



NILS-RSU



Measuring Internal Migration: Comparing Census and Administrative Data

Brian Foley (Queen's University Belfast)

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Other researchers involved with the project:

Tony Champion (Newcastle University)

Ian Shuttleworth (Queen's University Belfast)

Myles Gould (University of Leeds)

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Overview

Background/context

- Internal migration and population change
- Quantifying internal migration
- Administrative data and population statistics

Data source

Research aims

Results

Conclusions

Components of population change

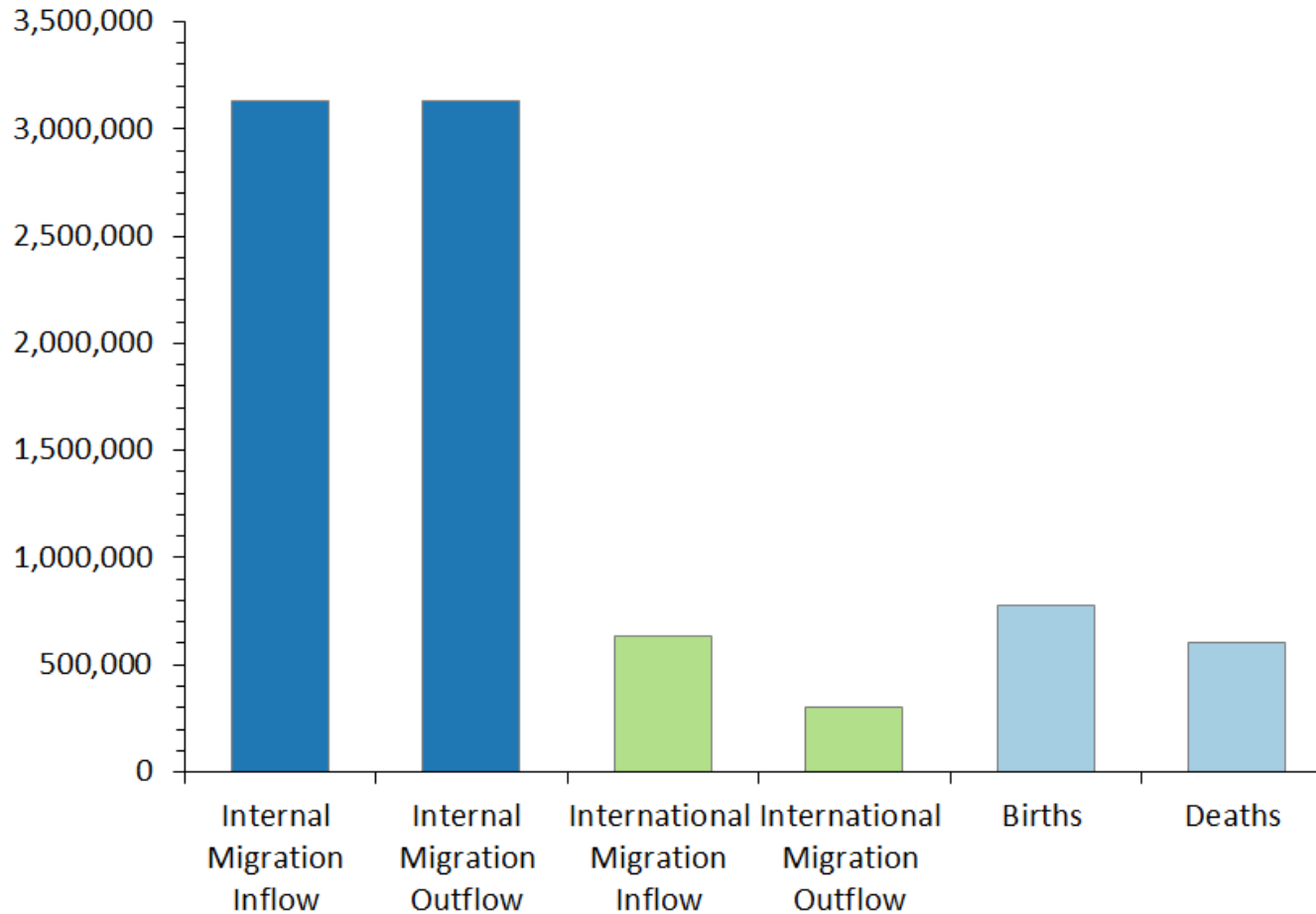
Births, deaths and migration

Much attention focussed on international migration

Small in comparison with flows of people that occur within nations -
internal migration

Internal migration shapes population change/redistribution at
subnational level

Components of population change for local authorities in the UK, year ending mid-2015



- Flows between local authorities (LAs) in England, Wales, Scotland and Northern Ireland greatly outnumbered international migration flows, births and deaths
- Internal flows would be even greater if methodology accounted for within-LA moves

Quantifying internal migration

Reliable estimation of internal migration is challenging

Contrast with accurate register-based statistics on births and deaths

Variation in internal migration data collection practices

- Intervals over which migration is measured
- Statistical geography over which migration is defined
- Data sources

Population census

Population census records internal migration transitions

Migrants identified by comparing their place of usual residence at a specific time (t) with that at an earlier date ($t-n$)

21 One year ago, what was your usual address?
➔ If you had no usual address one year ago, state the address where you were staying

2011 Census of England and Wales

Advantages

- High population coverage
- Attribute data provide information on the characteristics of internal migrants

Disadvantages

- Failure to identify multiple and return moves
- Data become less accurate over the inter-censal period

Administrative sources

Address changes recorded in administrative systems provide a measure of internal migration

Population registers aim to capture internal migration flows within a country, e.g. Nordic states

Termed event data; aim is to record all residential moves although some invariably missed

Advantages

- Availability of more frequent data
- Provide a more complete record of internal migration over time

Disadvantages

- Less information on migrant characteristics available
- Lag in updating administrative systems

Administrative data and population statistics

Administrative data increasingly used by national statistical agencies (NSAs)

UK context:

- Internal migration estimation
- 2021 Census, e.g. improved address register, enhanced population estimates

Motivation for research

Given the move towards administrative-based systems for producing population statistics, important to evaluate the strengths and limitations of these data with regard to quantifying internal migration compared to the traditional population census

Data source

Northern Ireland Longitudinal Study (NILS)

- Representative 28% sample (circa 500,000 individuals)
- Data spine is Health Card Registration System (HCRS); different structure to Office for National Statistics LS and Scottish LS, which use census as data spine

Linked to census and vital events data

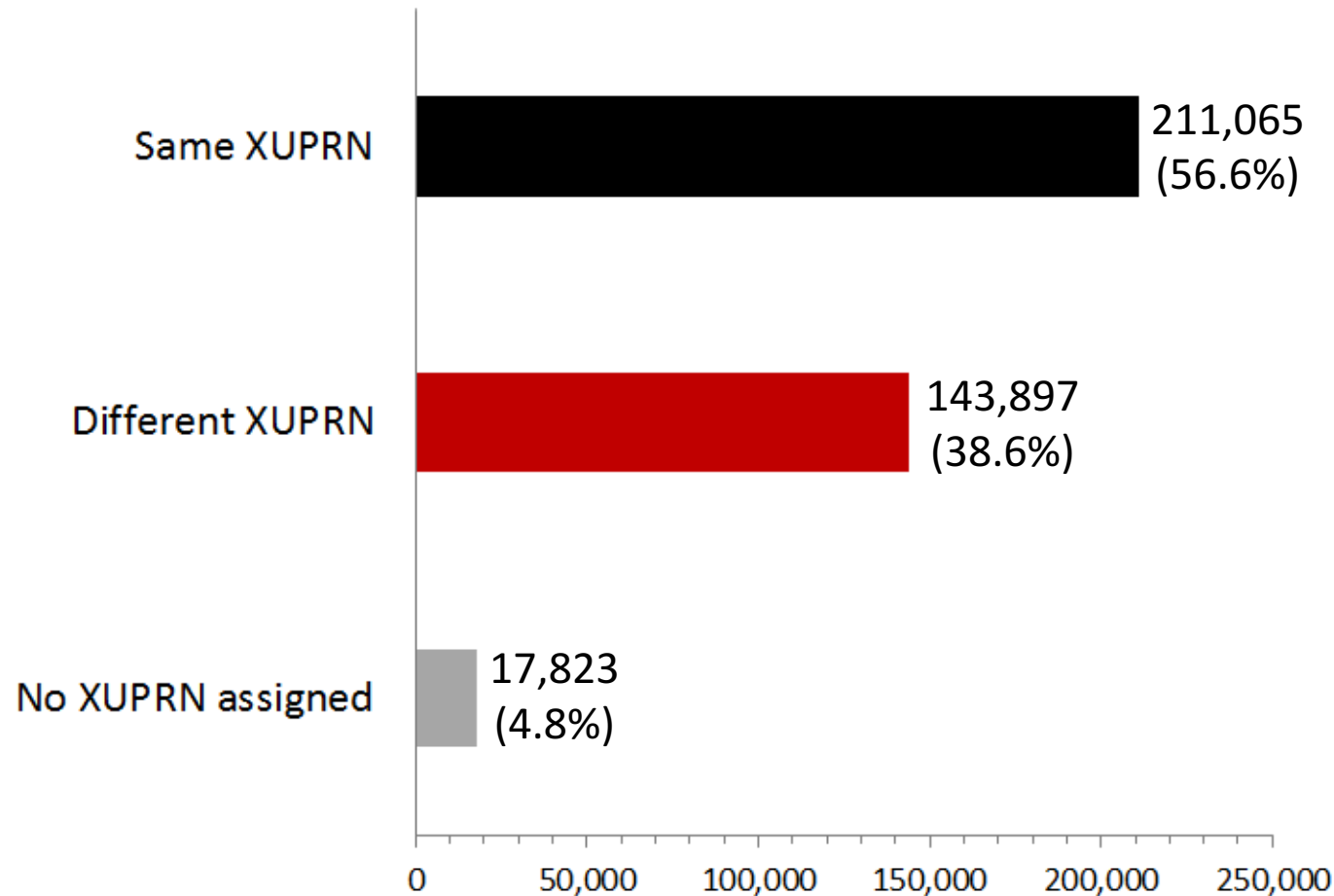
Address information for NILS members updated through six-monthly data downloads from April 2001 to April 2011 (20 time points)

- Anonymised Unique Property Reference Number (XUPRN)
- Super Output Area (SOA)

Research aims

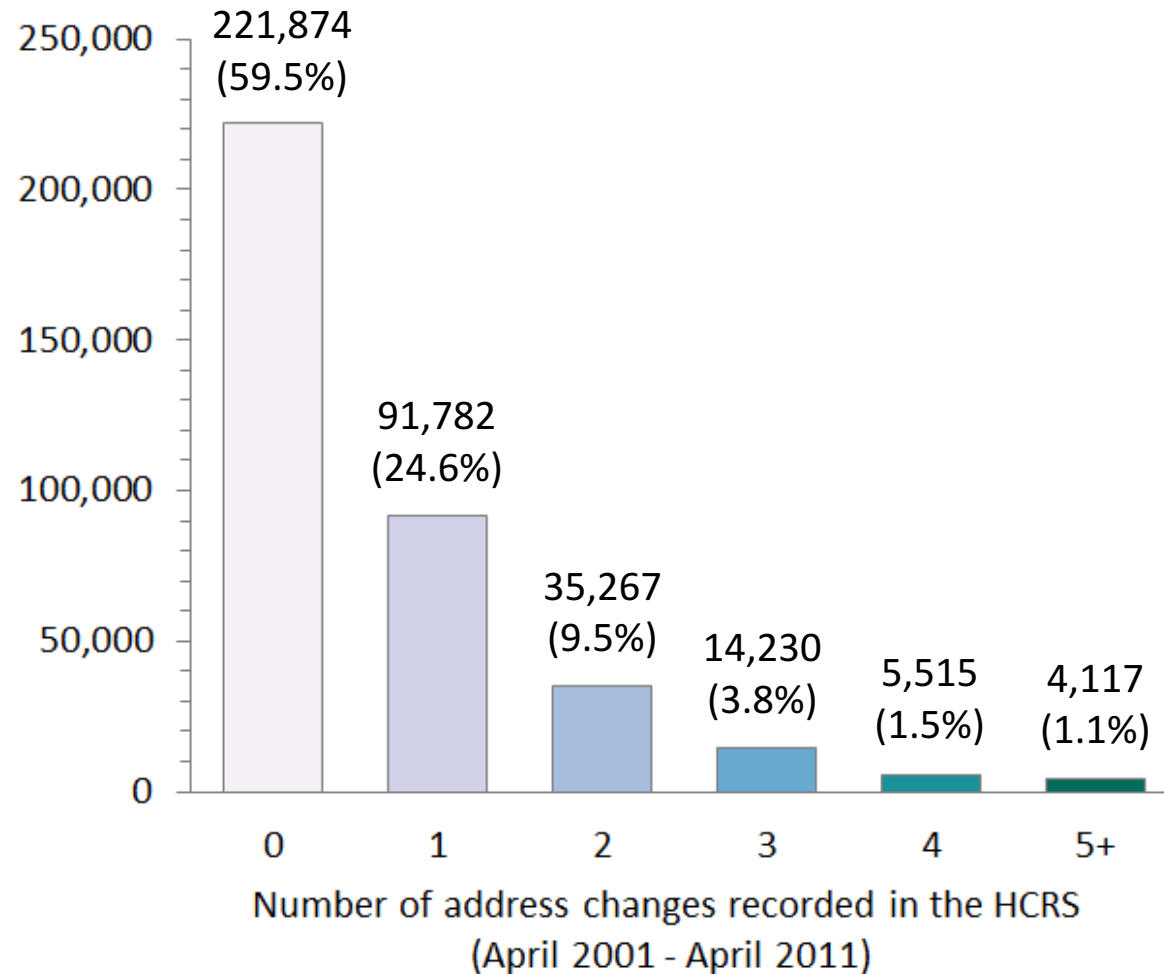
- 1) Investigate the internal migration activity of a cohort of NILS members based on address transitions over successive censuses and address change events recorded in the HCRS

Address transitions of NLS sample, 2001 and 2011 Census



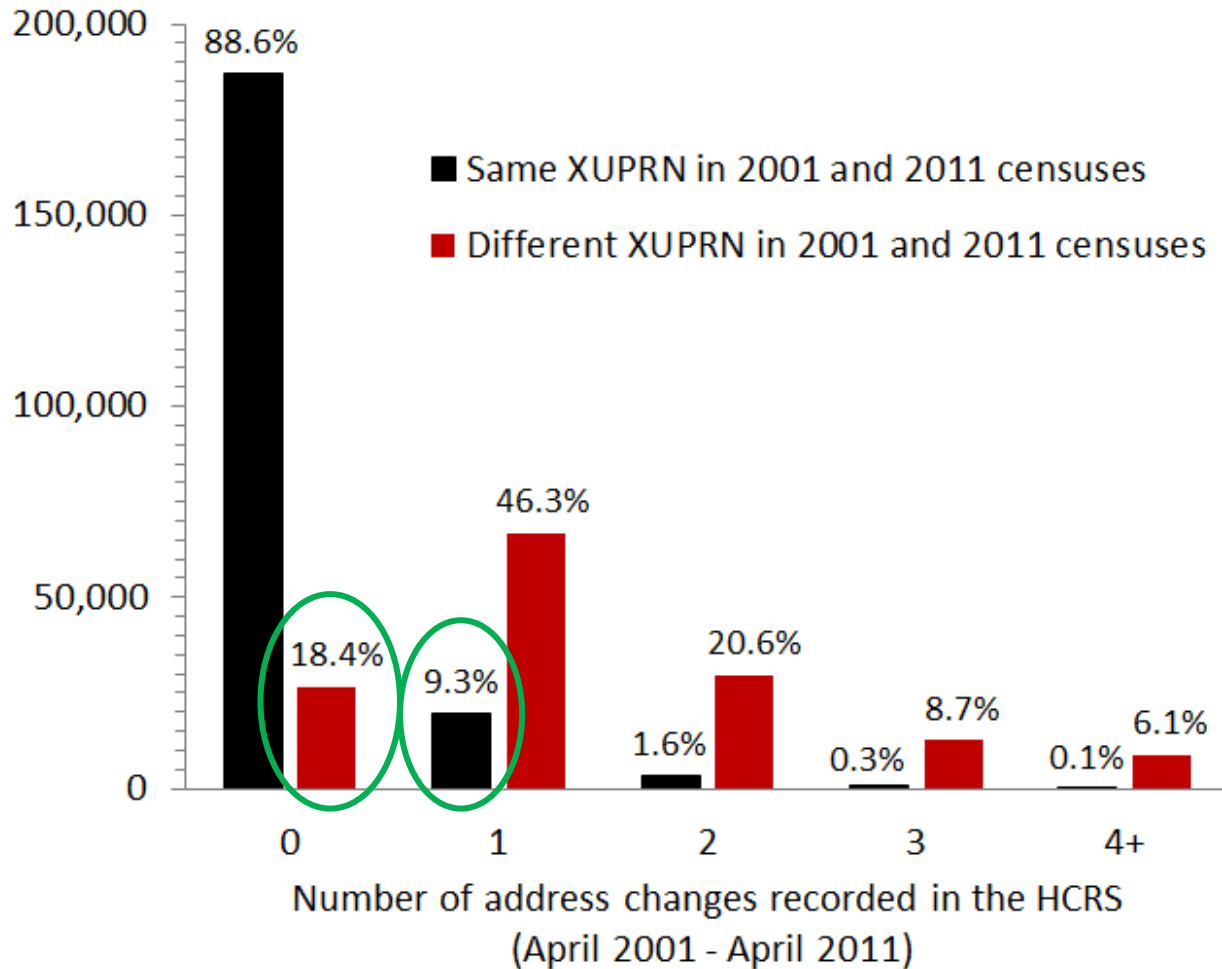
- 372,785 with census returns in both years
- Just under 40% enumerated at a different address in 2011 compared to 2001
- Address status missing for circa 5% due to unavailability of XUPRN information in one or both years

Address history of NILES sample from HCRS, 2001 to 2011



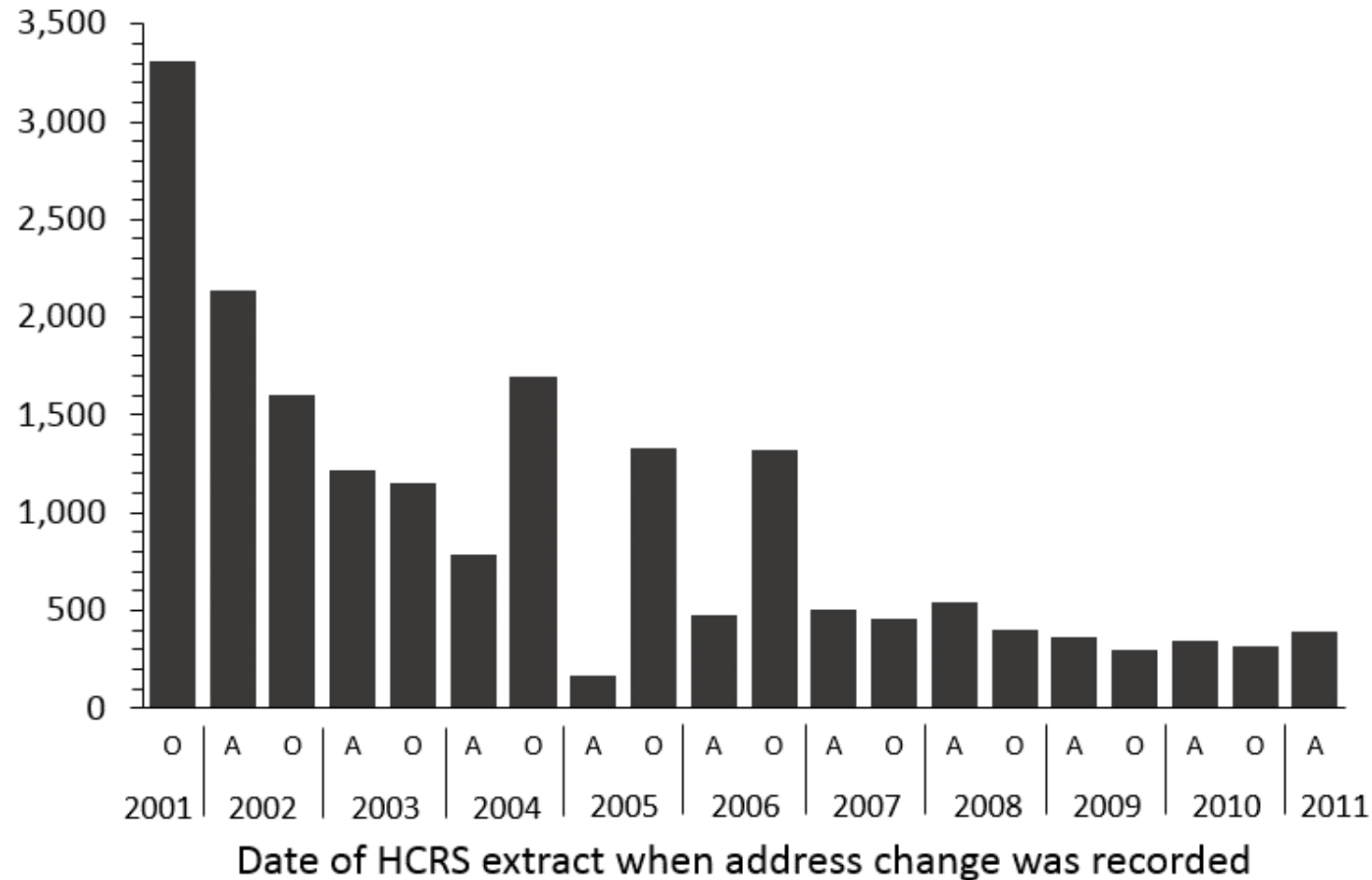
- Of the same cohort of NILES members, circa 60% had no address changes recorded in the HCRS over the 2001-2011 period, with almost a quarter having one address change
- Circa 4,000 reported five or more address changes over the decade

Address change events in HCRS according to census address status

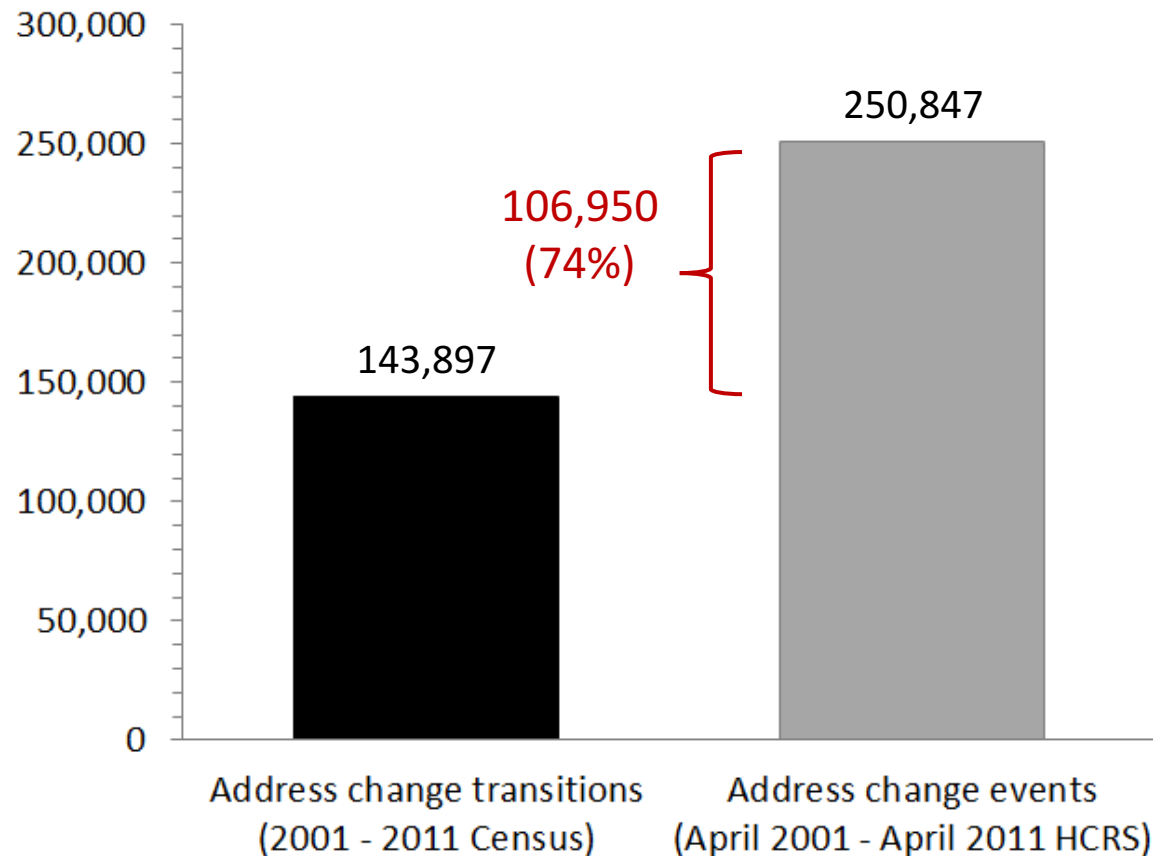


- Of the 211,065 with the same address in the 2001 and 2011 censuses, 88% had no address change recorded in the HCRS over the decade
- Anomalies highlighted -> largely attributable to a lag in reporting a residential move to the HCRS

Census non-movers: date of address change in HCRS



Comparing address change transitions and events



- Address change events expected to exceed transitions; the NLS provides an insight on the extent of the difference
- For the NLS cohort, 250,847 address change events recorded in HCRS from 2001-2011; exceeded census-based address transitions over the decade by 106,950 (74%)

Research aims

- 2) Estimate models of the propensity to change address based on census and HCRS data to identify the differences in related individual-, household- and area-level factors

Analysis

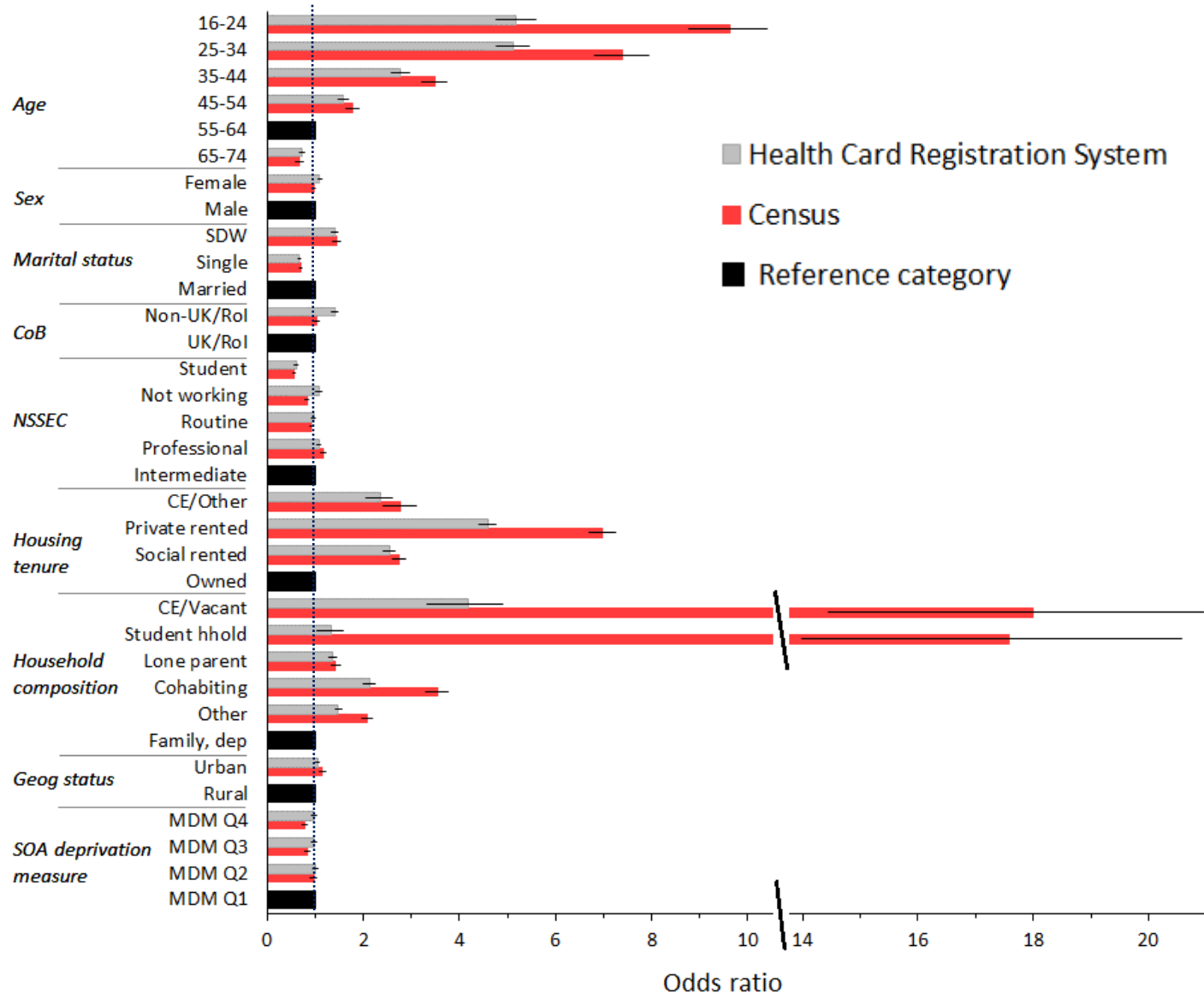
Two multilevel logistic regression models; one based on census and the other on HCRS data

Focussed on NLS members aged 16-74 in 2011 Census (n 323,762)

Binary outcome variable for each model:

- Changed address in year before 2011 Census (Yes/No)
- Different address recorded in HCRS between April 2011 and April 2010 (Yes/No)

Propensity to change address: Census vs HCRS



- Notable lower odds of address change in HCRS:
- 16-24 and 25-34 age groups relative to those aged 55-64
 - Housing tenure of private rented relative to owned
 - CE, student or cohabiting household relative to household of family with dependent children

Research aims

- 3) Assess the geographical comparability of internal migration flows between places using the census and HCRS

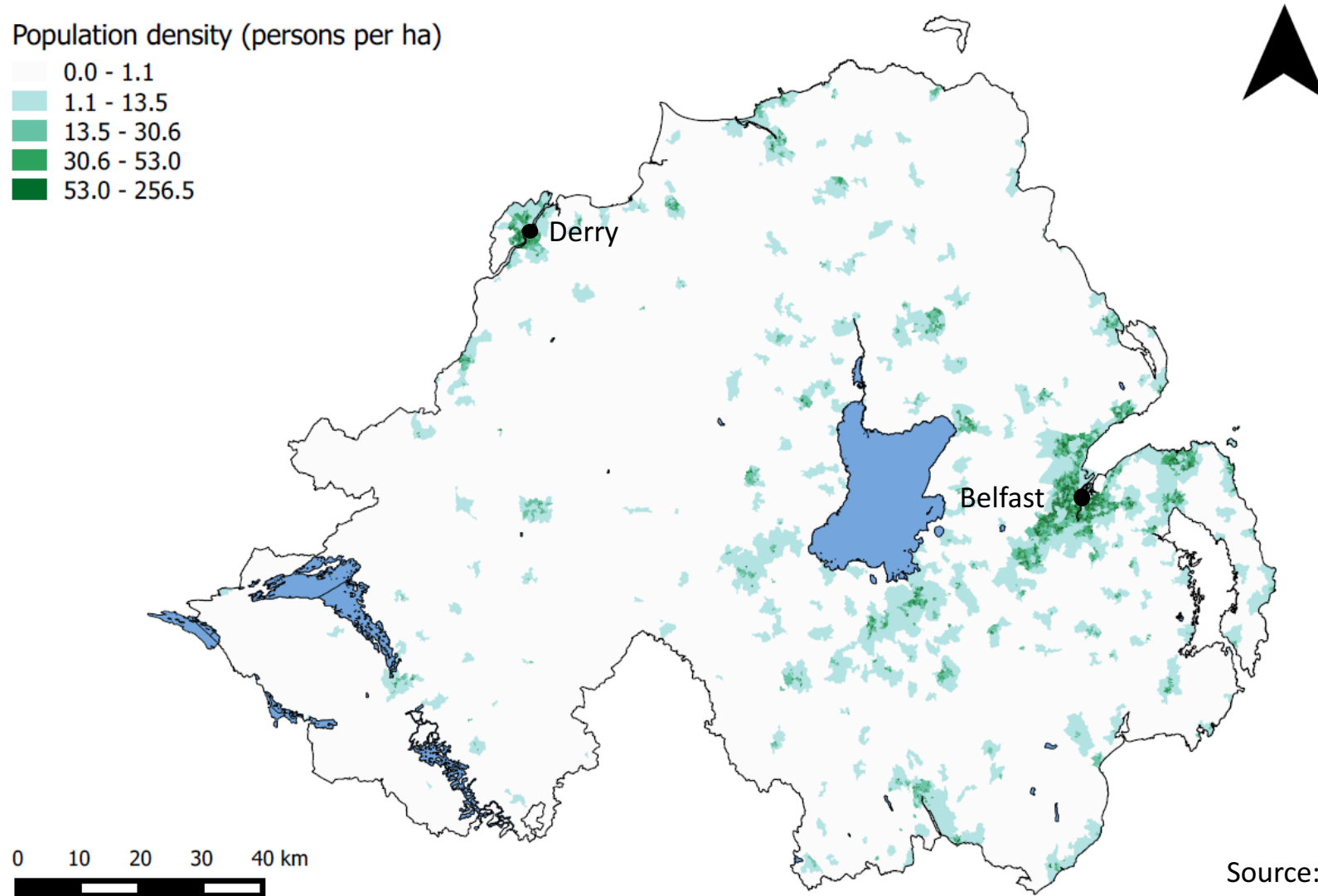
Analysis

Comparison of one-year net migration rates between census and HCRS data

Calculated net migration rates (per 1000) by SOA (based on counts by origin and destination SOA) using census and HCRS

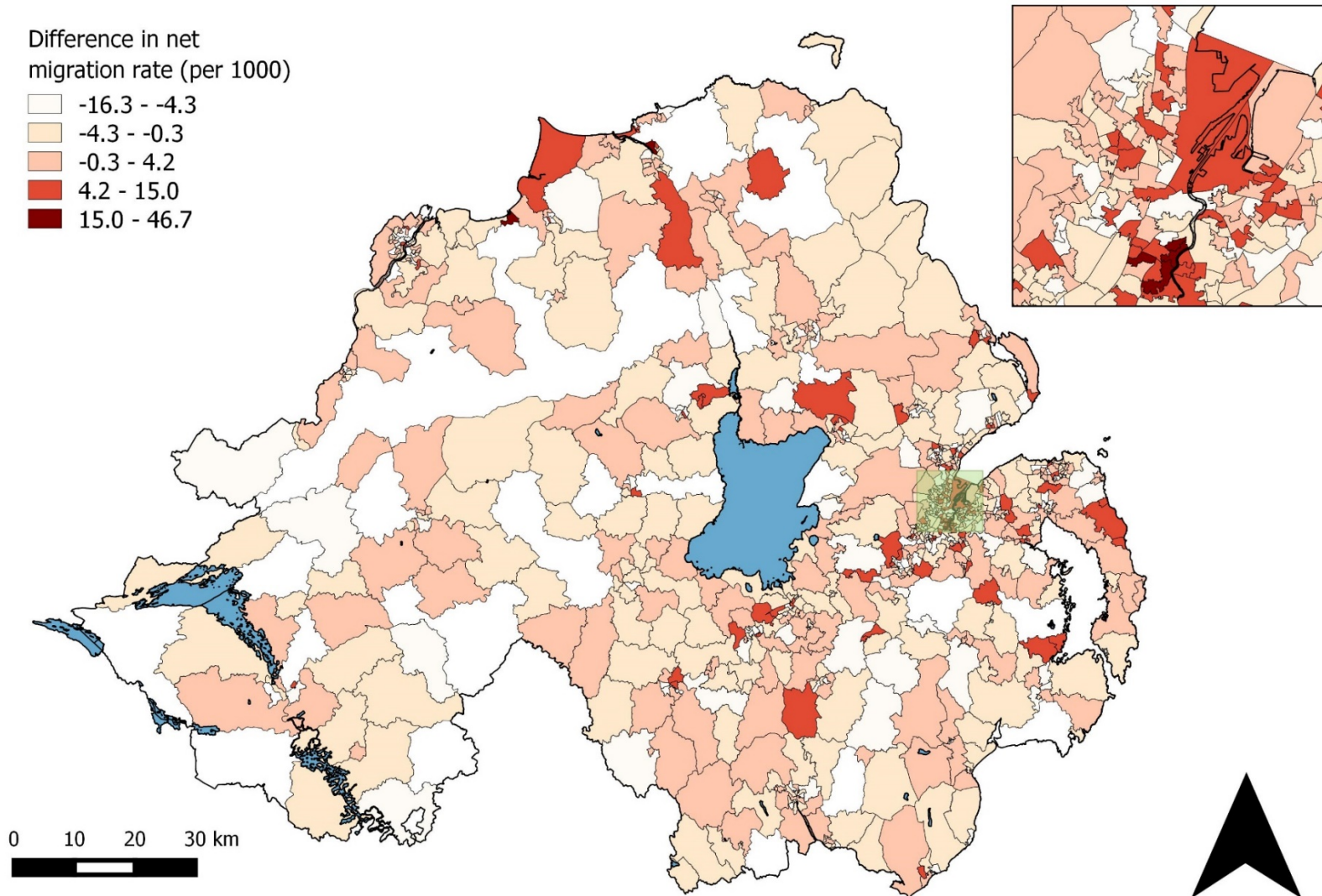
SOA maps to identify where largest differences were evident

Population density at Small Area level in NI



Source: NINIS, 2011 Census usually resident population at Small Area level

Difference in one-year (2010-2011) net migration rate by SOA between census and HCRS



Conclusions

Census and HCRS capture imperfect information on internal migration

Administrative data can provide a more complete picture of migration over time by recording events

- exceeded census-based transitions in NI by ca 74% over 2001-2011 period
- valuable insight from a research perspective

Lag in updating address changes in administrative systems is a limitation

- one of the challenges facing NSAs with the likely transition to an administrative-based statistical system after the 2021 UK Census

Conclusions

HCRS less effective in providing accurate record of internal migration activity for particular population groups such as young adults, students, cohabitees and renters

Difference in one-year net migration rates by SOA shows how population churn in urban and university areas impacts accuracy of internal migration data from an administrative source

Emphasises the importance of NSAs employing linked administrative sources to provide more reliable address data, thus improving the quality of resultant population statistics

Finally.....

Highlights value of the NLS as a data source for research on internal migration

Thank you for your attention