BANK OF ENGLAND

Spatial Inequality
Andrew G Haldane

DNB SUERF Conference

De Nederlandsche Bank, Amsterdam

8 January 2020

Is All Economics Local?

"*All politics is local.*"

      Tip O'Neill

      (Former Speaker of US House of Representatives)

"*Many of the economic and political concerns today across the world can be traced to the diminution of the community.*"

      Raghu Rajan

      (Former Governor of Reserve Bank of India)

"We are going to level-up and unite our country"

      Boris Johnson

      (UK Prime Minister)

BANK OF ENGLAND

Plan

- *Mapping* the economy – is all economics 'local'?

- Structural fault lines – the "Big Six"

- *Modelling* the economy – micro-to-macro

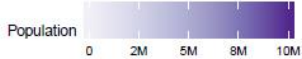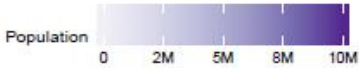- *Managing* the economy – a "complex needs" case

BANK OF ENGLAND

Mapping the UK Economy

- What do we mean by "doing well/badly"?

- Several different metrics – wealth, health and happiness

- At different resolutions – regional, local authority, postcode

- Scaling by "economic" size – cartograms
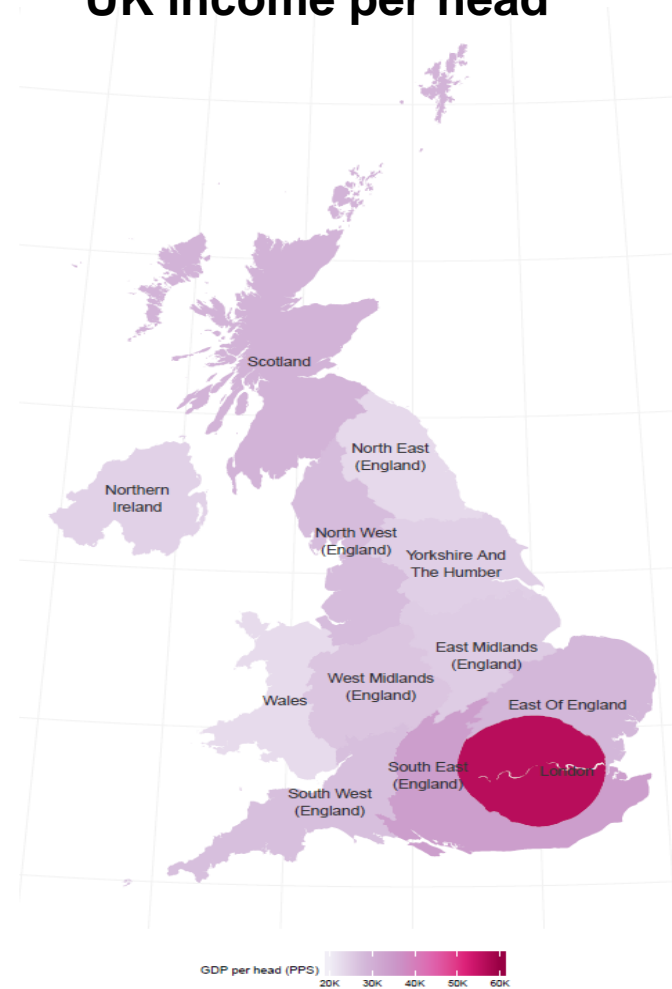
  ➢ **Complex, local adaptive system**

Population Cartograms
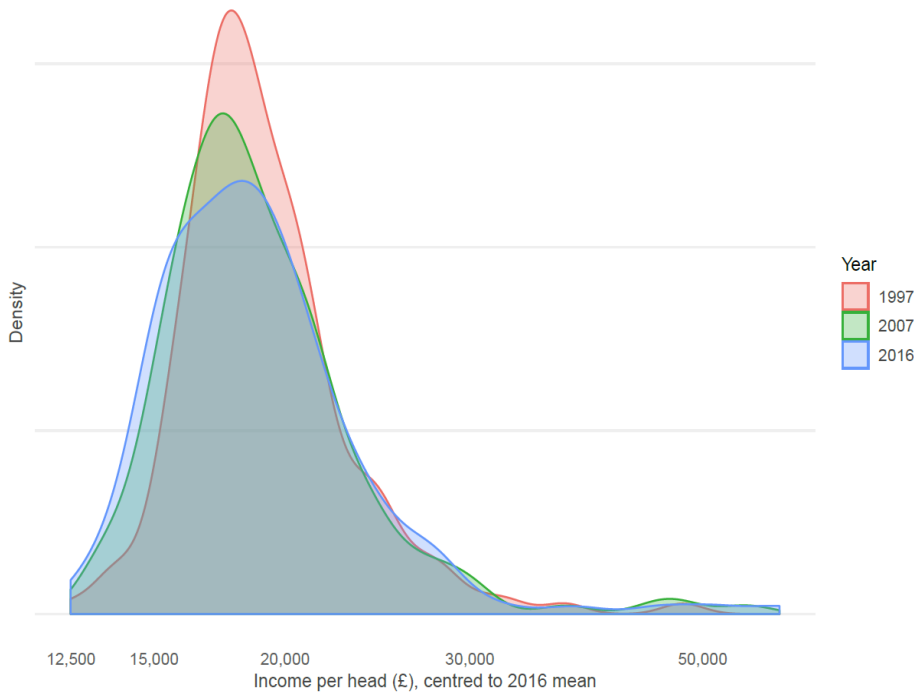
Regional Income Inequality

UK income per head

GDP per head (PPS)
20K 30K 40K 50K 60K

Sources: Eurostat and Bank calculations.

Notes: Purchasing power standard (PPS) per inhabitant for NUTS 1 regions.

BANK OF ENGLAND

6

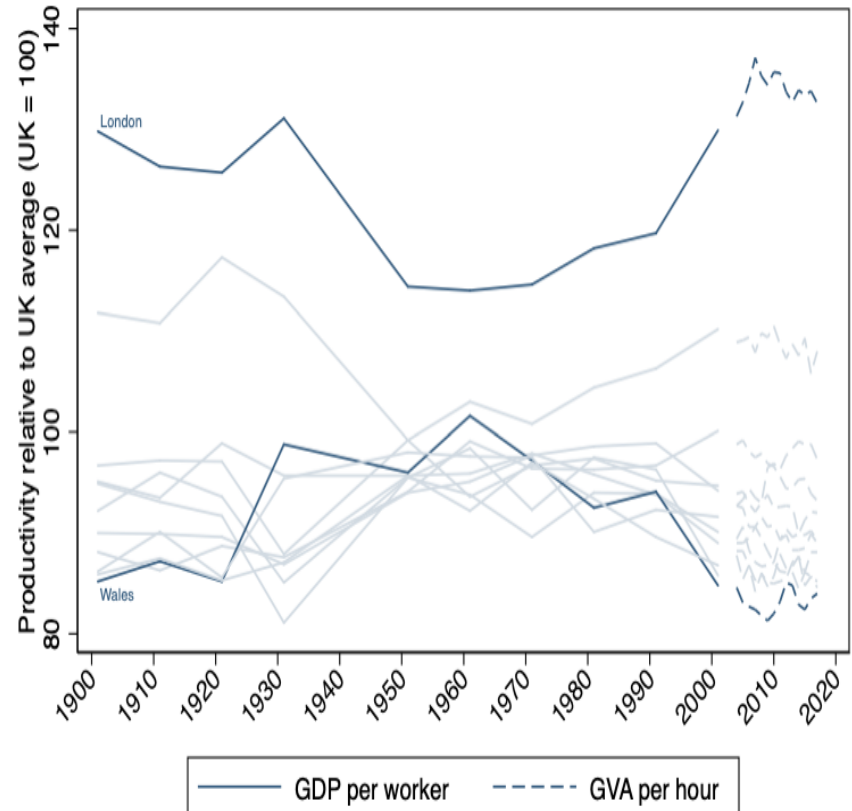# Income Inequality Compared – within the UK

Distribution of income

Productivity across regions

Sources: ONS and Bank calculations

7

Income Inequality Compared – between countries

Distribution of income
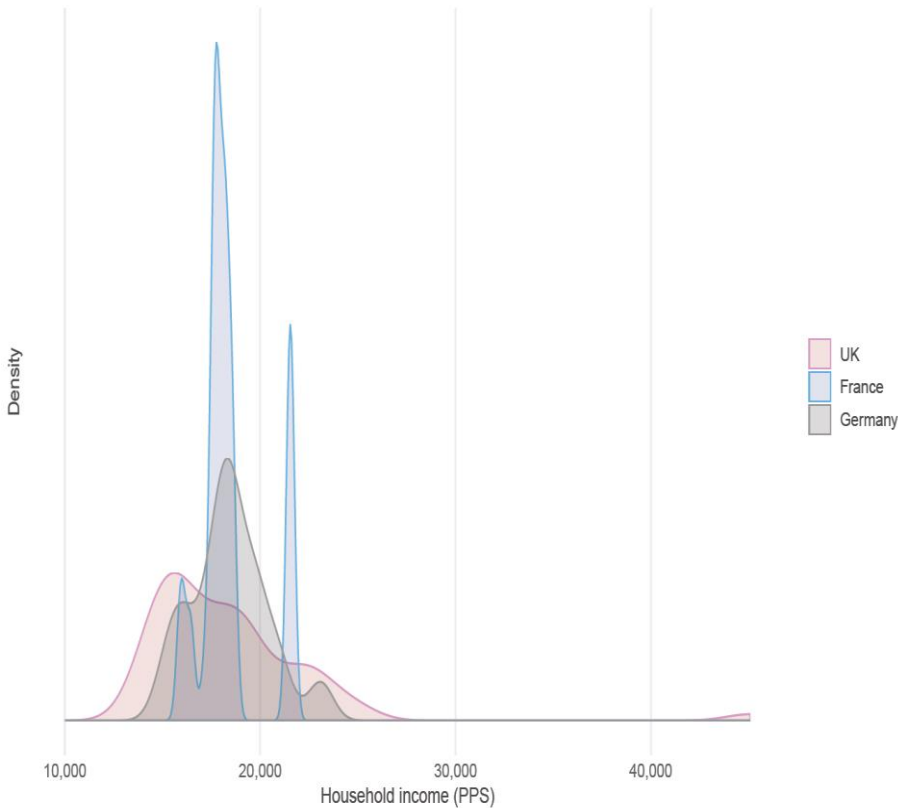
Productivity across countries

Sources: ONS and Bank calculations
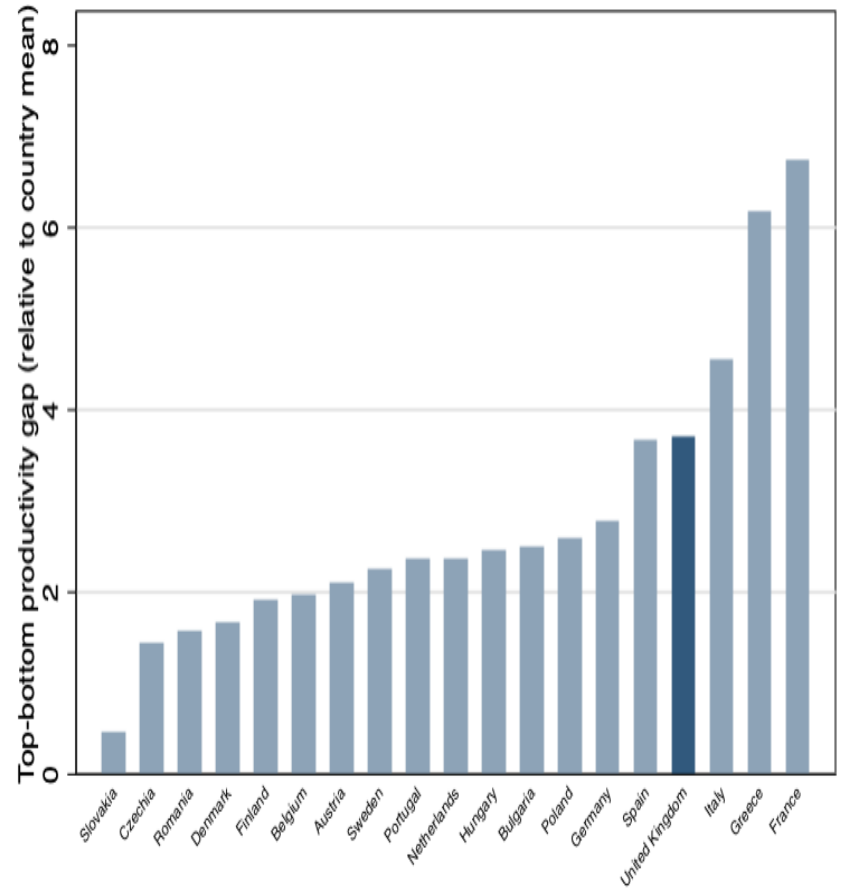
Health v Happiness

Cartogram of UK life expectancy

Cartogram of UK well-being
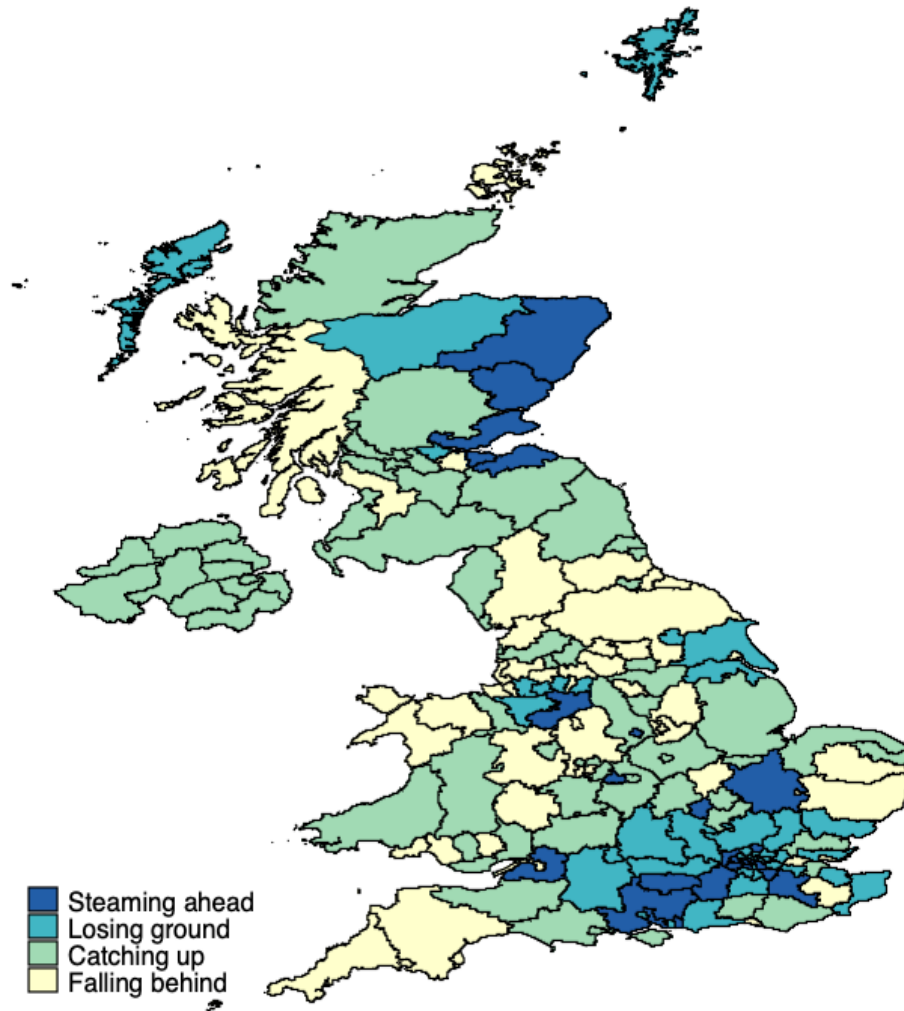

Sources: ONS and Bank calculations

9

Economic and Social Outcomes

	Productivity	Disposable income	Education	Broadband access	Life expectancy	Employment	Voter turnout	Homicide rate	Life satisfaction	Perceived network	Rooms per person
Productivity	1.00										
Disposable income	0.92	1.00									
Education	0.85	0.89	1.00								
Broadband access	0.58	0.72	0.65	1.00							
Life expectancy	0.51	0.72	0.50	0.51	1.00						
Employment	0.40	0.67	0.62	0.67	0.55	1.00					
Voter turnout	0.31	0.52	0.59	0.70	0.18	0.79	1.00				
Homicide rate	-0.16	-0.28	-0.20	-0.10	-0.28	-0.26	-0.23	1.00			
Life satisfaction	-0.27	-0.12	-0.12	0.17	-0.12	0.10	0.40	-0.05	1.00		
Perceived network	-0.50	-0.42	-0.39	0.19	-0.31	-0.21	0.19	0.36	0.70	1.00	
Rooms per person	-0.59	-0.46	-0.37	-0.26	-0.28	0.18	0.07	0.10	-0.30	-0.03	1.00

BANK OF ENGLAND

A Taxonomy of the UK Regions

Steaming ahead
Losing ground
Catching up
Falling behind

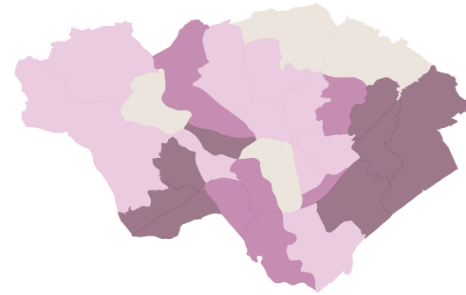BANK OF ENGLAND

Health in Cities

Bad/Very Bad Health (per cent)   0–4%   4–6%   6–8%   >8%
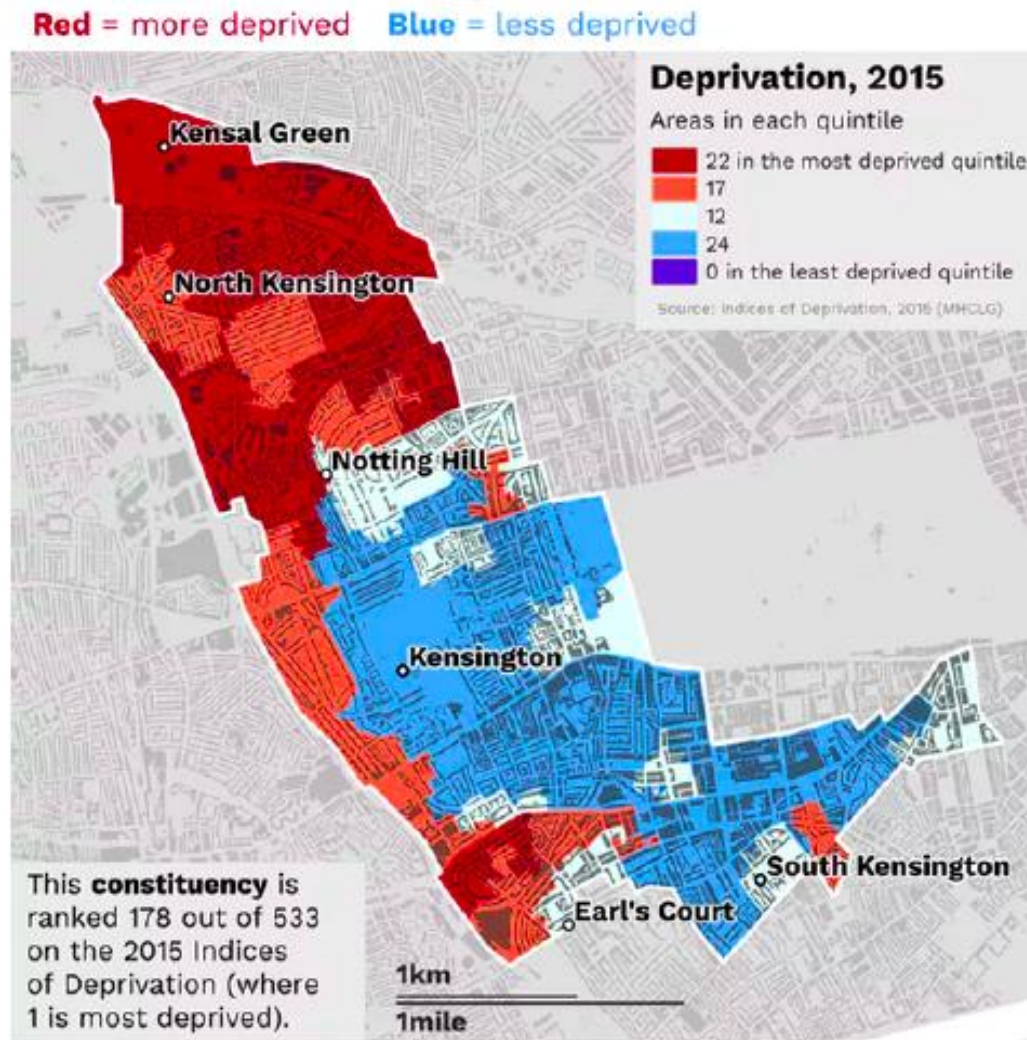
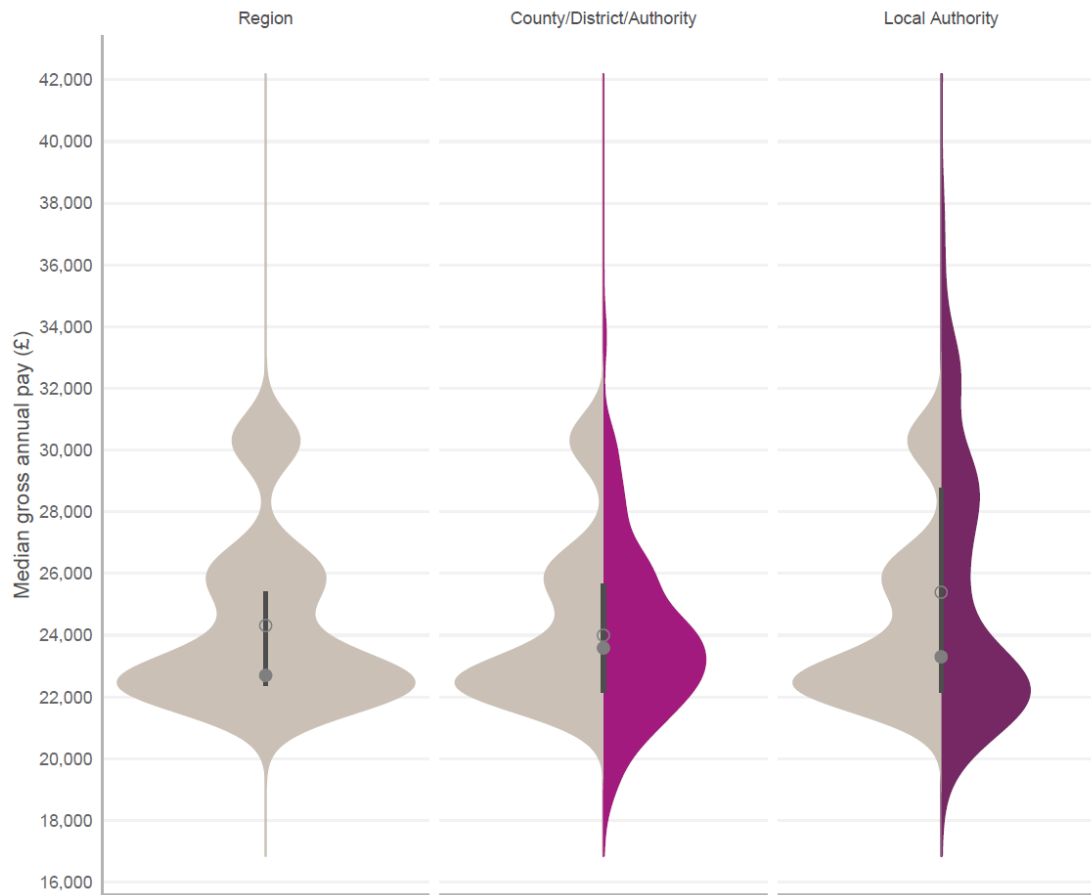Belfast
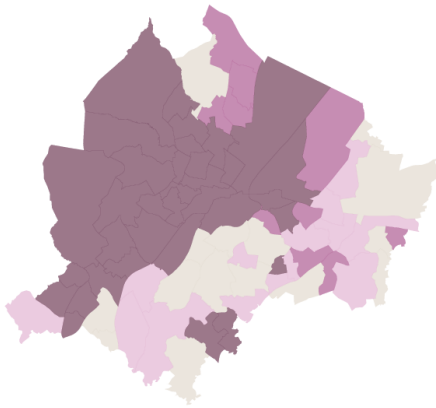
Cardiff

Edinburgh

Inner London

BANK OF ENGLAND
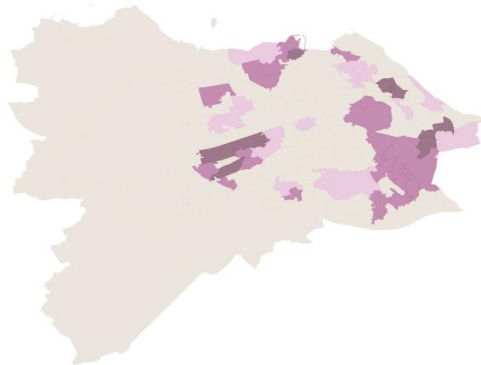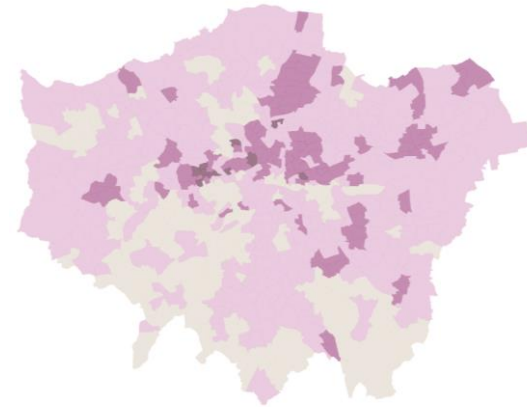
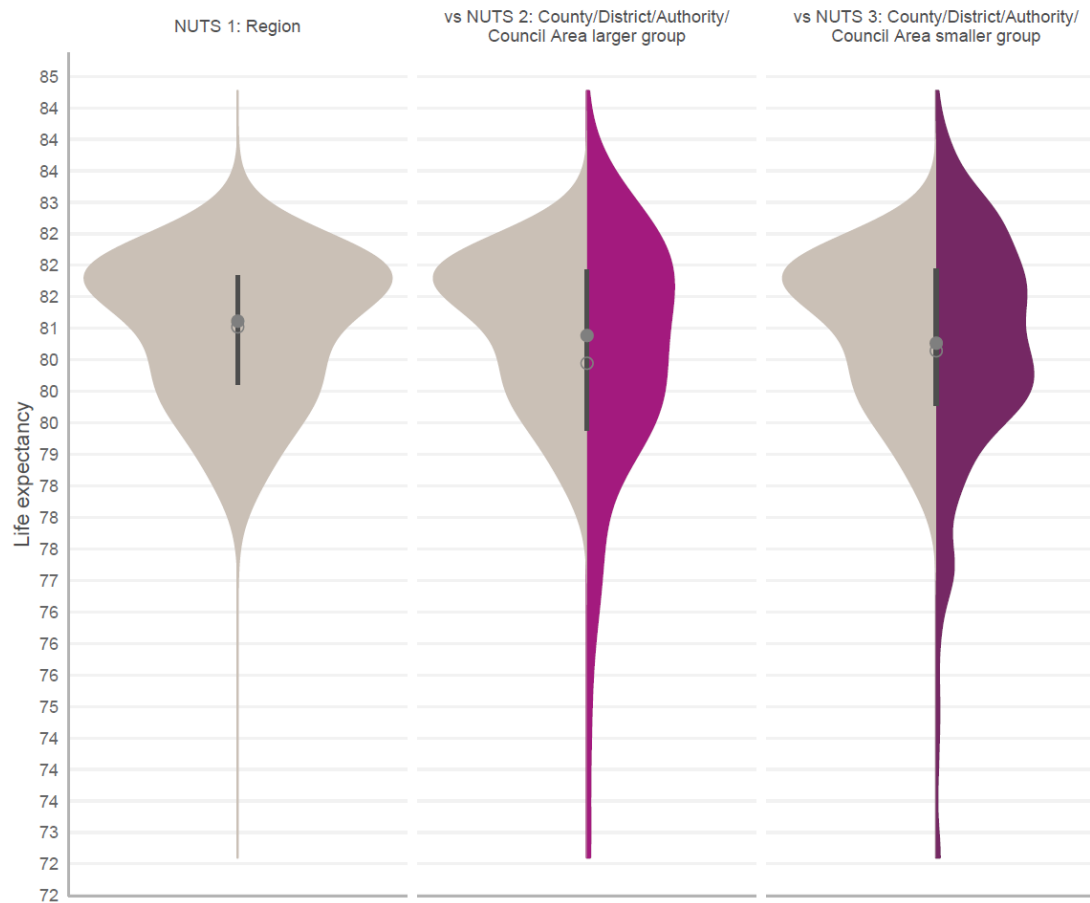# Health in Cities

Inequality **Within** Regions

'Violin' plot of wages

Inequality Within Regions

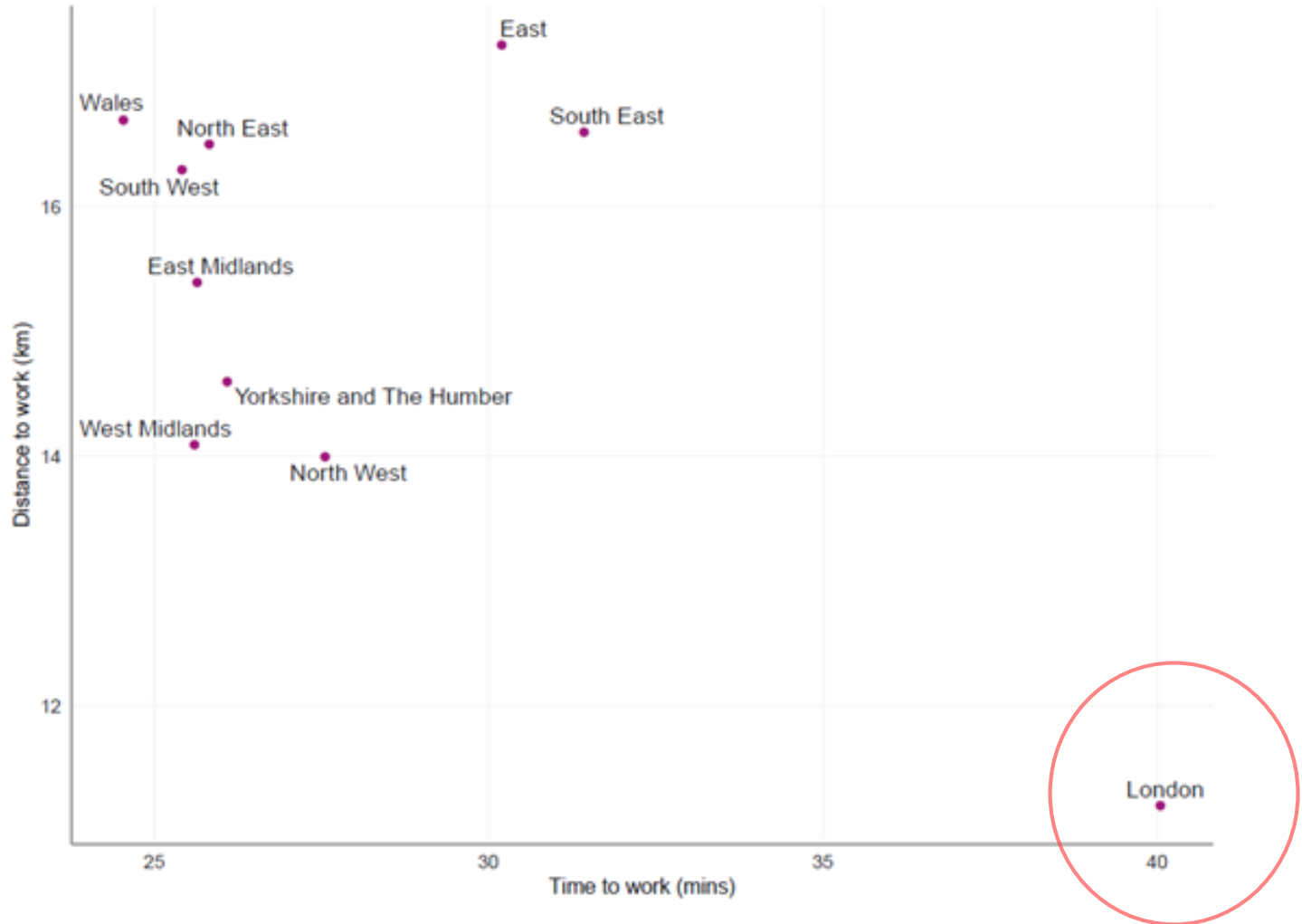## 'Violin' plot of health (life expectancy)

The "Big Six"

➢ "Complex needs" case

➢ Data but also "lived experience"

➢ "The Big Six"
  o **Transport and Connectivity**
  o Schools and Education
  o **Shopping and Social Places**
  o **Jobs and Skills**
  o Money and Finance
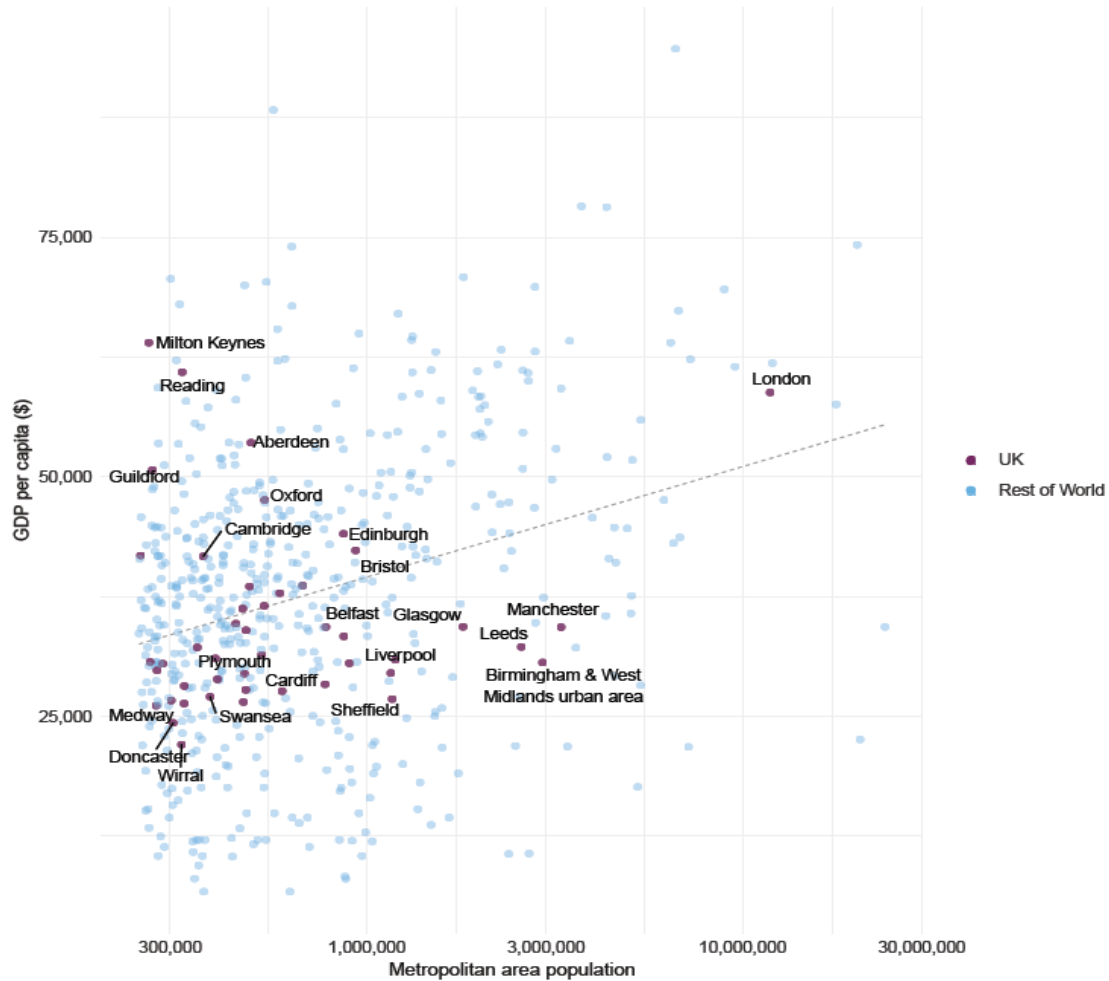 o Housing and Shelter

Commuting Times and Distances
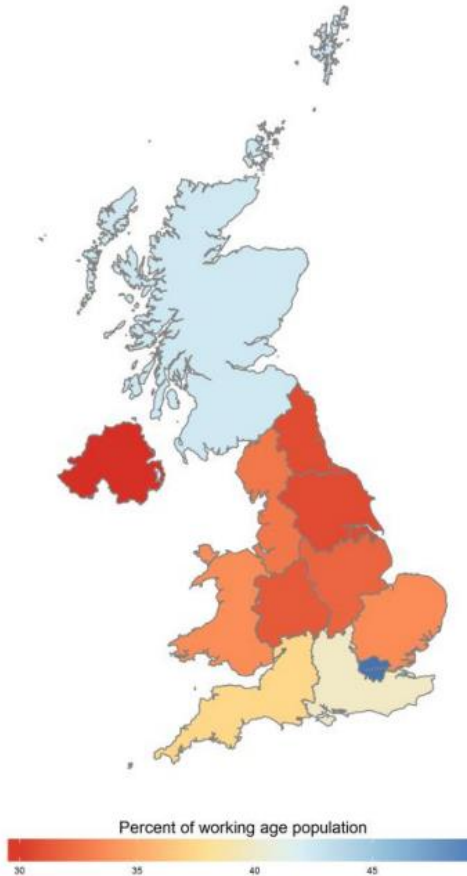
Commuting Cartogram

Mean travel time to work (mins)
0   10   20   30   40   50

Transport and Connectivity

City size and income

Jobs and Skills

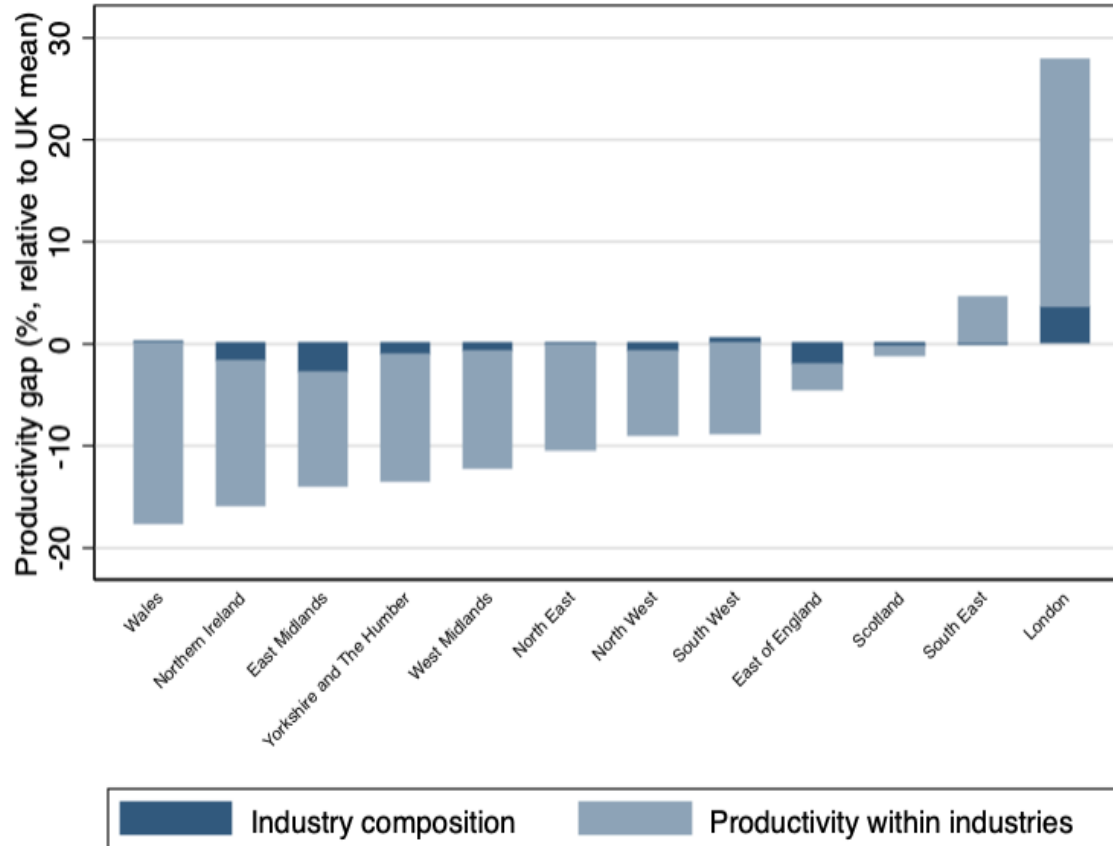**Regional skills (share of population with undergraduate degree or equivalent)**

Percent of working age population

30   35   40   45

Jobs and Skills

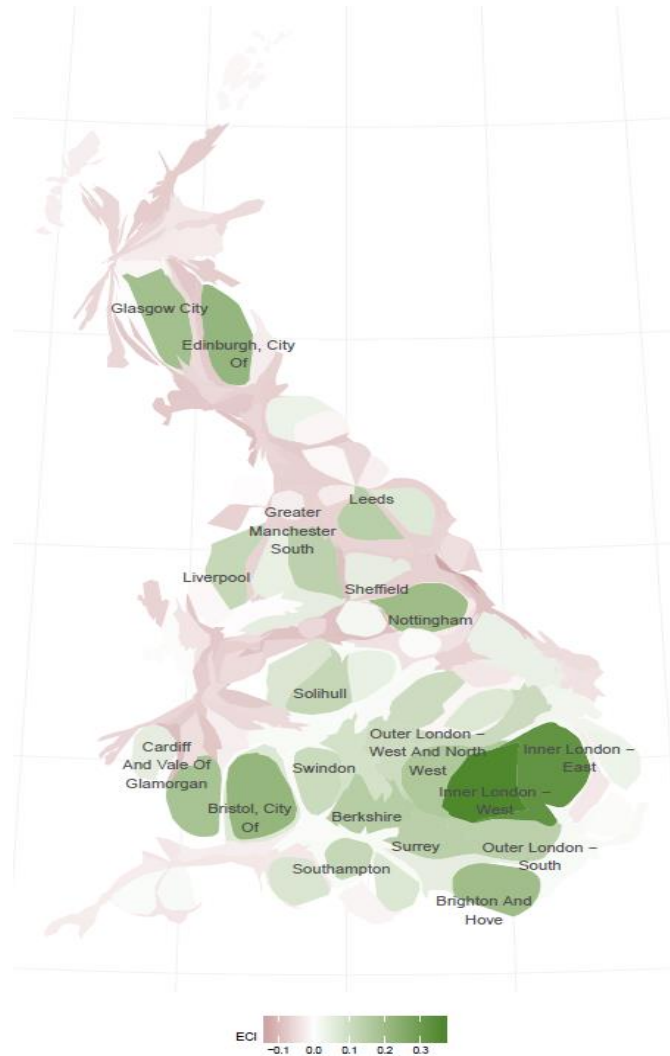Jobs at risk from automation

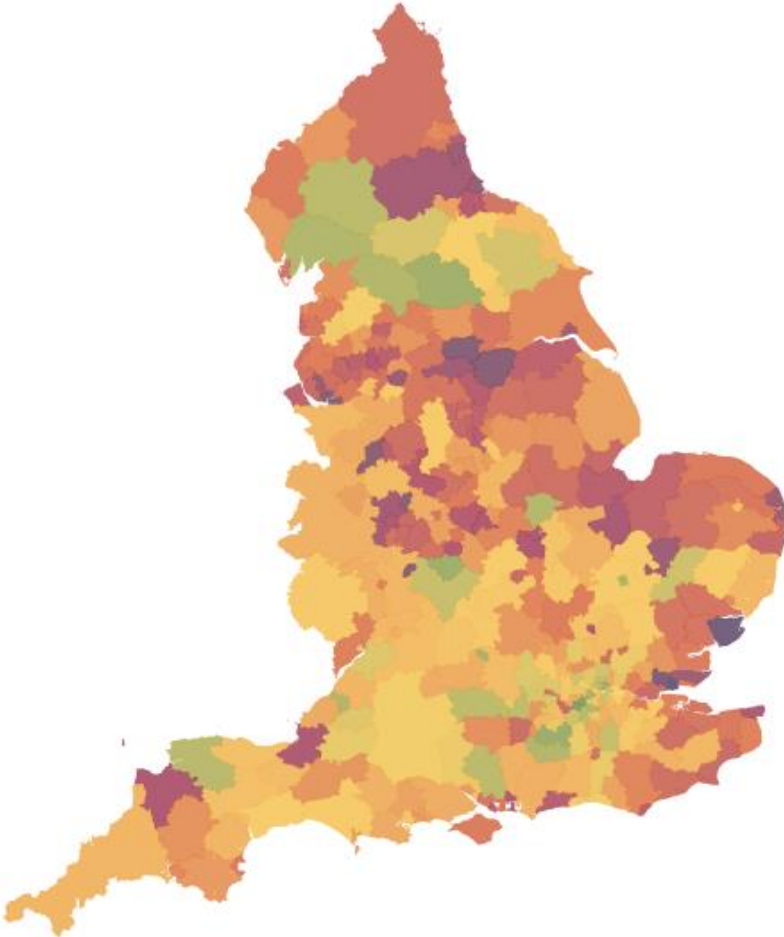# Jobs and Skills

Productivity by region

Jobs and Skills

Economic Complexity Index

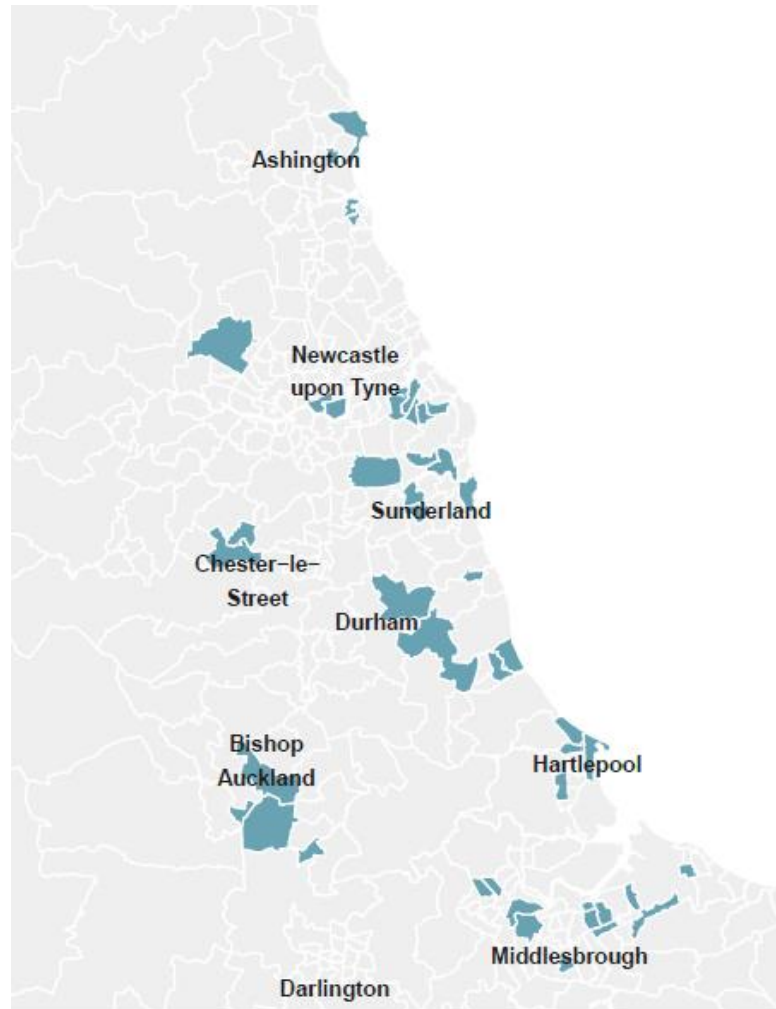# Social Infrastructure

Community Needs Index
40   80   120   160

Shopping and Social Places

"Left behind" areas within the North East

Modelling the Economy

- Highly-aggregated ("representative agents") models – RANK

- Less-aggregated ("heterogeneous agent") models – HANK

- Highly-disaggregated ("agent-based") models – ABM

- Why not have economic models at multiple levels of resolution?

- Particularly useful for addressing regional/spatial issues

Modelling Other Complex Adaptive Systems

- Modelling companies – "digital twins"

- Modelling cities – SimCity

- Modelling weather – micro-to-macro

- Modelling atoms, oceans, information, planets, galaxies etc

- New high-frequency data coming on stream

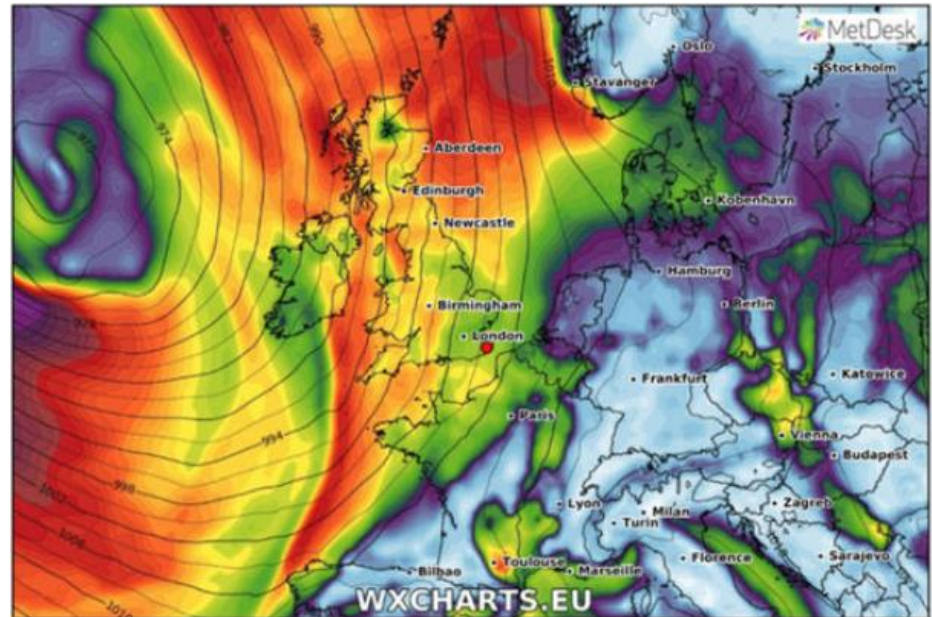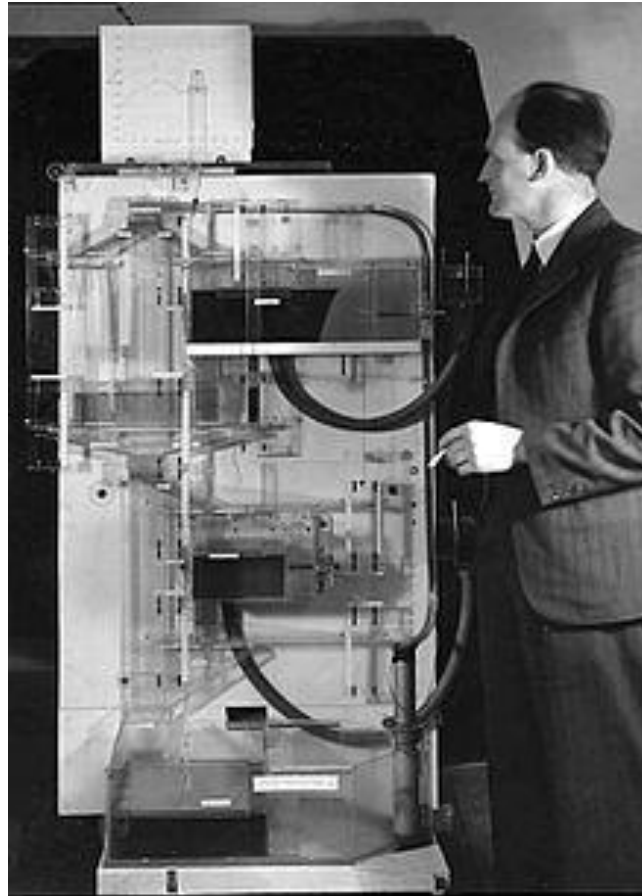- 21st century, high resolution Phillips machine?

BANK OF ENGLAND

Micro-to-Macro

City Systems

Weather Systems

BANK OF ENGLAND
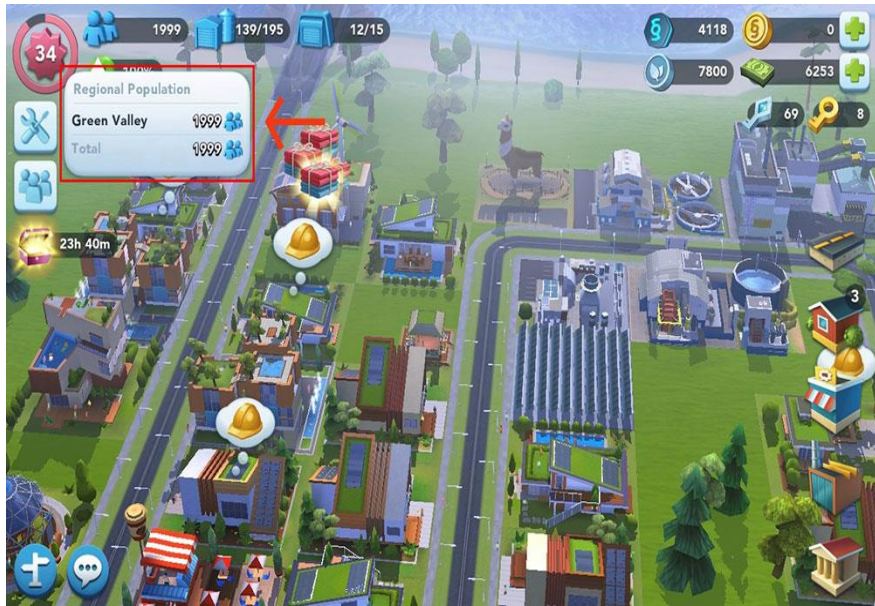
21st Century Philips Machine

Managing the Economy

- Better mapping/modelling at a local level?

- How to define "optimal policy areas"?

- How to create regional agencies which optimise role of local institutions?

- What are the natural limits to "levelling-up"?

- Role of local versus national strategies?

- What is the role of policy experiments?

BANK OF ENGLAND