

Spatial segregation & population dynamics: a review of recent evidence and data source developments

*Paper for the second ESRC Seminar on Neighbourhood Effects and
Population Dynamics, Manchester, 8/9 September 2010*

Nick Bailey, Helen Barnes,
Mark Livingston & David Mclellan

Universities of Glasgow & Oxford

Background

- Importance of population dynamics for neighbourhood effects research
 - Individual choices change places
 - Neighbourhood choices reflect individual characteristics
 - Exposure and duration
 - Turnover as context for individuals
 - Evidence of how context affects individuals - mechanisms
- ... and important for other debates

Aims

- Review of recent evidence (and a bit of new analysis)
 - Residential mobility and population turnover
 - Selective migration, neighbourhood change and migration typologies
- Review of data source developments
 - Longitudinal surveys
 - Census longitudinal data
 - Administrative data

Residential mobility & turnover

- Residential mobility theory
 - Residential stress – mismatch of current housing/nhd characteristics and desired
 - Stages - dissatisfaction, desire to move, intention to move and actual mobility
 - Push factors, pull factors, and barriers
- Population turnover
 - Compositional versus contextual

Residential mobility & turnover

- Discussion (1)
 - Neighbourhood context has limited impacts on mobility and turnover
 - Residential mobility much more strongly influenced by housing factors and life course
 - Population turnover largely compositional
 - Stronger impacts on desire to move than actual mobility - gap greater for lower income groups

Residential mobility & turnover

- Discussion (2)
 - Reactions to context ‘subjective’
 - General satisfaction not specific neighbourhood characteristics
 - Subjective perceptions not objective
 - Some variations between social groups
 - Much ‘unexplained’ individual variation

Residential mobility & turnover

- Discussion (3)
 - Neighbourhood change induces ‘stress’
 - ‘Reluctant stayers’ and those whose neighbourhoods change around them most at risk of ‘residential stress’
 - Understanding ‘residential stress’ - psychological adjustment and other ‘coping’ mechanisms of interest

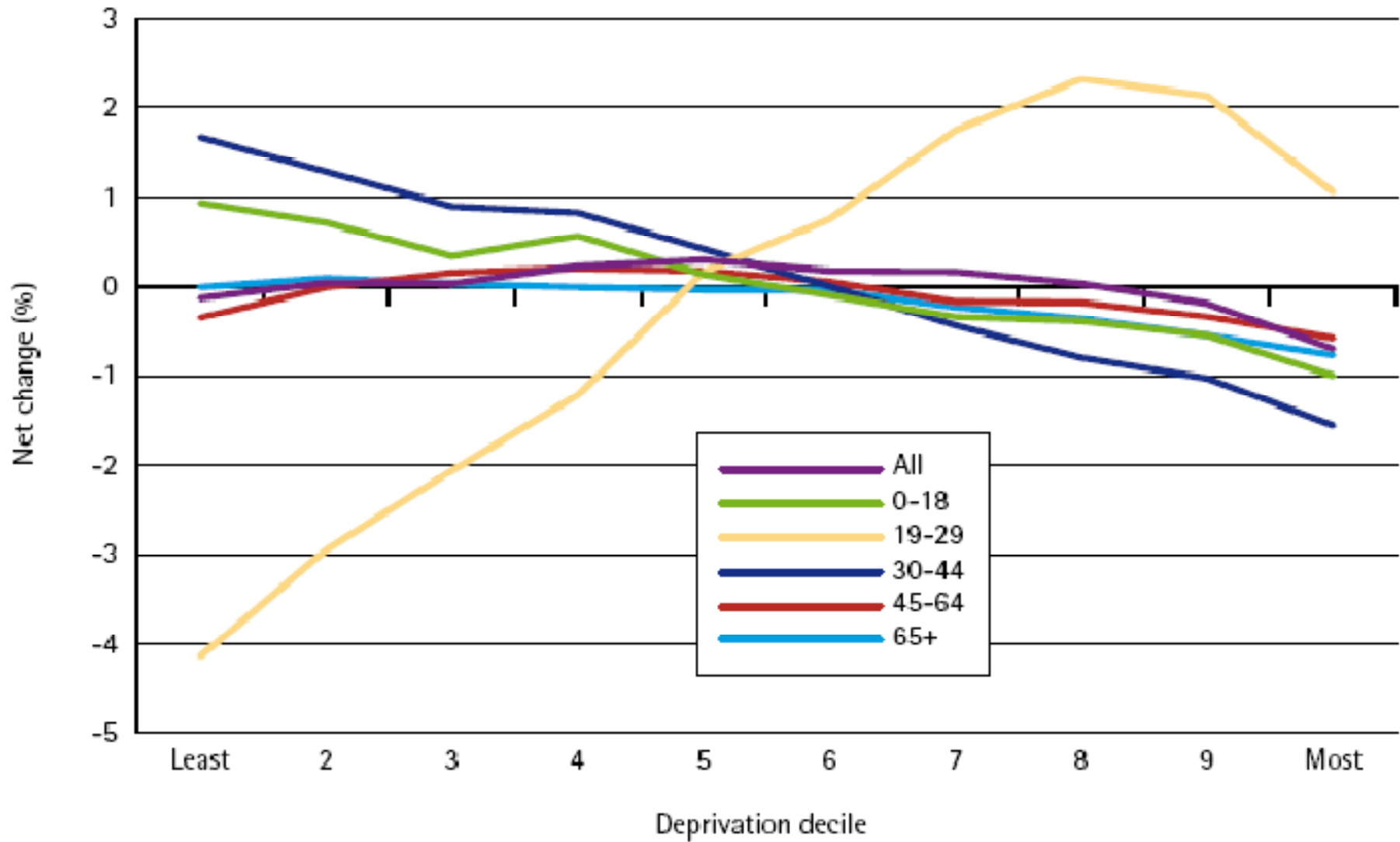
Selective migration & nhd change

- Selective migration
 - Social mobility results in spatial mobility
 - ‘Get on, get out’ – undermining ABIs
 - ‘People’ vs ‘place’ approaches
- Neighbourhood change and spatial segregation
 - Selective migration is key driver of growing spatial segregation by class/income
 - Debates about importance for segregation by health and ethnicity

Selective migration & nhd change

- Discussion (1)
 - Research is more fragmentary and varied
 - Fundamental importance of ‘demographic conveyor’

England



Source: Bailey and Livingston (2007: p49)

Selective migration & nhd change

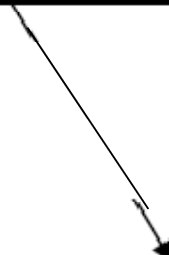
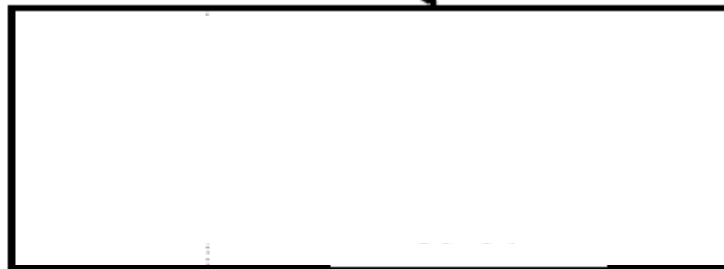
- Discussion (2)
 - Selective migration exists
 - BUT impacts of selective migration appear quite weak
 - A much wider range of processes are at work
 - Selective migration may be more important for more deprived neighbourhoods

Neighbourhood accounts

(1) In hhlds in
1991, 25-64



(13) In hhlds in
2001, 25-64



Data

- Scottish Longitudinal Study
 - 1991 and 2001 Census records
 - 5% of population (c. 250k individuals)
 - Plus vital events (births, deaths) and some health data
 - Neighbourhood units - Consistent Areas Through Time (CATTs) (ave. 500)

Table 1: Entry and exit flows by age

	Cases
1. Present in hhlds, 25-64 in 1991	129,324
Exits	
2. % die before 2001	
3. % to comm. est. in 2001	
4. % age out of sample	
5. % other exit	
6. Core	
- % of 1991	
Entry	
10. % from comm. est. in 1991	
11. % age in to sample	
12. % other entry	
13. Present in hhlds, 25-64 in 2001	131,905
- % change '91-'01	2%

Source: Scottish Longitudinal Study.

**Core group
only**

**Degree or
similar**

Employed

**In social
class:

Unskilled/
Semiskilled**

**Professional,
Managerial/
Intermediate**

- Index of Segregation – measure of evenness

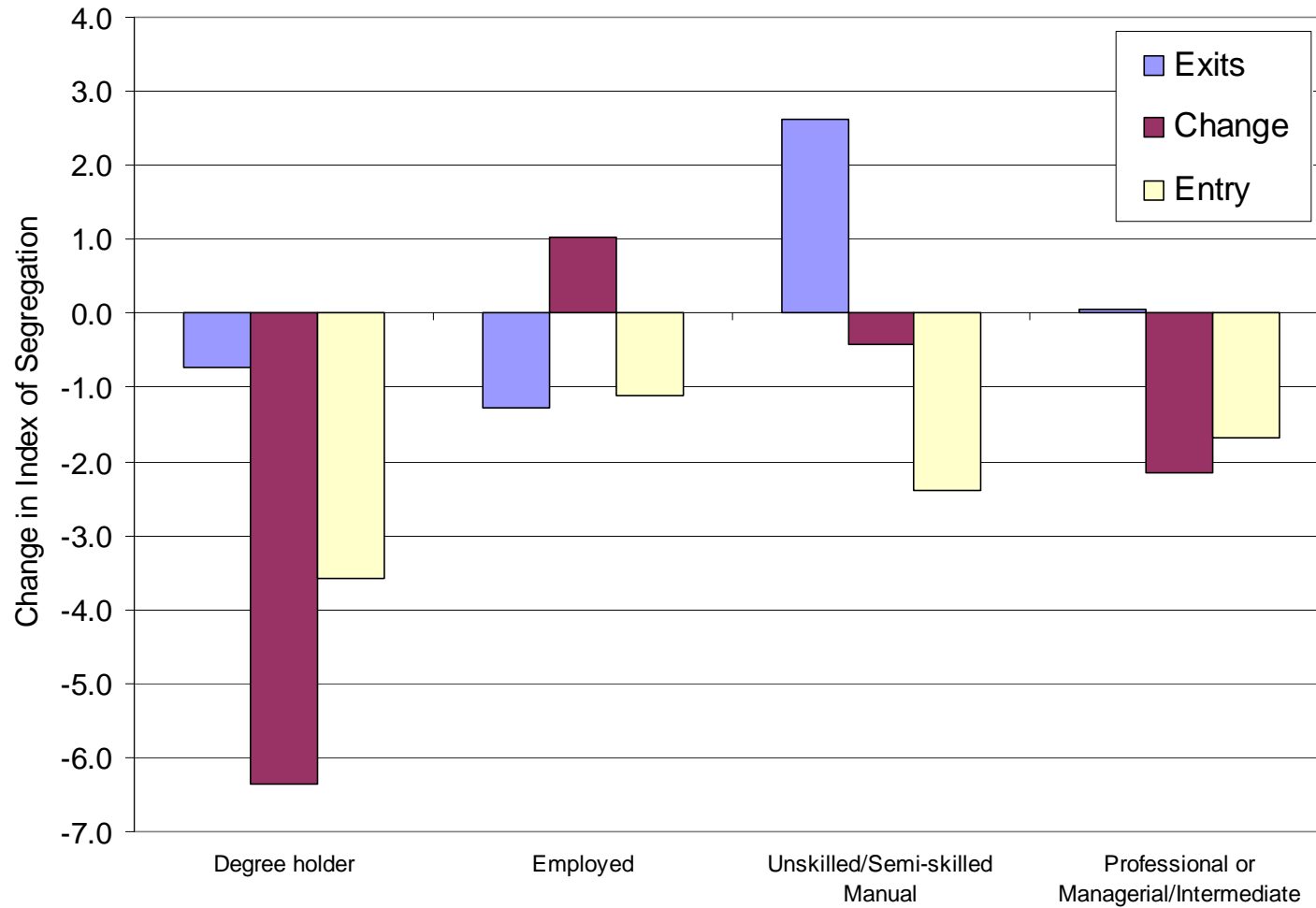
$$S = 1/2 * \sum | (x_i/X - t_i/T) |$$

Table 3: Changes in Index of Segregation – exits and entries

	Educational attainment	Employment status	Social Class: Unskilled/ Semiskilled	Professional, Managerial/ Intermediate
Indices of Segregation				
1991	32.9	8.3	22.2	21.7
2001	22.3	6.9	22.0	17.9
Change in Indices Overall				
<i>Exits</i>				
<i>Change for core sample</i>				
<i>Entry</i>				

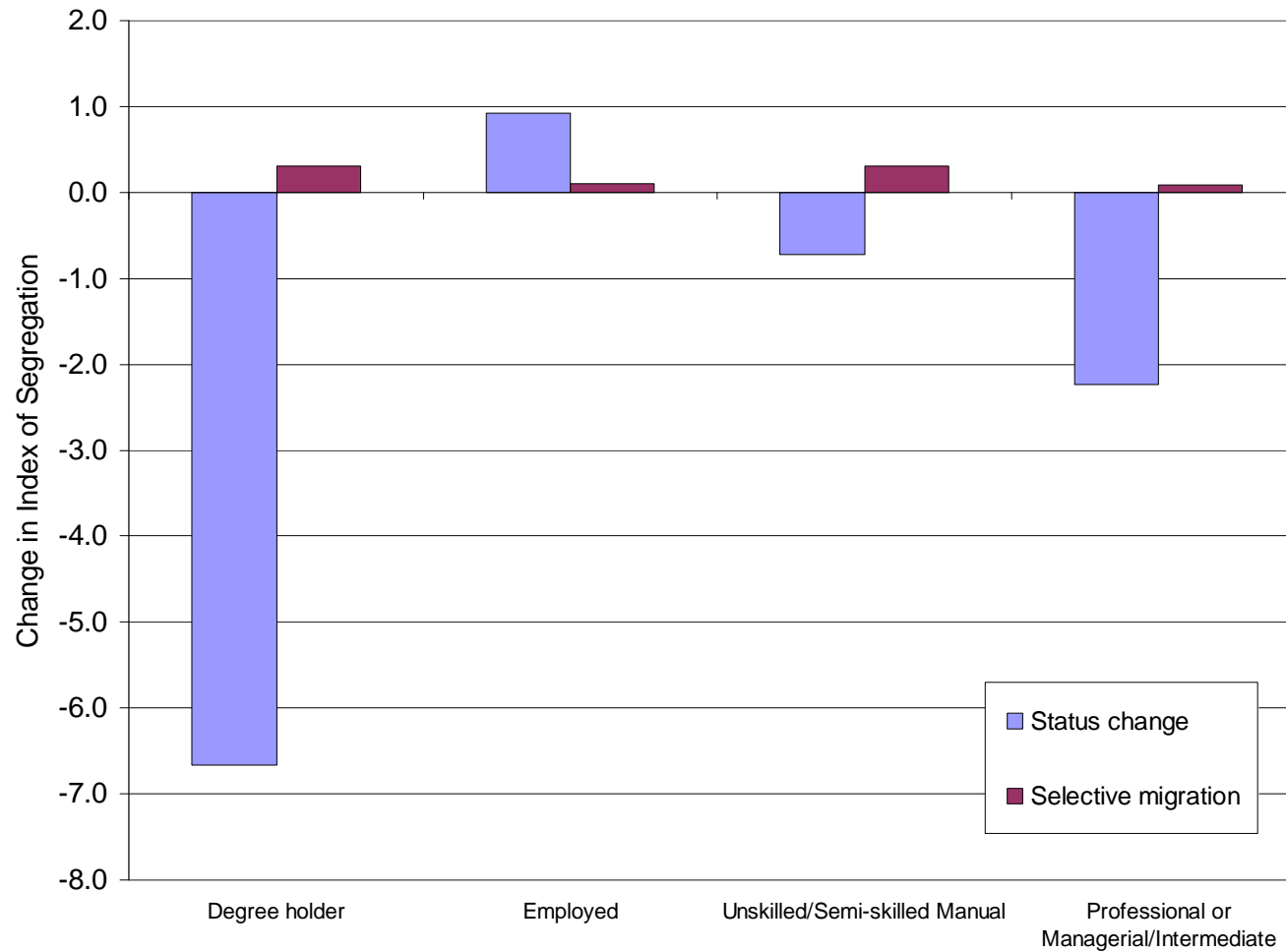
Source: Scottish Longitudinal Study.

Change in Segregation by Process



Source: Scottish Longitudinal Study.

Selective migration vs status change



Source: Scottish Longitudinal Study.

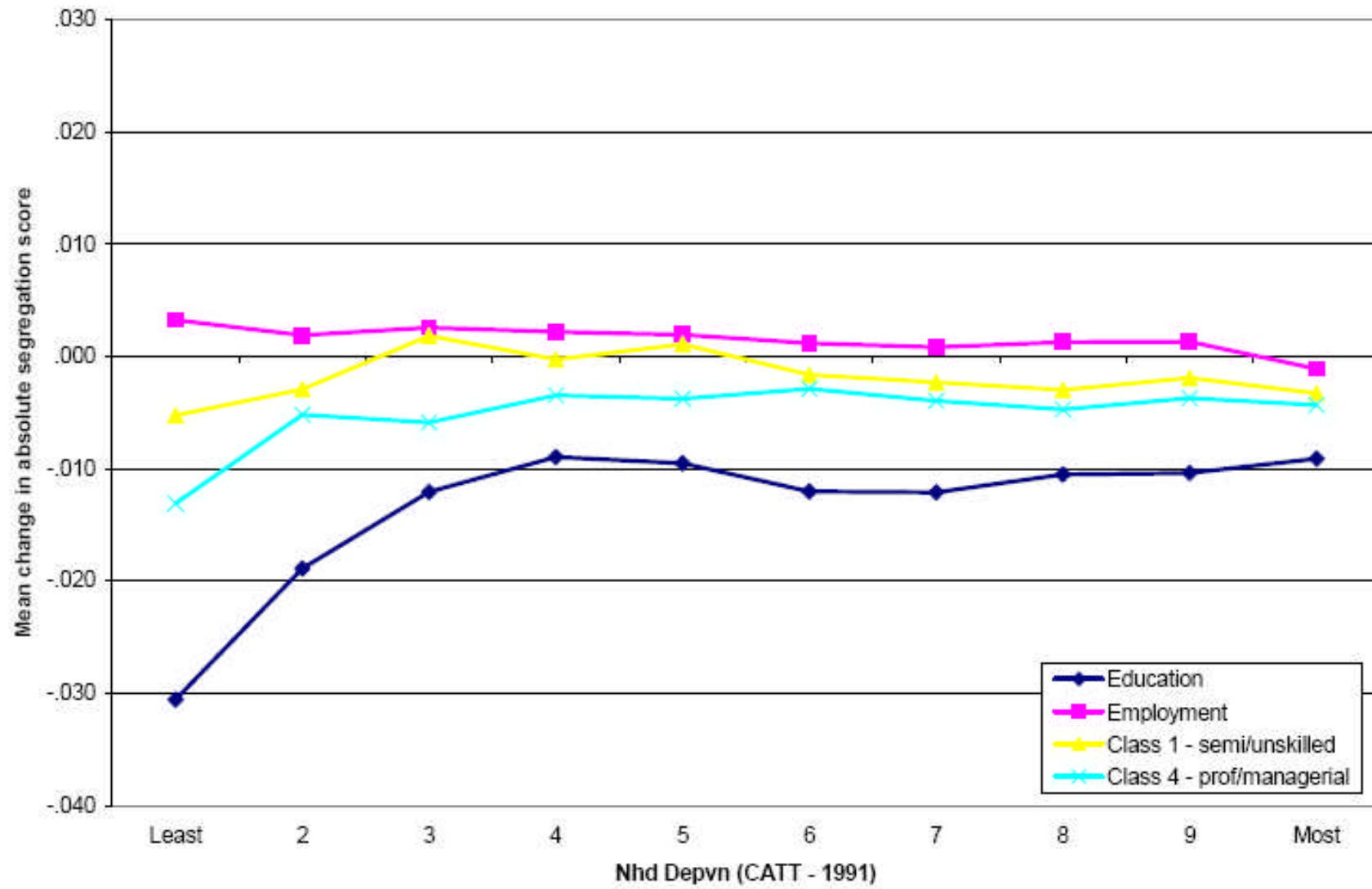
- Index of Segregation – measure of evenness

$$S = 1/2 * \sum | (x_i/X - t_i/T) |$$



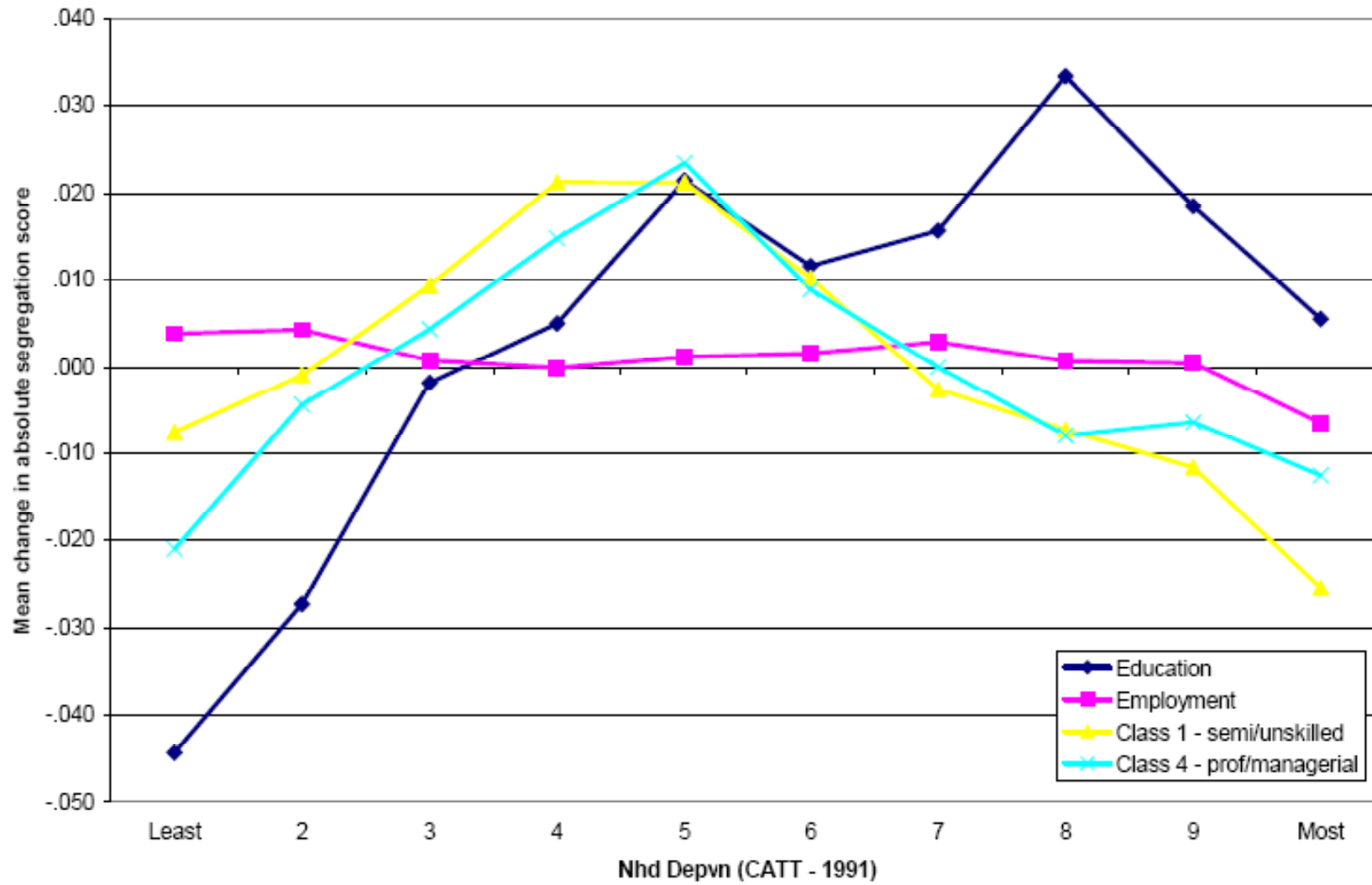
Contribution of each neighbourhood to overall change

(i) Status change



Source: Scottish Longitudinal Study.

(ii) Selective migration



Source: Scottish Longitudinal Study.

Selective migration & nhd change

- Discussion (3)
 - Complex patterns for individual neighbourhoods
 - Important contextual variations not captured by static measures
 - ‘Transit’/‘Launch pad’ vs ‘Isolate’
 - Research hampered by data availability – BUT new developments ...

Ideal data

Individual data

- Socio-demographic characteristics over time
- Individuals and households
- Perceptions of neighbourhoods
- Social networks, attachments

Neighbourhood data

- Socio-demographic composition
- Aggregate perceptions
- Aggregate networks, attachments

Longitudinal survey data

- + Can capture information on wide range of individual perceptions
- Not possible to provide data for neighbourhoods as sample size is too small

Examples

British Household Panel Survey

- Until recently geographical identifiers not provided below local authority level
- New version with SOA/Datazone codes

Understanding Society

- Larger sample size
- First wave underway

Census based longitudinal data

Census data:

- + Asks about place of residence one year previously
 - + Full population coverage allows small area analysis
 - Data on personal characteristics measured only at time of Census (i.e. after move)
- Longitudinal datasets built from Census

Examples

- English Longitudinal Study
 - 1% of population
 - Census data from 1971 onwards
- Scottish Longitudinal Study
 - 5% of population
 - 1991 and 2001 Census data
- Northern Ireland Longitudinal Study
 - 28% of population
 - 2001 Census data only

Limitations

- Lack of income data → linkage to administrative data?
- Limited range of information on individuals
- Lack of data on perceptions of the neighbourhood
- High level of turnover in Scottish data due to external migration → linkage of three UK Longitudinal Studies?

Administrative data

- Information collected by organisations primarily for administrative/functional purposes
- Secondary use as a research resource
- Examples
 - Work and Pensions Longitudinal Study (WPLS)
 - National Pupil Database (NPD)

Example: WPLS

- WPLS links benefit and programme information held by DWP on its customers with employment, earnings, savings, tax credit and pension records from HMRC
- Introduced in January 2004 but contains data back to 1999
- Hundreds of millions of records (spells on e.g. benefit or employment) and growing every day
- Approximately 12 relational datasets holding information from different sources
- One or more unique identifiers allow different datasets to be linked together

Some hypothetical WPLS data

Benefit/Programme data (DWP)

Employment data (HMRC)

ID	Encrypted NINO	DoB	Sex	Postcode	Spell Start Date	Spell End Date	Programme Type	Ethnicity	Match	Sex	DoB	Postcode	Employment Start Date	Employment End Date
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	02/01/1996	20/01/2002	34	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	03/08/1998	13/05/1999	2	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	25/01/2002	22/05/2002	2	21						
5438									G	M	17/11/1965	S	25/05/2002	24/09/2002
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	25/09/2002	29/09/2002	34	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	25/10/2002	02/03/2005	34	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	22/07/2004	02/03/2005	2	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	03/03/2005	05/07/2005	31	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	03/03/2005	08/04/2005	33	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	06/07/2005	08/11/2005	34	21						
5438	Pv?5^N@r	17/11/1965	1	OX1 2ER	26/01/2006		34	21						

Uses of WPLS

- Unprecedented capacity to link benefit and employment histories
- Home postcodes fairly accurately locate claimants of benefits and tax credits - can track people geographically
- Address information less reliable in employment side of data
- Can examine changes to an individual's benefit and employment status and changes to geographical location over time
- Q: Does a change to employment status prompt a geographical move? (SDRC project)

Limitations of WPLS

- WPLS only allows geographical tracking of benefit claimants into low paid work where claiming Working Tax Credit
- Child Tax Credit can also be used, but only for individuals with children
- Need to link in other data containing address information for adult population – patient register data? (SDRC/ADLS project)

Example: NPD

- Information on:
 - pupil and school characteristics (e.g. age, gender, ethnicity, postcode, free school meal status)
 - attainment
- Introduced in 2002
- Statutory requirement for all maintained schools, academies and city technology colleges
- Information on approximately 8 million pupils added each year

Uses of NPD

- Pupils keep unique reference number throughout compulsory education - records for a number of years can be matched
- Can track geographical movement using home postcode
- Can examine which pupils move using information on pupil characteristics (e.g. ethnicity, free school meals)

Summary of available data

	Longitudinal survey data	Census longitudinal data	Administrative data
<i>Individual data</i>			
Socio-demographic	Yes	Some	Yes
Individuals & households	Yes	Yes	Yes
Perceptions	Possible	No	No
Social networks	Possible	No	No
<i>Neighbourhood data</i>			
Socio-demographic	Limited	Some	Yes
Perceptions	Limited	No	No
Networks	Limited	No	No

Conclusions

- Residential mobility and selective migration research question some assumptions about how people react to neighbourhoods
- Selective migration research less well-developed
- Data developments offer new possibilities
- Combining data sources as key way forward

Acknowledgements

- SLS data was accessed through the Longitudinal Studies Centre - Scotland (LSCS). The help provided by staff of the LSCS is gratefully acknowledged. The LSCS is supported by the ESRC/JISC, the Scottish Funding Council, the Chief Scientist's Office and the Scottish Executive. The authors alone are responsible for the interpretation of the data. Census output is Crown copyright and is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland.