



# DEMOGRAPHIC RESEARCH

*A peer-reviewed, open-access journal of population sciences*

---

## ***DEMOGRAPHIC RESEARCH***

**VOLUME 36, ARTICLE 25, PAGES 731- 744**

**PUBLISHED 8 MARCH 2017**

<http://www.demographic-research.org/Volumes/Vol36/25/>

DOI: 10.4054/DemRes.2017.36.25

*Descriptive Finding*

**The spatialities of ageing: Evidencing increasing spatial polarisation between older and younger adults in England and Wales**

**Albert Sabater**

**Elsbeth Graham**

**Nissa Finney**

© 2017 Albert Sabater, Elspeth Graham & Nissa Finney.

*This open-access work is published under the terms of the Creative Commons Attribution NonCommercial License 2.0 Germany, which permits use, reproduction & distribution in any medium for non-commercial purposes, provided the original author(s) and source are given credit. See <http://creativecommons.org/licenses/by-nc/2.0/de/>*

## Contents

1	Introduction	732
2	Data and units of analysis	733
3	Methods	733
4	Results	735
5	Discussion	740
6	Acknowledgements	742
	References	743

## **The spatialities of ageing: Evidencing increasing spatial polarisation between older and younger adults in England and Wales<sup>1</sup>**

**Albert Sabater<sup>2</sup>**

**Elsbeth Graham<sup>3</sup>**

**Nissa Finney<sup>3</sup>**

### **Abstract**

#### **BACKGROUND**

With the proportion of older adults in Europe expected to grow significantly over the next few decades, a number of pertinent questions are raised about the socio-spatial processes that underlie residential age segregation, especially in circumstances where it may be increasing.

#### **OBJECTIVE**

We present evidence on whether, and to what degree, residential age segregation has changed across neighbourhoods in England and Wales since the 1990s.

#### **METHODS**

We examine the residential patterns of older adults (aged 65 and over) compared to those of younger adults (aged 25–40) for neighbourhoods across the country, for neighbourhoods within districts, and for neighbourhoods within districts classified by type. The analyses use harmonised population data for small areas (Output Areas) from the 1991, 2001, and 2011 Censuses of England and Wales.

#### **RESULTS**

The results reveal increasing segregation over time (1991–2011) between older and younger groups across neighbourhoods nationally. Although the index values of segregation tend to be higher in less urban areas, highlighting a strong age and life course dimension of the rural-urban divide, a rapid increase in age segregation is found in urban areas. Moreover, our findings suggest the existence of convergent clusters of increasing age segregation, particularly in urban settings (from small to large cities) and

---

<sup>1</sup> A preliminary version of this work received the EAPS Poster Award (Poster Session 3) at the European Population Conference 2016, Mainz, Germany.

<sup>2</sup> School of Geography and Sustainable Development & ESRC Centre for Population Change, University of St Andrews, UK. E-Mail: [albert.sabater@st-andrews.ac.uk](mailto:albert.sabater@st-andrews.ac.uk).

<sup>3</sup> School of Geography and Sustainable Development & ESRC Centre for Population Change, University of St Andrews, UK.

former industrial areas in the North of England, thus providing evidence suggesting a further dimension of the North-South divide.

## **CONCLUSIONS**

The findings demonstrate a growing age bifurcation over time and space, as both older and younger age groups are increasingly living apart. Although the drivers and consequences of these trends in residential age segregation remain unclear, the potential challenge to policies of social cohesion underlines the importance of further research.

## **CONTRIBUTION**

The findings contribute to current debates about relations between age groups and generations in contemporary Britain.

## **1. Introduction**

The relationship between age (or social generations) and space remains an under-researched field of empirical enquiry, despite growing concerns that demographic and institutional changes have led to the social and spatial separation of extra-familial generations<sup>4</sup> (Hagestad and Uhlenberg 2006). Social cohesion may be threatened if different age groups in a population live separate lives in different neighbourhoods (Andrews and Phillips 2005) and recent scholarship has highlighted the importance of creating intergenerational spaces where people of different ages can meet and interact (Vanderbeck and Worth 2015). These recommendations stem from the notion that limited contact and personal knowledge across groups create a dichotomy between ‘us’ and ‘them’, which is often associated with increased competition between age groups for limited public resources to support the interests, agendas, services, and institutions that best meet their age-specific needs (Binstock 2010).

This paper seeks to enhance understanding of the spatialities of ageing in England and Wales by investigating whether, and to what degree, residential age segregation has changed since the 1990s. We ask whether the residential segregation of older people relative to younger people has increased over recent decades. To address this research question, we examine patterns of residence of older groups (aged 65 and over) compared to younger groups (aged 25–40) for neighbourhoods across the country and for neighbourhoods within districts. We use a district-type classification and harmonised population data for small areas from the 1991, 2001, and 2011 Censuses of

---

<sup>4</sup> These refer to relationships outside the family. It is assumed that the rules guiding intra- and extra-familial intergenerational processes are connected but different. Bridging the gap between these two distinct realms is one of the challenges to be met by current social policies (United Nations 2007).

England and Wales. The paper thus provides both empirical evidence and critical insight into the transforming spatial relationships between younger and older members of contemporary British society, which are a central consideration in geographical gerontology (Andrews et al. 2007) and in current debates on spatialities of ageing (Schwanen, Hardill, and Lucas 2012).

## **2. Data and units of analysis**

Small area data from censuses offers unique information for the analysis of whether, and to what degree, age segregation is increasing. However, comparison of the geographical residential patterns of age groups since 1991 using census data can be misleading due to three types of bias: 1) the population definition; 2) the treatment of non-response in censuses, which varies between areas and ages; and 3) geographical units which have been affected by boundary changes between 1991 and 2011. To make accurate comparisons over time, we have included a full allowance for changes in the way the population is defined,<sup>5</sup> estimated non-response in all three years, and harmonised population data for small area geographies (see Sabater and Simpson 2009), providing comparable estimates for all 2011 Output Areas in England (171,372) and Wales (10,036) by age group. Output areas (OAs) are the lowest level of geography for which population estimates are provided and can be interpreted as a measure of population distribution at the neighbourhood level. Since they are designed to have similar population sizes (the lower threshold is 40 resident households and 100 resident people, and the upper threshold is 250 resident households and 625 resident people), population estimates at OA level are important as they provide insight into local patterns of change. In order to maintain geographic consistency with higher-level (sub-national) geographies, OA data from each decade is also associated with local authority districts (348) in England and Wales. For convenience, we will refer to OAs simply as 'neighbourhoods'.

## **3. Methods**

The paper presents evidence of changes in residential segregation by age both nationally and sub-nationally, with special attention to change at local authority district

---

<sup>5</sup> Whilst the 2001 and 2011 Censuses enumerated the whole population at their usual residence address, including students at their term-time address, the 1991 Census enumerated students at their vacation address, thus making necessary the transfer of students from their vacation address to their term-time address in 1991.

level, as well as in urban compared to rural areas. For sub-national analyses, a district classification initially devised by the Office of Population Censuses and Surveys (OPCS) is employed (Wallace, Charlton, and Denham 1995); this has been used in many studies of small area population change (e.g., Champion 2005). To assess the geographical spread (evenness) of the older relative to the younger age group over the study period, we apply the dissimilarity index ( $D$ ) to maintain continuity and allow straightforward comparisons with other studies (Massey 2016).  $D$  indicates how unevenly distributed older adults are relative to younger adults across neighbourhoods nationally, in a district, or in a district type using the OPCS classification. A standard formula for the dissimilarity index is:

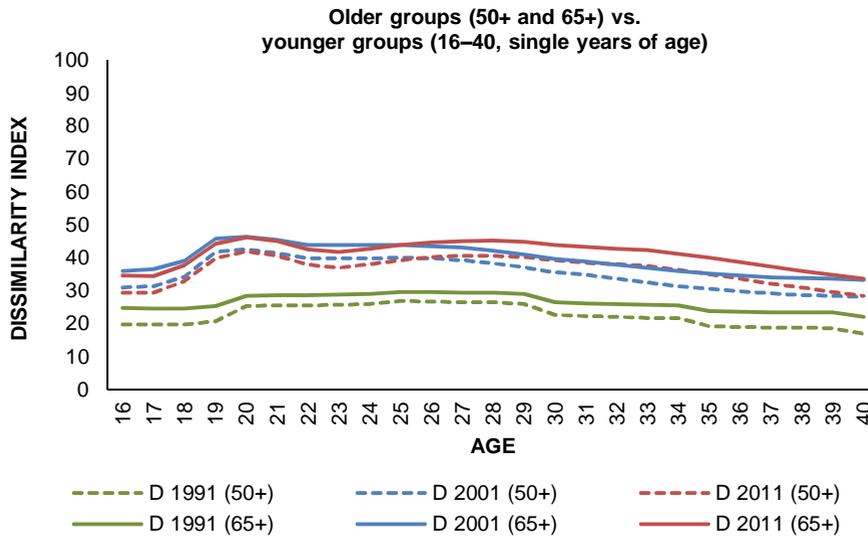
$$D = 0.5 * \sum_i \left| \frac{N_{xi}}{N_x} - \frac{N_{gi}}{N_g} \right| * 100$$

where  $N_{xi}$  refers to the population of the older group  $x$  of interest in neighbourhood  $i$ ;  $g$  is the population of the reference group (younger adults); and the summation over an index is represented by the dot symbol. Multiplying by 100 expresses the share as a percentage, where 0 = no segregation and 100 = total segregation. A good rule of thumb is that values of  $D$  less than 30 indicate low segregation, 30 to 60 indicate moderate segregation, and values over 60 indicate high segregation (Massey and Denton 1988).  $D$  can also be interpreted as the percentage of the population who would have to move to create a distribution of older adults to younger adults in the OA geography that matches the distribution in the larger (national/district) geographic unit. Notably,  $D$  is not affected by the composition of the population at the larger geography, and therefore, when examining age segregation within districts, for example, a local authority with a high proportion of older people (and a small younger population) can have the same  $D$  as a local authority with a low proportion of older people (and a large younger population).

Preliminary analysis compared the dissimilarity index values for a range of age groups. This led to the selection of two age groups for the main analysis of  $D$  focusing on older adults (aged 65 and over) relative to younger adults (aged 25–40). The former group consists of people who have reached, or are nearing, retirement age, while the latter group comprises people in their prime childbearing years, building a career and/or family. The use of these two specific groups, rather than a range of age groups, also facilitates interpretation of the results. For instance, for those in their 50s the coresidence of children would confound the results, and including those aged 18 to 21 would reflect concentrations of higher education students in university locations rather than more general social processes. Although the meaning of ageing may be changing

over time as life expectancy increases, retirement age has remained largely unchanged during the 1991–2011 study period, thus providing a valid cut-off point for documenting age segregation after retirement. As shown in Figure 1, a brief examination of residential segregation change across OAs nationally between 1991 and 2011 for two older groups (50 and over, 65 and over) relative to younger groups by single year of age (ages from 16 to 40) clearly supports this approach by evidencing higher *D* values for the 65 and over group.

**Figure 1: Residential segregation (evenness) by age across output areas in England and Wales, 1991–2011**

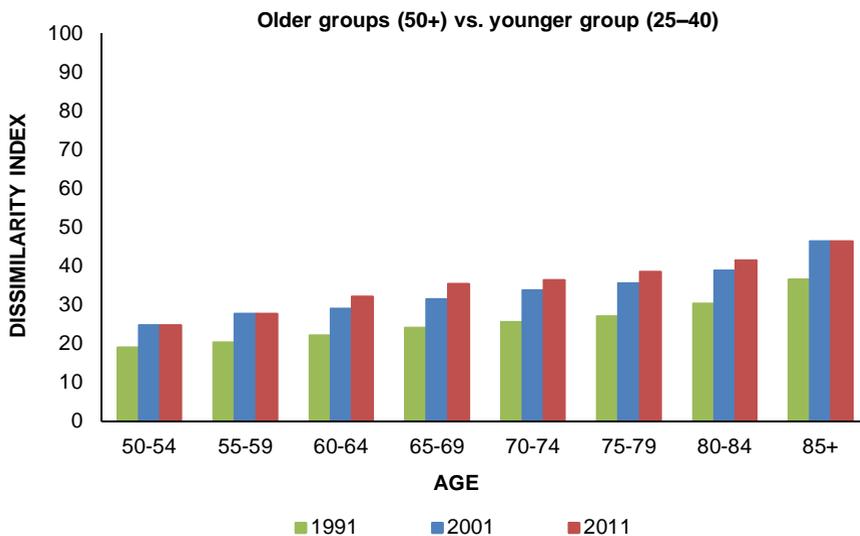


#### 4. Results

Before we focus only on the geographical spread of the 65 and over group relative to younger adults, it is worth highlighting some differences among older groups (from 50–54 years to 85 and over). Figure 2 shows the scores of the dissimilarity index in 1991, 2001, and 2011 for a series of older groups (aged 50 and over) relative to the younger group (aged 25–40) across neighbourhoods in England and Wales. The results indicate

that the geographical separation between older and younger groups is higher with increasing age, with the highest geographical separation found among the oldest group (85 and over). This gradient of increasing segregation as people age is as expected because age is an important driver of residential location and spatial sorting, particularly among older groups in institutional settings such as nursing homes, retirement homes, and retirement communities. Critically, however, our findings indicate that spatial unevenness between older and younger age groups has risen rapidly since 1991 for all groups at retirement ages. Hence, while  $D$  in 1991 was 28.7 on average for the group aged 65 and over, in 2011  $D$  for the same age group had increased to 39.6. Although this latter value falls within what the literature refers to as a ‘moderate’ degree of segregation (Massey and Denton 1988), it is evident that the spatial separation between the older and younger groups has increased substantially (+10.9) in the last 20 years. Thus far, our results indicate increasing age segregation, in accordance with previous literature in the US showing an increase in residential segregation between similar age groups (60 years and over vs. 20–34 years) across local neighbourhoods defined by census blocks (Winkler 2013).

**Figure 2: Residential segregation (evenness) by age across output areas in England and Wales, 1991–2011**



While the first set of findings demonstrates a trend of increasing age segregation across neighbourhoods, it is possible that they may hide considerable heterogeneity at the sub-national level. To examine this, Figure 3 shows within-nation variations in residential age segregation by mapping  $D$  for neighbourhoods within districts for each local authority district (348) in England and Wales.<sup>6</sup> The results reveal at least three important aspects of change. First, the level of geographical separation between older and younger groups has increased significantly in most locales. While only one local authority district (Central Bedfordshire) displays high index values of segregation in 2011 (64.1), a substantial number of districts have shifted upward from low to moderate age segregation since 1991. For instance, in 1991 only 33 districts (9.4%) displayed moderate index values of segregation, compared to 198 (56.8%) in 2011. Second, unsurprisingly perhaps, the results indicate that the levels of geographical separation between older and younger age groups are higher in more rural areas than in urban areas, thus highlighting a strong age and life course dimension to the rural-urban divide, with young adults favouring residence in urban centres while older adults suburbanise. Perhaps more surprising is the fact that neighbourhoods in predominantly urban areas are also becoming more age segregated, an aspect which is discussed below. Third, increases in the spatial separation between older and younger adults over time are particularly noticeable in regions such as the East Midlands, North West, Yorkshire, and the Humber (+9%), and to a lesser degree in the East of England and North East (around +8%), thus providing evidence suggesting a further dimension of the North-South divide. Although southern regions have also experienced increases, these are predominantly (with the exception of the East of England) below the national average (+7.7%). Moreover, the clustering of above-national-average increases is clearly visible in some northern cities. For instance, index values of dissimilarity in large cities such as Manchester and Leeds, or in small cities such as Preston and York, have increased sharply from about 20 to 35. This pattern of reduced geographical spread over time of older compared to younger adults across neighbourhoods in northern cities suggests that there is an important socioeconomic dimension to age segregation which is likely to have a number of explanations. Nevertheless, it is clear from the analysis that one can expect older adults to be more or less separated from younger adults depending on where they live in England and Wales, and whether they live in an urban or rural environment.

---

<sup>6</sup> To facilitate the examination, population cartograms are used throughout this paper. These depict local authorities approximately proportional in size to their population. The shapefiles for the cartogram were originally created by Dorling and Thomas (2011).

**Figure 3: Residential segregation (evenness) of older group (65+) vs. younger group (25–40) across output areas for each local authority district in England and Wales, 1991–2011**

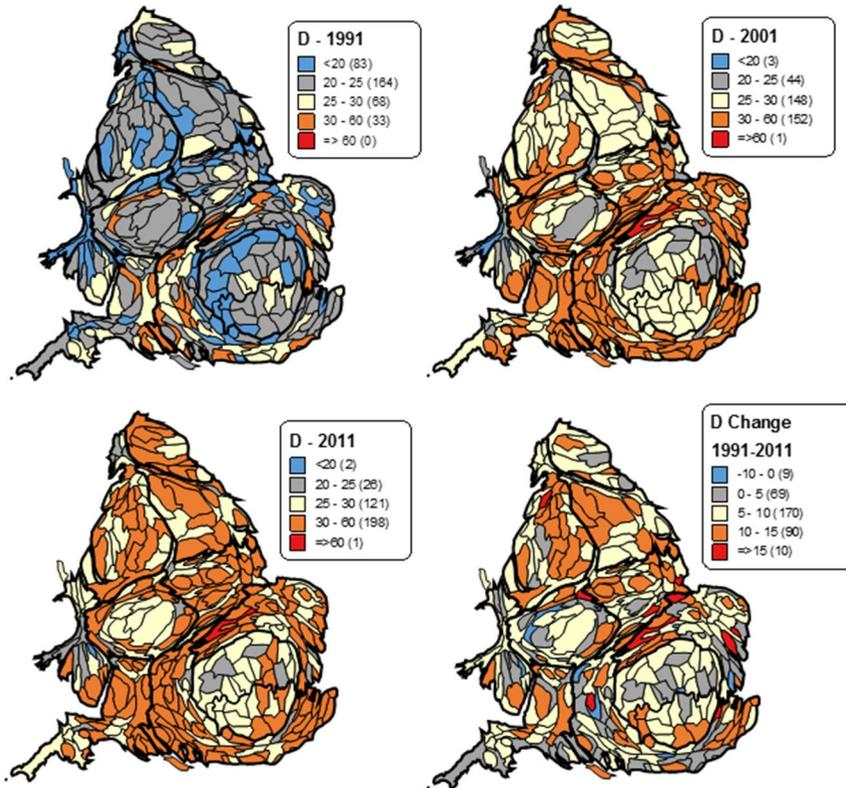
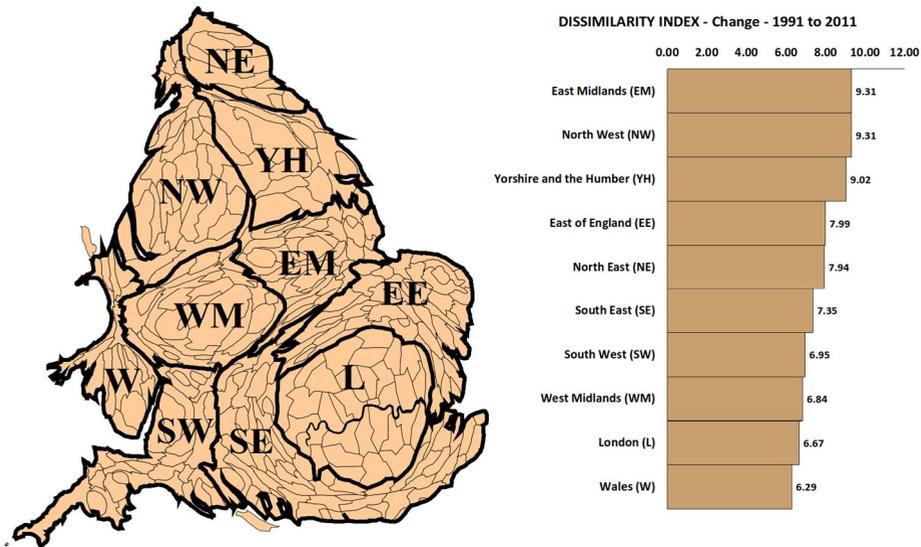
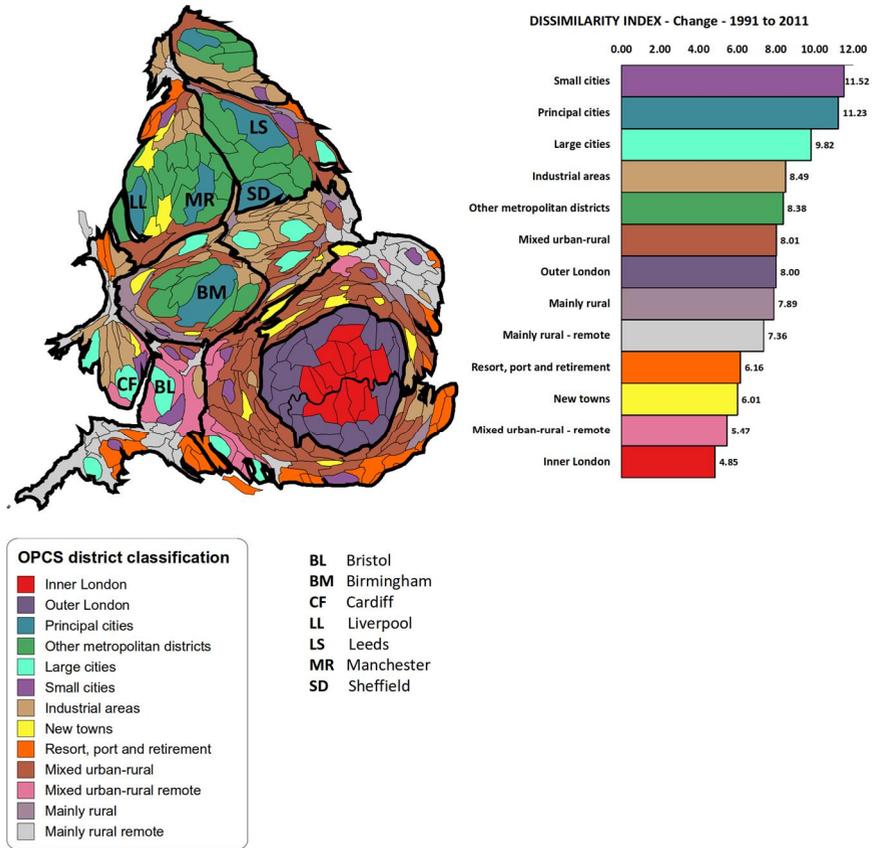


Figure 3: (Continued)



In order to interrogate the latter point further, we also investigate the spatial variation of age segregation using a detailed district classification. Figure 4 illustrates changes in age segregation across neighbourhoods by district type in England and Wales since 1991. The results confirm that the geographical separation between older and younger groups is widespread in various district types, although it has grown predominantly in urban settings: the largest increases can be found in (small, principal, and large) cities outside London (+10%) and to a lesser degree in (largely former) industrial areas and other metropolitan districts (at some 8.5%). From these results, it can be seen that age is an important dimension along which residential neighbourhoods are segregated.

**Figure 4: Residential segregation (evenness) of older group (65+) vs. younger group (25–40) across output areas within districts classified by type, England and Wales, 1991–2011**



## 5. Discussion

Our main empirical finding is that spatial polarisation between older and younger age groups in England and Wales has increased across neighbourhoods nationally and over time (1991–2011). Age segregation rose rapidly in the 1990s and further increased in the 2000s, albeit to a lesser degree, but the drivers and consequences of these trends

remain unclear. The current policy focus in Britain and elsewhere on ‘ageing in place’ highlights one possible mechanism expected to increase age segregation. Recent evidence from the UK suggests that residential mobility has decreased among adults aged 65 and over since the 1970s (Champion and Shuttleworth 2016), and evidence from Scotland indicates that this has been particularly pronounced in the new millennium (Graham, Fiori, and Feng 2015). When residential *immobility* increases, the short-term effect may be to slow the pace of age segregation, but in the longer term, as the population ages, this can act as a driver of age segregation in particular places. However, whether or not it is older people who initiate the process remains to be investigated. The immigration of young adults in the 2000s, especially from Eastern Europe, is likely to have moderated the pace of age segregation in some rural areas. Further, the pronounced ‘youthification’ of cities that has resulted from a young adult population increasingly ‘stuck in place’ by the housing (stock) crisis suggests that the immobility of younger adults also contributes to segregation processes.

While there is a burgeoning body of scholarship on the geographies of both ageing and youth/young ages (e.g., Schwanen, Hardill, and Lucas 2012; Vanderbeck and Worth 2015), demographers have almost entirely ignored residential segregation by age (Winkler 2013 is one recent exception in the US context), generally assuming that it is a benign process (Hagestad and Uhlenberg 2005). However, there are potentially substantial implications in terms of sociopolitical change, local service provision, and intergenerational exchanges outside the family realm (Binstock 2010; Graham and Sabater 2015). While arguments favouring age segregation on the grounds of efficient service provision may make economic sense, they are seriously challenged by the potentially adverse consequences for social cohesion (Hagestad and Uhlenberg 2006). For instance, age segregation can become exclusionary by physically separating one age group from another, with potentially serious implications such as fostering distrust, stereotypic thinking, and misunderstanding, thus impeding the well-being benefit from intergenerational mixing (World Health Organisation 2007<sup>7</sup>). Additionally, in a context of increasing age segregation, austerity measures, and reduction in the capacity of the local state, competition between age groups for limited public and private resources to support their age-specific interests and agendas has the potential to generate intergenerational conflict as well as affect political outcomes (Binstock 2010). Perhaps, as Harald Wilkoszewski (2016) noted, nowhere is this new reality in starker relief than in the United Kingdom following the majority vote to leave the European Union (EU). Attachment to the EU directly varied by district and age: the older the voter, the lower the attachment. The latter could be a signal that populations that are becoming segregated by age challenge the efficacy of geographically organised representative

---

<sup>7</sup> The WHO initiative on ‘global age-friendly cities’ demonstrates the relevance of the spatialities of ageing to international urban policymaking.

democracy and impede the creation, maintenance, and commitment to care for the next generation. More recently, the US presidential election has also highlighted a clear dividing line in terms of age in support for the two main candidates. Younger voters favoured Clinton, while older voters favoured Trump, which raises questions about the impact of increasing residential age segregation on political divisions in that country. In sum, this study indicates that further analysis of residential segregation by age, including its drivers and consequences, is needed if we are to develop policies that mitigate the potentially negative social and economic, as well as political, consequences of recent increases in age segregation in Britain.

## **6. Acknowledgements**

Census output is Crown Copyright and reproduced with permission of the Controller of HMSO. The full population estimates are available from the UK data archive (see [www.data-archive.ac.uk](http://www.data-archive.ac.uk)) under Study Number (SN) 6043. [<http://dx.doi.org/10.5255/UKDA-SN-6043-1>]. We are grateful to the editor and three reviewers for their useful insights and suggestions.

## References

- Andrews, G.J. and Phillips, D.R. (2005). Geographical studies in ageing: Progress and connections to social gerontology. In: Andrews, G.J. and Phillips, D.R. (eds.). *Ageing and place: Perspectives, policy practice*. London: Routledge: 7–12.
- Andrews, G.J., Cutchin, M., McCracken, K., Phillips, D.R., and Wiles, J. (2007). Geographical gerontology: The constitution of a discipline. *Social Science & Medicine* 65(1): 151–168. doi:[10.1016/j.socscimed.2007.02.047](https://doi.org/10.1016/j.socscimed.2007.02.047).
- Binstock, R.H. (2010). From compassionate ageism to intergenerational conflict. *The Gerontologist* 50(5): 574–585. doi:[10.1093/geront/gnq056](https://doi.org/10.1093/geront/gnq056).
- Champion, A.G. (2005). The counterurbanisation cascade in England and Wales since 1991: The evidence of a new migration dataset. *Belgeo* 1–2: 85–101. doi:[10.4000/belgeo.12440](https://doi.org/10.4000/belgeo.12440).
- Champion, T. and Shuttleworth, I. (2016). Is longer-distance migration slowing? An analysis of the annual record for England and Wales since the 1970s. *Population, Space and Place*. doi:[10.1002/psp.2024](https://doi.org/10.1002/psp.2024).
- Dorling, D. and Thomas, B. (2011). *Bankrupt Britain: An atlas of social change*. Bristol: The Policy Press.
- Graham, E. and Sabater, A. (2015). Population change and housing across the life course: Demographic perspectives, methodological challenges and emerging issues. Southampton: ESRC Centre for Population Change (CPC Working Paper 64).
- Graham, E., Fiori, F., and Feng, Z. (2015). To downsize or not? Household changes and housing consumption among older adults in Scotland. Southampton: ESRC Centre for Population Change (CPC Briefing Paper 30).
- Hagestad, G.O. and Uhlenberg, P. (2005). The social separation of old and young: A root of ageism. *Journal of Social Issues* 61(2): 343–360. doi:[10.1111/j.1540-4560.2005.00409.x](https://doi.org/10.1111/j.1540-4560.2005.00409.x).
- Hagestad, G.O. and Uhlenberg, P. (2006). Should we be concerned about age segregation? Some theoretical and empirical explorations. *Research on Aging* 28(6): 638–653. doi:[10.1177/0164027506291872](https://doi.org/10.1177/0164027506291872).
- Massey, D.S. (2016). Segregation and the perpetuation of disadvantage. In: Burton, L. and Brady, D. (eds.). *The Oxford handbook of social science of poverty*. Oxford: Oxford University Press: 369–393.

- Massey, D.S. and Denton, N.A. (1988). The dimensions of residential segregation. *Social Forces* 67(2): 281–315. doi:10.2307/2579183.
- Sabater, A. and Simpson, L. (2009). Enhancing the population census: A time series for sub-national areas with age, sex, and ethnic group dimensions in England and Wales, 1991–2001. *Journal of Ethnic and Migration Studies* 35(9): 1461–1477. doi:10.1080/13691830903125927.
- Schwanen, T., Hardill, I., and Lucas, S. (2012). Spatialities of ageing: The co-construction and co-evolution of old age and space. *Geoforum* 43(6): 1291–1295. doi:10.1016/j.geoforum.2012.07.002.
- United Nations (2007). *Intergenerational solidarity: Strengthening economic and social ties*. Department of Economic and Social Affairs, Expert Group Meeting, New York, October 23–25, 2007.
- Vanderbeck, R. and Worth, N. (2015). *Intergenerational space*. London: Routledge.
- Wallace, M., Charlton, J., and Denham, C. (1994). The new OPCS area classifications. *Population Trends* 79: 15–30.
- Wilkoszewski, H. (2016). Turning the tables: Policy and politics in an age of ageing [electronic resource]. Population & Policy Bites, Population Europe. <http://blog.population-europe.eu/turning-the-tables/>
- Winkler, R. (2013). Research note: Segregated by age: Are we becoming more divided? *Population Research and Policy Review* 32(5): 717–727. doi:10.1007/s11113-013-9291-8.
- World Health Organisation (2007). *Global age-friendly cities: A guide*. Geneva: World Health Organisation.