The geographies of diversity and segregation by country of birth

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D4I - Data Challenge on Integration of Migrants in Cities
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The geographies of diversity and segregation by country of birth

How far people born in different countries might mix with those born elsewhere

➢ Residential segregation: how far do members of one group live apart from members of other groups?

➢ Diversity: how many different population groups are represented in neighbourhoods?

…at the **local level**

Why are residential segregation and diversity worth measuring?

- An indicator of spatial integration
  - Geographical distribution of groups of immigrant origin vary at the micro (neighbourhood) level
  - A policy matter for many EU member states

- Planning for adequate services provision (e.g., housing, schools)

- Inequalities → need data at a *high spatial resolution*…and *local measures*

Filling some research/policy gaps…

- Few studies of the geographies of ethnic groups/country of birth for small areas in multiple countries

- Significant gaps in academic and policy research on small area population distributions, and relationships with inequalities

- D4I initiative, combined with our host of measures, represents a unique opportunity:

✓High **spatial resolution** (data and methods)

✓**Consistent scale** of analysis across several European countries

✓Gridded datasets allow for the possibility of 'holes' (unpopulated areas; see Lloyd et al., 2017)

✓Moving on from proportions of groups (percentages): segregation indices **provide distinct information** (see McLennan et al., 2016). A suite of local measures vital in determining how far inequalities connect to segregation…and in designing polices for combating these inequalities
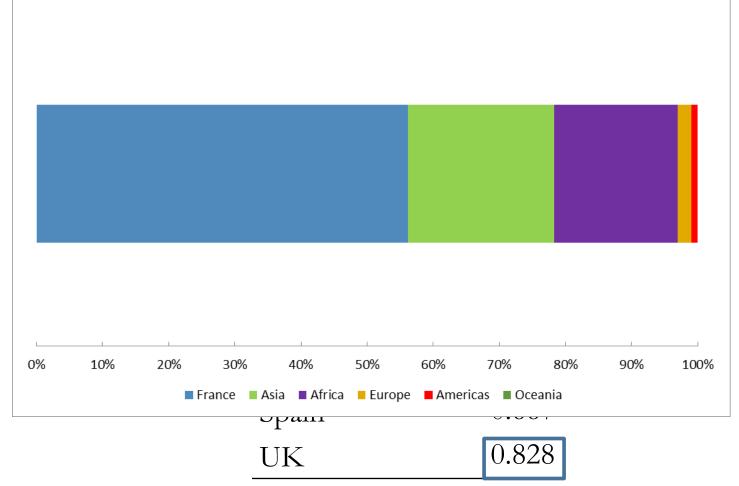
1: Diversity

Reciprocal Diversity Index (RDI)

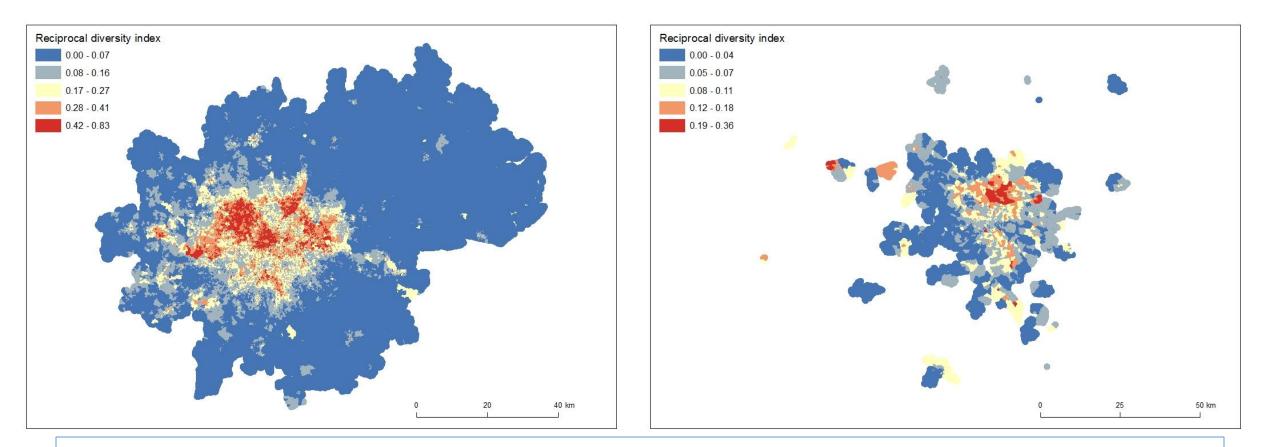RDI = 0 where all people in a grid cell come from a single country/continent

RDI = 1 where there is an equal proportion of people from each country/continent

Useful for comparing diversity levels between neighbourhoods

Spain	
UK	0.828

London   Paris

Reciprocal diversity index
- 0.00 - 0.07
- 0.08 - 0.16
- 0.17 - 0.27
- 0.28 - 0.41
- 0.42 - 0.83

Reciprocal diversity index
- 0.00 - 0.04
- 0.05 - 0.07
- 0.08 - 0.11
- 0.12 - 0.18
- 0.19 - 0.36

Levels and spatial extent of highly diverse areas greater in London than Paris

1: Diversity

Reciprocal Diversity Index (RDI)

Diversity as an urban phenomenon -> UK and Netherlands; not so in Spain and Italy

UK: ethnic diversity is spreading outside of the 'traditional' core urban areas (Catney, 2016)

Country	Intercept	Beta: log(population)	r squared
France	-5.930***	0.590***	0.189
Germany	-5.385***	0.642***	0.153
Italy	-3.811***	-0.008***	0.0000174
Netherlands	-7.437***	0.948***	0.174
Portugal	-5.246***	0.458***	0.119
Spain	-4.139***	0.084***	0.00192
UK	-6.685***	0.817***	0.108

2: Group unevenness
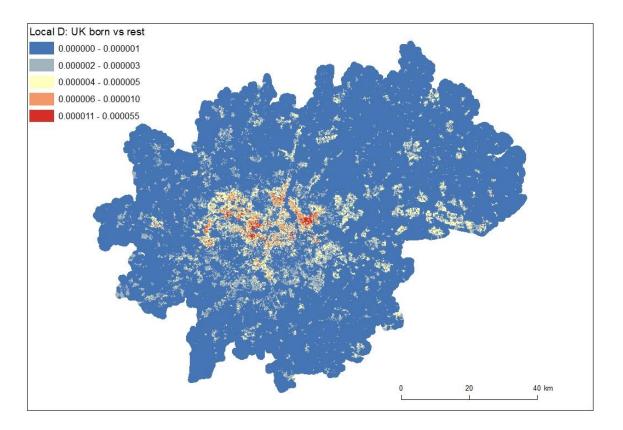
Index of Dissimilarity (*D*)

D = 0 if each grid cell had an even share of the two groups compared (e.g., 85% UK born, 15% non UK-born)

D = 1 if each grid cell comprised 100% of one group (e.g., UK-born *or* non UK-born)

Country	Host *vs* rest of pop	Largest CoB group (% of pop)	Host *vs* largest CoB group
France	0.285	Algeria (1.42)	0.400
Germany	0.292	Poland (3.09)	0.357
Italy	0.390	Romania (1.10)	0.618
Netherlands	0.408	Turkey (0.66)	0.886
Portugal	0.286	N/A	N/A
Spain	0.431	Morocco (0.96*)	0.927
UK	0.477	India (0.91)	0.784

*Data for Spain do not include all CoBs or an 'other' category

3: Local segregation

Local D: UK born vs rest
- 0.000000 - 0.000001
- 0.000002 - 0.000003
- 0.000004 - 0.000005
- 0.000006 - 0.000010
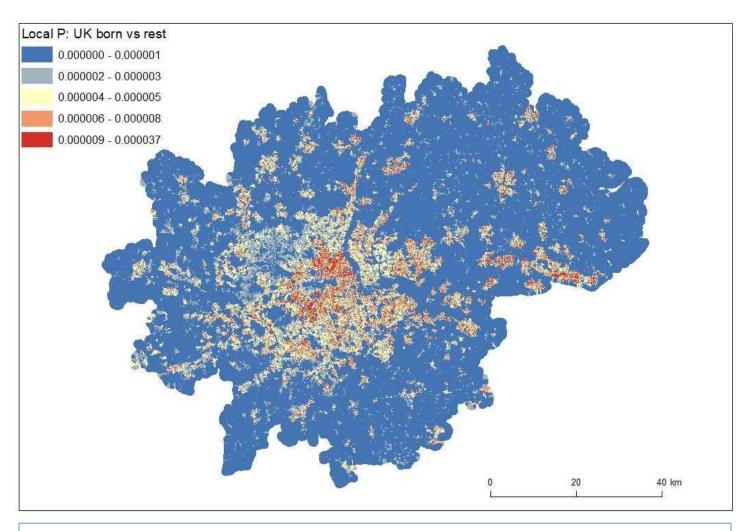- 0.000011 - 0.000055

0   20   40 km

Greater unevenness in areas with *smaller* shares of the host population group

- Uses information on *neighbouring* zones – in this case the zones (grid cells) which neighbour each zone (grid cell). More true to 'on the ground' interactions.

- Local Index of Dissimilarity (*D*): shows locations where the **spread of two groups is uneven** – e.g., a large value of local *D* suggests that there is a much larger than average share of one group and a smaller than average share of the other group(s).
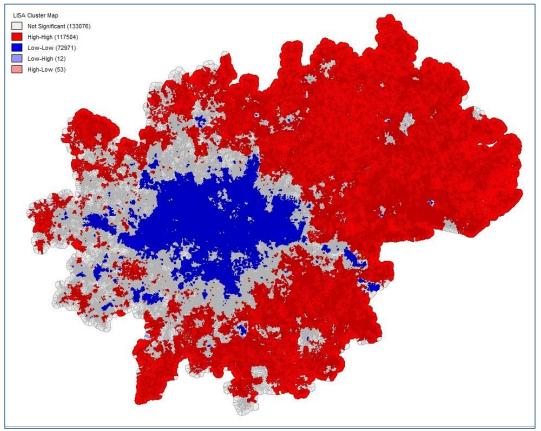
3: Local segregation

Local Index of Intragroup Exposure (*P*): has large values where members of a particular group (e.g., those born in the UK) are **exposed mainly to members of the same group** – suggesting less opportunity for mixing with members of other groups in the residential environment.
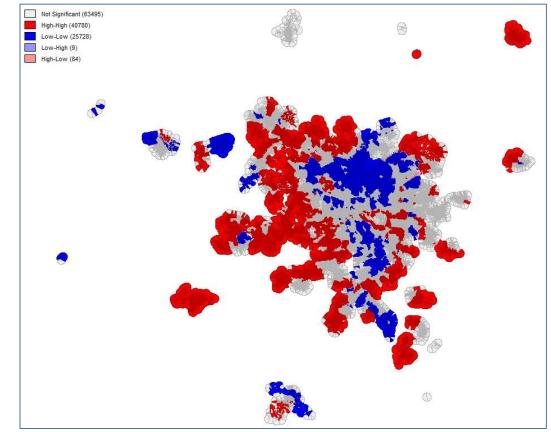

Local P: UK born vs rest
- 0.000000 - 0.000001
- 0.000002 - 0.000003
- 0.000004 - 0.000005
- 0.000006 - 0.000008
- 0.000009 - 0.000037

0   20   40 km

Greater intragroup exposure in areas with *larger* shares of the host population group

3: Local segregation

- Local Moran's *I* spatial autocorrelation coefficient: a measure of clustering of neighbourhoods with **similar or dissimilar proportions of each group**
- Core area comprising 'low-low' clusters (areas with larger proportions of people not born in the 'host' country)
- Areas in an outer ring comprising 'high-high' clusters (areas with large shares of the 'host' population)
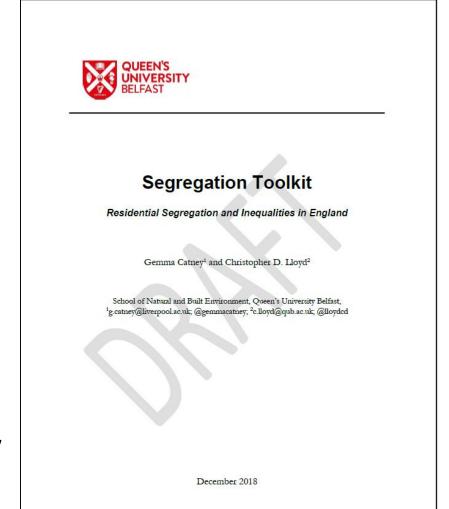
Policy relevance of the research

- Uneven geographies of 'immigrant' groups – between groups *and* between places… at the **very local level → more complex** than we might expect
- The drivers of these distributions can be positive (networks, opportunities), and/or negative (inequalities, discrimination)
- Challenges for policy makers: identify the local patterns, understand the processes behind them, and consider their **consequences**
- Segregation is **multidimensional**: cannot expect social integration without addressing ethnic *and* economic inequalities
- Significant potential for local segregation outputs to consider how these distributions relate to those groups' **life opportunities**: deprivation, access to resources (e.g., employment, housing, education), or social outcomes (e.g., poor health) → a vital tool for any countries which seek to address **inequalities between ethnic/CoB groups**
- Challenges in **separating experiences** for immigrant, settled, 1.5/2nd generation

Further potential for informing policy

- Full set of segregation and diversity measures **for all grid cells within all of the study countries**

- **Individual countries of birth** (rather than coarse categorisations)

- First **multi-country analysis of multi-scale segregation** that **does not focus solely on urban areas**

- Potential to be used to **monitor change over time**, if such data were to become available

- UK resource for measuring ethnic residential segregation and diversity **could be adapted for other countries**

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Segregation Toolkit

Residential Segregation and Inequalities in England

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