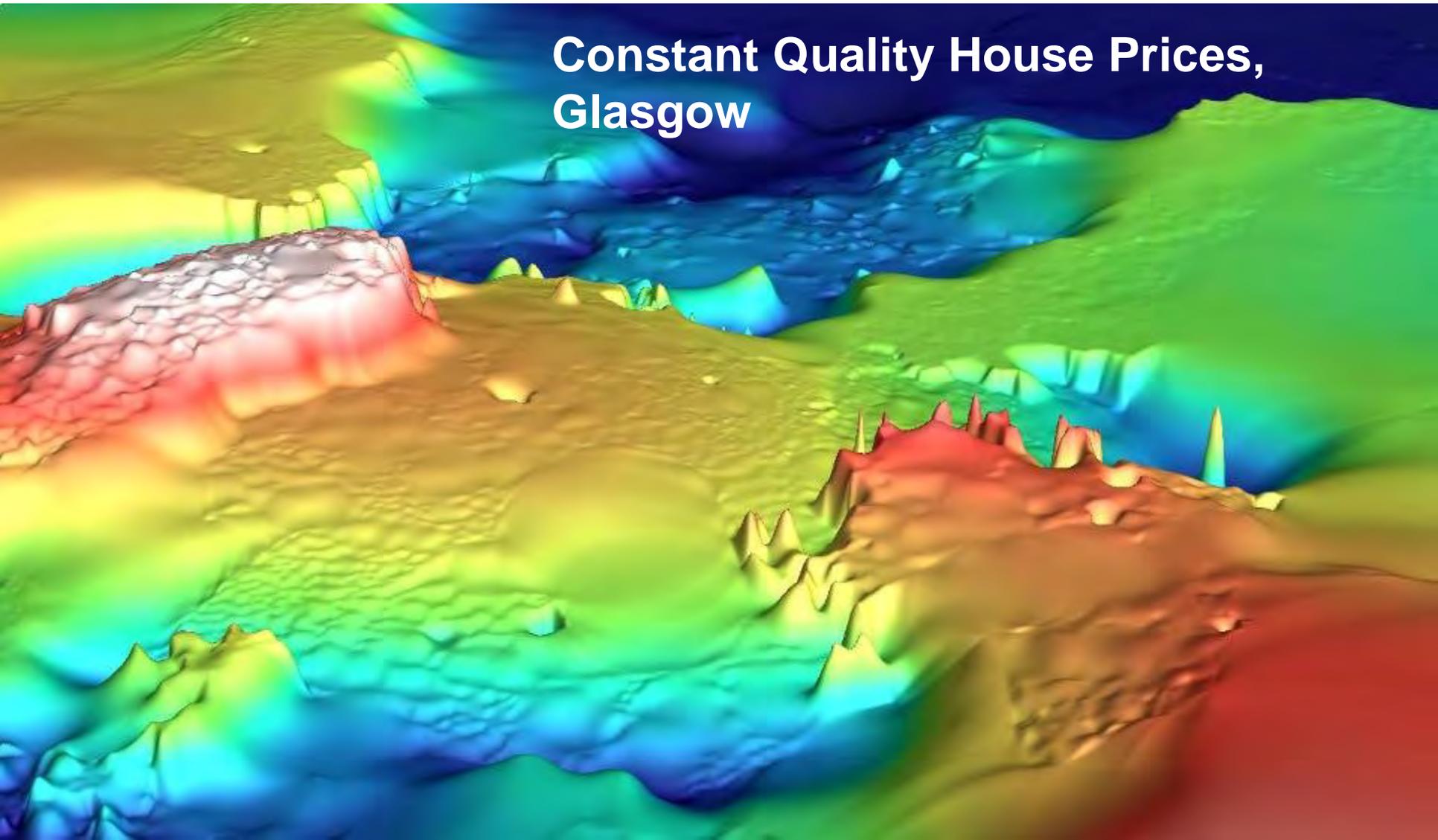# Educational Achievement and the Neighbourhood Context

Gwilym Pryce, University of Sheffield

(The Future of Education Data in Scotland,
Edinburgh Centre for Carbon Innovation, Infirmary Street, Edinburgh
Mon 13th June 2016)

Context matters…

Constant Quality House Prices, Glasgow

What is the impact of 3 key aspects of the neighbourhood environment on educational performance?

1. Decentralisation & fragmentation of poverty
2. Environmental factors
3. Immigration, Cohesion & Mix

Relative Centralisation Index: Measures relatively whether people in poverty or not in poverty are more centralized.

– Aerial units ordered by distance from the centre

- **RCI = 0**, the two groups (poor & non-poor) have the same spatial distribution in terms of distance to the city centre.
- **RCI > 0**: people in poverty tend to be closer to the city centre than people not in poverty.
- **RCI < 0**: people in poverty tend to be further away from the city centre than people not in poverty.
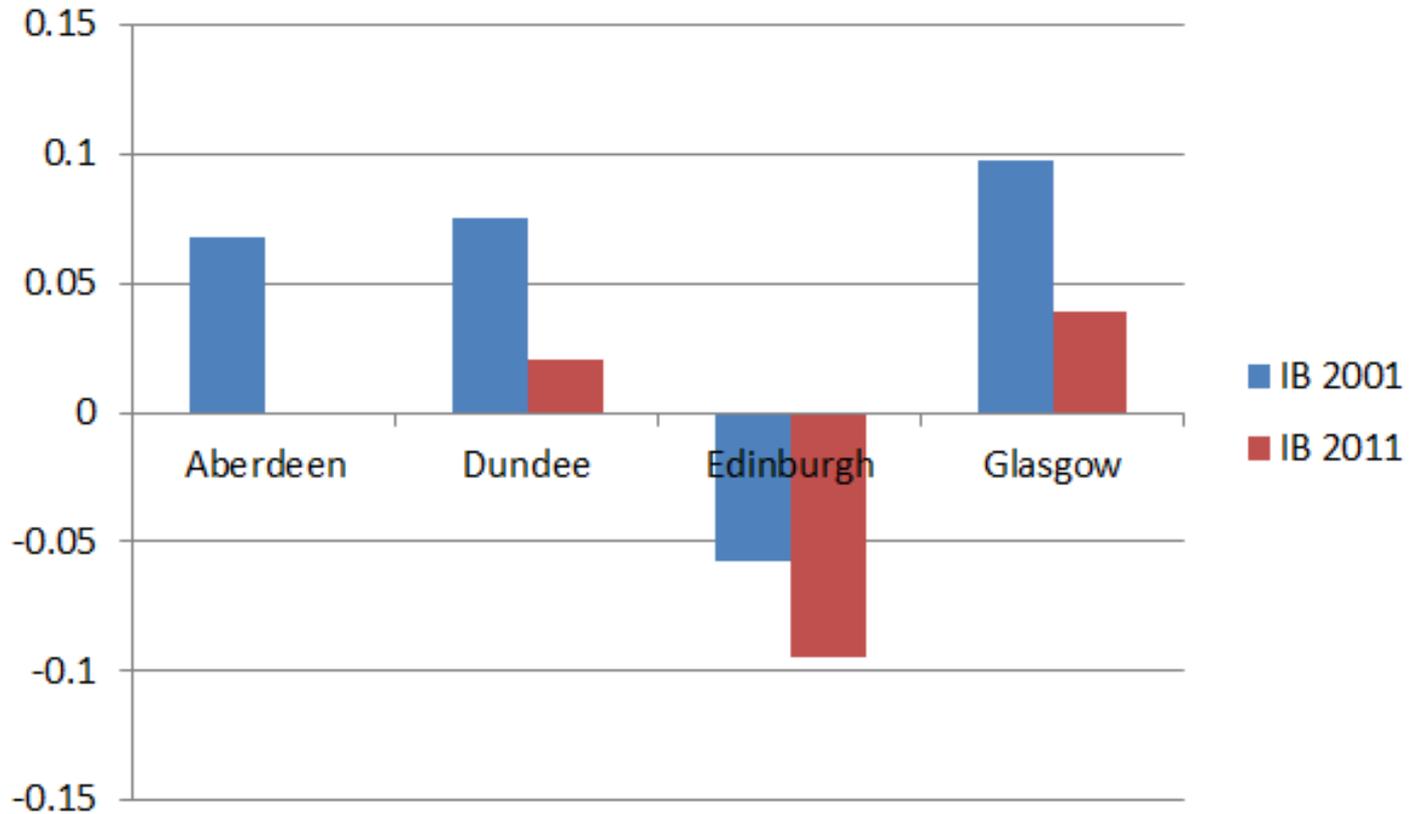
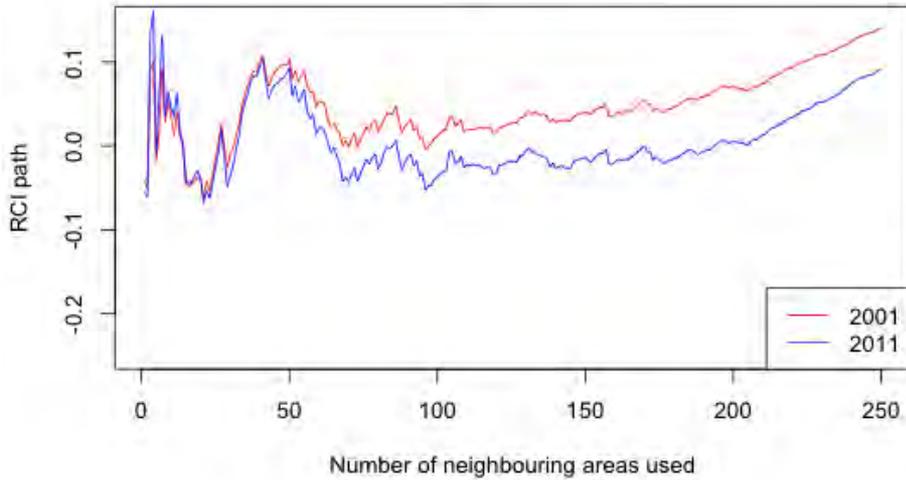**Results:** Income Support
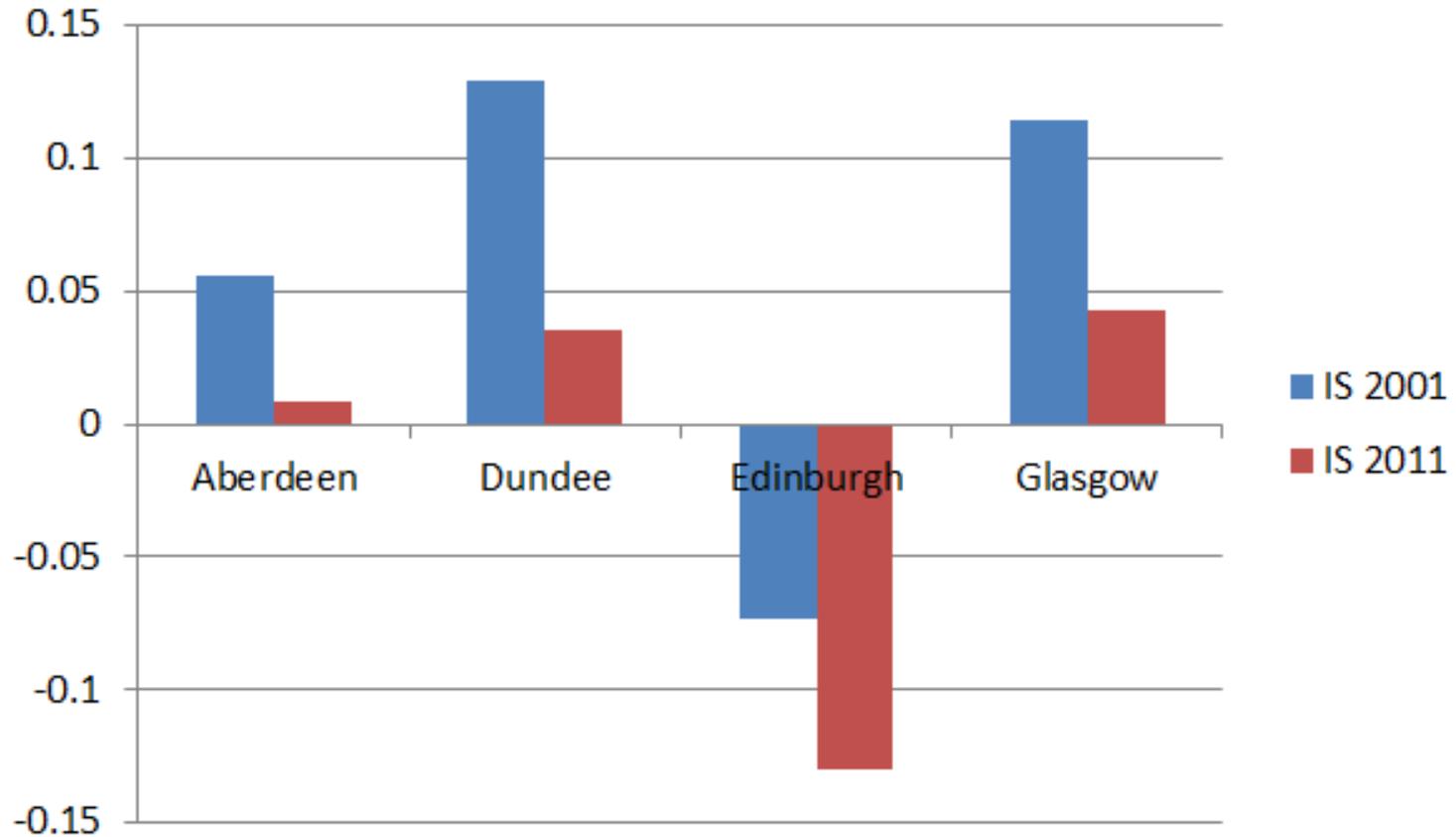
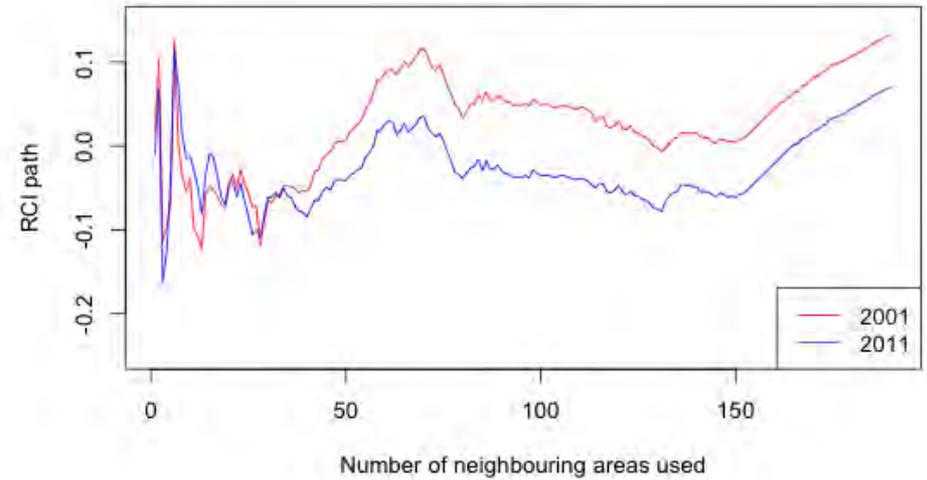# **Results:** Job Seekers Allowance
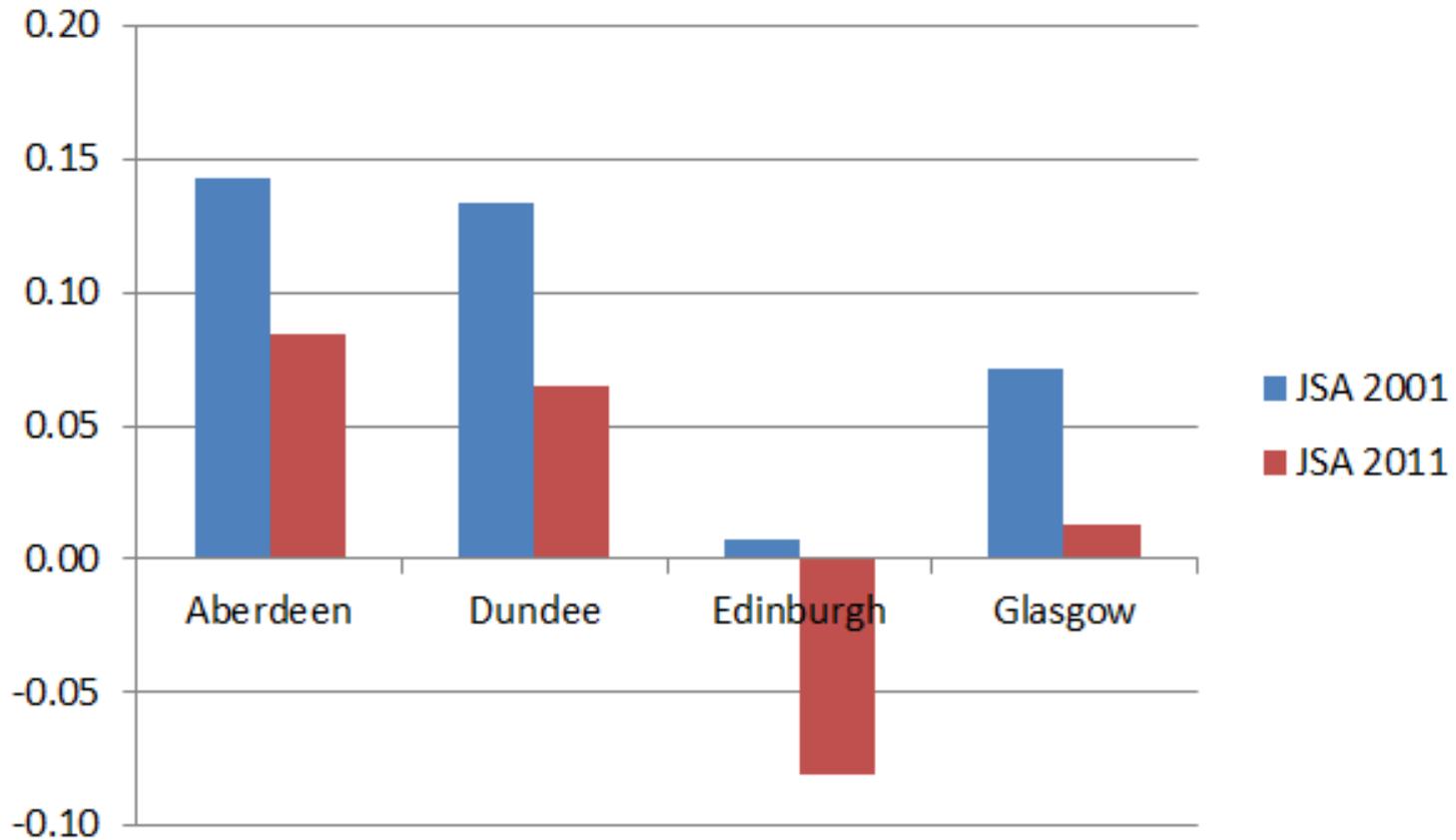
Results: Incapacity Benefit

Sensitivity to city boundary
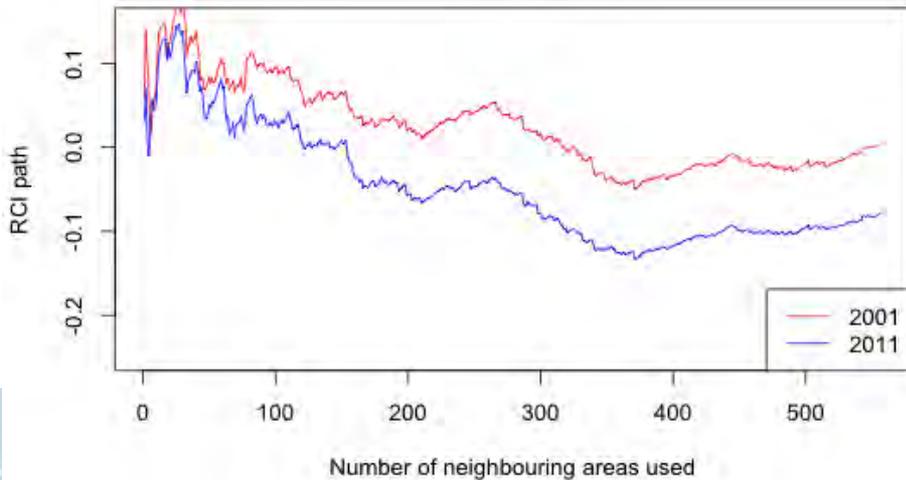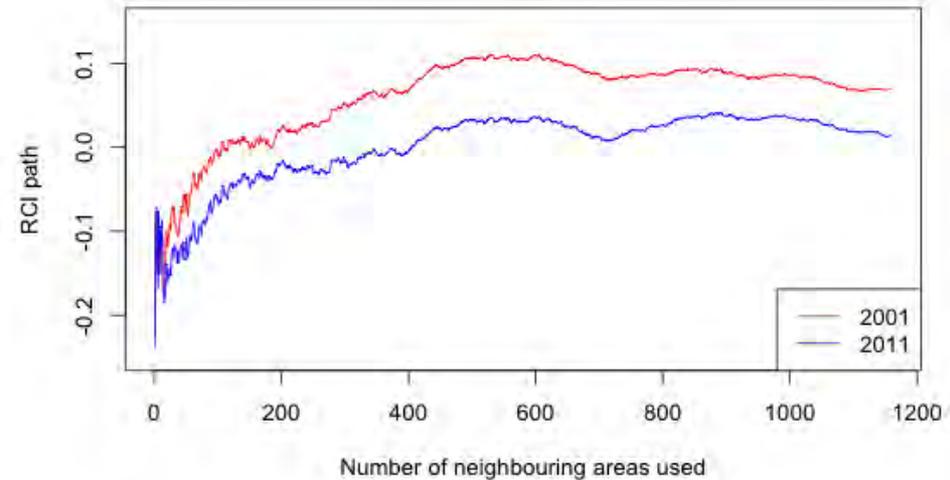
•**Changes in the spatial pattern of poverty**

–Poverty appears to be decentralising – moving from the inner city to the periphery.

–But in some cities, the spatial ordering of poverty with respect to traditional hubs of deprivation is also starting to break down

• a fragmentation in the relationship of poor households to established loci of poverty.

Spatial ordering of poverty:
Edinburgh

Local RCI for Edinburgh in 2001 and 2011
The mean local RCI is -0.008 (2001) and -0.057 (2011) and the corresponding standard deviations are 0.032 and **0.055** respectively.
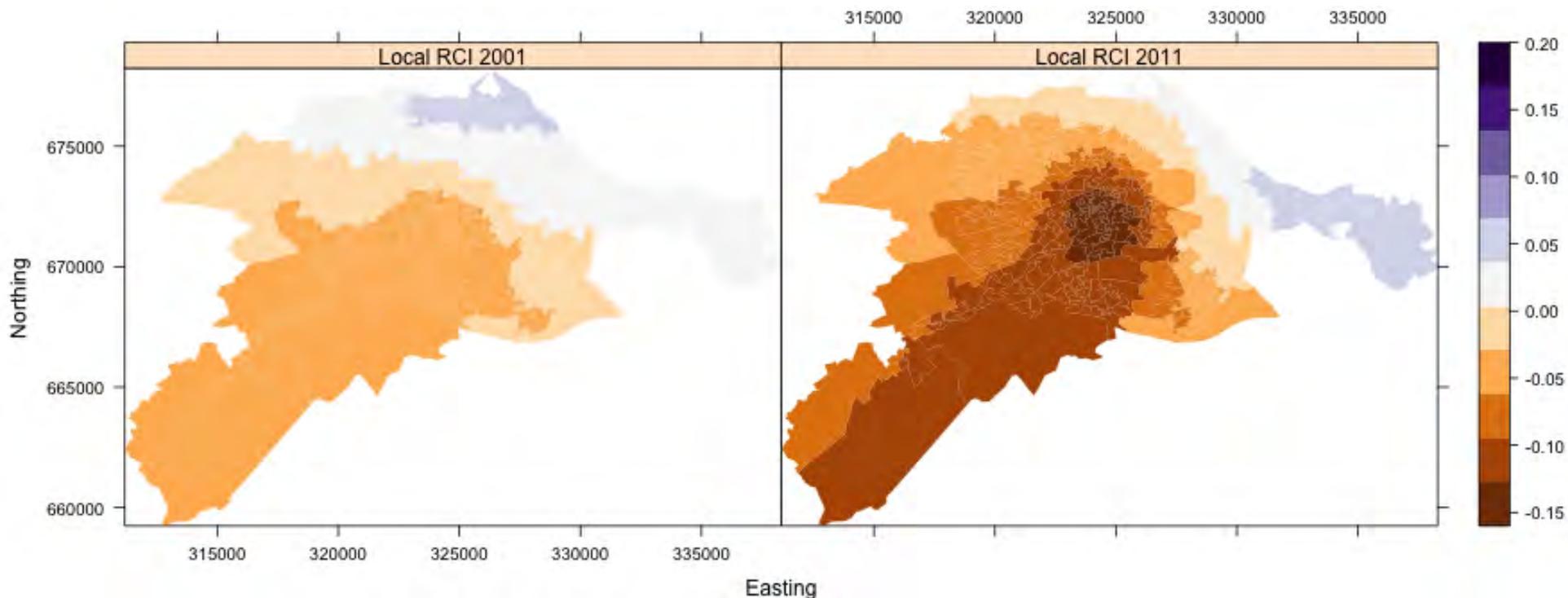
Spatial ordering of poverty: *Glasgow*

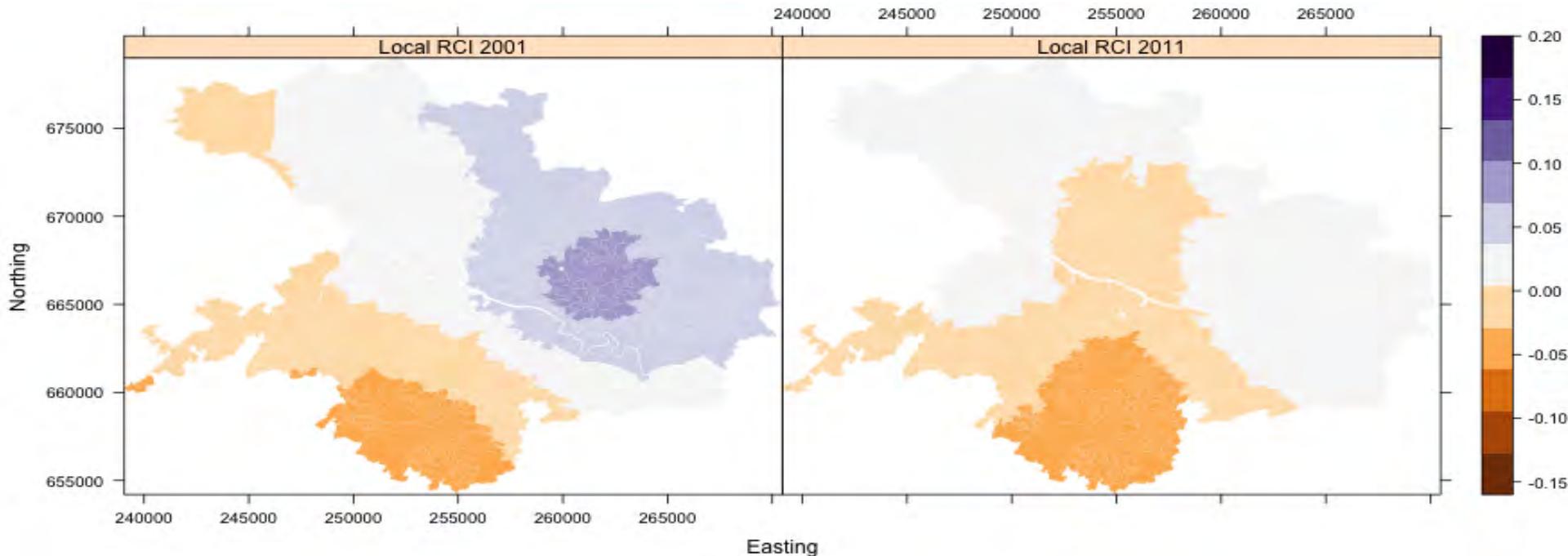**Local RCI for Glasgow in 2001 and 2011**
The mean local RCI is 0.022 (2001) and -0.001 (2011) and the corresponding standard deviations are 0.033 and 0.020 respectively.

Spatial ordering of poverty: *Aberdeen*
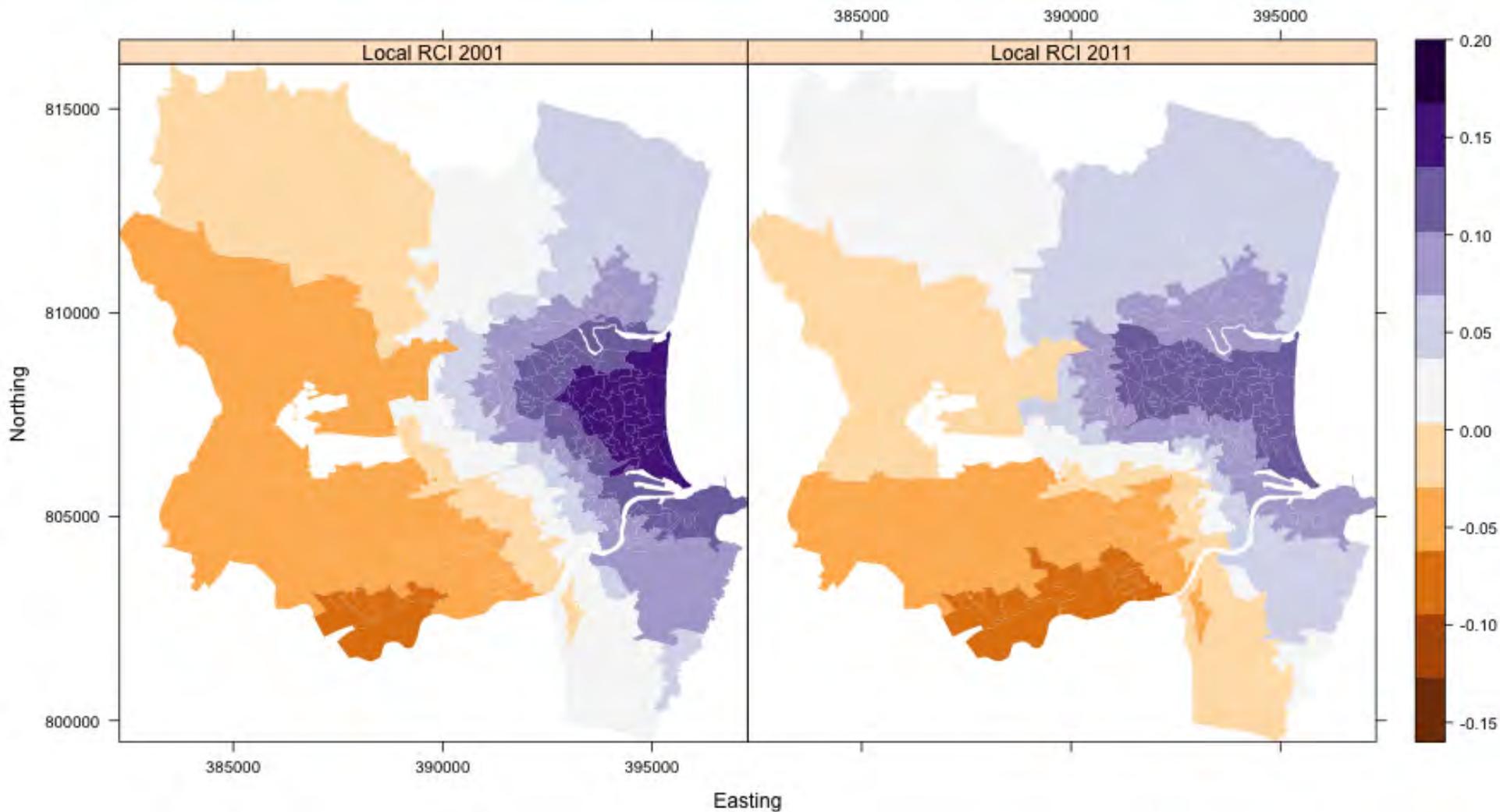
Spatial ordering of poverty: *Dundee*
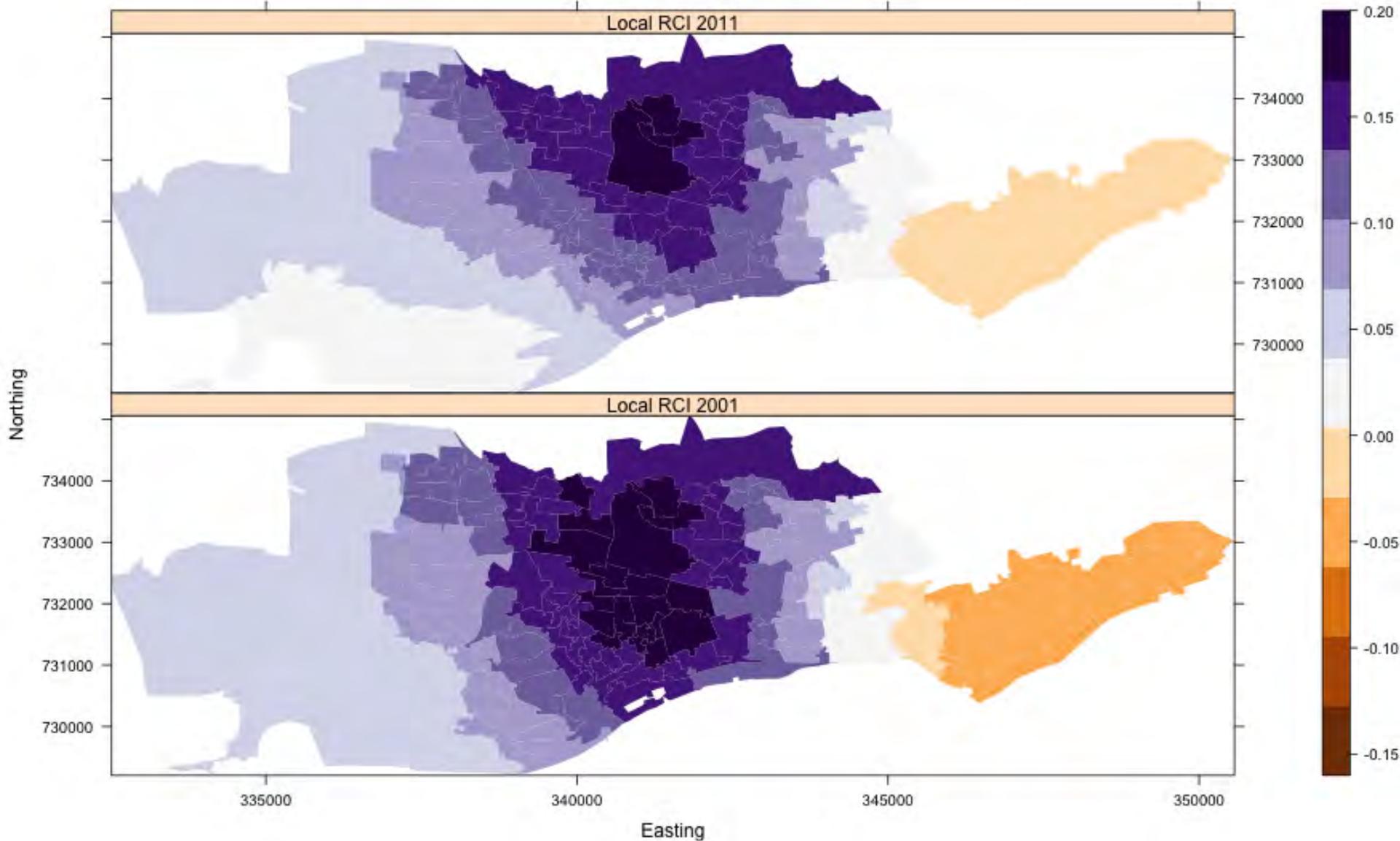
Raises key questions:

- **What is causing these changes and what are the impacts on educational outcomes?**
  - Gentrification?
  - Labour market shifts?
  - Economic and employment restructuring?
  - Changes to the benefits system?
  - Market sorting in response to changes the cultural, physical and/or social environment

↑ stress on poor families ⟹ ↑ Educ Impact

- **More difficult to provide services & support** if poverty is dispersed or clustered in distant pockets around the periphery?

- Does the decentralisation of poverty **reduce its visibility**, leading to hidden pockets of adversity?

- More **punitive welfare** placing acute stress on families exacerbated by ↓access to employment?

Data Linkage Needed

- Use SLS to follow benefit claimants and poor HHs over time
- Link with detailed pupil performance data
- Enable us to quantify the impact on educ performance of children in poor HHs of
  - house moves due to benefit changes, rent rises, gentrification?
  - community/ghetto fragmentation ?
  - access to suburban schooling?

1. Decentralisation & fragmentation of poverty

2. **Environmental factors**

3. Immigration, Cohesion & Mix

Local variation & non-linearity in shape of relationship between pollution & poverty

- Not all poor HHs are highly exposed to pollution

  – Opportunity to isolate the impact of air pollution on educational performance

  – E.g. link detailed individual pupil record data and air pollution data with SLS to explore this.

• Other contaminants could also be important: E.g. Impact of low-level **lead exposure**

– Evens et al. (2015) study of 58,650 children born in Chicago between 1994 and 1998 "Early childhood lead exposure is associated with poorer achievement on standardized reading and math tests in the third grade, even at very low B-Pbs. Preventing lead exposure in early childhood is critical to improving school performance."

AQMeN
Applied Quantitative Methods Network

- British Geological Survey Glasgow and Clyde Basin Urban Super Project (CUSP).
  - CUSP is a multi-disciplinary catchment-based project that aims to characterise the geoenvironment of the Clyde Basin to aid sustainable planning and development in and around Scotland's major conurbation.
- SEPA data on proximity to waste disposal sites etc.

1. Decentralisation & fragmentation of poverty

2. Environmental factors

3. **Immigration, Cohesion & Mix**

3. Immigration, Cohesion & Mix

- (a) What trade-offs do migrants and movers make?
    - E.g. between access to good schooling and proximity to neighbours of similar religion/ethnicity/social class?
        - What are the educational costs of homophily?
- (b) How does social cohesion mediate the impact of ethnic mix on school performance?
- (c) What is the impact of segregation & proximity to social frontiers on school performance?

(a) Homophily horizons by ethnic group

- Policy implications:
  - Homophily horizons have implications for LT structure of cities, with implications for preference formation
    - "contact hypothesis"
  - May help prioritise policies for mixed communities in particular cities
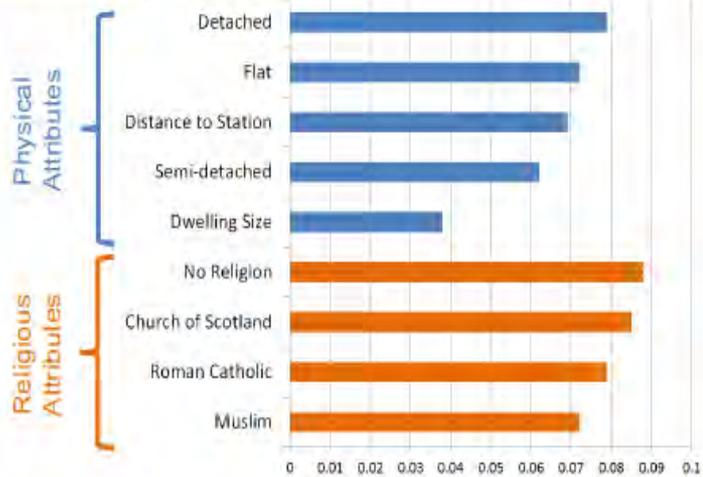- Potential collaboration:
  - Help us understand the potential trade-offs between homophily, education and low-crime.
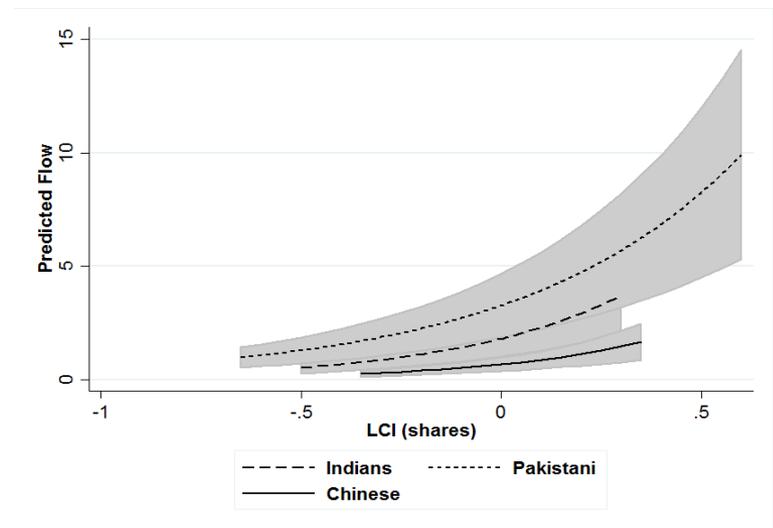
(b) Distinguishing between social mix & social cohesion

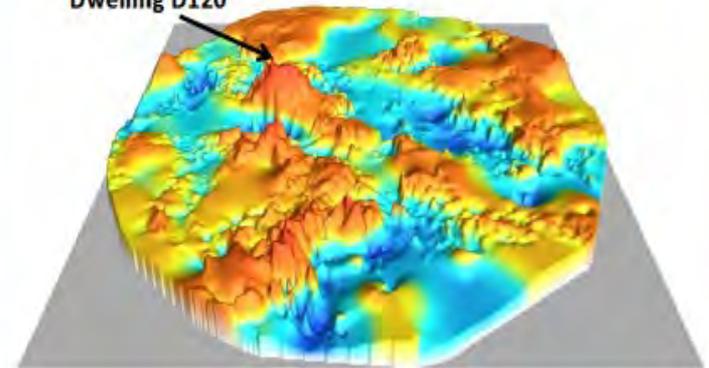•How does social cohesion mediate the impact of ethnic mix on school performance?

Homophily coefficients

Substitutability surface for location D120

Dwelling D120

❑ Map shows perceived substitutability of other locations in Glasgow respect to location D120
❑ Substitutability is measured by how closely price movements of those other locations are related to the prices of dwellings at D120
❑ Why are some locations perceived to be much closer substitutes to D120 than others?

– Method for identifying social frontiers & potential hotspots for social tension

- Impact of social frontiers on crime, education & health
- Epigenetic causal link
  - ESRC EpiStressNet collaboration on an ESRC/BBSRC bid
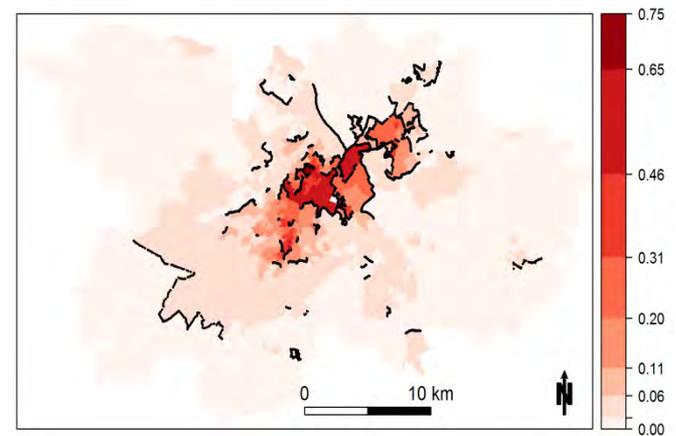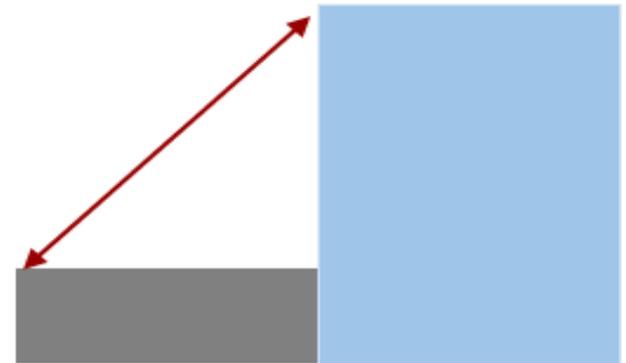
Conclusion

- The neighbourhood social and physical environment have potentially important implications for educational performance.

- Failure to take into account the full extent of these influences could lead to faulty interpretations of the data, and poorly informed policy.

- Data linkage could help us address these important questions.