Using the Census Longitudinal Studies for research on internal migration

Laura Prazeres, Fiona Cox & Alan Marshall
School of Geography & Sustainable Development
University of St Andrews

Published November 2017
# Table of contents

1. Introduction  
   1.1. Aim of the guide  
   1.2. What are the Longitudinal Studies and why are they so useful for internal migration research?  
   1.3. Accessing the data  
   1.4. Structure of the guide  

2. Studying population migration using the Longitudinal Studies  
   2.1. Migration variables in the LSs  
   2.2. Correlates of migration in the LSs  
   2.3. Consistency over time  
   2.4. Consistency between LSs  
   2.5. Combining LSs  

3. Case study 1: Are we becoming more migratory? An analysis of internal migration 1971-2011 (Prof Tony Champion & Dr Ian Shuttleworth)  
   Research supported by CeLSIUS  
   3.1. Research aims and key findings  
   3.2. Why was the ONS LS needed?  
   3.3. Analysis  
   3.4. Potential policy impact  
   3.5. Extensions to this work  

4. Case study 2: Migration, occupational mobility and regional escalators in Scotland (Prof Maarten van Ham, Prof Allan Findlay, Dr David Manley & Dr Peteke Feijten)  
   Research supported by SLS-DSU  
   4.1. Research aims and key findings  
   4.2. Why was the SLS needed?  
   4.3. Data and methods  
   4.4. Potential policy impact  
   4.5. Extensions to this work  

5. Case study 3: Does internal migration in Northern Ireland increase religious and social segregation? Perspectives from the Northern Ireland Longitudinal Study (NILS) 2001-2007 (Dr Ian Shuttleworth, Dr Paul Barr & Dr Myles Gould)  
   Research supported by NILS-RSU  
   5.1. Research aims and key findings  
   5.2. Why was the NILS needed?  
   5.3. Data and methods  
   5.4. Potential policy impact  
   5.5. Extensions to this work  

6. Future research directions and developments  

7. References
1. Introduction

1.1. Aim of the guide

The purpose of this guide is to introduce the UK census-based Longitudinal Studies (LSs)\(^1\) and highlight their potential for conducting research on internal migration. It provides practical guidelines on how to access the data, the migration information and correlates that are available in each LS and explains why the LSs are such an important resource for migration researchers.

The guide focuses on 3 case studies that illustrate recent research on internal migration using the longitudinal studies across the UK. These case studies cover a range of areas in migration research from occupational mobility to residential segregation.

The guide is accompanied by a recorded webinar that is freely available from the CALLS Hub website and includes a presentation based on each case study led by the authors of the papers.\(^2\)

1.2. What are the Longitudinal Studies and why are they so useful for internal migration research?

The three UK Census-based Longitudinal Studies (LSs) cover all regions of the country and comprise the Scottish Longitudinal Study (SLS), Northern Ireland Longitudinal Study (NILS) and ONS Longitudinal Study (ONS LS) covering England and Wales.

LS members are selected to be part of an LS based upon their birthdate (day and month), with each study having their own set of confidential birthdates. The ONS LS is based on four birthdates, providing a 1% representative sample of the population of England and Wales. The SLS uses the four ONS LS birthdates plus an additional 16 dates (i.e., 20 dates in total), giving an approximately 5.3% sample of the Scottish population. The NILS has the largest sampling fraction, at approximately 28% of the Northern Ireland population. The NILS selects members based on 104 birthdates throughout the year.

Census data form a key component of the studies and census forms are available on the CALLS Hub website. Because there is a legal requirement for every household to complete a census form every 10 years, attrition rates are very low in the LSs, with far fewer study members lost to follow-up than in most surveys and datasets. The census provides a rich resource of information on social and demographic variables including health outcomes, household composition, housing tenure, ethnicity, religion, age, education, marital status, economic activity and migration. Follow-up periods in the LSs vary between 20 and 40 years: the ONS LS is the oldest of the LSs, containing census data from 1971 onwards, whilst the NILS has data from 1981-2011 and the SLS covers 1991-2011.

In addition to census data, the LSs contain information from a variety of other administrative data sources. For example, information from the registration of births and deaths are contained in all three LSs, and the SLS and NILS also include marriage registration data. The LSs in Northern Ireland are not ‘census-based’; its members are derived initially from the Northern Ireland Health Card Registration System which are then linked to the census returns. We use the term ‘census-based’ here as a convenient collective term for the LSs, since the census forms a key component of all three studies.

---

\(^1\) In fact the NILS is not ‘census-based’, its members are derived initially from the Northern Ireland Health Card Registration System which are then linked to the census returns. We use the term ‘census-based’ here as a convenient collective term for the LSs, since the census forms a key component of all three studies.

\(^2\) http://calls.ac.uk/guides-resources/thematic-guides-webinars/
Ireland and Scotland also have unique regional linkages to other data, including education data (SLS), NHS health data (SLS, NILS) and property datasets (NILS). The geographical detail of the LSs mean they can be linked to other data sources such as environmental air quality.\(^3\)

This rich combination of data over 20–40 years of follow-up presents an excellent opportunity for long-term longitudinal research linking circumstances across all phases of the life course. The scale of the LSs in terms of population coverage (the ONS LS now has over 1 million members) means that analysis may be possible at a relatively small level of geography or for minority population subgroups, and also that more sensitive or rare events may be explored. This is particularly true for the NILS and SLS.

1.3. Accessing the data

Due to the sensitive nature of the information held in the ONS LS, NILS and SLS and the potential risk of identification of an individual within the LSs, the data are not freely available to download. Instead access is given only to approved researchers in safe-setting locations with Research Support Unit staff on hand to assist with queries. Currently the safe-settings are located at:

- NISRA, Colby House, Belfast (NILS)
- Ladywell House, Edinburgh (SLS)
- ONS VML offices at London, Fareham and Newport (Wales) (ONS LS)

Information on the application process is available on the CALLS Hub website at http://calls.ac.uk/guides-resources/applying-to-use-the-lss/ It should be noted that if you would like to request linked NHS or other health data (SLS and NILS), this will require additional application steps to satisfy the relevant data-holders.

As data from the LSs can only be accessed within our safe-setting locations, this means the process can take a little longer than it might for other data resources. In order to help address this issue, the Synthetic Data Estimation for the UK Longitudinal Studies (SYLLS) project has developed synthetic longitudinal data resources [7]. Synthetic data are fake data which have been created from the real data, but which do not contain any real observations. This allows researchers to explore synthetic data at their own computer in preparation for a visit to the safe-setting.

A synthetic ‘spine’ dataset of core variables has been created for each of the LSs and can be downloaded from the CALLS website at http://calls.ac.uk/guides-resources/. Synthetic datasets are ideal for teaching purposes or for exploration of how LS data look and behave.

An additional development from SYLLS is the option of receiving a bespoke synthetic version of your project dataset, in order to develop syntax and models using data which closely mimic the properties of the real data. This option is now being rolled out for SLS researchers, and it is hoped that it will be available for ONS LS and NILS researchers in the near future.\(^4\)

\(^3\) See, for example, http://calls.ac.uk/output-entry/place-of-work-and-residential-exposure-to-ambient-air-pollution-and-birth-outcomes-in-scotland-using-geographically-fine-pollution-climate-mapping-estimates/

\(^4\) NOTE: Synthetic data are not real, and analyses developed using synthetic data must always be run finally on the actual LS data
The CALLS Hub helpdesk can be reached by phone, email or via our website, and exists to help with all enquiries you may have about the LSs or applying to use them (contact details available at the end of this guide).

1.4. Structure of the guide
After this introduction the guide is divided into several parts. First, we discuss the practicalities of studying migration using the longitudinal studies. We describe some of the migration information available within the LSs and associated administrative data. We also address issues of consistency between LSs and over time, and the challenges and opportunities of joining data from more than one LS. The subsequent three sections discuss the case studies that use LS data to make contributions to different substantive research questions relating to migration. The first case study presents Prof Tony Champion and Dr Ian Shuttleworth’s research that used the ONS LS to examine changes to internal migration across England and Wales. In the second case study, we discuss research on occupational mobility and regional escalators in Scotland by Prof Maarten van Ham, Prof Allan Findlay, Dr David Manley and Dr Petke Feijten. The third and final case study from Dr Ian Shuttleworth, Dr Paul Barr and Dr Myles Gould describes research that examines religious and social segregation in Northern Ireland based on internal migration.

2. Studying population migration using the Longitudinal Studies

2.1. Migration variables in the LSs

The census-based longitudinal studies are unique, allowing detailed exploration of correlates, predictors and outcomes of migration across time and for fine geographical areas and minority population groups. The longitudinal nature of the data allows exploration of migration with a life course perspective testing for both precursors and outcomes, and providing indications of causality that cross-sectional or survey data alone cannot provide.

The LSs currently contain the following types of migration data that may be useful to derive further variables:

- From census:
  - Address on census night
  - Address one year before census
  - Distance of move between censuses
  - Year of most recent arrival in the UK/NI (2011 only)
  - Country of birth
  - Passports held (NI, E&W only, 2011 only)

- From administrative data:
  - Postcode from vital event registrations (e.g., births and deaths)
  - Postcode from GP/health registrations (Scotland and Northern Ireland only)

It should be noted that postcodes and some address data are not provided to researchers. However on request Support Unit staff can create derived variables from them which are then made available. Postcode data may also be used by support staff to link in user-provided geographically-based data such as alternative ecological variables.

2.2. Correlates of migration in the LSs

A key advantage of the LSs for migration research is the ability to investigate the relationship between migration and a wide range of individual, household and neighbourhood factors. Table 1 gives an indication of the correlates of migration available in the LSs.

2.3. Consistency over time

There are a few small differences in the census migration questions over time. At 1971 (ONS LS only) there is an additional ‘usual address 5 years ago’ question, which may be useful in effectively extending the address data back to 1966. The 1971 ONS LS data also includes ‘year of first entry to the UK’. The Northern Ireland 1981 Census did not contain postcode data, however a 1km square grid for homes was used and the closest 2001 Super Output Area was assigned.

Year of most recent arrival and its follow up questions were first added to the census at 2011, and vary slightly by region (see below).

Due to their nature, postcodes from vital event registrations (e.g., births, deaths) are not provided consistently across time or for all LS members. However, they may provide some valuable additional intercensal detail on migration.
<table>
<thead>
<tr>
<th>Migration Correlate</th>
<th>Source</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation and employment status</td>
<td>Census</td>
<td>Occupation coded to SOC categories</td>
</tr>
<tr>
<td>Economic activity</td>
<td>Census</td>
<td>Information on the economic activity of respondents including</td>
</tr>
<tr>
<td></td>
<td></td>
<td>categories such as ‘unemployed’, ‘employed’, ‘self-employed’ and ‘retired’</td>
</tr>
<tr>
<td>Social class</td>
<td>Census</td>
<td>NS-SEC socio-economic position based on census-reported occupation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(only available for those who have ever worked)</td>
</tr>
<tr>
<td>Household composition</td>
<td>Census</td>
<td>Details the relationship structure of those in the household, e.g.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>single pensioner, all students, cohabiting family, married family,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>single parent family</td>
</tr>
<tr>
<td>Provision of care</td>
<td>Census</td>
<td>Hours spent each week providing informal care to others because of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ill-health, disability or old age (2001, 2011 only)</td>
</tr>
<tr>
<td>Country of birth</td>
<td>Census</td>
<td>Country of birth</td>
</tr>
<tr>
<td>National identity</td>
<td>Census</td>
<td>Self-reported national identity (2011 only)</td>
</tr>
<tr>
<td>Ethnic group</td>
<td>Census</td>
<td>Included since 1991 at each census, although ethnic categories</td>
</tr>
<tr>
<td></td>
<td></td>
<td>change over time. See Simpson et al (2016) for detail of stability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of census measures of ethnicity over time [13]</td>
</tr>
<tr>
<td>Educational qualifications</td>
<td>Census (all LSs), SQA/ScotXed data (SLS)</td>
<td>Highest level of qualification is available from census. SLS can be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>linked to more detailed education data (2007-2010)</td>
</tr>
<tr>
<td>Limiting Long-term Illness (LLTI)</td>
<td>Census</td>
<td>Self-reported LLTI has been included since 1991</td>
</tr>
<tr>
<td>General health</td>
<td>Census</td>
<td>Self-reported level of general health (2001, 2011)</td>
</tr>
<tr>
<td>Long-term health conditions</td>
<td>Census (NILS &amp; SLS only)</td>
<td>Detail of long-term health conditions included at 2011 Census in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Northern Ireland and Scotland</td>
</tr>
<tr>
<td>Additional health data</td>
<td>Cancer registrations (ONS LS), NHS (NILS, SLS only)</td>
<td>Cancer registration data is available in the ONS LS. With approval it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>is possible to link the NILS and SLS to more detailed NHS, dental</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and GP data. For further info see Thematic Guide 1 [5]</td>
</tr>
<tr>
<td>Housing tenure and type</td>
<td>Census</td>
<td>Details on tenure including indicators of renting and owner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>occupation</td>
</tr>
<tr>
<td>Household amenities</td>
<td>Census</td>
<td>Varies across time, but includes: central heating, bath/shower and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>car/van access</td>
</tr>
<tr>
<td>Household deprivation</td>
<td>Census</td>
<td>Based on education, employment, health and housing tenure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indices</td>
</tr>
<tr>
<td>Area deprivation</td>
<td>Indices of Multiple Deprivation (SLS, NILS, ONS LS) Carstairs index (SLS, ONS LS) Townsend index (SLS)</td>
<td>Information on area deprivation available at different geographies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>over time</td>
</tr>
<tr>
<td>Area house prices</td>
<td>Land and Property Services Data (NILS)</td>
<td>Details on the valuation of properties at various geographies that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>can be linked to the NILS</td>
</tr>
<tr>
<td>Air pollution</td>
<td>DEFRA</td>
<td>CO, NO, O3, SO2 and particulate matter can be linked at a 1x1km</td>
</tr>
<tr>
<td></td>
<td></td>
<td>grid square level</td>
</tr>
<tr>
<td>Meteorological data</td>
<td>Met Office</td>
<td>Available from January 1981 onwards. Includes: temperature, frost,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sunshine, precipitation, cloud cover. Monthly data at 5x5km grid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>level.</td>
</tr>
</tbody>
</table>

Table 1: A selection of the correlates of migration available in the LSs or may be linked to them (Note: individual level information is also available for other household members, providing further contextual data). More information at [http://calls.ac.uk/variables/](http://calls.ac.uk/variables/).
Additional data on migration between censuses is available in Scotland and Northern Ireland from GP and health card registrations respectively. The NILS contains 6-monthly health downloads providing postcodes from 2001 onwards, while the SLS contains continuous data from 2000 onwards.

### 2.4. Consistency between LSs

As noted above, there are some regional differences in the migration variables. In the Northern Ireland and England and Wales 2011 Census, those who were born outside the UK and who had arrived within the previous year were asked how long they intended to stay in the UK (see figure 1). The Scottish 2011 Census did not ask this question.

The 2011 Census in England, Wales, and Scotland asked all individuals who were not born in the UK to provide the “date [they] most recently arrived to live here” (figure 2). In Northern Ireland, the 2011 Census asked whether individuals had lived outside NI for a continuous period of at least 12 months. Those who answered yes were then asked to provide the country in which they had lived, and the date they most recently arrived to live in Northern Ireland (see figure 3).

Intercensal postcode data from GP/health card registration is not available in the ONS LS but are available from 2001 onwards in the NILS (6-monthly updates), and from 2000 onwards in the SLS (continuous data). As previously noted, postcodes are not released to researchers but may be used by Support Unit staff to provide derived variables to researchers or to link in additional data.

The smallest level of geography available to researchers varies across the UK, though smaller levels of geography may be used by Support Unit staff to create derived variables or to link in other datasets. In Northern Ireland the lowest level of geography available is the Super Output Area (approx 2,000 people). In England and Wales the lowest available geography is local authority level. Alternative groupings of lower level units such as wards or output areas can be created and made available to users as long as they are of an equivalent size to local authorities or larger. In Scotland data are available to Datazone level (between 500 and 1,000 residents).

### 2.5. Combining LSs

It is not possible to transfer LS data between UK regions due to legal restrictions. Until recently this meant that comparative analyses between the LSs was only possible on a post-hoc basis.

However, thanks to the eDatashield methodology developed by the Longitudinal Studies Centre Scotland, it is now possible to analyse data from more than one LS as though they were part of the same dataset. To use...
eDatashield researchers must first apply separately to each LS. The technique requires that variables can be ‘harmonised’ between the LSs. Both census and NHS data may be combined in eDatashield analyses, provided comparable variables can be found or created. Further information on eDatashield is available on the CALLS website at http://calls.ac.uk/guides-resources/ or by contacting our helpdesk (see below).

3. Case study 1: Are we becoming more migratory? 
An analysis of internal migration 1971-2011 (Prof Tony Champion & Dr Ian Shuttleworth)

Research supported by CeLSIUS

3.1. Research aims and key findings
Although there are assumptions that populations are becoming more migratory, recent evidence shows a decline in spatial mobility in the USA and Canada. In response, Champion and Shuttleworth (2017)[3] set out to explore whether a similar decline in internal migration rates has been occurring in the UK.

The study used ONS LS data to calculate rates of 10-year address-changing within England and Wales, with particular focus on comparison between the decades 1971-1981 and 2001-2011. Analyses were conducted to find out whether the proportion of people changing address has altered over time, how much this varies by distance of move, and which subgroups of the population have been the main ones driving the trends.

The results show that the rates of longer-distance moving in England and Wales have dropped somewhat, but not to the same extent as in the USA. For moves of 50km or more, the types of people with the sharpest falls in rate included pensioners, owner occupiers, people educated to degree level and those working in more skilled occupations.

A much more substantial decline was found for short-distance moving, with the overall rate for moves of less than 10km down by a quarter between the 1970s and the 2000s. The reduction was particularly marked for the retirement age groups, down by more than half for the 65-74s, but was also down by at least a third for divorcees, immigrants and unskilled workers.
The study also confirmed the results of previous research on differential migration rates across the population. More skilled and highly educated individuals were among those most likely to make long-distance moves (over 50km), while low-skilled people were among those most likely to make short-distance moves. Military personnel, younger people, single people and private renters were also amongst the more migratory groups.

It is now clear that the decline in overall migration rate is a widespread phenomenon that is shared by almost all the subgroups tracked in this study, albeit to varying extents but with only a couple of exceptions, notably those living in the private-rented sector.

3.2. Why was the ONS LS needed?
The ONS LS permits the identification of all distances of address change between censuses and offers a range of personal characteristics that can be compared fairly consistently, whereas the NHSCR dataset - the other main source of internal migration data - is limited to age and gender and excludes within-area moves. Meanwhile, survey and panel sources such as the Annual Population Study/Labour Force Survey, British Household Panel Survey/Understanding Society and Birth Cohort Studies suffer problems with sample size and attrition. The ONS LS also enables longer time coverage and provides high levels of individual-person linkage between censuses. In addition, because it provides a detailed geography of usual residence at each census, the distance of any 10-year change of address can be calculated.

3.3. Analysis
The study used data from the 1971, 1981, 1991, 2001 and 2011 censuses for ONS LS members, with a separate analysis for each intercensal decade based on comparing people’s usual address at the start and end of that decade. Each decade’s sample of LS members was necessarily limited to those who remained in the country and survived the decade. In this initial study, 10-year address rates were calculated separately for each population subgroup and a variety of distances of move.

3.4. Potential policy impact
This study has particular implications for both labour and housing market change, with slowing rates suggesting poorer matching of supply and demand in both, but lower mobility can potentially reflect greater satisfaction of people with their current home and local area. The research has already impacted on public awareness and understanding of internal migration issues through a news article published in The Economist.[2]

3.5. Extensions to this work
Next steps in this work include regression analysis to measure the individual role of the population characteristics in the overall change in migration rate. The Blinder-Oaxaca decomposition method can be used to distinguish the relative contributions of structural changes, such as population ageing, and behavioural changes, such as particular types of people becoming less willing to move. Another potential approach is to examine the role of age, cohort and period effects over the period 1971-2011 giving a fully longitudinal design. Going further towards explanation requires survey-based information on a wider set of attributes including on people’s intentions to move.

4. Case study 2: Migration, occupational mobility and regional escalators in Scotland (Prof Maarten van Ham, Prof Allan Findlay, Dr David Manley & Dr Peteke Feijten)

Research supported by SLS-DSU

4.1. Research aims and key findings
Despite a growing body of works on ‘escalator regions’, there are few studies looking at regional differences and opportunities for occupational mobility. Escalator regions are geographical areas that tend to reward incoming migrants from other regions with promotions and better employment outcomes. However, migration does not automatically result in career advancement; rather it is a move that can facilitate it.

This study examines regional variations in occupational mobility in Scotland as well as its relationship to migration.[14] It investigates whether people who migrate to specific Scottish
urban centres are more likely to experience upward occupational mobility compared to Scottish individuals who have not migrated inter-regionally or internationally.

The results show that there are large regional differences in opportunities for occupational mobility, but also that these can be overcome by moving long-distance within Scotland. Those who moved longer distances within Scotland were more likely to achieve upward occupational mobility than those who moved short-distances or who did not move. Those who moved to Scotland from England and Wales or outside Great Britain were even more likely to benefit from the effect of moving long-distance.

It was also revealed that Edinburgh, and to some extent Glasgow, are key ‘escalator cities’ in Scotland. A long-distance move to Edinburgh was found to have a similar benefit on occupational mobility as having a degree or other higher qualification. Even non-movers in Edinburgh and Glasgow showed a benefit of living there, and were more likely to experience upward mobility than non-movers elsewhere in Scotland.

4.2. Why was the SLS needed?

With records for approximately 274,000 people - approximately 5.3% of Scotland’s population - the Scottish Longitudinal Study allowed neighbourhood and socioeconomic characteristics from the 1991 Census to be linked and compared with those of the 2001 Census. The longitudinal nature allowed for an analysis of changes in location and employment variables for the research population.

4.3. Data and methods

Data from the 1991 and 2001 censuses were used to explore the occupational mobility of individuals using locational and individual characteristics. Standard logistic regression models were used to measure the influence of key independent variables - place of residence and moving distance - on occupational mobility between 1991 and 2001. The place of residence was classified according to job opportunities and these were based on Council Area Boundaries and Urban/Rural categories from the Scottish Government’s 1991 census. Distance of move was categorised as non-mover, short-distance (less than 35km) or long-distance (more than 35km). Information on country of birth - from England and Wales or outside Great Britain - was also included to determine long-distance moves into Scotland. Control variables included were gender, age, ethnicity, change in the presence of children, change in household composition, change in health status based on long-term limiting illnesses, 1991 post-compulsory (post-18) educational qualifications in three groups, and 1991 housing tenure.

4.4. Potential policy impact

This study is one of the first to demonstrate escalator effects beyond major world city regions. The observed spatial inequalities in occupational opportunities are of some concern and may require intervention by the Scottish Government in order to ensure that occupational mobility is within the grasp of those living outside Edinburgh and Glasgow or who are not able to make long-distance moves.
4.5. Extensions to this work

Now that 2011 data are also available, it would be possible to trace people for the whole 1991-2011 period which would give insight into the relationships between more complex migration patterns, occupational status and mobility. The other census-based Longitudinal Studies could also be used for comparative research in other regional urban centres.

5. Case study 3: Does internal migration in Northern Ireland increase religious and social segregation? Perspectives from the Northern Ireland Longitudinal Study (NILS) 2001-2007 (Dr Ian Shuttleworth, Dr Paul Barr & Dr Myles Gould)

Research supported by NILS-RSU

5.1. Research aims and key findings

While much media attention in Northern Ireland has focused on internal migration as a factor in increasing residential segregation based on religious background, there has been little academic attention paid to this topic. With migration not only assumed to increase religious segregation but also driving changing geographies of social deprivation and wellbeing there is a gap in the literature on Northern Ireland. This paper addresses this by using data from the Northern Ireland Longitudinal Study (NILS) to investigate the influence of residential migration on spatial patterns of population distribution based on education, limiting long-term illness, religion and areas with different deprivation levels.[11]

The results of the analysis indicate that there are differences in mobility based on individual characteristics. Catholics are slightly more likely to move to more Catholic areas, and those with no limiting long-term illness are more likely to move to less deprived areas. Having some educational qualifications increases the likelihood of being more mobile compared to those with no qualifications. Overall, a minority of Northern Ireland residents changed address in the period 2001-2007, and they only moved over relatively short distances when they did.

The authors found that internal migration in Northern Ireland had little effect on levels of religious segregation. In other words, migration did not significantly increase or lessen communal residential segregation; rather, the results indicate that it has remained relatively consistent over the 2001 to 2007 period, corresponding with the stable levels reported by Shuttleworth and Lloyd (2009)[12] for the period between 1991 and 2001.

5.2. Why was the NILS needed?

Previous quantitative research on residential segregation in Northern Ireland has relied on aggregate cross-sectional census data and so it has been difficult to understand how migration has affected religious and social segregation in residential areas. In order to address this, the paper uses individual-level data on migration from the NILS for the period 2001-2007 to examine the characteristics of those who change address and the range of distances they move. Since NILS links the Northern Ireland Health Card Registration (NIHCR) system to the census, it offers a large dataset which covers approximately 28% of the Northern Ireland population and which provides very good information on residential movement between censuses because of the address updates every six months. The NILS is unique in this.

5.3. Data and methods

The census explanatory variables included as part of the data included: limiting long-term illness, educational qualifications, housing tenure,
economic activity and ‘community background’ amongst others. Migration was defined as a change of address using six monthly data from the Northern Ireland Health and Social Care Business Service Organisation. Spatial data for the analysis was based on the Super Output Area (SOA) of which there are a total of 890 in Northern Ireland each with around 2,000 inhabitants. The sample included those aged 25–74 years old not living in communal establishments, who were present in both censuses, who remained in Northern Ireland for the entirety of the study. The level of social deprivation for each SOA was based on the Northern Ireland Multiple Deprivation Measure (MDM).

5.4. Potential policy impact

There are policy implications for the research for those who are interested in understanding how and why neighbourhoods change through time and also for those interested in learning more about the dynamics of social mixing and segregation. The former includes groups such as councils, housing associations and statutory bodies. Those interested in residential mixing and segregation include central government and government agencies whose remit includes the promotion of social mixing and integration as part of devolved government priorities.

5.5. Extensions to this work

Two of the authors have undertaken other work using the NILS that has explored residential moves and housing tenure transitions through time and their implications for changing health status having allowed for individuals’ community background and social economic characteristics and area deprivation. This work has also involved explicit consideration of spatial clustering at the level of the Super Output Area (Gould and Shuttleworth, 2018).[9] There is also scope to extend the analysis to cover a full decade between censuses and also to look at internal migration in long-term perspective from 1991 as has been done by other NILS projects[4,10] and a NILS-based PhD project[1].

6. Future research directions and developments

The LSs already contain unparalleled opportunities for migration researchers, but the Research Support Units are continuously looking into ways to develop the datasets even further. Linkages to new data sources can create additional information for analysis.

As mentioned above, the SLS-DSU has now incorporated historical continuous GP registration postcodes going back to 1 January 2000. This important addition helps to bridge the data gap in the period between the censuses. A second recent linkage to the SLS is the 1936 Birth Cohort, a large sample of individuals who sat the Scottish Mental Survey in 1947 when they were aged 11 (for more detail see this blog post). By providing information on where these people lived almost 80 years ago, analysis of migration effects across the full life course are now possible. One SLS project is already using the data to explore social and spatial mobility using the cohort, early results of which were presented at the ADRN 2017 Conference (Forrest et al, 2017).[8]

CeLSIUS have recently begun exploring the potential of linking open source data to the ONS LS. Linkage is planned to Land Registry Price Paid data, providing the price paid in residential transactions from 1995 to the present day. This will give a contextual wealth variable to use in conjunction with household tenure, as well as enhancing migration research projects (Dennett et al, 2017).[6]
7. References


FURTHER INFORMATION

You can find the recording of an accompanying webinar at:
http://calls.ac.uk/guides-resources/thematic-guides-webinars/

For further information about CALLS Hub and the Longitudinal Studies:

- www.calls.ac.uk
- info@calls.ac.uk
- Follow us on Twitter @CALLS_HUB
- CeLSIUS: www.ucl.ac.uk/celsius
- NILS-RSU: www.qub.ac.uk/research-centres/NILSResearchSupportUnit/
- SLS-DSU: www.lscs.ac.uk/sls/

The CALLS Hub website contains a range of information and resources for anyone considering using the LSs or who would like to explore previous LS-based research outcomes, including:

- Census forms
- Searchable database of research outputs
- Searchable data dictionary for all 3 LSs with features to save and download your own lists of variables
- Research briefs
- Impact case studies
- Thematic guides

ACKNOWLEDGEMENTS

We are grateful to the researchers who shared their work with us:

Prof Tony Champion (Newcastle University)
Dr Ian Shuttleworth (Queens University Belfast)
Prof Maarten van Ham (Delft University of Technology/University of St Andrews)
Prof Allan Findlay (University of St Andrews)
Dr David Manley (University of Bristol)
Dr Peteke Feijten (Netherlands Institute for Social Research)
Dr Paul Barr (The Dartmouth Institute)
Dr Myles Gould (University of Leeds)

Case study 1:
The permission of the Office for National Statistics to use the Longitudinal Study is gratefully acknowledged, as is the help provided by staff of the Centre for Longitudinal Study Information & User Support (CeLSIUS). CeLSIUS is supported by the ESRC Census of Population Programme (Award Ref: ES/K000365/1). The authors alone are responsible for the interpretation of the data. This work contains statistical data from ONS which is Crown Copyright. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data.

Case study 2:
The help provided by staff of the Longitudinal Studies Centre – Scotland (LSCS) is acknowledged. The LSCS is supported by the ESRC/JISC, the Scottish Funding Council, the Chief Scientist’s Office and the Scottish Government. 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.

Case study 3:
The help provided by the staff of the Northern Ireland Longitudinal Study (NILS) and the NILS Research Support Unit is acknowledged. The NILS is funded by the Health and Social Care Research and Development Division of the Public Health Agency (HSC R&D Division) and NISRA. The NILS-RSU is funded by the ESRC and the Northern Ireland Government. The authors alone are responsible for the interpretation of the data and any views or opinions presented are solely those of the author and do not necessarily represent those of NISRA/NILS.