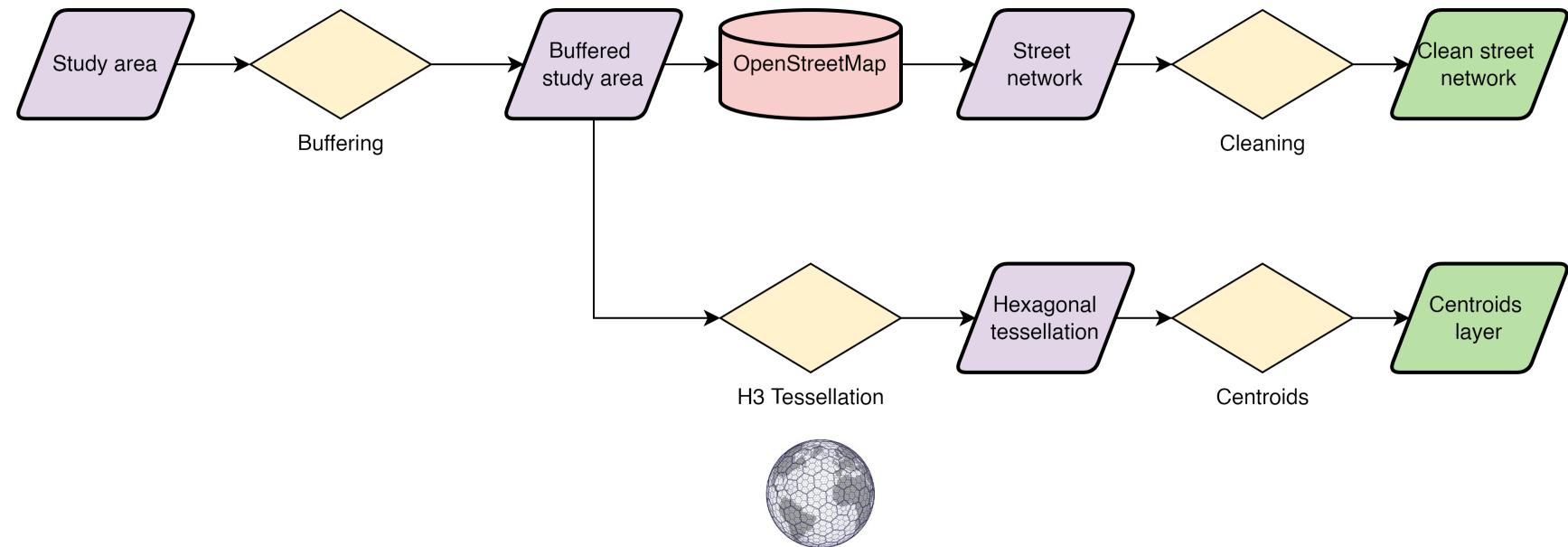


Morphometric analysis

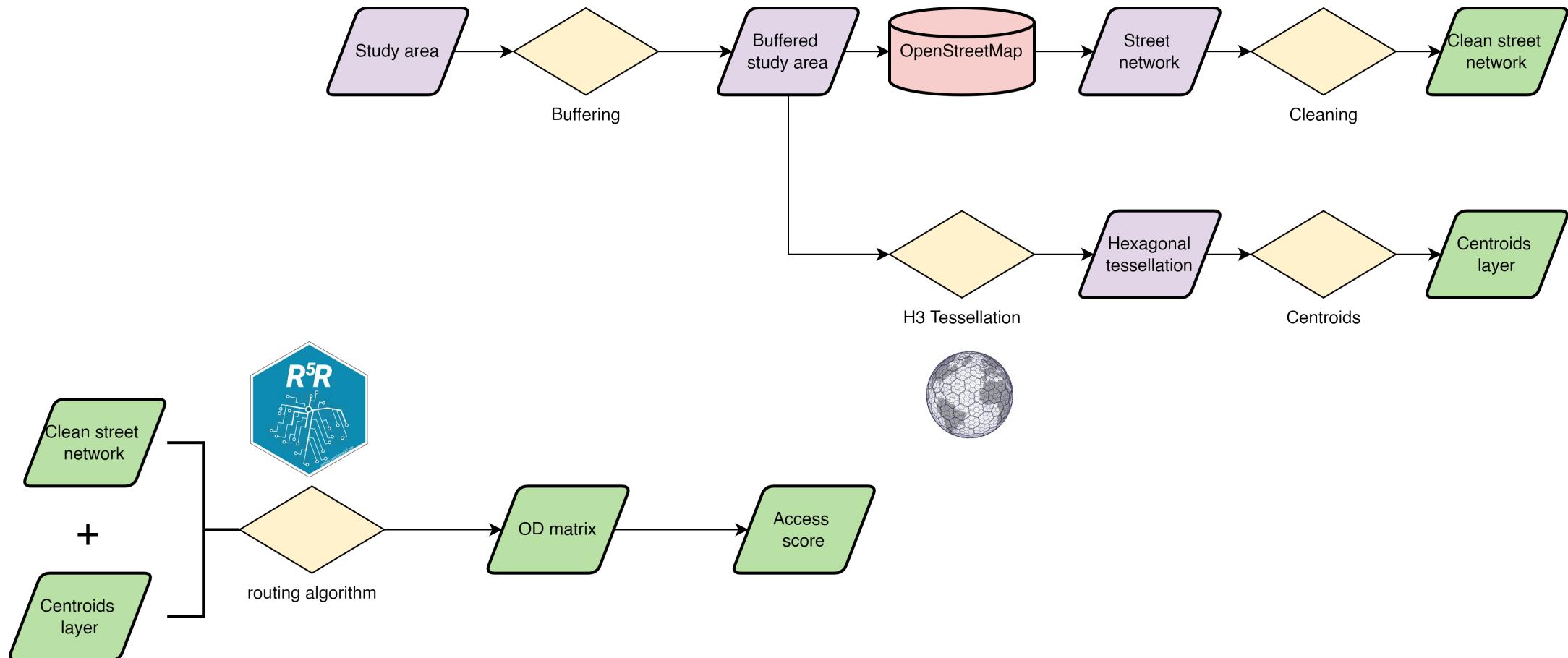


Socioeconomic analysis

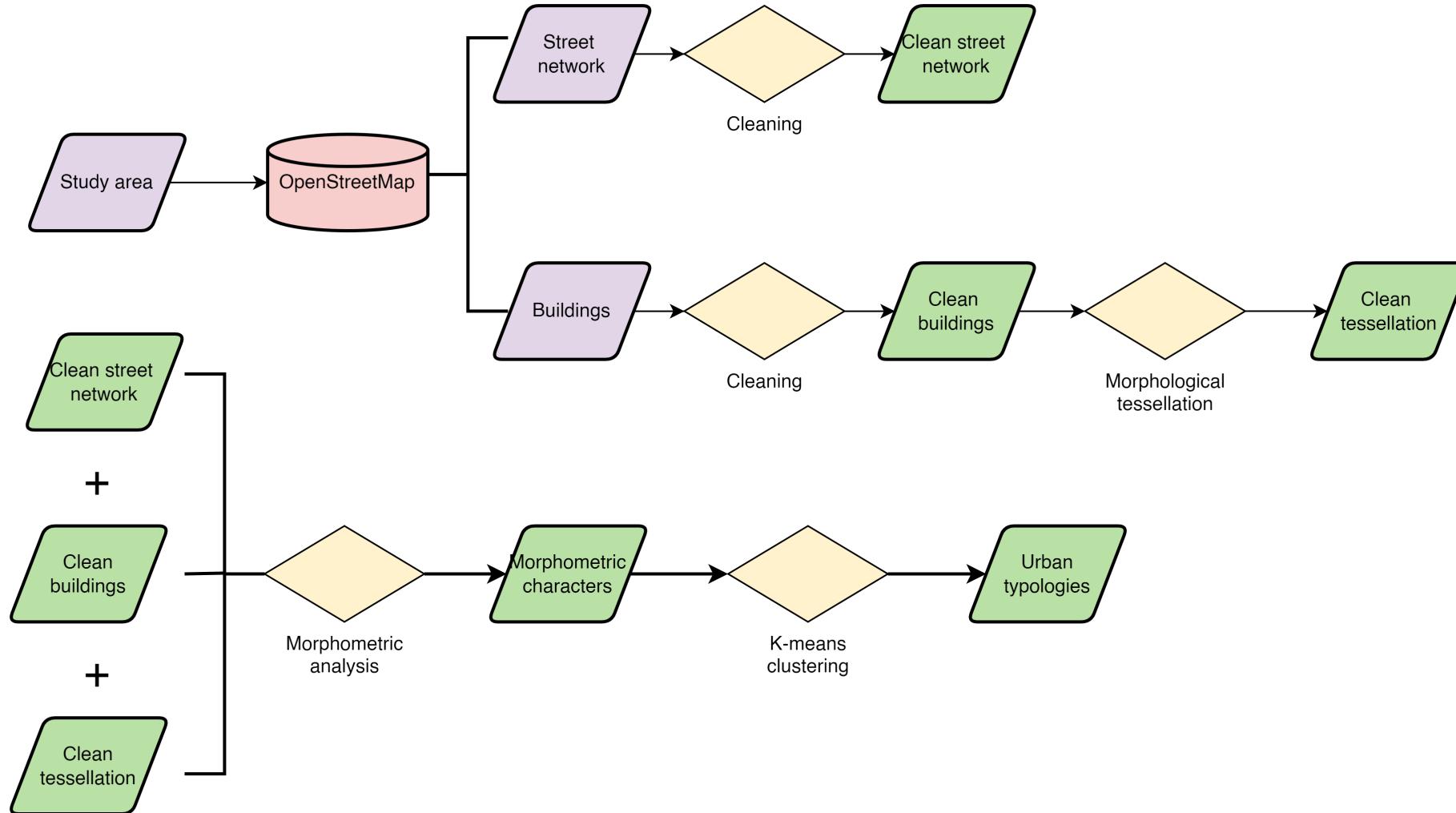
Methods – Accessibility score

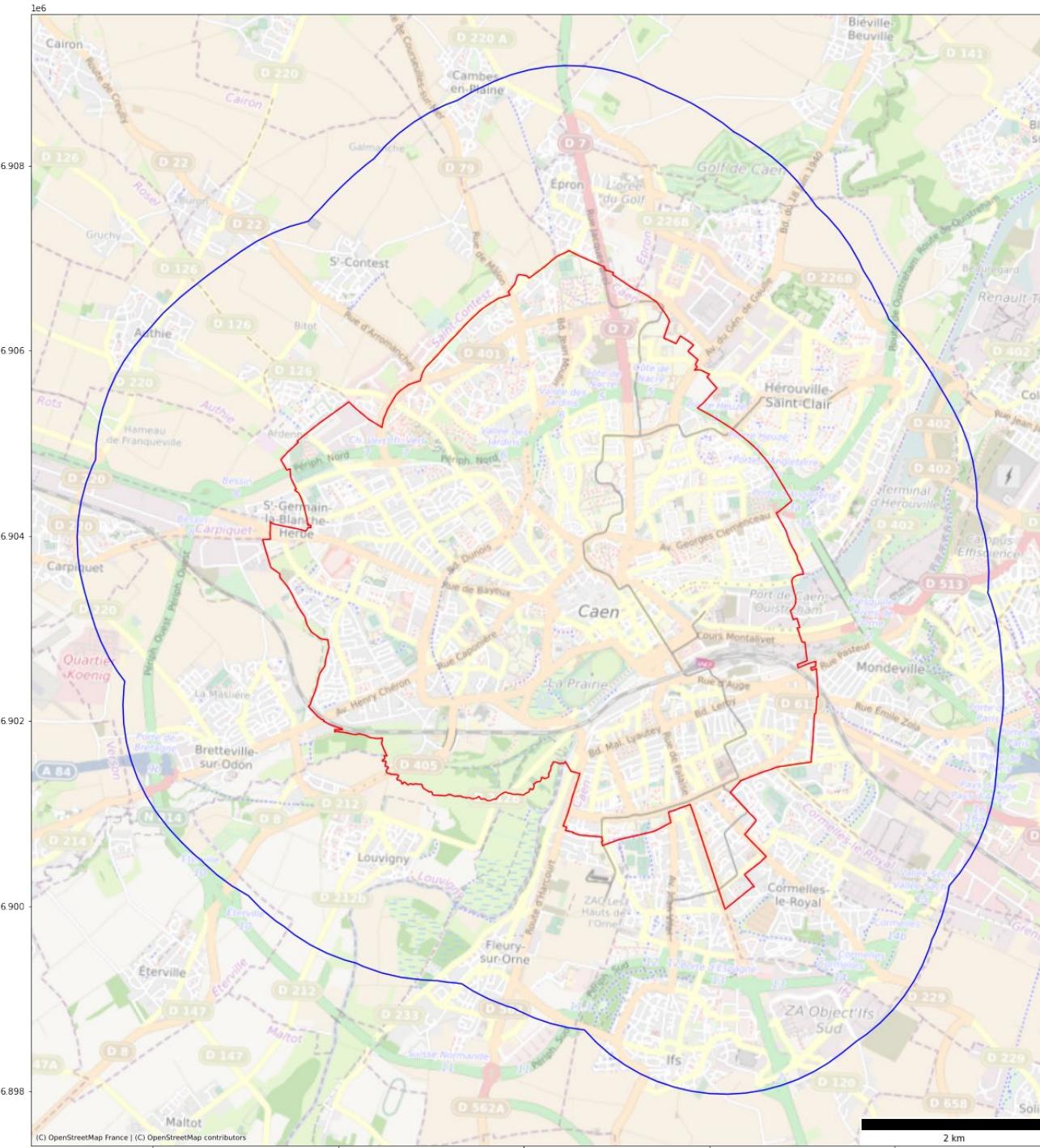


Methods – Accessibility score



Methods – Morphometric analysis



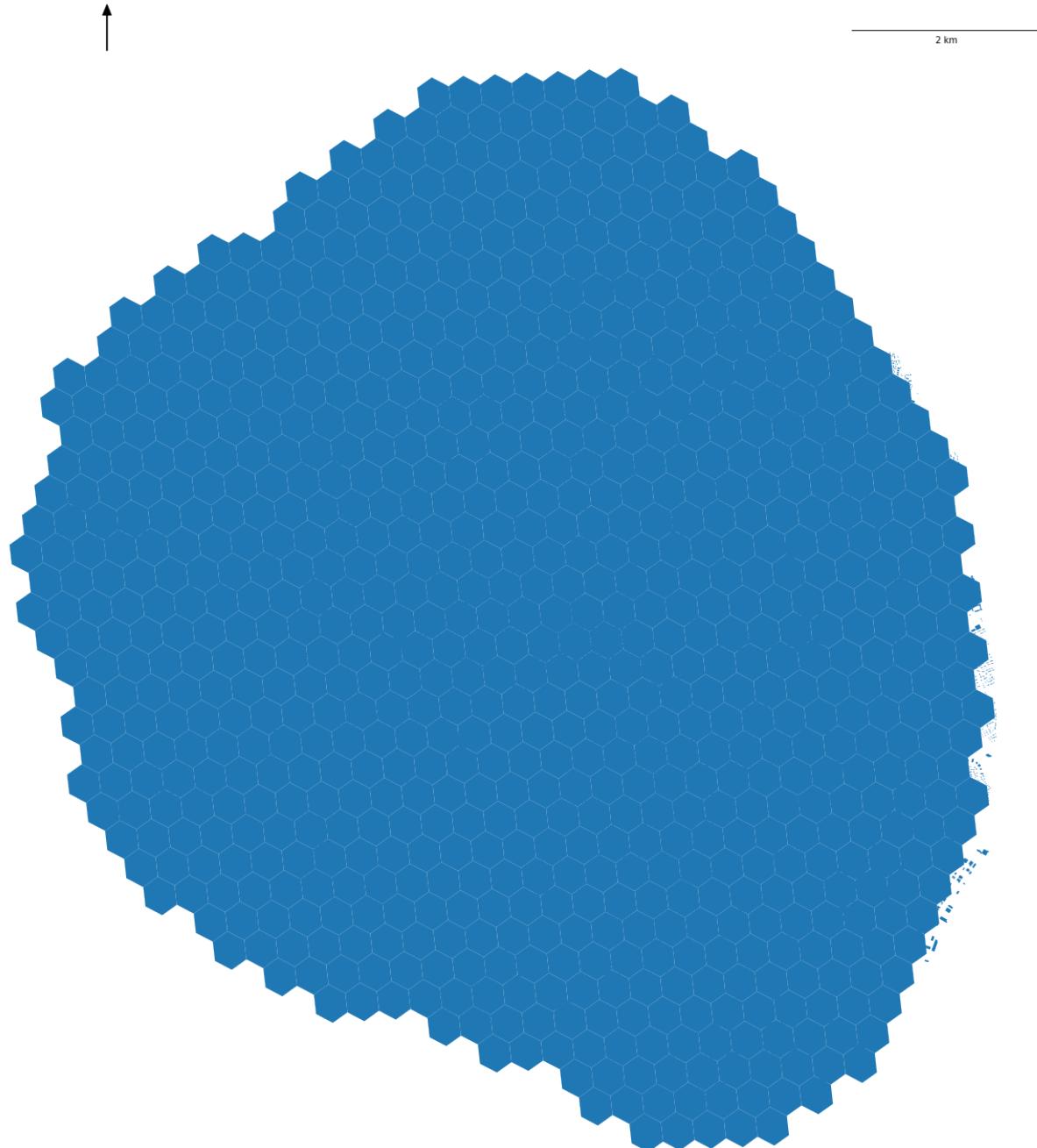




2 km

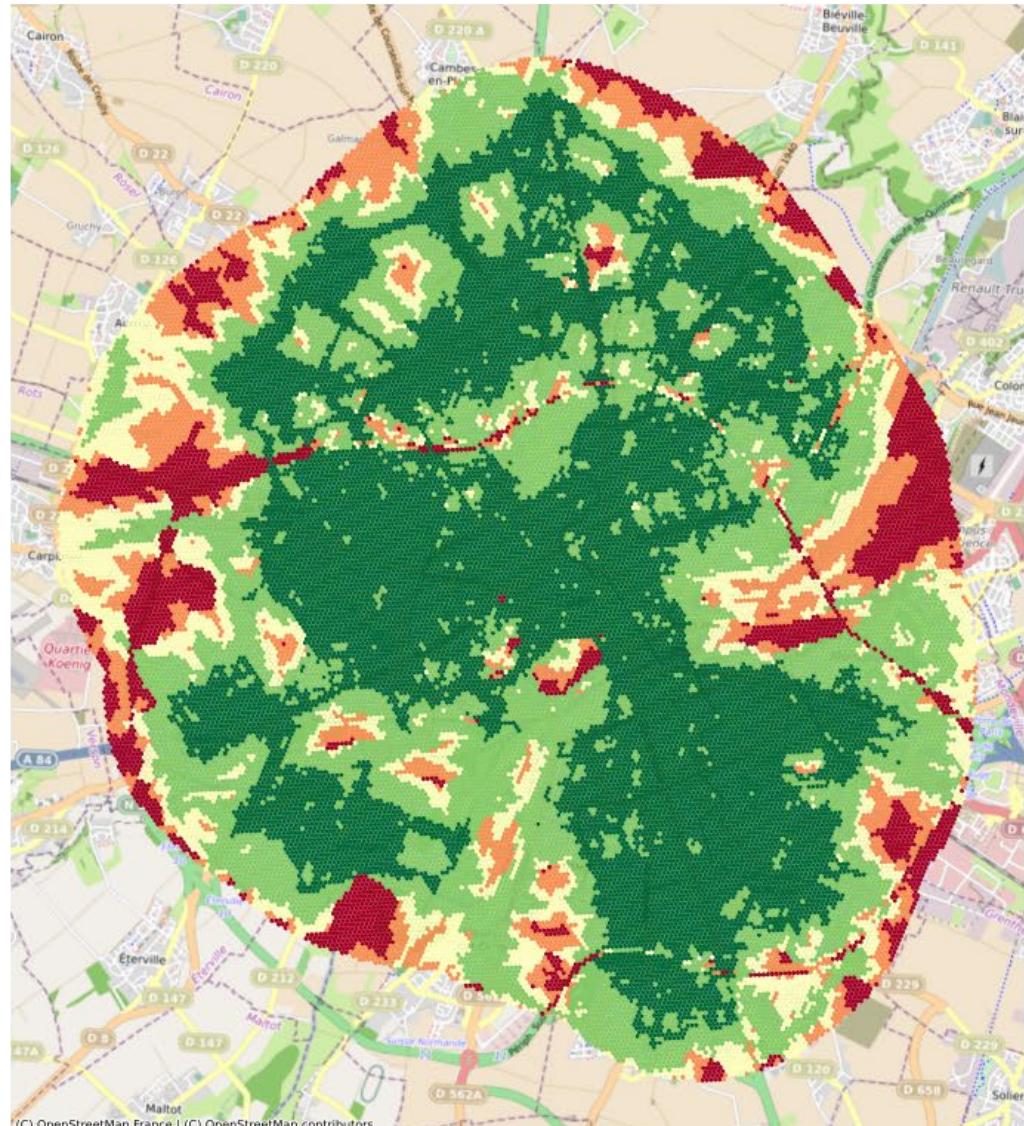




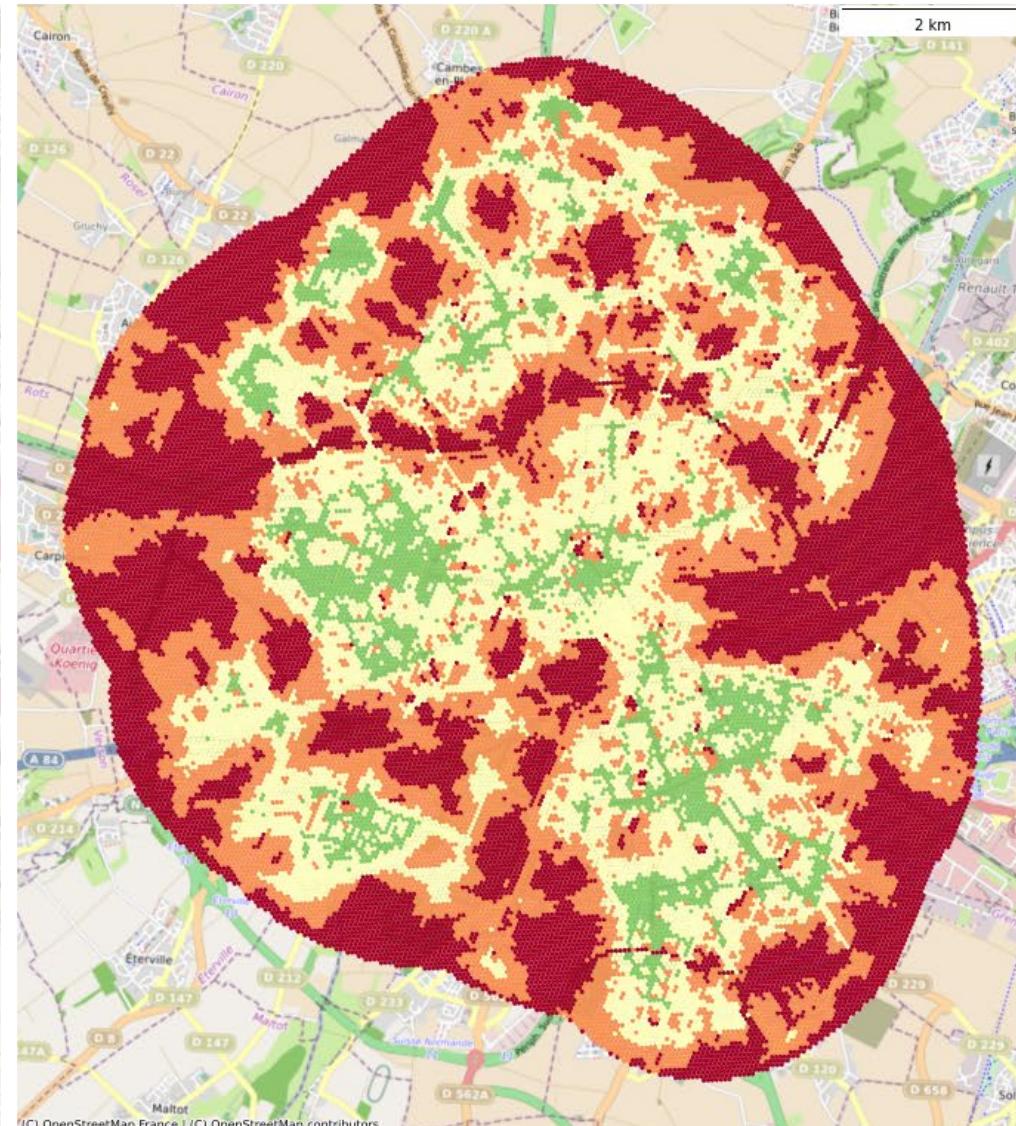


Results

Access score adults



Access score seniors

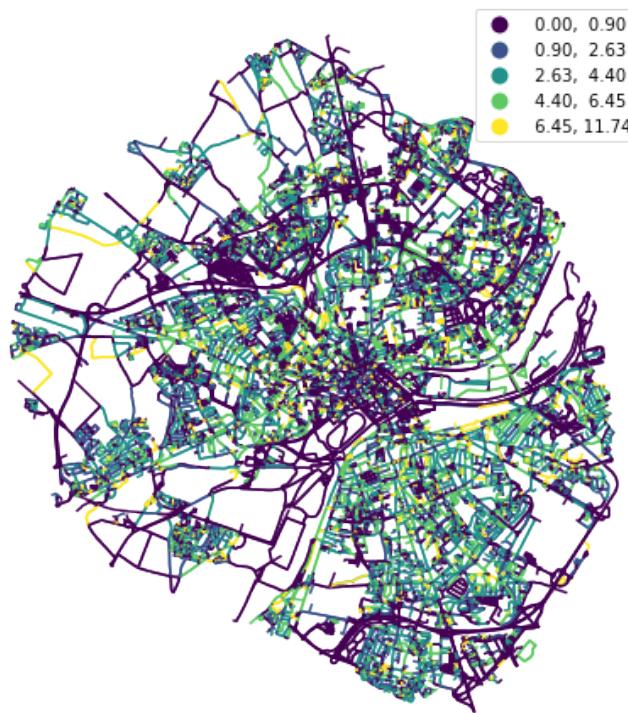


- Very low access
- Low access
- Medium access
- High access
- Very high access

Width



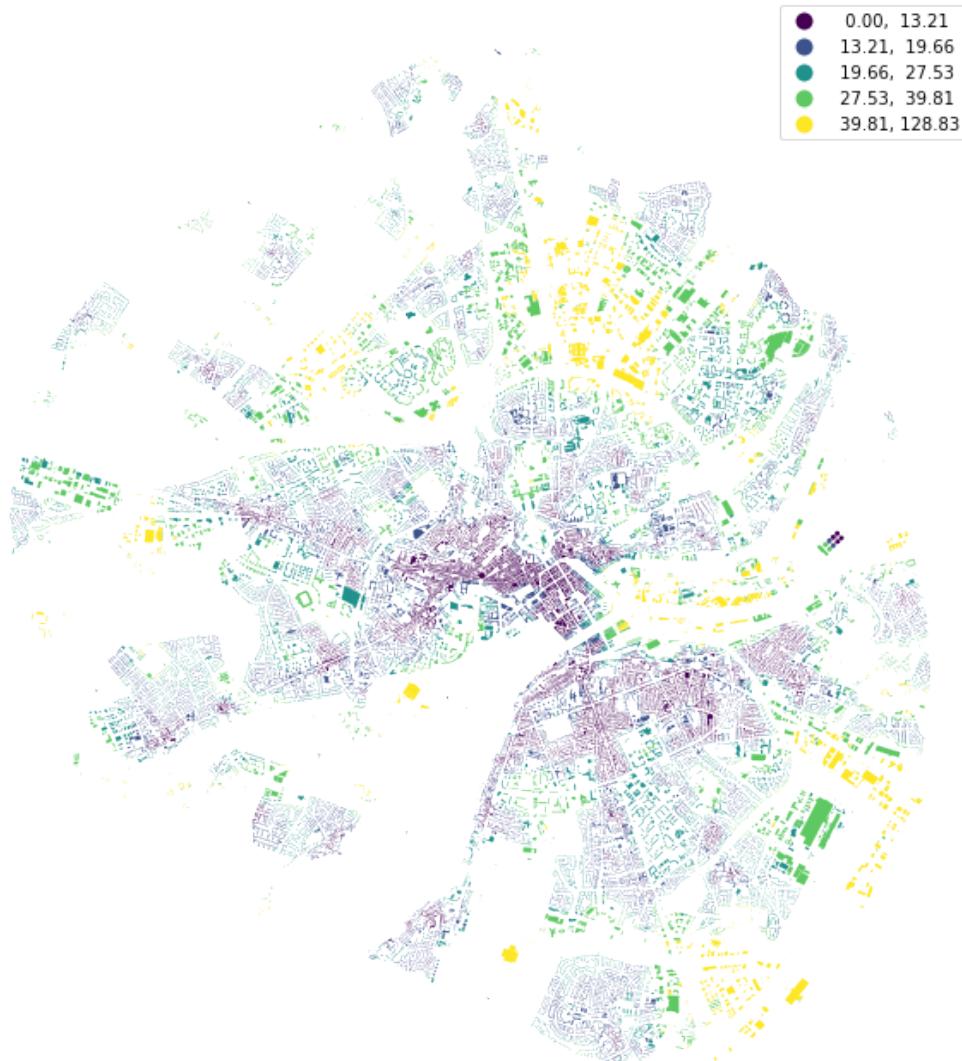
Width deviation



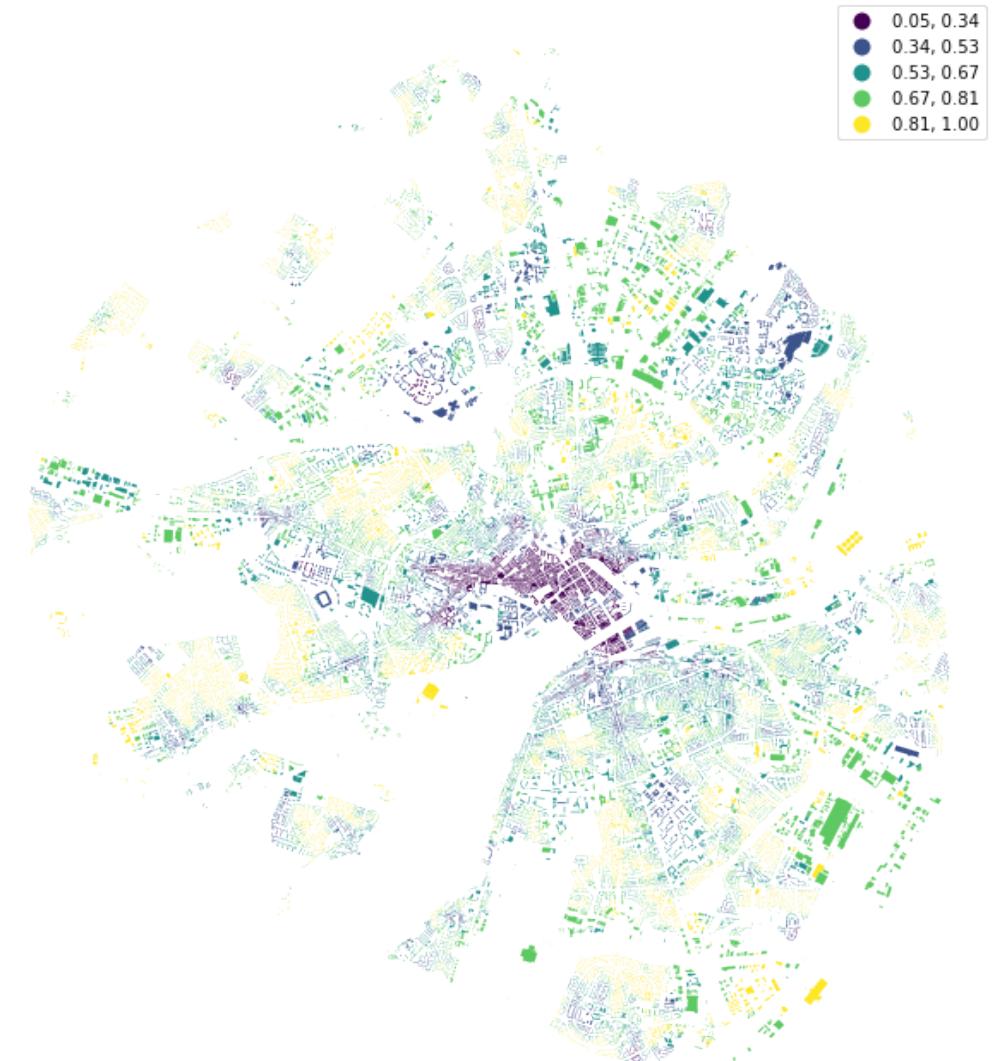
Openness



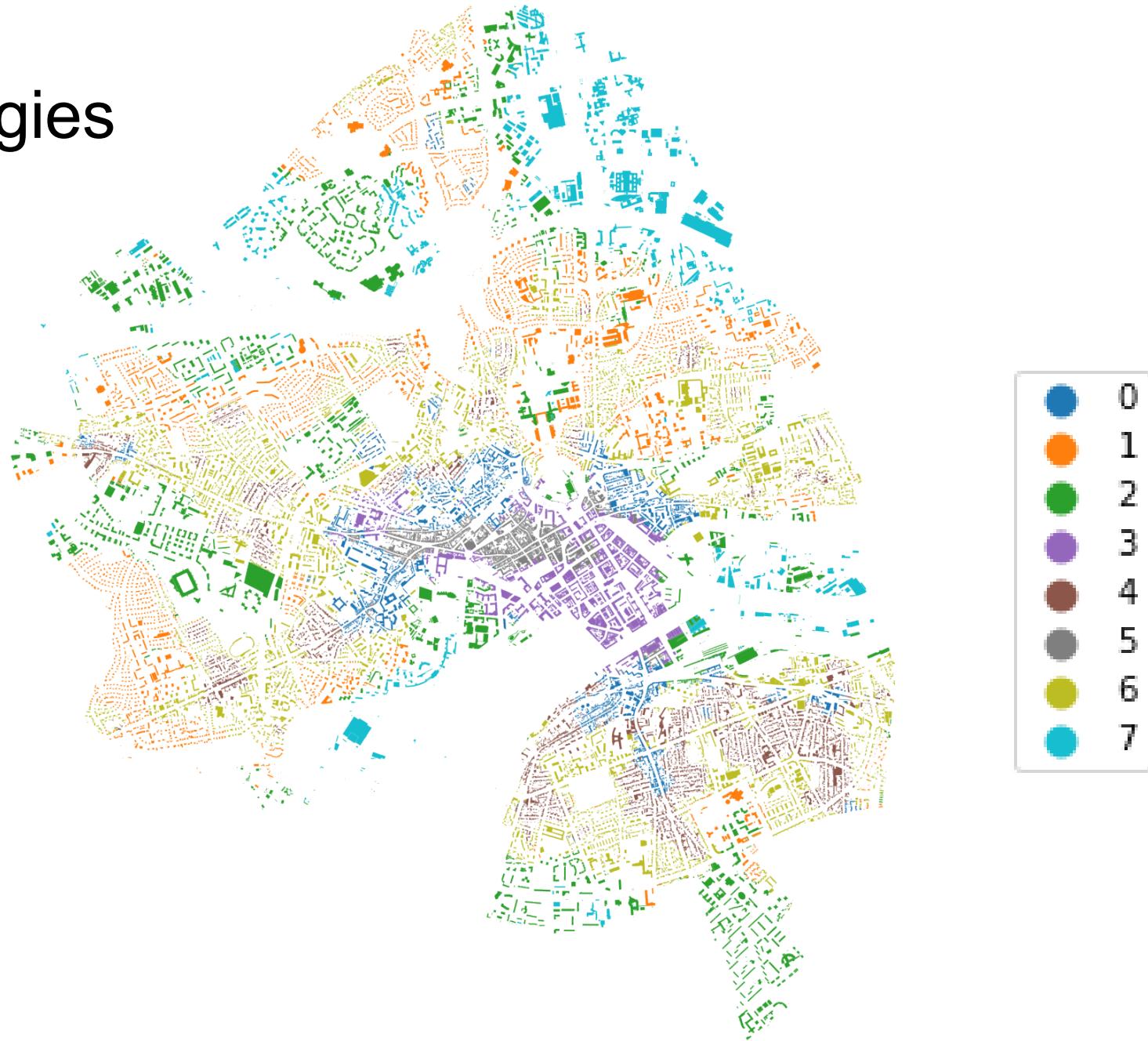
Inter-building distance



Adjacency



Urban typologies



Conclusions & future work

Conclusions & future work

After a very preliminary exploration, results suggest there is a relationship between accessibility and certain morphometric characters

Hexagonal tessellation can be a useful tool to standardise analyses across multiple study areas.

Conclusions & future work

GWR to quantify relationships between accessibility and urban form

Incorporate amenities as destinations

Assign weights to amenities based on demographic profiles

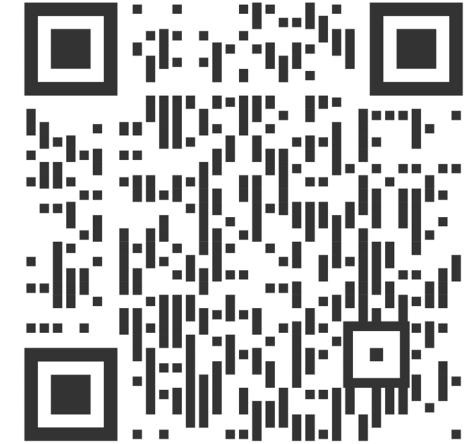
Socioeconomic & land use variables - Dasymetric population

Deep learning for urban tissue simulation



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Thank you

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