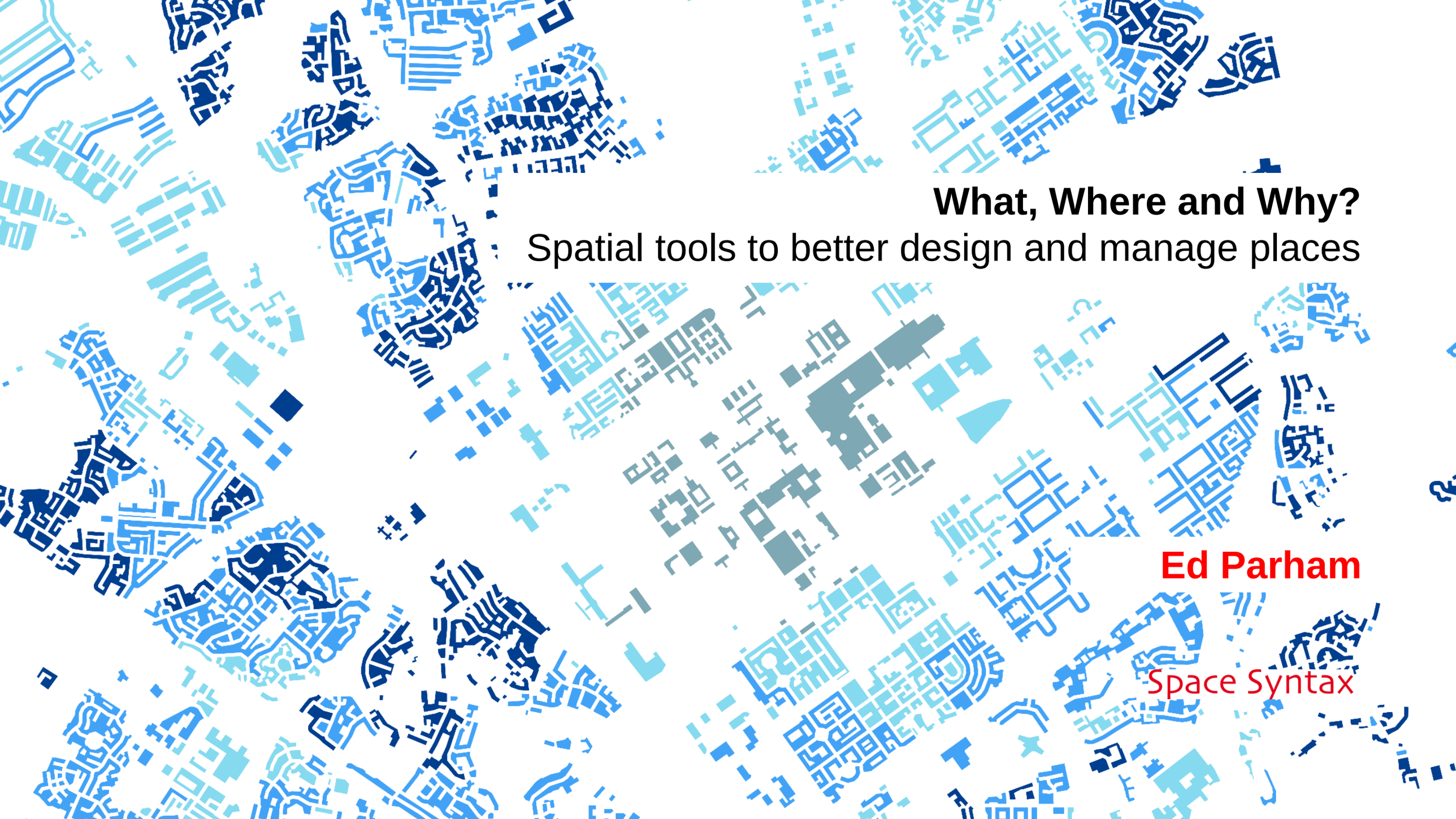


What, Where and Why?

Spatial tools to better design and manage places

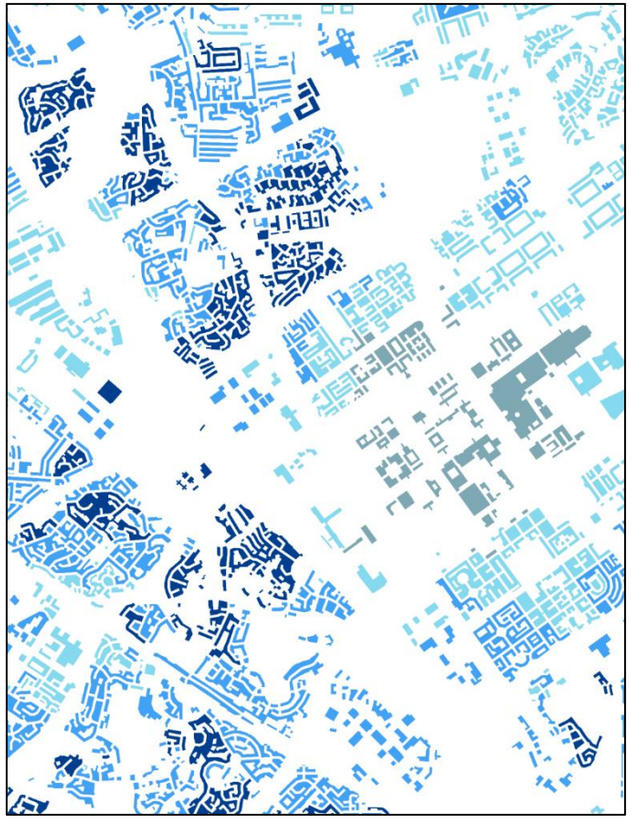
Ed Parham

Space Syntax

Space Syntax

UCL spin out
30+ years old
Employee owned

Daily activity, outcomes and impacts



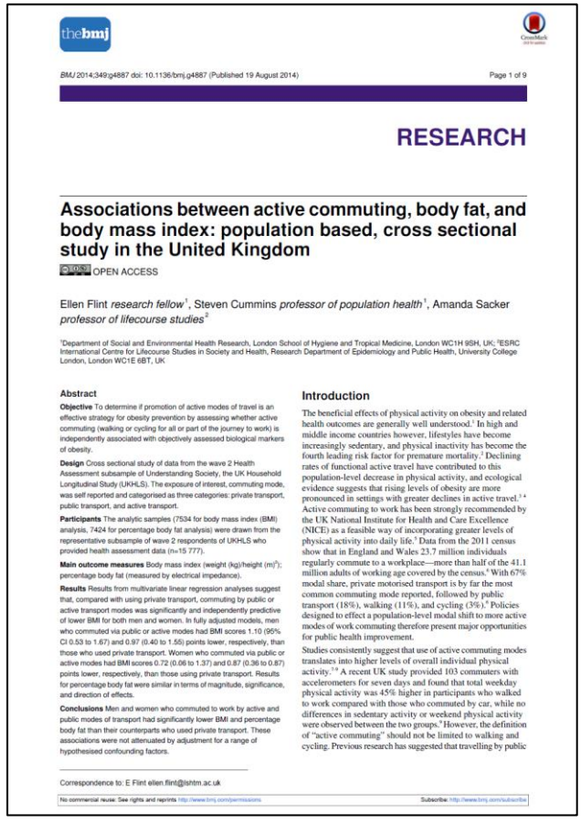
Young couples 'trapped in car dependency'

By Roger Harrabin
BBC environment analyst

24 October 2018 Share

The scramble to build new homes is producing communities where cars are the only form of transport

It must be miserable: you've saved for a newly-built home past the town's ring-road, but now you're trapped too often in a metal box with wheels.



thebmj

BMJ 2014;349:g4887 doi: 10.1136/bmj.g4887 (Published 19 August 2014) Page 1 of 9

RESEARCH

Associations between active commuting, body fat, and body mass index: population based, cross sectional study in the United Kingdom

OPEN ACCESS

Ellen Flint *research fellow*[1], Steven Cummins *professor of population health*[1], Amanda Sacker *professor of lifecourse studies*[2]

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Abstract

Objective To determine if promotion of active modes of travel is an effective strategy for obesity prevention by assessing whether active commuting (walking or cycling for all or part of the journey to work) is independently associated with objectively assessed biological markers of obesity.

Design Cross sectional study of data from the wave 2 Health Assessment subsample of Understanding Society, the UK Household Longitudinal Study (UKHLS). The exposure of interest, commuting mode, was self reported and categorised as three categories: private transport, public transport, and active transport.

Participants The analytic samples (7534 for body mass index (BMI) analysis, 7424 for percentage body fat analysis) were drawn from the representative subsample of wave 2 respondents of UKHLS who provided health assessment data (n=15 777).

Main outcome measures Body mass index (weight (kg)/height (m^2)); percentage body fat (measured by electrical impedance).

Results Results from multivariate linear regression analyses suggest that, compared with using private transport, commuting by public or active transport modes was significantly and independently predictive of lower BMI for both men and women. In fully adjusted models, men who commuted via public or active modes had BMI scores 1.10 (95% CI 0.53 to 1.67) and 0.97 (0.40 to 1.55) points lower, respectively, than those who used private transport. Women who commuted via public or active modes had BMI scores 0.72 (0.06 to 1.37) and 0.87 (0.36 to 0.87) points lower, respectively, than those using private transport. Results for percentage body fat were similar in terms of magnitude, significance, and direction of effects.

Conclusions Men and women who commuted to work by active and public modes of transport had significantly lower BMI and percentage body fat than their counterparts who used private transport. These associations were not attenuated by adjustment for a range of hypothesised confounding factors.

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Introduction

The beneficial effects of physical activity on obesity and related health outcomes are generally well understood.[1] In high and middle income countries however, lifestyles have become increasingly sedentary, and physical inactivity has become the fourth leading risk factor for premature mortality.[2] Declining rates of functional active travel have contributed to this population-level decrease in physical activity, and ecological evidence suggests that rising levels of obesity are more pronounced in settings with greater declines in active travel.[3 4] Active commuting to work has been strongly recommended by the UK National Institute for Health and Care Excellence (NICE) as a feasible way of incorporating greater levels of physical activity into daily life.[5] Data from the 2011 census show that in England and Wales 23.7 million individuals regularly commute to a workplace—more than half of the 41.1 million adults of working age covered by the census.[6] With 67% modal share, private motorised transport is by far the most common commuting mode reported, followed by public transport (18%), walking (11%), and cycling (3%).[6] Policies designed to effect a population-level modal shift to more active modes of work commuting therefore present major opportunities for public health improvement.

Studies consistently suggest that use of active commuting modes translates into higher levels of overall individual physical activity.[7-9] A recent UK study provided 103 commuters with accelerometers for seven days and found that total weekday physical activity was 45% higher in participants who walked to work compared with those who commuted by car, while no differences in sedentary activity or weekend physical activity were observed between the two groups.[9] However, the definition of "active commuting" should not be limited to walking and cycling. Previous research has suggested that travelling by public

The Social Cost of Automobility, Cycling and Walking in the European Union
Stefan Gössling, AndyChoi, Kaely Dekker, Daniel Metzler

Research in the EU* shows that the car represents a cost to society, on average of €0.11/pkm

Cycling and **walking** incur external benefits, at €0.18/pkm and €0.37/pkm, respectively

External cost of automobility (within the EU) is about €500 billion per year, while cycling and walking represent benefits of €24 billion and €66 billion

Space Syntax

Integrated Urban Models

Make better urban design and policy decisions by measuring how systems interact to affect daily patterns of use

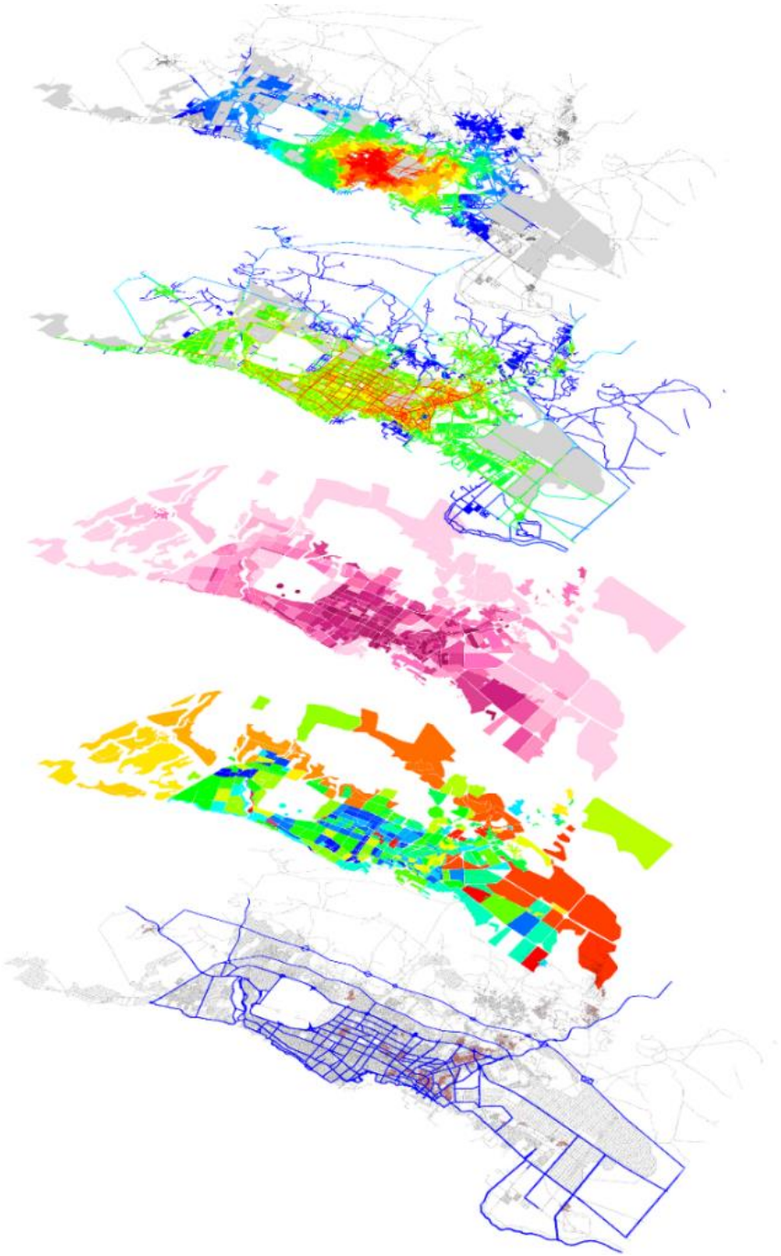
User focused outcomes:

How many jobs can I get to in half an hour?

Can I walk to a decent school or doctor?

Am I close to shops, cafes, parks etc?

What is better for everyone?



Road network

Public Transport Network

Pedestrian Routes

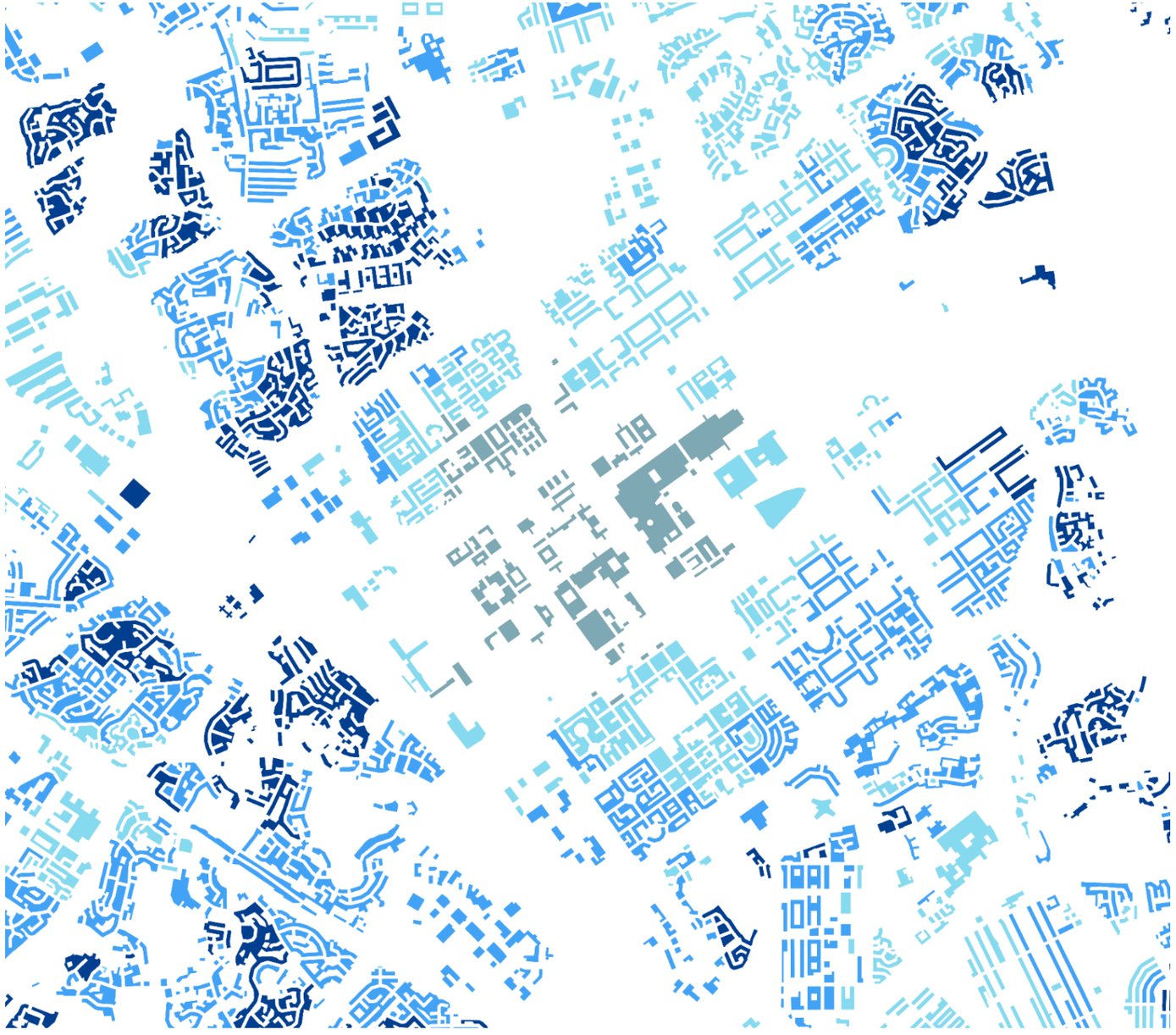
Land use

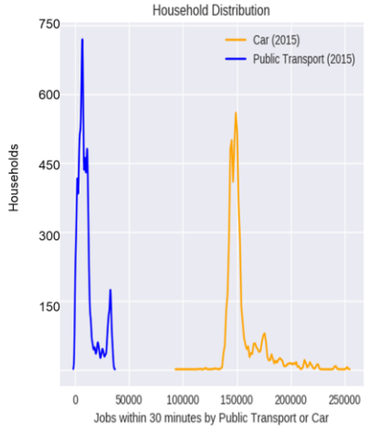
Population

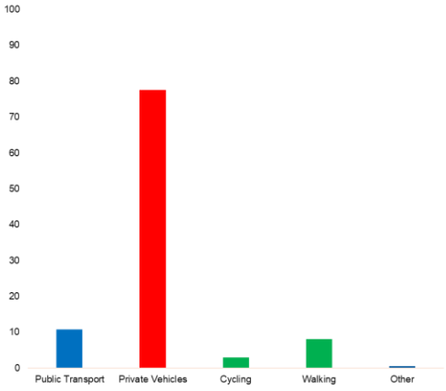
Census Data

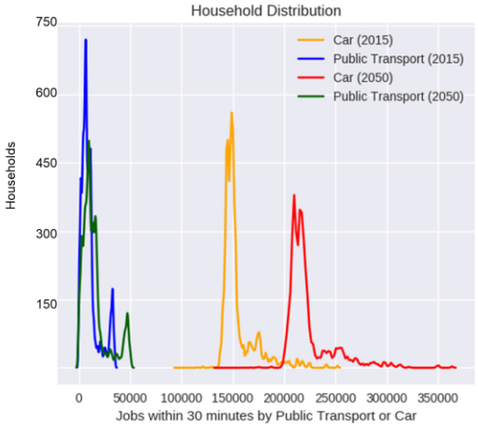
Space Syntax

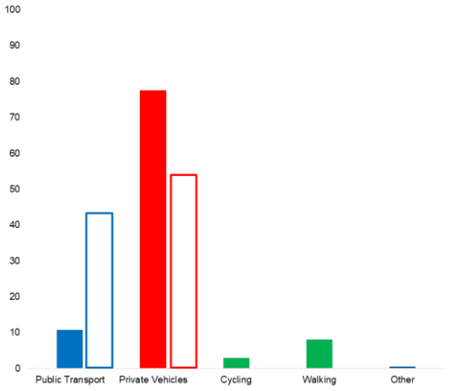
Place risk (existing and future)









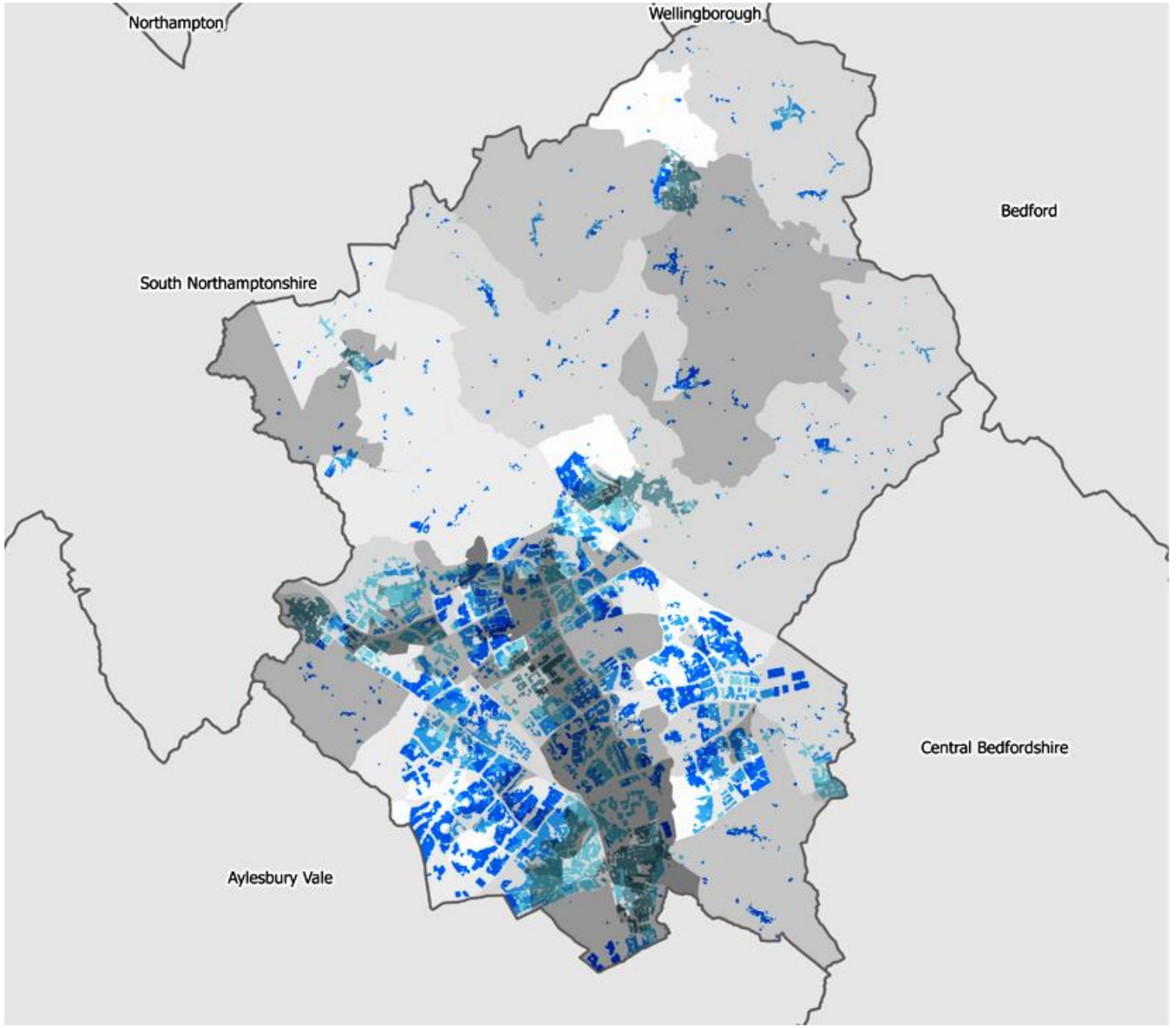


Car Dependence

Car is equal to Public Transport
Car is 1.0 x better
Car is 1.0 - 2.5 x better
Car is 2.5 - 5.0 x better
Car is 5.0+ x better

Space Syntax

Place and Demographic risk Social isolation in elderly people



Car Dependence

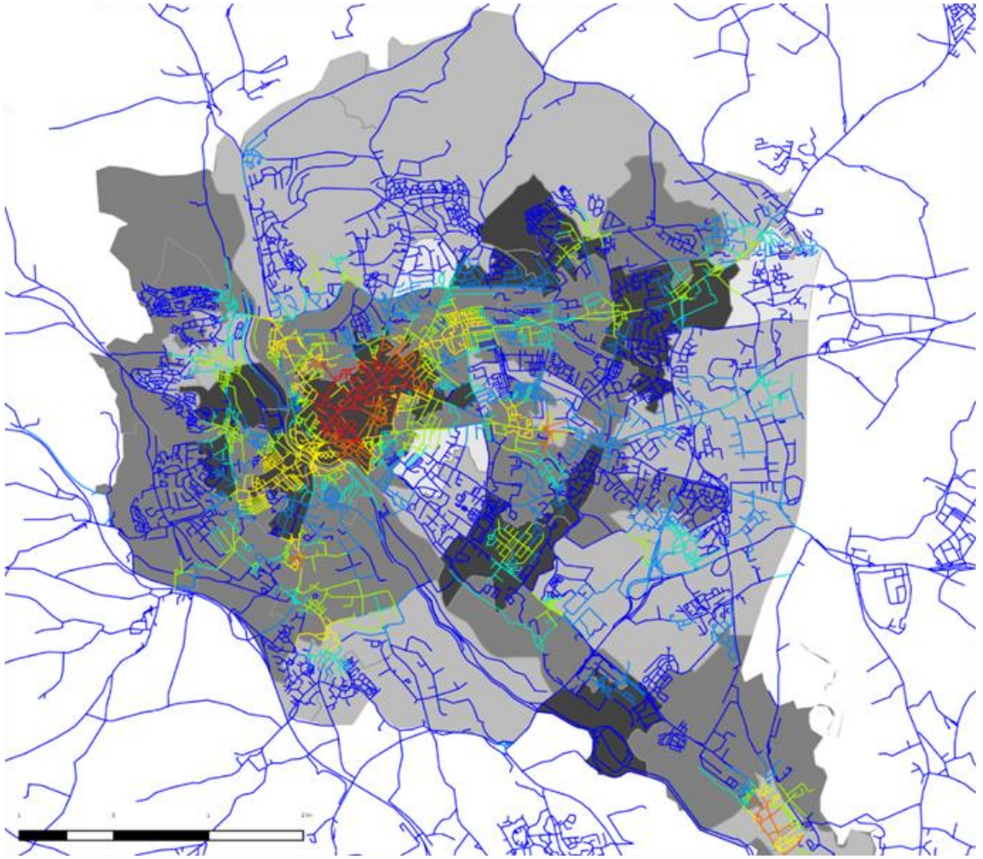
- Car is equal to Public Transport
- Car is 1.0 x better
- Car is 1.0 - 2.5 x better
- Car is 2.5 - 5.0 x better
- Car is 5.0+ x better

Social Isolation Score

- 0.300 - 0.600
- 0.600 - 0.800
- 0.800 - 0.900
- 0.900 - 0.950
- 0.950 - 1.150
- 1.150 - 1.400
- 1.400 - 2.000

Space Syntax

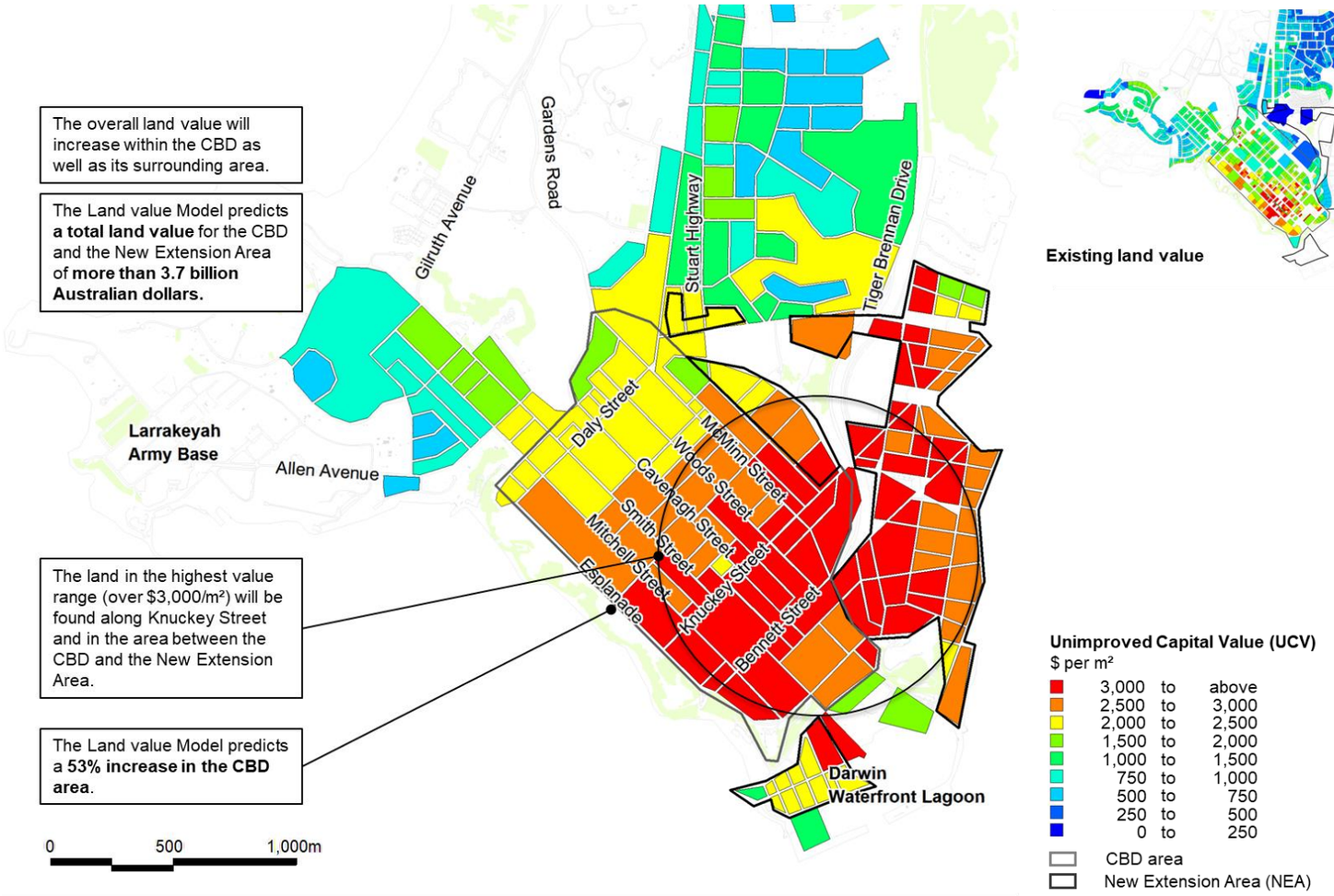
Place and long-term outcomes Obesity



indicator	Cumulative Car Dependency (Mean Average)	Average of number of different land uses	Average Number of GP's within 10 minute walk	Average Number of GP's with 80% satisfaction within 10 minute walk	Number of Residential ID's
Emergency Admissions DASR per 100,000 2014-2016	-0.18	0.35	0.17	-0.06	0.25
A&E Attendances DASR per 100,000 2016	-0.01	0.04	-0.04	-0.07	0.14
Falls Admissions DASR 2014-16	-0.25	0.39	0.22	0.24	0.06
KSI on Roads per 100,000 2014-16	-0.01	0.16	-0.08	-0.16	0.33
Census 2011 Health_Bad_SAR	-0.04	0.17	0.16	0.03	0.13
Census 2011 Long_Term_Condition_SAR	-0.14	0.27	0.15	0.00	0.14
Census 2011 Health Limited a lot 16-64 %	-0.08	0.11	0.01	-0.10	0.22
Adult Obesity Estimates (percentage) 2015	0.41	-0.48	-0.43	-0.44	-0.27
Physical Inactivity Estimates (percentage) 2015	-0.01	0.11	-0.06	-0.15	0.10
Life Expectancy at Birth (2011-2015)	0.13	-0.27	-0.15	-0.03	-0.17
Self-Reported Wellbeing 2011-12 Modelled Estimates by LSOA applied to 2014 Population - Low Happiness %	-0.14	0.25	0.08	-0.02	0.15
Respiratory Emergency Admissions (Crude Rate per 100,000), 2014-2016	0.17	-0.11	-0.03	-0.11	-0.01
Respiratory Emergency Admissions DASR per 100,000, 2014-2016	-0.11	0.22	0.25	0.24	0.03
Circulatory Emergency Admissions DASR per 100,000, 2014-2016	0.02	0.13	0.05	-0.05	-0.07
Circulatory Emergency Admissions (Crude Rate per 100,000), 2014-2016	0.23	-0.15	-0.16	-0.25	-0.13

Space Syntax

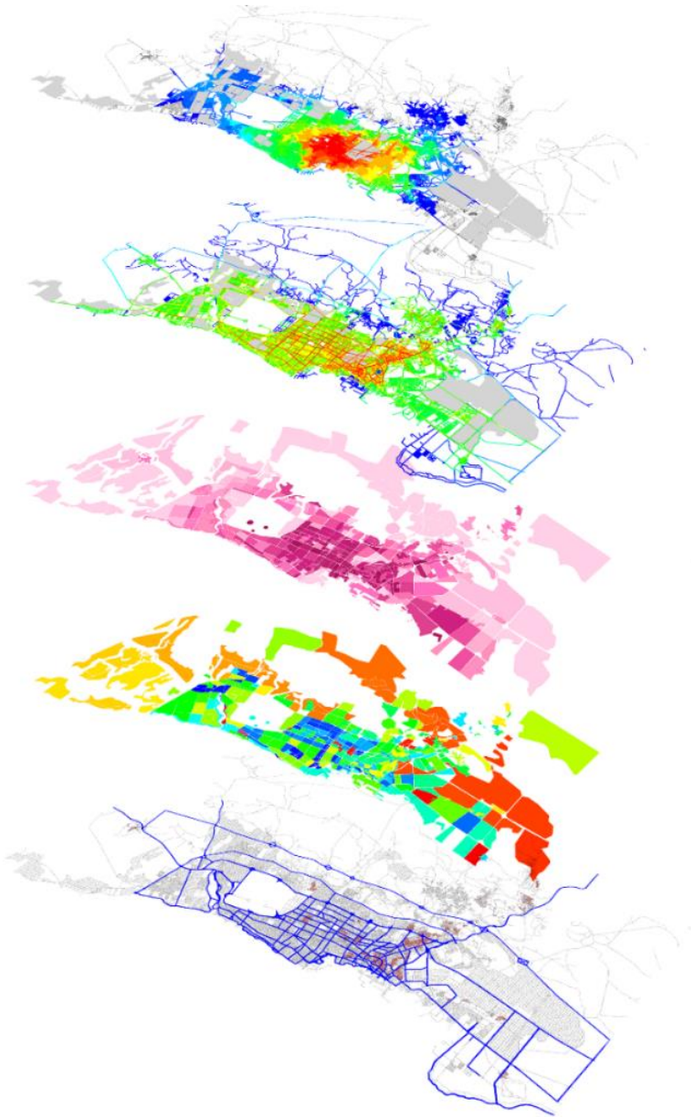
Place and long-term outcomes Value

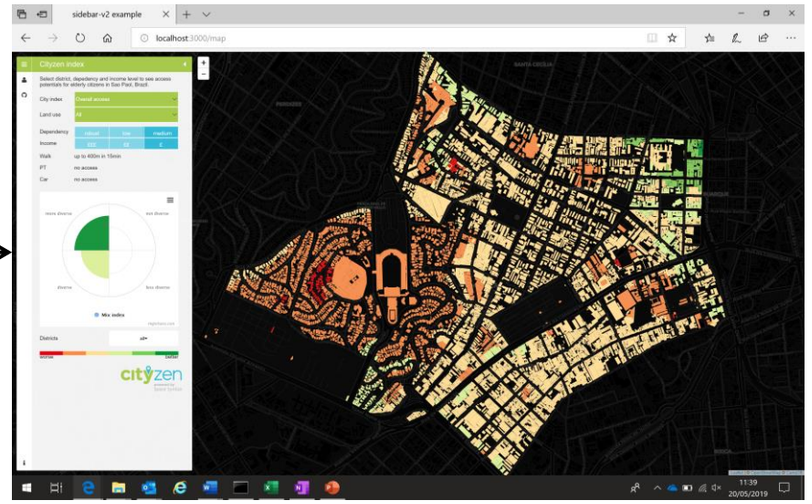


https://princes-foundation.org/journal/walkability-report

Space Syntax

Design better new places and better manage existing places





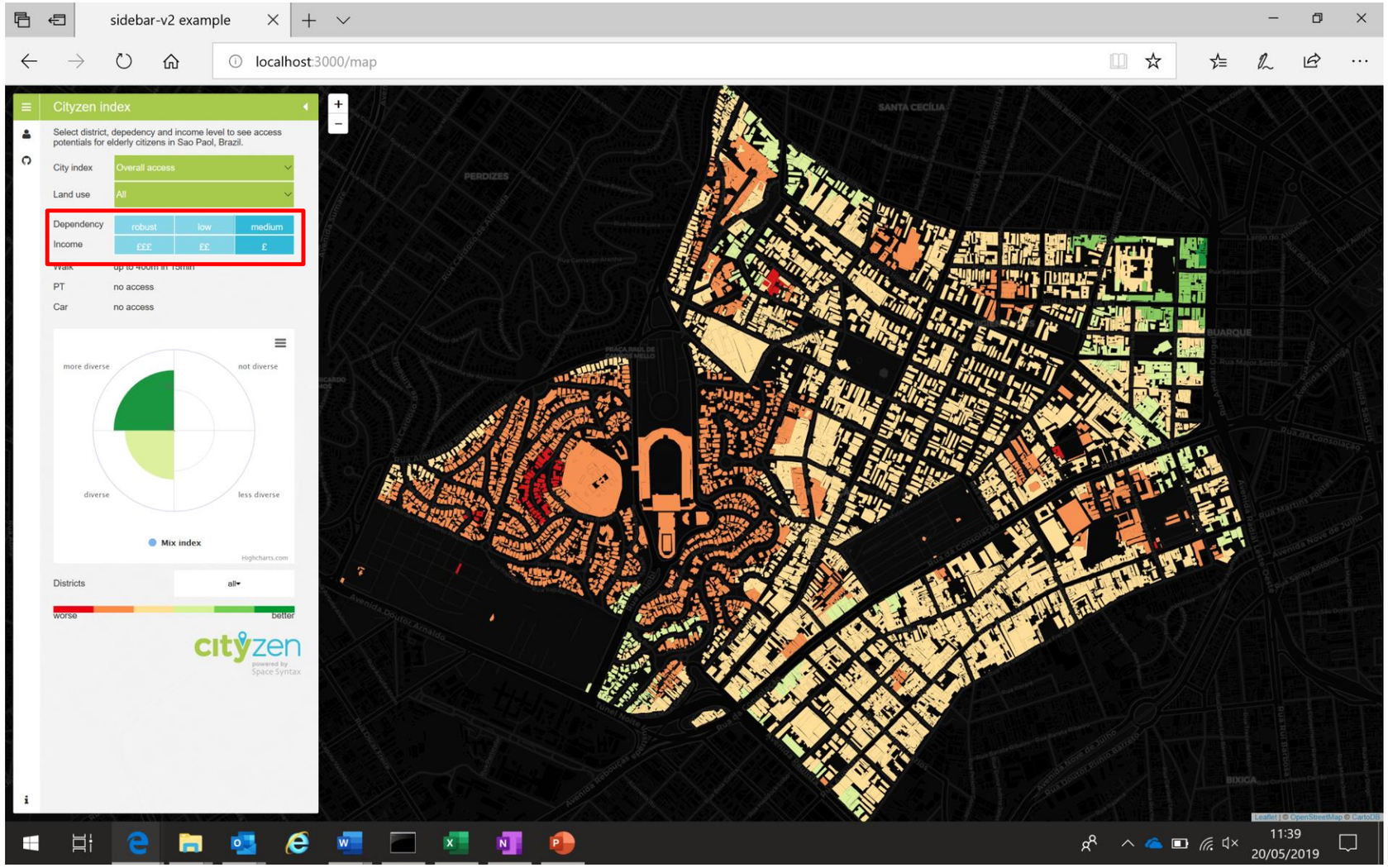
Space Syntax

Design better new places Astana 2050

Nur-Sultan
2030 masterplan

Space Syntax

Better manage existing places CityZen Explorer

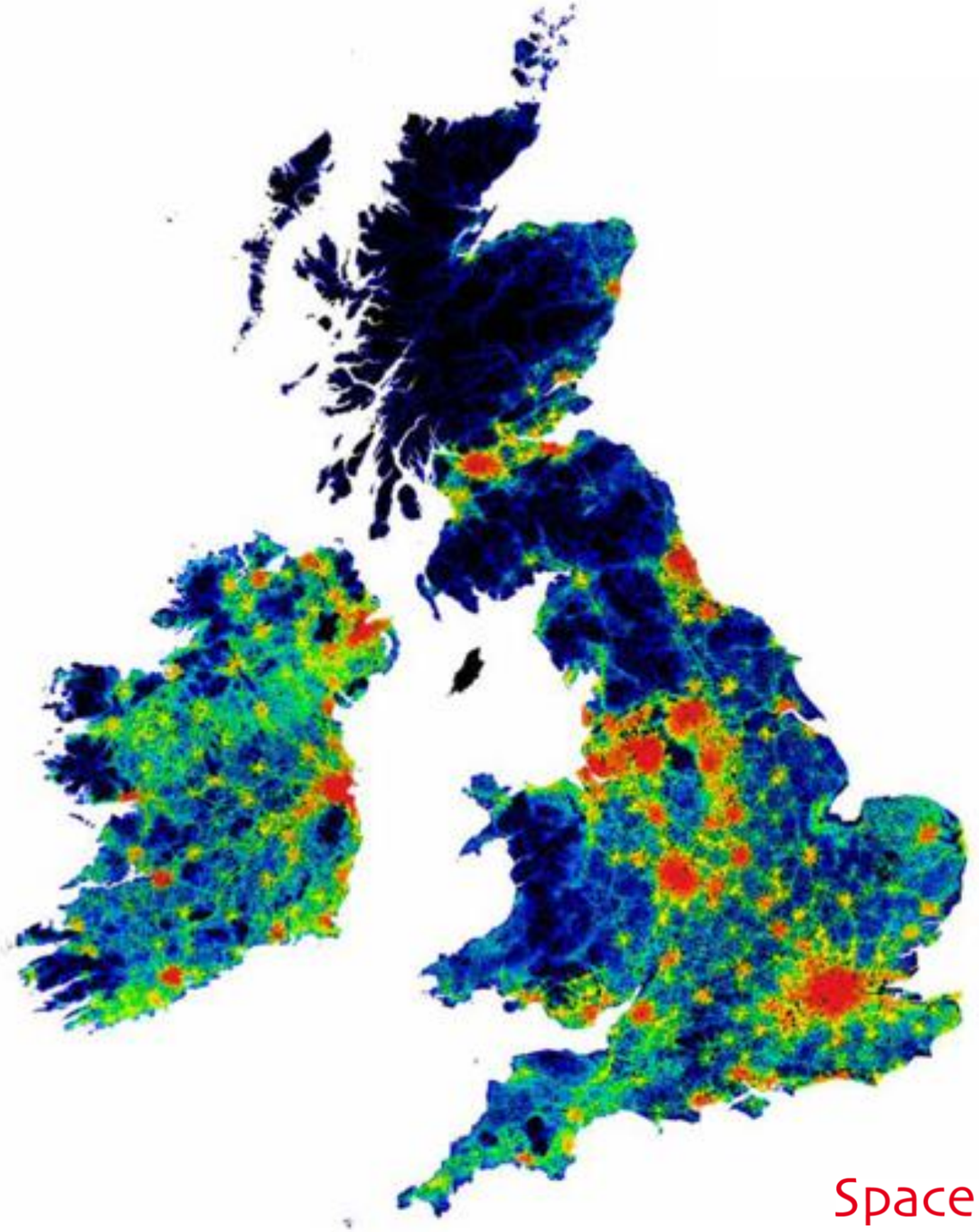


City Professional

Where are the highest risk areas?
What makes them like this?
What could be done to change them?
Where is there a shortfall of facilities?
Where should be prioritised?

www.spacesyntax.com/cityzenexplorer

Space Syntax



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