Thinking about place

ILO27 – Computer Modelling for All

THE UNIVERSITY OF WARWICK

Q-Step

A step-change in quantitative social science skills

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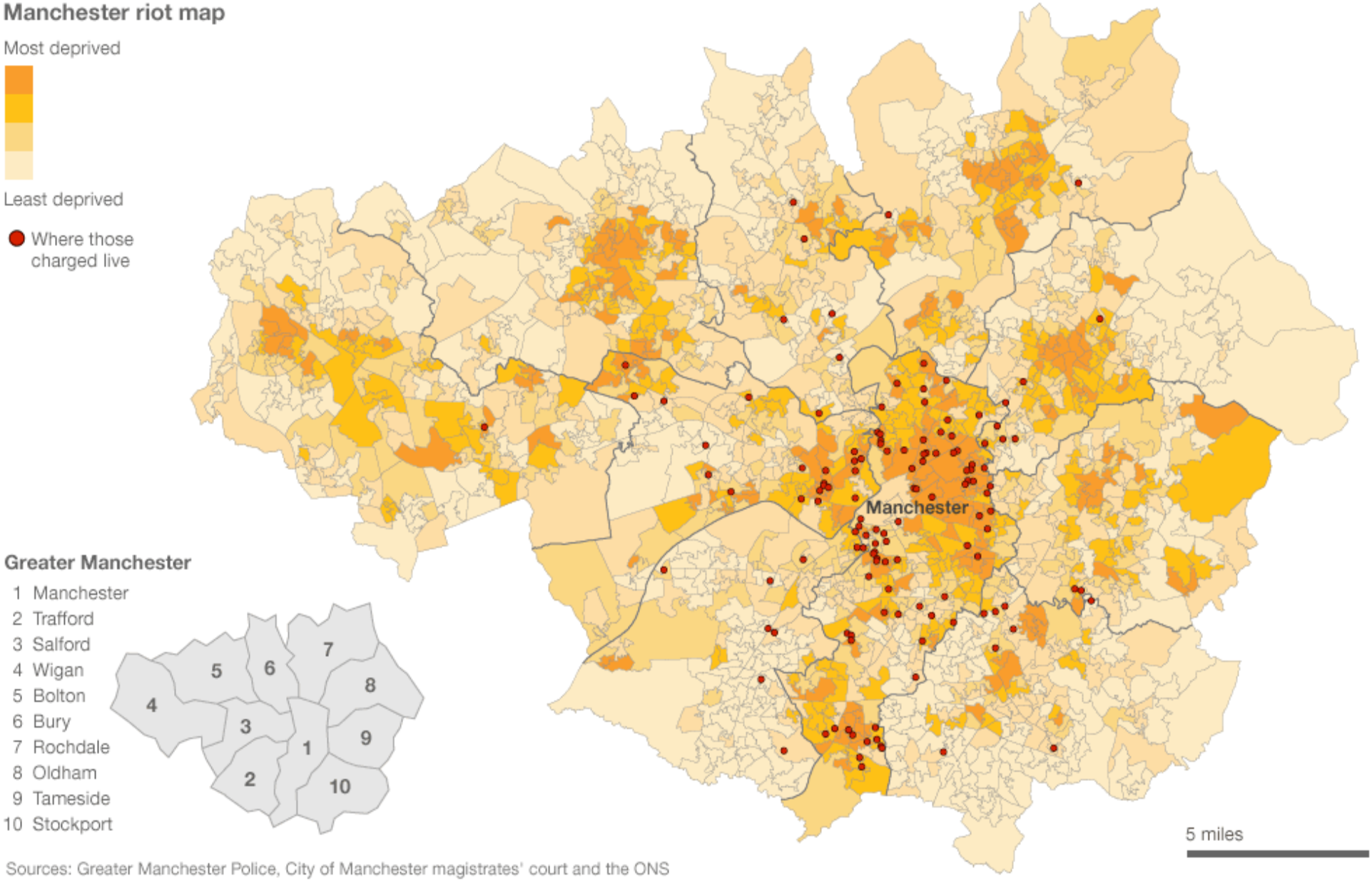
- Teaching Fellow in Sociology at Warwick
- Research interests in social inequalities
- PhD completed in 2016: Tenure, household, ‘home’ and the new urban landscape: a mixed methods analysis of the changing private rented sector
- Previously worked in regulating performance of local government, health and criminal justice

Why place matters

Manchester riot map



Sources: Greater Manchester Police, City of Manchester magistrates' court and the ONS

Why place matters

Our view of society is determined by the relations with people around us. For most this is through attachment to places:

- Where we grew up
- Where our families come from
- Where we went to school
- Where we are now

At various times these places are important to us, they evoke imaginations of ‘home’, provide us with a sense of who we are and how we project ourselves to others. They may evoke other aspects of identity: social class, race and culture.

Why place matters (2)

We have learnt to associate places with ideas about their characteristics often based on historical events.

What do you think of when people talk about the East End of London, Moss Side, Liverpool, Handsworth?

‘Problem’ places have been identified by the types of people who live in them in popular discourse. They include the dangerous classes of Victorian London, Commonwealth migrants in the 1950s and 60s, black youths and mugging in the 1970s, the underclass and benefit scroungers in the 1980s, Eastern European migrants and most recently the Muslim extremist. At a local level moral panics about the Albanians, the Russian mafia and the Gurkhas have dominated press reporting.

Why place matters (3)

Public spending is mediated through local agencies: local government, health bodies, criminal justice agencies so it is important to understand the local context to ensure that this money is spent on what is necessary.

Central government delegates duties (what must be done) and powers (what can be done) to these local bodies. They are accountable for how they spend this money and, to varying degrees over time, what they achieve with it.

Local information

We collect large amounts of information about individuals. In the commercial sector this data is mapped into specific locations to inform decisions about the location of stores, marketing and what stock to hold. In the public sector similar data is used to forecast services: such as new schools, health facilities and policing routines.

The information is based on a decennial census (last one was 2011) supplemented by mid year population estimates and data collected through public service delivery.

The data is organised into spatial units that support the type of investigation we want to undertake.

Spatial units

Administrative

- City region, local authority (three tiers), electoral wards
- *Subject to boundary changes in response to population shifts e.g. in the next reorganisation Birmingham will go from 40 wards to 69 wards*

Electoral

- 650 constituencies for the election of MPs and Assembly members
- *Subject to boundary changes in response to population shifts*

Statistical

- Output area geography developed for the 2001 census with areas based on having similar characteristics

Statistical geography

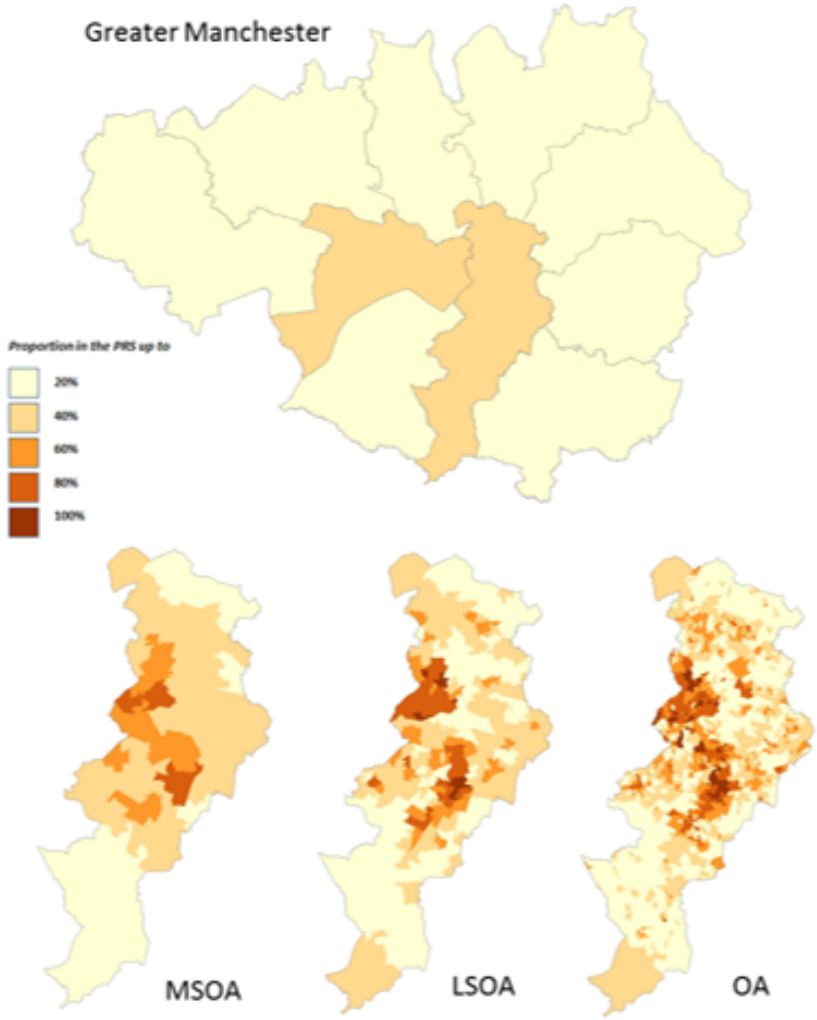
The benefits of using a statistical geography are that it remains relatively stable and areas are generally more homogeneous.

- Output areas have an average population of 300 people
- Lower level super output areas (LSOAs) have an average population of 1,500 people
- Middle level super output areas (MSOAs) have an average population of 7,200 people

In 2011 the output area geography was updated to reflect population change. Around 95% of boundaries stayed the same.

Choosing the best geographical unit

Figure 1 – proportion of households in the private rented sector



In the first figure Manchester is represented by a single shade with the proportion of people living in the PRS just under 30%. There are fifty seven MSOAs in Manchester and patterns of concentration emerge in the city centre and towards the north and south.

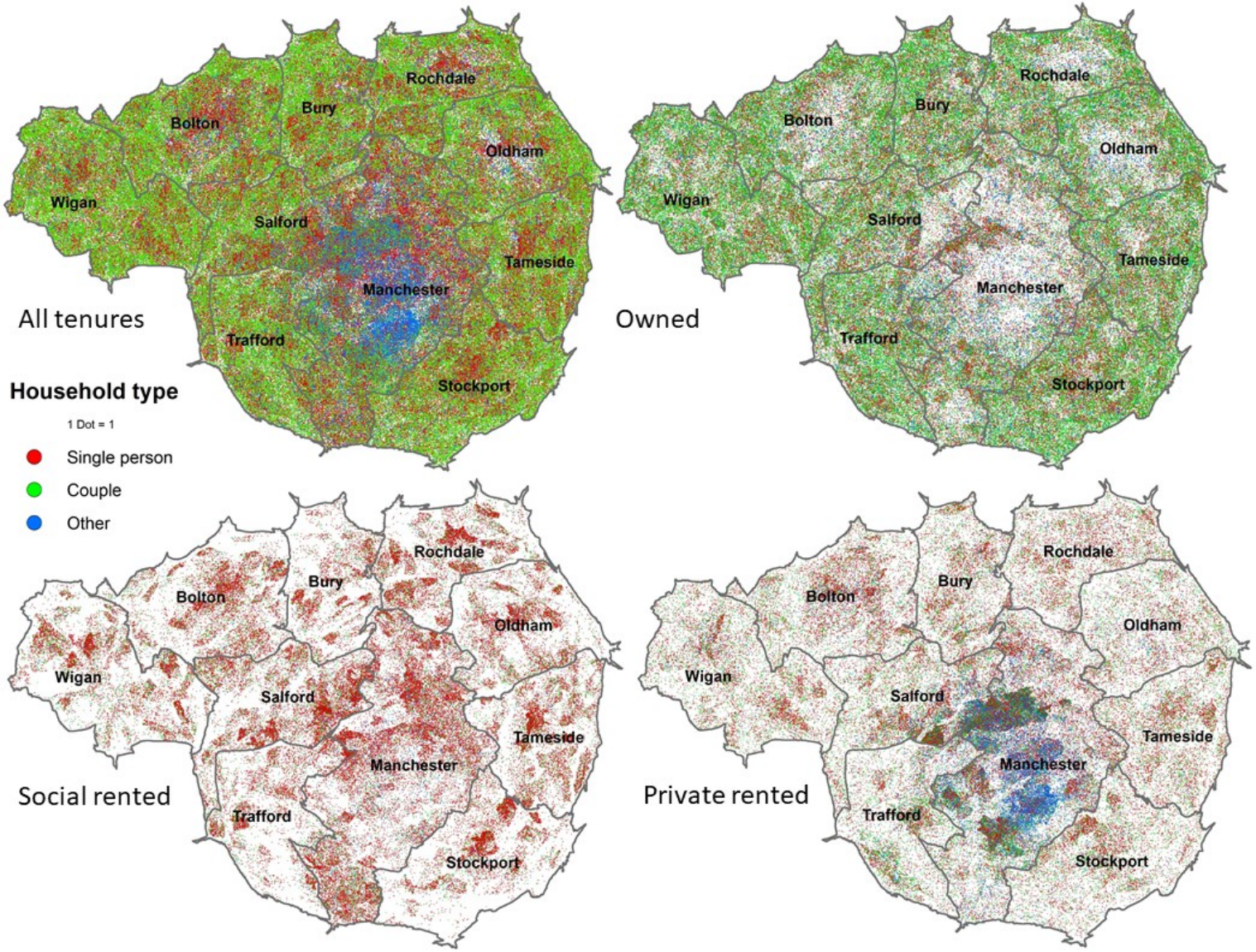
The range of values of people living in the PRS varies between 10% and 70%. There are 282 LSOAs in Manchester and individual pockets of concentration are visible as areas become more distinguishable. The range of values of people living in the PRS now varies between 5% and 90%. There are 1,530 output areas. The patterns of concentration become more complex. The same overall pattern of concentration was dominant but the variation in other parts of the city has become increasingly evident. The range of values of people living in the PRS now varies between 0% and 97%.

Exploring household polarisation in Greater Manchester

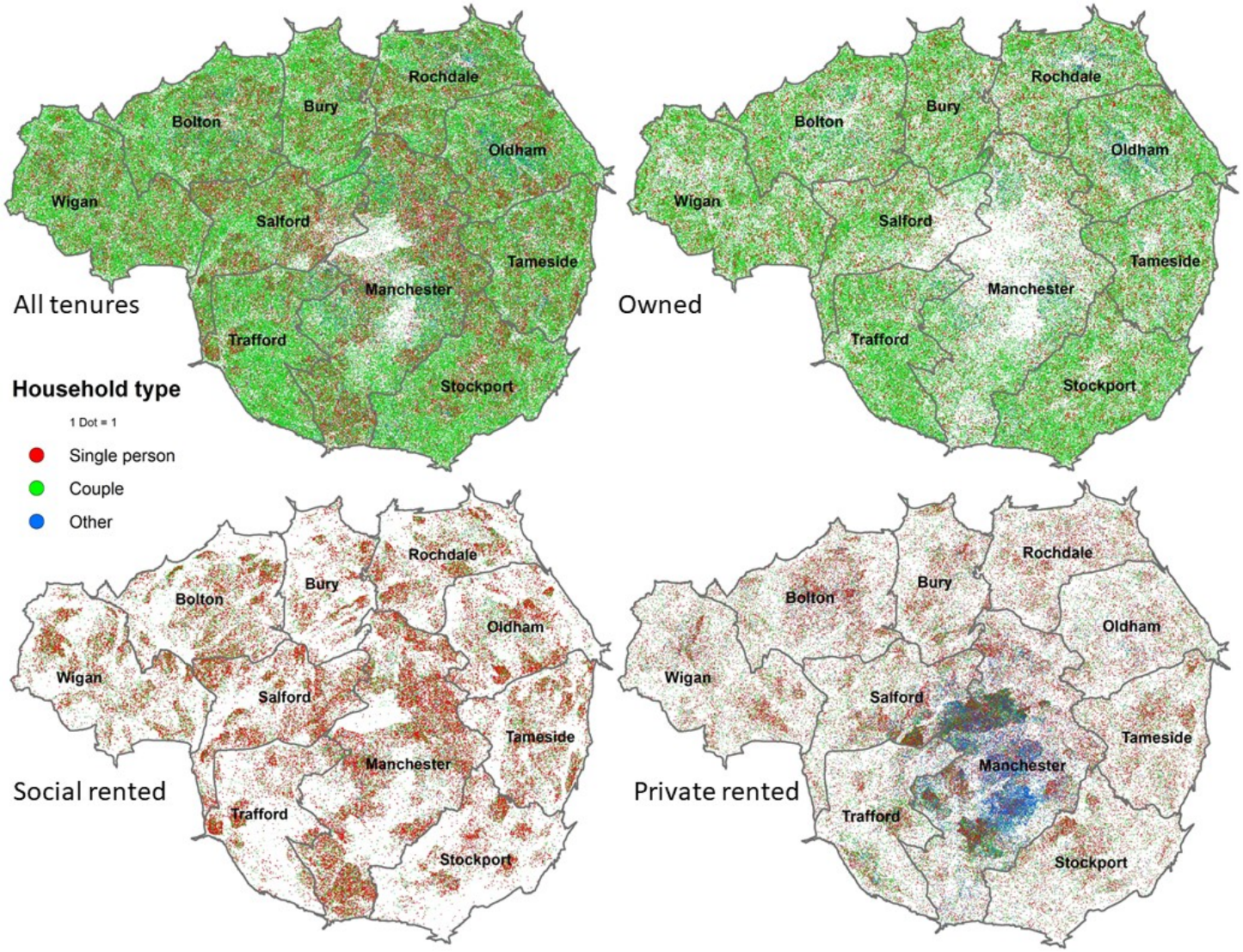
using a different way of mapping

… a cartogram based on population

Households without dependents by tenure in Greater Manchester



Households with dependents by tenure in Greater Manchester



and a puzzle from the West Midlands… what do you think has happened

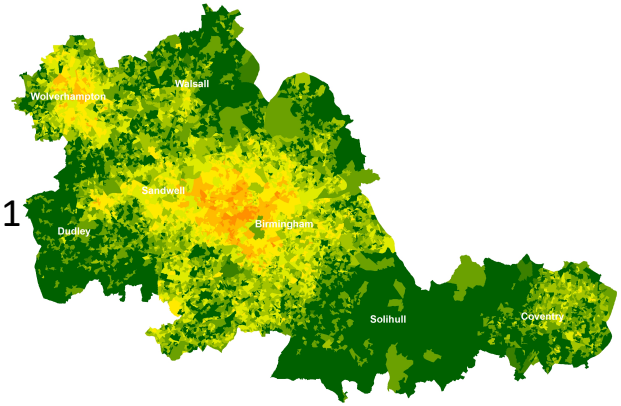
Black African ethnic group fell from 76,000 in 2001 to 56,000 in 2011

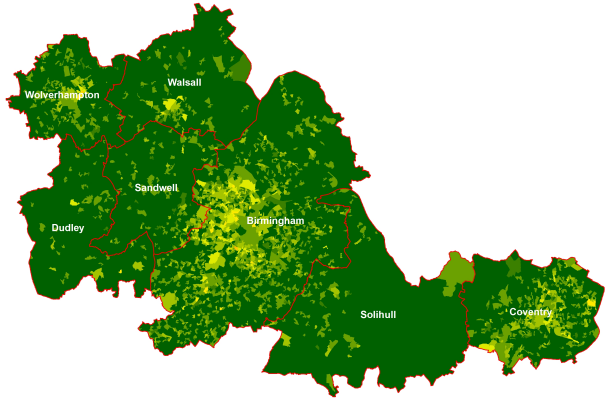
Black Caribbean ethnic group grew from 10,000 in 2001 to 80,000 in 2011

Black African

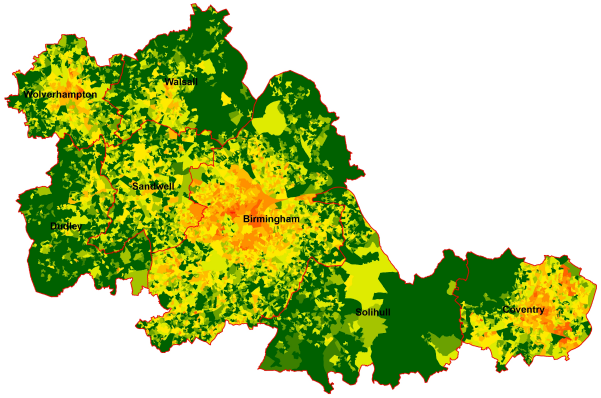
Black Caribbean

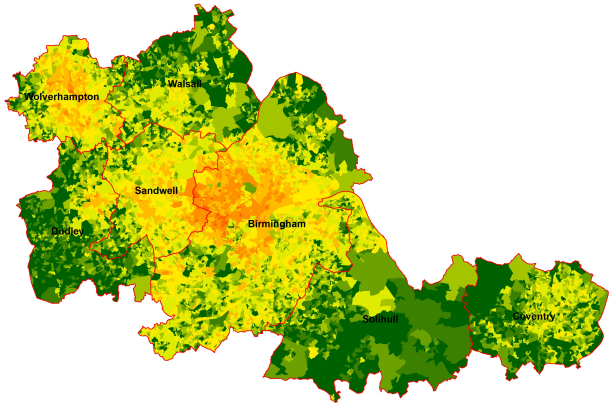
2001





2011





Coventry

Information is provided at LSOA level for Coventry. In the class we will work through some population data. The assignment is based on other datasets.

Open the dataset age.csv. The header shows the age bands and each cell holds the count for each LSOA.

LSOA	all	a0-4	a5-7	a8-9	a10-14	a15	a16-17	a18-19	a20-24	a25-29	a30-44	a45-59	a60-64	a65-74	a75-84	a85-89	a90
Coventry 0	1425	120	54	22	101	27	44	31	102	116	299	248	71	117	28	11	5

We will look at a couple of key demographic ratios, the age related dependency ratios, and the way they vary between local areas in Coventry.

The dependency ratios measure the relationship between the working age population, children and older people. The working age population is defined as those aged 16-64. Younger people are aged 0-15 and older people aged 65 or over.

Calculate three new fields to hold these three figures for each LSOA.

Age related dependency ratios

The child dependency ratio is calculated as

$$\frac{\text{Number of children}}{\text{Working age population}}$$

The older people dependency ratio is calculated as

$$\frac{\text{Number of people aged 65 or over}}{\text{Working age population}}$$

Calculate the dependency ratios for each LSOA

Generate a histogram of the dependency ratios

Calculate summary statistics (mean, standard deviation, minimum and maximum)

Planning service provision

In this application we will look at the school places required for Coventry using the 2011 census data. In reality these calculations are regularly updated to try and reflect births and migration in and out of local areas. We are interested in four education sectors:

- Pre-primary for ages 0-4
- Primary for ages 5-10
- Secondary for ages 11-15
- Tertiary for ages 16-17

You will notice that one of the age bands (10-14) goes across the boundary of the bands we want. We can apportion this by taking 20% into primary and 80% into secondary.

Calculate the number of potential students for each sector by LSOA

Calculate summary statistics (mean, standard deviation, minimum and maximum)

Identify the five top LSOAs for each sector

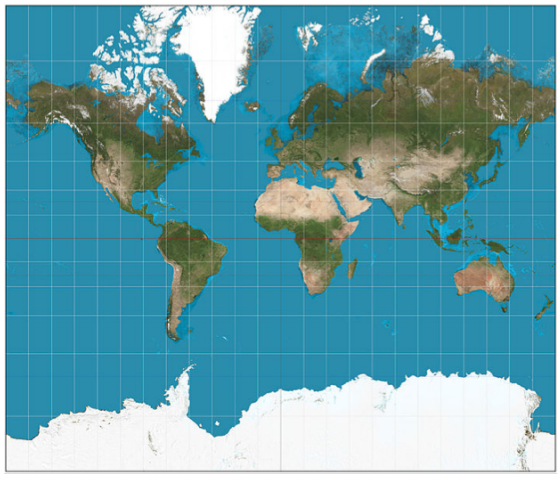
The mechanics

A number of different elements

- Projection
- Shapes
- Data
  - areal
  - point
- …

Projections and co-ordinate systems

Projection – going from a sphere to a flat surface



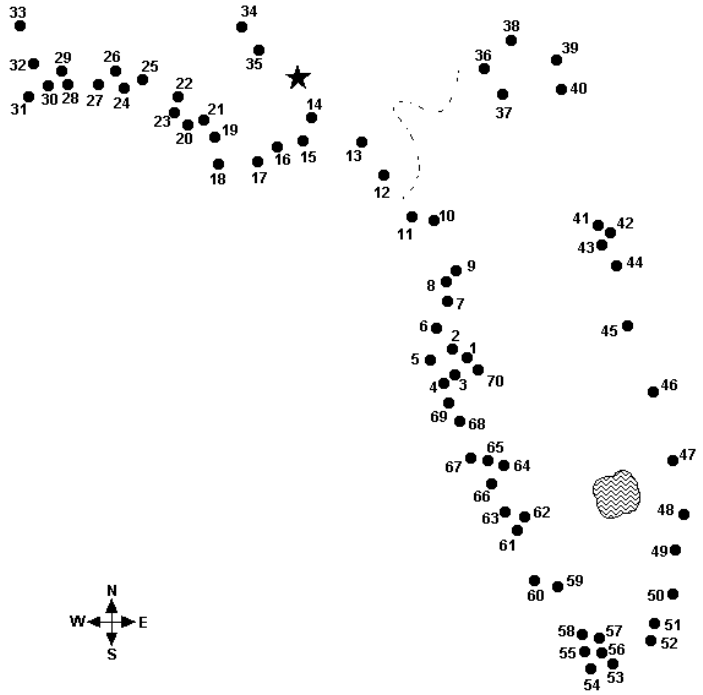
Co-ordinates

- Latitude and Longitude (WGS 1984)
  British National Grid (Eastings & Northings)

Shape files

Commonly used system is based on ESRI developed by Arc-GIS

- Developed by joining up the dots



Data

Areal data: collected for each geographical unit in the areas you wish to represent

	A	B	C	D	E	F	G	H	I
1	LSOA	pop	empft	hwind	owned	sochse	prs	sp	cpnc
2	Bolton 001	537	312	0.703911	0.928741	0.007126	0.064133	0.123515	0.337292
3	Bolton 001	566	337	0.717314	0.763485	0.002075	0.23444	0.232365	0.325726
4	Bolton 001	435	251	0.705747	0.900524	0.015707	0.08377	0.157068	0.36911
5	Bolton 001	560	354	0.723214	0.865116	0.002326	0.132558	0.176744	0.286047
6	Bolton 001	519	290	0.697495	0.869658	0.004274	0.126068	0.215812	0.34188
7	Bolton 002	384	230	0.710938	0.930514	0.003021	0.066465	0.154079	0.392749
8	Bolton 002	432	267	0.689815	0.771739	0.089674	0.138587	0.228261	0.293478
9	Bolton 002	456	255	0.66886	0.861502	0.025822	0.112676	0.143192	0.338028

Point data: collected for each location you want to highlight

	A	B	C	D	E	
1	X	Y	Label_Tex	Phase	Condition	TIF
2	382360.6	403798.8	Heaton Pa	1 & 2	functional	
3	383530.3	403163.7	Bowker Va	1 & 2	functional	