No place like home: The causes of attachment to neighbourhood

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In political science, attachment to our immediate environment is typically considered of secondary importance to other geographic identities, such as regional or national. Yet, evidence shows that many voters consider it as important, if not more so, than these higher-level identities. In Europe, nearly two-thirds of voters feel as though they belong to their locality, as many as feel as they belong to their country. Despite this, and despite growing interest in the role of local context in the discipline, we still do not have a strong understanding of what drives this identity. Combining census data with the European Values Study and UK Household Longitudinal Study, I examine what predicts whether voters feel as though they belong to their 'neighbourhood' using hierarchical and dynamic panel models, modelling on very small geographic units. Bringing together theory from social psychology, political geography and sociology, I identify three primary areas of study, on an individual, household and neighbourhood level: geographic mobility and length of residence, social ties, and ethnicity and class as they relate to the makeup of the neighbourhood. I find evidence for the effect of all three on local attachment. These conclusions have important implications not just for what we focus on when we talk about geographic social identities in politics, but what we look for when we study its effects, particularly in looking beyond far right voting.

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1 Introduction

Why do we feel like we belong to where we live? This question of place-based social identity has been the subject of great study within political science, including from scholars such as Cramer (2012; 2016), Enos (2017), Rodden (2019) and Fitzgerald (2018), among others. This focus is highly salient. Many developed democracies are experiencing political upheavals—right-wing nationalism, the immigration backlash and cultural polarisation—which can be partly attributed to an assertion or reassertion of a politics strongly rooted in this sort of identity. Indeed, many of these studies have linked this identity to specific political effects, in particular radical right voting (Bolet 2021; Cramer 2016; Fitzgerald 2018; Ziblatt, Hilbig, and Bischof 2020), and preferences for local candidates (Arzheimer and Evans 2014; Evans and Menon 2017; Kal Munis 2021; Schulte-Cloos and Bauer 2021).

Yet, despite a rich selection of theory and an abundance of good data, we still do not have a robust understanding of how this identity is formed. What causes us to become locally attached in the first place? Where scholars study place-based social identity, it is typically not on small geographies (Bolet 2021; Simon, Kulla, and Zobel 1995). Political scientists studying the ways in which we relate socially to space have tended to focus on how the spatial distribution of groups—'socio-geographic space'—influences intergroup relations (Enos 2017). What has been neglected, I contend, is to study our psychological attachment to place and the way it, necessarily shaped by our relations to other and to social groups, affects politics. This is often obliquely referred to in such previous studies, but which scholars have generally neglected to study directly. These omissions are surprising, given that our immediate social environment is the one which is most influential

in shaping our social interactions, where we spend the most time, and therefore where we might reasonably expect attachment to be strongest. When studies do focus on small geographies, they are based on small case studies, or study it using proxies, such as distance from birthplace, variation in regional dialects or cues from candidates (Jacobs and Munis 2019; Schulte-Cloos and Bauer 2021; Ziblatt, Hilbig, and Bischof 2020).

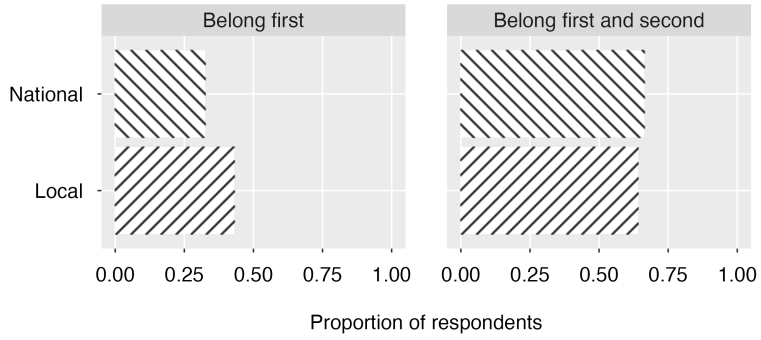

Figure 1: Relative importance of attachment to country and 'locality' in Europe: EU 27, EFTA, UK; including don't knows (EVS 2010)

Research points us to the assumption that the nation is always our primary geographic identity, or at least that it is far more important than other geographic identities. We would be wrong to think this. When asking Europeans to rank their attachment to 'locality', or country, among a range of options which includes regional, European and global identities, over 10 per cent more choose their locality

over their country as first-ranked (Figure 1) [1]. Even when adding in second preferences, the two identities are roughly equal, and almost two thirds of people are locally attached. This is not even a constrained phenomenon within Europe: it is fairly uniformly spread across the continent (Figure 2), albeit more common the further east you travel. Considering local attachment as attachment to the idea of the 'neighbourhood', and as a feeling of 'belonging' to the neighbourhood specifically, is not necessarily a common approach. Most similar studies do not focus on such small units, either by design or through lack of data, though such cases, when we are considering attachment to place, clearly warrant study (Bolet 2021; Fitzgerald 2018). Similarly, studies do not operationalise this attachment as to 'belong' to such, again either by design, or through lack of question availability.

This paper has three main contributions. Firstly, it develops a strong theoretical base for the study of place-based social identity, which is not always present in similar studies. I conceptualise attachment to place as principally a social identity, and therefore drawing in the main on social identity theory (Tajfel and Turner 1979). Studying place as a social identity throws up unique theoretical challenges, however, and therefore I also integrate theory from from social psychology, environmental psychology and sociology. Secondly, I argue that we should conceptualise place-based social identity primarily in terms of attachment to our most immediate social environment. In this case, I study the idea of the 'neighbourhood'. Our most immediate social environment—where we spend most of our domestic lives, may work and may spend much of our social lives in—is highly influential in shaping our social interactions; it is also an environment in which, to a far greater

[1] When including don't knows.

Figure 2: Proportion of respondents expressing belonging to 'locality' in Europe: EU 27, EFTA, UK; including don't knows (EVS 2010)

degree than the region or country, we have a realistic chance of developing an image of the people who live there. We might therefore expect the social factors which shape attachment to place to be strongest at the most local level. Empirically, it primarily makes use of a survey, the UK Household Longitudinal Study (also known as *Understanding Society*), which is comparatively underused in political science: more commonly the preserve of medical or demographic research. My panel covers nearly a decade, employing highly-specified variables regarding social networks, geographic mobility, life events and neighbourhood unavailable to previous similar studies; I also make use of real addresses across the whole panel to determine geographic mobility, residential length and neighbourhood factors. The level of geographic granularity—down to neighbourhoods of only a few thousand people—is also unique in similar research, to which I match UK census data.

The paper is organised as follows. I first outline my theory, from which I draw the three areas of study I focus on in looking at the antecedents of local attachment: geographic mobility and residential length; social ties; and an individual's ethnicity and class as it relates to their immediate environment. I then outline my empirical strategy, first using wave 4 (2008) of the EVS, before three waves of the UKHLS. These I study using hierarchical and dynamic panel models. I conclude by considering the implications of my findings, particularly for politics.

2 Theorising local attachment

One factor which has constrained previous research into place-based identity is a consensus on the theory on which to base study, or a consistent application of it in research design. I am primarily concerned with understanding attachment to small geographies as a social identity: what its antecedents are, focusing primarily on how they influence group behaviour. I therefore base my analysis principally on social identity theory, though I also incorporate theory from social psychology, environmental psychology and sociology. This paper also attempts to establish attachment to neighbourhood as an identity distinct from other important social identities—many of which may be linked to place—such as national identity, race and class. The term 'local attachment' is an attempt to capture these diverse approaches. Unusually in quantitative studies of geographic social identity, I focus on the concept of the 'neighbourhood' as my primary geographic unit of study for three reasons. Firstly, from a social identity perspective, this makes the most sense. The neighbourhood, or 'local area', is the area in which we might expect

to find inter-group dynamics to be strongest. The neighbourhood is a place in which we live out our domestic, and often working, lives. It is an area in which we are likely to spend a large amount of our free time, large enough to contain within it amenities for living—shops, social venues, schools—while small enough that we have a realistic chance of knowing, or at least recognising, its inhabitants. Secondly, the neighbourhood is a relatively bounded unit, and conjures up specific limits in people's minds. Finally, focusing on such small specific units allows us to avoid any issues with potential identity heterogeneity, than we would with wider categories.

2.1 Social identity theory

Most approaches to group identification involve drawing psychological ties between an individual and a perceived group or social stratum. These generally also involve self-locating yourself within a group (Tajfel 1981). Borrowing from other disciplines, particularly sociology and social-psychology, political science research has long identified group identity as an important predictor of political behaviour. First developed by Henry Tajfel, John Turner and their colleagues in the 1970s and 80s (Hogg and Abrams 1988; Tajfel 1978; Tajfel and Turner 1979; Turner 1982), social identity theory is perhaps the most influential approach to defining inter-group relations. Groups can be based on significant visual categories, or 'purely cognitive', with little that meaningfully distinguishes them (Tajfel and Turner 1979, page 39). Competing goals are not necessary for discrimination to occur, though the approach does not preclude them. Four principles define the ways in which people identify with groups within social identity theory, and therefore how

groups identify with each other: *categorisation*, even under minimal conditions; *salience* of groups in different contexts, *social comparison* between in-groups and out-groups, particularly in cases where these groups are broadly similar and geographically proximate; and *positive distinctiveness* between groups. Social identity theory is helpful for three reasons. First, its conclusions, most significantly the identification of intergroup discrimination without conflict or competing goals, have been widely reproduced. Moreover, those issues which it confronts—how individuals categorise themselves into groups, group status, norms, perceived threat and collective action from it, intergroup conflict and discrimination, are all highly relevant to this work. Here, I am conceptualising local attachment primarily as *belonging* to a locality. This thus neatly captures both the idea of identification with, and self-location to, a group. Belonging is also relatively neutral; it does not necessarily indicate a positive or negative opinion, and therefore allows us to evaluate local attachment outside of this affect. There are several alternative approaches taken in empirical political science. Using 'belonging' in survey research within a social identity theory framework is an established approach. This approach also has support from a large number of similar studies, outside of a specific social identity theory framework, from sociology and political science (Cramer 2012; Fitzgerald 2018; McIntosh, Sim, and Robertson 2004; Robertson, McIntosh, and Smyth 2010). Most similar are approaches which use questions concerning how important a particular geographic identity is to respondents' sense of self, or whether they identify neighbours as members of their in-group (Borwein and Lucas 2021; Huddy and Khatib 2007; Huddy, Mason, and Aarøe 2015; Kal Munis 2021; Trujillo 2022b). Another approach, borrowing roughly from the 'neighbourhood cohesion' sociology literature, identifies attachment as the extent to which

you feel as though others around you are similar to or 'close' to you, or share your values (Lyons and Utych 2021; Wong 2010).

Use of social identity theory in political science originally marked a shift from an understanding of voting and political views primarily in terms of our group memberships or demographic categories to one of attitude, emotion and psychological features. Interest in social identity theory, and social identities more broadly, has greatly expanded in recent years, as scholars attempt to learn more about how intergroup relations and identity affect voting patterns, particularly in an era of growing political polarisation in established democracies (**hobolt˙divided˙2020**; Achen and Bartels 2016; Borwein and Lucas 2021; Mason 2018; Sides, Tesler, and Vavreck 2018; Sobolewska 2009). These studies, taken together with the established social identity literature, suggest that we should begin to think about local attachment as importantly as we do about more established categories like political partisanship, so tightly linked is it to a huge array of political behaviours and policy preferences. Identity as it relates to place has not always been at the forefront of political science research, but adjacent concepts—place attachment, place identity and sense of place—have long been the concern of sociology and environmental psychology. [2]

In conceptualising geographic identity as a social identity, I am arguing that people develop attachment—from neighbourhood to supranational—to geographic units primarily as an attachment to the people and groups who live within that unit. Secondly, attachment to the unit itself serves as a social identity to which we might ascribe values, culture and traditions and a way of life. As such, local

[2] See Lewicka (2011) for a review.

attachment is both geographic identity and group identity. This distinguishes it from other social identities, such as class and ethnicity, which may be linked to a specific locality but which do not represent it exactly. In order to identify with social groups, and therefore to establish intergroup bias, we must be able to find commonality between ourselves and our in-group. Though this linkage may take place within the minimal group paradigm—on the smallest of visual cues—it is more commonly founded on concrete social categories, particularly ones which are highly visible. If people are going to form strong local attachment to their neighbourhood, it will therefore be important for them to feel as though they are a part of their neighbourhood: that, in part, they look like their neighbourhood in terms of highly-salient visual characteristics, or their neighbourhood looks like them.

What space are we picturing when we talk about belonging to our most immediate social environment? Cooke offers a broad description of a locality as a 'place where people live out their daily working and domestic lives': a 'base' through which allows 'subjects can exercise their capacity for pro-activity by making effective individual and collective interventions within and beyond [it]' (1989, page 3, 12). Previous research within political science, sociology and social psychology has approached this identification question in several ways. It may conceptualise it as belonging to a named area, usually within cities, or a city itself (Fischer 1976; Frost 2020; Odrakiewicz 2014); it may focus on a specific urban form—your 'town', 'village' or 'municipality' (Borwein and Lucas 2021; Bühlmann 2012)—or use highly-localised framing (Chan and Kawalerowicz 2021; Fitzgerald 2018). If we are to approach the question of what is means to belong to where we live from a social identity perspective, then we must be robust in choosing the units we study.

In particular, we must choose units in which we might expect to find intergroup dynamics to be strongest and which, in Cooke's sense, offer people the greatest opportunity to live out their everyday lives. I therefore focus here on the idea of the 'neighbourhood'. There are several reasons for this. Firstly, it is the most obvious application for a social identity approach: the unit in which we would expect to find group dynamics to be strongest. Neighbourhoods, as the places in which we live, and live out much of our domestic lives, are also highly salient identities. Secondly, it conceptualises a specific, relatively bounded geographic unit. 'Neighbourhood', and to a lesser extent phrases such as 'local area' or 'locality', conjures up images of specific streets, etc. It is more intuitive for people to think of these than to picture a wider area when asked questions about it, since these are terms that they may use in everyday life. Naturally, as with almost any such definition of local, there will be space for different interpretations of what this means for respondents. This is unavoidable, as with any geographic identity, though the differences are relatively marginal here. Concerns that such terms may be construed too differently between respondents do not usually present significant issues in the literature (Chan and Kawalerowicz 2021; Fitzgerald 2018). Because what you see as where you live is more tactile—it is where you live, interact with friends and often spend a lot of time—it is also more stable. Finally, as with the potential issue of heterogeneity in how people acquire identities based on residence, it allows us to avoid confusion where those who do not live in the area of focus feel belonging towards it. Whereas attachment to a geographical category such as rural or urban allows greater leeway in residency requirement—we may feel like the values we hold are inherently 'rural' or 'urban' or that, though we no longer live there, we still consider ourselves a resident of that category by temperament—as well

as confusion regarding whether the place you live now constitutes part of that category, there is no such issue with the neighbourhood. [3] While it may be the case that people on the boundaries of this unit claim membership of it, it seems unlikely that those living away—and therefore entailing the greatest danger to our theory—would do so.

2.2 Attachment formation

This theoretical grounding therefore directs us to select factors based on several themes: visual distinctiveness between groups, identifying highly salient group identities with less permeable boundaries, and social categories or life events denoting group membership or the breaking of it. Because the local area is both geographic and social identity, it presents a unique case for the theory. Since group identification is based, more than ever, on social interaction within this unit—a place where we live, and may work—these themes, especially regarding visual group identification, are vital. The focus in selecting these areas of study is, where possible, factors which are less influenced by personal choice, particularly kin ties; important life events, as with parenthood and homeownership; and the effect of neighbourhood-level variables, and which will allow us to more robustly causally identify them.

Following this, I choose three area of study: geographic mobility and length of residence, social ties, and contextual social characteristics as they relate to the individual, specifically ethnicity and class. Firstly, when considering factors which

[3] See Trujillo (2022a).

may disrupt social relationships in the context of geographic identity, and therefore influence intergroup behaviour, of immediate interest are *geographic mobility* and *length of residence*. If we conceive of local attachment principally as a social identity, then any factors which significantly disrupt our ability to form social relationships will very likely negatively impact attachment. If we have lived longer in our home—indeed, low mobility is the norm in developed democracies—then we have had more time to develop deeper relationships with those around us, we feel a stronger bond to the area itself, and consequently therefore feel like we belong there more. If we are constantly moving throughout our lives, whether it be significant moves like moving house, or just commuting for work—in particular, if we are moving great distances in doing do—then it follows that we would feel both a greater psychological separation from the place we live, but also simply have less time to identify group boundaries, and form meaningful social relationships.

While evidence indicates that some measure of attachment to place can happen with limited contact (Bonaiuto *et al.* 1999), when considering geographic attachment, research typically find that feelings of belonging to a specific location require more time to develop (Hernández *et al.* 2007; Stedman 2002). Studies typically find that commuters are less attached to where they live (Bühlmann 2012). Both as function of time spent where they live, and out of a sense of needing to rely less on their local area for their income or needs during the working day, they likely feel less attachment toward it. As a product of spending less time in the area, it is also logical that long-distance commuters are less involved in formal and informal social groups. A high percentage of commuters in dormitory areas may also contribute to the feeling of economic dependence from working municipalities, which

in turn has an overall negative effect on an individual's attitudinal attachment. Therefore:

H1a Those with lower geographic mobility will feel more attached to their neighbourhood.

H1b Those who have lived longer in their house will feel more attached to their neighbourhood.

Many studies have attempted to robustly study the effects of social relations on attachment, generally always finding a positive relationship (Austin and Baba 1990; Kao and Sapp 2020; Rollero and De Piccoli 2010). Some of this work also find positive evidence for the relationship with formal group memberships (Fitzgerald 2018). The reasoning is simple. The more time we spend in the neighbourhood, the more likely we are to interact with the people within it, and therefore to develop social relations and group memberships. Indeed, within social identity theory, interaction is necessary to make such memberships salient and decrease perceived distances between in-group members (Turner 1981). Endogeneity is concerning here, however; it affects many of these studies, particularly with regards to reverse causation. It in many ways makes as much sense for people, as a result of their feelings of attachment to an area, to seek out greater involvement within it, through increased social ties, as does the reverse. This particularly concerns the

social and environmental psychology literature, where the relationship is confusing and poorly causally identified (Bonaiuto *et al.* 1999; Lewicka 2005; Mesch and Manor 1998). This uncertainty therefore justifies us in taking great care when attempting to disentangle any effects. It is wise to focus in designing any study on those social ties over which we have no, or limited, choice. The most obvious are kin relations. Of course, these are not immune from potential endogeneity concerns, notably when considering distance effects, but they are far more robust than any other social relations. Therefore:

H2a Those who live with more family members in their household will feel more attached to their neighbourhood.

H2b Those who live closer to adult kin will feel more attached to their neighbourhood.

Two major potential life events are extremely influential in shaping our social ties: homeownership and parenthood. Buying a house and, in particular, having children fundamentally alters our behaviour, our social groups, and how we spend our time in the local area. Since many of the services that parents rely upon with children—daycare, school, friends who can babysit—are usually available locally, it follows that people become more psychologically invested in the area when they have children. Similarly, buying a house forces us to become more invested in

the local community. It is potentially the most significant investment many of us make in our lives, and typically greatly reduces our future residential mobility. The mechanism by which this happens is not necessarily clear. It is likely a product of numerous factors. Housing tenure is one the most significant predictors of residential mobility (Mulder 1998; Rossi 1955). It may therefore simply be that those who own their own homes spend more time in the local area, and therefore feel more attached to it. The effect of homeownership is unlikely to simply be a product of residential length or time spent in the local area, however. It would seem to follow that those who own their own homes, with more invested financially in the place they live, are therefore more likely to perceive that area favourably. They may also be more likely to be members of residents' associations and other formal group memberships which involve activity in the local area, though the evidence for this link is not always clear (Leviten-Reid and Matthew 2018). [4]

H2c Those with more dependent children will feel more attached to their neighbourhood.

H2d Those who own their own home, or live in a home that is owned, both mortgaged and outright, will feel more attached to their neighbourhood.

[4] Both these factors are partly a function of age, since most generational cohorts accomplish these events at roughly the same period in their lives, but merely measuring age would not capture the changes in the roles and relationships, both formal and informal, over the course of our lives which social ageing denotes.

The role of the physical environment itself is often neglected within social identity theory. Where it is included in such research, it is generally as a social marker denoting another identity—if a neighbourhood confers a certain status on a group, for instance—or if an area has a certain cultural significance for a group. Rarely are the features of the physical environment, and therefore the effect they may have on social relations, studied within a social identity framework. In studying this, we need to focus on the aspects of place which may be most influential in shaping social interactions. Two factors therefore concern us here: the general morphology of settlements, in particular where they are placed on a scale from rural to urban, and key population dynamics which define how people interact on an aggregate level. Survey-based research tends to operationalise rural-urbanisation using simple binary identifiers (Fitzgerald 2018; Lappie and Marschall 2018; Trujillo 2022b). This is problematic, for it glosses over much potential heterogeneity when employing more fine-grained settlement classification. Secondly, high turnover in our immediate environment means that our opportunities to form meaningful group membership and identify those of others may be significantly disrupted. Population density, similarly, is likely influential in shaping social interaction. Importantly, while these two factors are related to an area's place on a scale from rural to urban, they are not the same; we can conceive of a highly-urbanised area with relatively low population turnover, for instance, as we can conceive of a rural area with a high population turnover. Thus:

H2e Those who live in more rural and more isolated neighbourhoods will feel more attached to them.

H2f Those who live in neighbourhoods with lower population turnover and higher population density will feel more attached to them.

Homogeneity is perhaps the most complex of our three areas of study. Evidence for the relationship between social mix and attachment is varied, particularly on race. Research using panel data usually find evidence that social mix has a negative effect on attachment or cohesion (Laurence and Bentley 2015). These studies tend to be of the effect of area makeup alone, rather than the interaction of these with those of the individual. Studies which find a positive relationship between social mix—usually studying class or ethnicity—and geographic attachment or, similarly, social cohesion, usually find it to be weak and inconsistent (Bailey, Kearns, and Livingston 2012; Livingston, Bailey, and Kearns 2008; Livingston, Bailey, and Kearns 2010), though these studies are also typically impressionistic. More systematic studies which do consider how the interplay of individual and contextual factors shape affect towards an area or the people study attachment obliquely, using proxies (Jacobs and Munis 2019; Schulte-Cloos and Bauer 2021; Ziblatt, Hilbig, and Bischof 2020). Rarely, therefore, is the link between individual class or ethnicity and that of the immediate local area studied quantitatively.

Given the strong social identity justifications for the idea that this interplay affects attachment—that the stronger the feeling that we have something in common with those around us, that we share a social group, and that this in turn causes us to feel like we belong in that area—this is surprising. This also accords with the principle of homophily: divisions along racial lines in particular produce some of the starkest divides, and that geographical closeness produces some of the strongest homophilous relations (McPherson, Smith-Lovin, and Cook 2001). Thus:

H3a Those who live in neighbourhoods that more closely match their class will feel more attached to them.

H3b Those who live in neighbourhoods that more closely match their ethnicity will feel more attached to them.

3 Data and design

I use data from two surveys: at first wave 4 (2008–10) of the European Values Study (EVS) to study the question cross-nationally (EVS 2010). Since variables and available contextual data are limited here, I then use three waves of the UK Household Longitudinal Study (UKHLS), covering 2011 to 2017 (ISER, NatCen, and Kantar 2021a; ISER, NatCen, and Kantar 2021b; ISER, NatCen, and Kantar 2021c). To both of these, I build in a range of contextual variables from the

European Commission and UK census. For the EVS, this is on the district level (NUTS 3). For the UKHLS, this is on the neighbourhood level (LSOA), with a population of only a few thousand residents.

3.1 European Values Study

I initially test the theory cross-nationally, using wave 4 of the European Values Study (EVS), a large, repeated cross-sectional survey of European countries. Fieldwork was conducted from 2008 to 2010. The question of interest asks respondents to rank first or second which geographic area they feel they belong to, choosing either 'locality or town', their district, country, 'Europe' and 'the World'. I operationalise this as a binary variable, counting both respondents placing locality first and second counting, in order to capture having the identity or not. While the EVS does not allow me to test the entire theory, it is useful in offering a large cross-national view of local attachment, as well as unique in offering respondents the opportunity to rank attachment to different geographic identities.

For *social ties*, I record the number of the respondents' own children living in the household, defined as those who spend on average four or more nights a week there. [5] For kin relations, I measure the number of respondents' parents, grandparents and 'other relatives' living in the house, excluding children. Both these linear variables I group into five levels; for children, none, 1–2, 3–4, 5–6, and more than 6; for family: none, 1–3, 4–6, 7–9, and more than 9. I construct

[5] Note that there is no way to measure the age of these children in the household in the EVS, nor whether the respondent is explicitly responsible for them, as there is for the UKHLS.

settlement type from a variable from the restricted access version of the survey measuring the size of town in which the interview was conducted. I construct five categories: *large urban*, most major cities greater than 100,000 population, *urban*, all other settlements over 10,000 population; *town and fringe*, smaller towns and urban fringes between 5000 and 10,000; *village*, smaller and more isolated but still homogeneous settlements between 2000 and 5000; and *isolated*, primarily hamlets and individual dwellings under 2000 population. The reference category is isolated. To study settlement factors, I match European Commission data to NUTS-3 districts, the lowest level geography available in the survey (Eurostat 2022a; Eurostat 2022b). I measure population density (persons per square kilometre) and net migration in the year previous to the EVS fieldwork for that country. Due to large variation I study the logs of both. To look at class homogeneity, I use the European Socio-economic Classification (ESeC) schema, a common occupational class classification selected for maximum comparability with the UKHLS and UK census data, collapsed into three groups: higher managerial, administrative and professional occupations (*managers*); intermediate occupations and self-employed (*intermediate*); and routine and manual occupations (*routine*). For those out of work, unless they are full-time students, have been involuntarily out of work for more than six months, or have never worked, this is their last main job. 'Managers' are effectively middle class, while 'routine' is working class. 'Intermediate' is a smaller grouping composed mostly of the self-employed and small business owners. Since occupational class data is limited for the NUTS-3 level, I instead construct variables using weighted proportions from the EVS itself. I study respondents when their class matches or does not match that of the majority or plurality groups in their district.

3.2 UK Household Longitudinal Study

To test the theory in much greater depth, I use the the UK Household Longitudinal Study (UKHLS), one of the largest household panel studies in the world (ISER, NatCen, and Kantar 2021a; ISER, NatCen, and Kantar 2021b; ISER, NatCen, and Kantar 2021c). It is commonly used in sociological, public health, and psychology research (Borkowska and Laurence 2020). While it is increasingly popular in political science, with a particular emphasis on identity questions (Bernardi 2021; Chan and Kawalerowicz 2021; Lee, Morris, and Kemeny 2018; McAndrew, Surridge, and Begum 2017), it is still dramatically underused in the field. It provides a hugely rich selection of variables and allows me to model the theory completely. That it is a household panel study both allows me to use panel methods, and to construct variables by feeding forward information from previous waves, using real addresses and distances in most cases, from the restricted access version of the survey. A final advantage to using it is the availability of detailed census data in the UK on small geographies, as well as of data on ethnicity, which is not always available in comparable European countries.

The response variable asks respondents how strongly they agree or disagree with the statement 'I feel like I belong to this neighbourhood' on a five-point Likert scale. I compiled three waves for which this question was available: waves 3 (2012), 6 (2015) and 9 (2017). I again operationalise this as a binary indicator, taking the top two levels of the scale to equal 1. Some questions—those measuring distance the respondents lived from their parents or adult children—were not asked in wave 6. See page II in the Appendix for details. To model neighbourhoods, I match respondents in the restricted Special Licence version of the survey to Lower Layer Super Output Areas (LSOAs), the second lowest-level census geography for

the UK. These offered an easily scalable unit, consistent across the whole time period of the panel, to which I could relatively easily match most contextual data. LSOAs have a mean population of 1,511 for the 2011 census and do not vary significantly in this ([34, 8,807], s.d. = 441).

Mobility and residential length directly affect our group membership by determining the amount of time we spend with them. To study this, I look at inter-wave moves, commutes and residential length. To study house moves, I measure the actual distance moved for participants who changed houses between waves (from wave 6 for the cross-sectional analysis). This is coded as a series of binaries: not moved, 0–15 km, 15–30 km, 30 to 60 km, and more than 60 km; not moved is the reference category. [6] To study length of residence, I feed forward addresses from the whole panel, using data from the first wave in 1991. This is composed of six binaries: lived less than 1 year in the house, between 1 and 2, 2 and 3, 3 and 5, 5 and 10, and more than 10. Less than one year is the reference. To study distance from work, I use commuting time, measured as four categories: 0 to 5 minutes commute, where the respondent is retired or unemployed, or where the respondent works from home; 5 to 10 minutes; 10 to 30 and more than 30 minutes. The first is the reference category. This variable is derived from respondent answers, rather than calculated from addresses.

Social ties define our relationships with others and to social groups more broadly, and therefore also dictate intergroup relations. Socialisation also plays an

[6] Distance is calculated based on the latitude and longitude of the centre of participants' full postcodes, using Vincenty's formula to calculate distance between. This therefore does not measure intra-postcode moves, though in practice these will be very short distances anyway.

important role in some of these processes. I study four areas: kin ties, homeownership, parenthood, and the features of the neighbourhood itself, in particular what places it along the urban-rural axis. Homeownership is coded as 1 for whether the respondent lives in a house that is owned outright or on mortgage, 0 for all other categories. I measure how many dependent children the respondent has in the household, using the household grid and the UK *Department for Work and Pensions* (DWP)'s definition. This is any child aged 0 to 15, and any child aged 16 to 18 in school or non-university further education, not married and living with their parent. Finally, to study kin ties, I choose three measures. The first records how many family members in the house, excluding dependent children. Since the UKHLS is a household survey, these are actual enumerated persons from the household grid. I include partners, step, in-law, half, foster and adoptive relations in this measure. The final two measures of kin ties record approximately how far the respondent lives from any adult children or parents, door-to-door. I construct four binaries for each: living under 15 minutes, 15 to 30 minutes, 30 minutes to an hour from, and more than one hour. The reference category is the first.

I also study the features of the neighbourhood itself which may affect social ties: population density, population turnover, and urbanisation. Settlement classification involves classifying settlement along an urban-rural axis, with a desire to avoid a binary distinction. I use the Office for National Statistics' (ONS) classification of census output areas, based on urbanisation and contextual information about the surrounding area. Census settlement type data uses different classifications for England and Wales, Scotland, and Northern Ireland (ISER, NatCen, and Kantar 2021c; ONS 2016). This necessitates grouping these more detailed categories into five broad morphological groups, based primarily on population

size and geographic isolation: *large urban*, including most major cities, *urban*, all other settlements over 10,000 population; *town and fringe*, smaller towns and urban fringes; *village*, smaller and more isolated but still homogeneous settlements; and *isolated*, primarily hamlets and individual dwellings. The reference category is isolated. [7] Data for density and turnover I collect from the 2011 UK Census (NISRA 2013; NRS 2013; ONS 2013a). For density, this is the number of people per hectare. For turnover, I measure gross migration. This is the sum of all migrants and emigrants to the area, adding those who moved into the area from within the UK and those who moved from outside the UK to those who move out of the area, expressed as a ratio to the population one year before the census date. Again, I study the log of both turnover and density.

Homogeneity measures individual characteristics against the makeup of the neighbourhood. I first assess this by social class, measured as the social class of the 'Household Reference Person' (HRP)—effectively the head of the household, and therefore a more realistic assessment of the social position of the whole household, who may pool resources—for all members of the household. [8] I use the UK National Statistics Socio-economic classification (NS-SEC), on which which the ESeC used in the EVS was based, collapsed into the same three groups: higher managerial, administrative and professional occupations (*managers*, or *middle class*); intermediate occupations and self-employed (*intermediate*); and routine and manual occupations (*routine*, or *working class*). For those not in work, for instance

[7] See Tables A2 and A3 for details of harmonisation across the UK. Note that this indicator was not available for Northern Ireland, and so these cases will drop out of the model once it is introduced.

[8] This is the person in whose name the house is owned or rented, or who is otherwise responsible for it (for example, a lead tenant).

due to unemployment or retirement, this is their last occupation. I measure this characteristic in both plurality and majority class group neighbourhoods.

Secondly, I look at ethnic homogeneity, using the main ethnic groups from the UK census: white (including any other white nationalities), black, asian; south asian, mixed, and other, a group primarily composed of those of arabic descent or who did not fit into the other categories. Because nearly all LSOAs in the UK, and therefore likely in the UKHLS, are majority or plurality white, it would not be practical to use these standards. Instead, I measure whether a respondent matches a group whose proportion in the neighbourhood is above the national average. Table A4 outlines these proportions. As with class, these broad ethnic groups should give the greatest chance for visual distinction between groups. There are naturally potential issues with this categorisation. People do not always judge ethnicity on such general visual characteristics: the ways in which we organise groups to aid data collection may not tally with how people identify other ethnicities. Of particular concern here are different white groups, who are generally all places in the same group in the census.

Models for the EVS and the UKHLS begin with the same socio-demographic traits which may affect belonging to neighbourhood: education, class, age, gender and, in the UKHLS, ethnicity. Education is composed of three binaries: those with no qualifications, school leavers and those with vocational qualifications, and university-educated. The reference category is 'no qualifications'. Class follows the ESeC / NS-SeC coding, which are functionally identical. This uses the three-class schema: managers, intermediate and routine. For the UKHLS, this is again that of the Household Reference Person. 'Routine' is the reference category. Age is composed of five binaries: 18 to 24, 25 to 39, 40 to 64, and older than 65. The

latter is the reference category. The UKHLS also includes the ethnicity of the respondent in the model, composed of the same six categories: *white*, *black*, *south asian*, *asian*, *mixed* and *other*. White is the reference category.

3.3 Empirical strategy

For both sets of data, I initially fit hierarchical models with random intercepts for groups. Hierarchical models are appropriate here for two reasons: firstly to accommodate the structure of the data, while allowing us to model the effect of variables at the second (i.e. district or neighbourhood) level. Secondly, since hierarchical models are fit using partial pooling, they are better able to estimate group effects for groups with low variance. This is of particular concern since, while the UKHLS has a very large sample, I am fitting it to extremely small geographic units and so mean respondents per neighbourhood in the model will likely be low. Hierarchical models also allow us to model time-invariant variables in the full panel.

For the EVS, I specify a hierarchical model with a two-level structure, with respondents nested in districts. For the UKHLS, I first specify a hierarchical model with a three-level structure, using only wave 9, with respondents nested in households, nested in neighbourhoods. The number of neighbourhoods in the final cross-sectional model is very high—approximately 7,000—which overcomes a common limitation with hierarchical modelling: the small number of higher-level clusters. I add this additional household level to accommodate the fact that this is a household study, with likely correlations within households, and with some vari-

ables which are effectively recorded at the household level. In practice, there will be very few households per neighbourhood in the final model. To strengthen the robustness of any conclusions, I additionally specify dynamic panel models, using all three waves of the survey. Dynamic panel models have long been suggested to address endogeneity caused by reverse causality (Anderson and Hsiao 1981; Anderson and Hsiao 1982; Leszczensky and Wolbring 2022). Although current values of a predictor may be endogenous to a response in the current period, it is unlikely that past values of it are, so the logic goes. I fit two main specifications: a synchronous model, including the lagged dependent variable as a regressor, and an asynchronous model, regressing the response in the current period on all values which can vary, excluding age, from the previous period. Though we can be more confident of the causal ordering of variables related to important life events—and which are therefore less susceptible to reverse causation—such as homeownership and parenthood, I also lag these. [9] I have striven, in selecting all the models here, to test the theory under a range of assumptions, and therefore ideally to produce roughly similar results.

[9] Note that, since inter-wave movement already captures a lagged effect, I do not lag this. Note also that I do not specify a hierarchical model with lagged variables, so as to avoid Nickell bias, first highlighted in fixed effect models (Nickell 1981).

4 Results

Table 1 shows the EVS results; Table 2 shows results from wave 9 (2017) of the UKHLS. Further tables in the elaborate on these. The cross-sectional models build in indicators based on the level they are measured at. Model 1 first tests socio-demographic predictors, Models 2 and 3 add individual-level variables, Model 4 adds the household-level, and Model 5 adds the district or neighbourhood-level. I finally test two dynamic panel models.

Results from the EVS show tentative evidence for the two areas of focus I was able to study here: social ties and homogeneity. The number of a person's own children in the home has a relatively weak association with attachment; moving from no children in the home to 2 or 3 produces a 1 per cent increase in local attachment. The effect of class homogeneity is robust to specifying either majority or plurality-class districts (NUTS-3 level), with a slightly weaker positive relationship for the latter. Someone living in a district with a majority class group that matches their own is 3 per cent more likely to be locally attached, compared to someone living in a district which does not match them, or where there is no majority; for someone living in a district where the plurality group matches their own, they are 2 per cent more likely to be locally attached, compared to someone living in a district which does not match them (Models 2 and 3; Figure 3). All settlement types are negative when moving from the most isolated settlements, with not a dramatic difference in effects, though only 'large urban' and 'urban' settlements were significant. Living in the largest cities more strongly predicts local attachment. While both population density and net migration are negative,

Table 1: Predictors of belonging to locality (EVS)

	Model 1	Model 2	Model 3	Model 4	Model 5
DV: Attachment to locality					
Individual level					
No. of own children in house		0.07 (0.02)***	0.07 (0.02)***	0.07 (0.02)***	0.07 (0.02)**
Match majority class in district		0.13 (0.04)***		0.13 (0.04)***	0.09 (0.04)*
Match plurality class in district			0.10 (0.03)**		
No. of family members in house				0.03 (0.03)	0.02 (0.03)
District level					
Large urban					−0.15 (0.05)**
Urban					−0.12 (0.04)**
Town and fringe					−0.06 (0.05)
Village					−0.09 (0.05)
log(Population density)					−0.31 (0.09)***
log(Net migration)					−0.02 (0.10)
(Intercept)	1.14 (0.11)***	1.05 (0.11)***	1.05 (0.12)***	1.05 (0.11)***	1.26 (0.13)***
Controls	Y	Y	Y	Y	Y
Log Likelihood	−21634.46	−20666.98	−20668.51	−20666.57	−17887.15
N (Individuals)	35747	34163	34163	34163	29604
N (Districts)	845	845	845	845	746
N (Countries)	31	31	31	31	29

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

only population density is significant. [10] The number of family members in the house is not significant. Given that it is significant and robust to different model specifications in the UKHLS data, this is likely due to questionnaire design (see page 36).

The strongest coefficients are sociodemographic. All these variables are significant, other than 'Intermediate'. [11] Those aged 18 to 24 and with at least a degree-level education are significantly negatively associated with local attachment. These people are 12 per cent less likely to be locally attached, when compared to the over-65s. The relationship with age is very heavily skewed towards the eldest; however, all age groups under 65 negatively predict attachment. For education, having at least a school-level qualification is negatively associated, compared to those with no qualifications. Those with degrees are the most negatively attached: 11 per cent less when compared to the reference (no qualifications), one of the strongest effects in the model. Class, while weaker, is negatively associated. Being middle class ('manager' occupations) means you are 2 per cent less likely to be locally attached than being working class ('routine' occupations). Women, similarly, are slightly positively associated with attachment: 4 per cent more locally attached compared to men. Finally, the strength of class and education, though not age, are partially reduced by the introduction of social ties and homogeneity variables to the model, which indicates that we can partially explain some of their effect through these.

[10] An alternative specification of net migration, the crude rate of net migration—the ratio of net migration over the year to the average population in that year—is also not significant. See Table A6.

[11] This may be because it is more of a residual class group and has few respondents in the sample.

However, I am of course greatly limited in the EVS, both by the indicators available and the geographic level on which I can model the data. For that reason, I focus most of my analysis on the UKHLS. I first look at the data cross-sectionally using wave 9 (2017), the most recent relevant wave (Table 2). I further test kin ties using a subset of the data (Table A7). I also test different specifications of the homogeneity hypothesis (Table A13), again using wave 9. Finally, I specify two dynamic panel models, using all three waves: 3 (2011), 6 (2014) and 9 (Tables A8 and 3). Results here offer more comprehensive and more robust support for the hypotheses.

As with the EVS, some of the strongest factors were socio-demographic. All variables are significant, other than class and ethnicity. Age was notable, particularly for the 18 to 24 and 25 to 39 groups, which are very strongly negatively associated—producing an increase of 28 per cent and 22 per cent respectively when compared to the over 65s—though, again, all age groups under 65 negatively predict attachment. Having at least a school-level qualification is again negatively associated with attachment, compared to those with no qualifications. Surprisingly, opposite to the EVS, those with school leaving qualifications are more negatively associated with attachment than those with degrees: a decrease of 6 per cent, as opposed to 4, when compared to the reference (no qualifications). Women, similarly, are positively associated with attachment, with an increase of 4 per cent compared to men. The strength of age again decreased on the introduction of mobility and residence, social ties, and homogeneity variables to the model; however, the strength of education in fact increased on the introduction of these variables.

Table 2: Predictors of belonging to neighbourhood (UKHLS wave 9)

	Model 1	Model 2	Model 3	Model 4	Model 5
DV: Neighbourhood attachment					
Individual level					
No. of own children in house		0.26 (0.05)***	0.25 (0.04)***	0.27 (0.05)***	0.27 (0.05)***
Five to 10 minutes commute		−0.13 (0.08)	−0.15 (0.08)*	−0.13 (0.08)	−0.09 (0.09)
10 to 30 minutes commute		−0.19 (0.06)**	−0.23 (0.05)***	−0.19 (0.06)**	−0.18 (0.06)**
More than 30 minutes commute		−0.31 (0.07)***	−0.36 (0.06)***	−0.32 (0.07)***	−0.31 (0.07)***
Class matches majority group		0.17 (0.06)**	0.21 (0.06)***	0.17 (0.06)**	0.19 (0.06)**
Ethnicity matches groups above nat avg		0.27 (0.06)***	0.32 (0.06)***	0.24 (0.06)***	0.16 (0.07)*
Lived in house 1 to 2 years		0.27 (0.12)*		0.22 (0.12)	0.27 (0.12)*
Lived in house 2 to 3 years		0.54 (0.12)***		0.50 (0.12)***	0.50 (0.13)***
Lived in house 3 to 5 years		0.35 (0.11)**		0.27 (0.11)*	0.29 (0.11)*
Lived in house 5 to 10 years		0.49 (0.10)***		0.42 (0.10)***	0.45 (0.11)***
Lived in house more than 10 years		0.81 (0.10)***		0.69 (0.10)***	0.71 (0.10)***
Moved 0 to 15 km from previous wave			−0.42 (0.11)***		
Moved 15 to 30 km from previous wave			−0.42 (0.28)		
Moved 30 to 60 km from previous wave			−0.57 (0.39)		
Moved 60 km+ from previous wave			−0.88 (0.24)***		
No. of family members in house			0.24 (0.11)*	0.23 (0.11)*	0.25 (0.11)*

Contd.

Table 2: Predictors of belonging to neighbourhood (UKHLS wave 9)

Household level					
Owns home				0.35 (0.06)***	0.34 (0.06)***
Neighbourhood level					
Large urban					−0.16 (0.13)
Urban					−0.41 (0.13)***
Town and fringe					0.06 (0.14)
Village					0.13 (0.15)
log(Population density)					−0.03 (0.02)
log(Population turnover)					−0.05 (0.03)
(Intercept)	1.24 (0.07)***	0.39 (0.14)**	1.13 (0.10)***	0.04 (0.18)	0.49 (0.23)*
Controls	Y	Y	Y	Y	Y
Log Likelihood	−12811.87	−8605.65	−9732.86	−8557.90	−8270.70
N (Individuals)	20298	13916	15703	13872	13455
N (Households)	11863	8682	9402	8652	8376
N (Neighbourhoods)	9330	7287	7700	7266	7038

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Ethnicity (White); Commute (¡5 min / wfh); Residential length (¡ 1 yr); Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Mobility and residential length variables are all strong predictors of local attachment. The strong negative effects for short distances are particularly notable. Short commutes of even only 10 minutes are negatively associated and significant, when compared to those who live just 5 minutes from their work, who work from home or who are unemployed or retired. Similarly, moving even short distances—and therefore out of the neighbourhood—is strongly negative, when compared to those who stayed put, though middle distances are not significant. Those who moved only 0–15 km from the previous wave (wave 8, 2017), when compared to those who stayed put, were 10 per cent less likely to be locally attached. For residential length, all categories from one year onwards are positively associated with attachment. Effects at the upper end of these scales are also remarkable. Residency of greater than 10 years, moving more than 60 km, and commuting more than 30 minutes were among the strongest coefficients in the model. When compared to those who work from home, are retired, unemployed or commute less than five minutes, those who commute more than 30 minutes are 7 per cent less likely to be locally attached. Similarly, those who have lived in their home more than 10 years are 16 per cent more likely to be locally attached, when compared to those who have lived there less than a year. Those who have moved more than 60 km—by no means a great distance—from the previous wave are 21 per cent less likely to be locally attached, when compared to those who didn't move.

MARGINAL EFFECTS PLOT FOR FAMILY DISTANCE HERE

We find more evidence for the mobility hypothesis when looking at adult relations. In the models subset to include only those with either adult children or parents outside the house (Table A7), even living merely 15 minutes away from either group is enough to negatively predict local attachment, when compared to

those who live under 15 minutes away. The strength was broadly similar between the two groups, though stronger for adult children at greater distances. Those with adult children or parents living 15–30 minutes away are 5 per cent and 7 per cent less likely to be locally attached, respectively, when compared to those with these relatives living under 15 minutes away. The evidence also reinforces what we know about how geographically immobile many people are: approximately a quarter of people with adult children or parents outside the house live less than 15 minutes from them.

The social ties hypothesis also receives strong support. As with the EVS, having your own children in the home—this time explicitly defined as dependent children—is significant and positively associated. Moving from no children to 2 or 3 produces a 6 per cent increase in local attachment. Owning your own home is also positively associated and significant, with a 8 per cent increase in local attachment compared to those who don't. A notable difference with the EVS model is that the effect of family members in the house is positive and significant, as expected, although weakly so: moving from no family in the house to 2 or 3 produces a 6 per cent increase in local attachment. Given the theoretical evidence pointing us to this hypothesis, this distinction is likely due to questionnaire differences. Whereas the EVS asks the respondent to list only numbers of parents, grandparents and 'other relatives', the UKHLS records in detail every cohabitant and collects questionnaires or proxy questionnaires for each one. The EVS result therefore probably does not capture the full effect of family members on how locally attached people are.

Only 'urban' settlements—all those settlements over 10,000 residents, excluding major conurbations—were significant in the model. Moving from 'isolated'

settlements—those smaller than villages—to these 'urban' settlements produces a 7 per cent decrease in local attachment. The effect of population density and turnover are not significant, or otherwise inconsistent, in the models. Given divergent results with the similarly inconsistent EVS results, we should be careful when making any conclusions about these. It may be that people care more about their personal circumstances and that of their immediate families than they are influenced by the features or population characteristics of the environment around them. It may also be that, even on the neighbourhood level, people are simply not aware of the population characteristics of their neighbourhood. As regards turnover, while their own personal mobility, length of residence and distance travelled either to work or between home, as well as the distance to and number of their closest kin, strongly affects how locally attached people are, it might be that that of their neighbourhood does not concern them. It may also be that they are not aware of, or do not have well-enough developed social networks to know know enough people in their immediate environment, for aggregate turnover to make a difference, other than in areas with extremely high turnover. [12]

The homogeneity hypothesis is also well supported, with similar results to the EVS, again with slightly stronger effects for majority class neighbourhoods, as with majority districts. Moving from a neighbourhood where another class group is in the majority or where there is no majority produces a 4 per cent increase in

[12] Inconsistencies in findings between the EVS and UKHLS could be explained by issues with the data too. With European Commission data, despite some gaps, I was able to collect results mostly from one year before fieldwork for most of the districts in the survey, whereas, for the UKHLS, I only have access to census data at 10 year intervals. See Table A1 for other issues with UK census data. Note that both population density and turnover are significant and negative in the hierarchical model extended to the full panel may confirm this (Table A9).

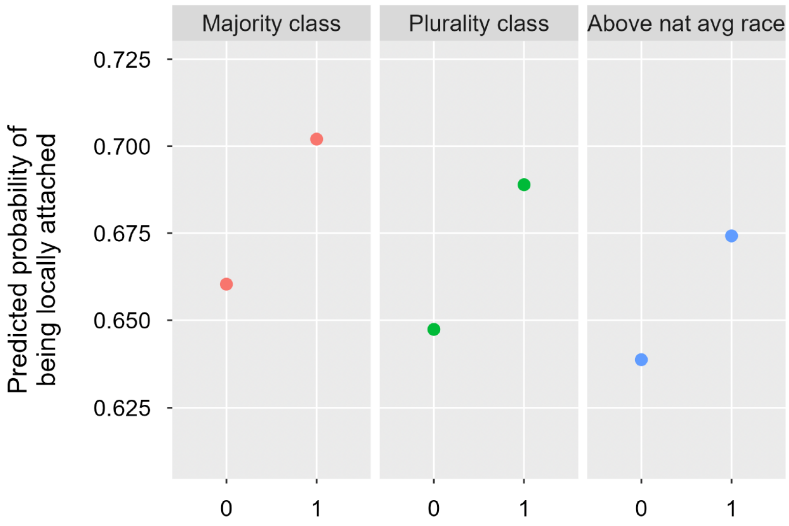

Figure 3: Class and ethnic homogeneity, Table A13 (UKHLS wave 9, 2017) ADD ERROR BARS

attachment. When looking at the three constituent groups on which I measure class, we can see that this effect comes entirely from middle class respondents ('Managers'). For someone in the middle class, moving from a neighbourhood with no majority class or where one of the other groups is in the majority to one which is majority middle class produces a 7 per cent increase in local attachment. Homogeneity effects for those from the other two classes in the model are not significant (Table A13). [13] Effects for ethnic homogeneity were weaker than class, though still significant in the model. To move to a neighbourhood in which your ethnic group is proportionally below the national average to one in which it is above the national average, produces a 3 per cent increase in local attachment.

[13] Note that, because there were so few majority intermediate neighbourhoods in the model, variance was extremely high, and I have therefore removed the coefficient.

As robustness tests, I re-run both the EVS and UKHLS analyses as multilevel ordered logit models, operationalising the responses appropriately. For the EVS, I code 1 as being locality first choice, 0.5 locality second choice, and 0 for locality as neither. For the UKHLS, I invert the original Likert scale. The results are the same, other than for the homogeneity arguments, which may indicate that these are are dependent on an assumption of local attachment as a binary identity, rather than an affinity scale (Tables A14 and ?? of the Appendix). A great advantage of the EVS is this ranking of geographic identities in the source question. I am therefore able to use it to test the same predictors on national attachment; the response is simply a restructuring of the same question. [14] I re-run the main EVS multilevel logit model on this response (Table A15). Very few variables are significant in the final model, other than age, education and settlement type. This gives us strong evidence that these predictors are uniquely associated with local attachment, and that they do not help us in predicting belonging to country.

4.1 Dynamic panel models

Finally, I specify two dynamic panel models for the UKHLS data. Table 3 is the asynchronous model. Table A8 is the synchronous model, available. Results across both of these specifications are broadly similar, and concordant with the cross-sectional results. [15] We therefore firstly know that the conclusions are robust

[14] Unfortunately, there is no comparable national attachment question for the UKHLS.

[15] I also estimate a model controlling for all lagged regressors which can vary in their previous period (Table A10). This model can also be interpreted as

to controlling for previous values of the response. We know secondly that we can predict local attachment in the current period from values in the previous. While coefficients and significance are broadly similar between the cross-sectional model and the synchronous model, they are generally weaker in the asynchronous model, which may validate this conclusion. One notable difference is that ethnic homogeneity is no longer significant in the asynchronous model. Given the weak evidence for this hypothesis from the main cross-sectional model, this is perhaps not surprising. It may simply reflect the fact that people are more sensitive to class homogeneity when it comes to local attachment than ethnic homogeneity, or that they are less concerned with past perceptions of homogeneity when it comes to local attachment.

The asynchronous model imposes far greater restrictions on the theory, and should therefore be considered a stronger test. Note, however, in lending weight to one model over the other, that the distance between waves—each is approximately three years apart—may represent too great a gap for the theory. While we might expect the effect of the factors studied on local attachment to take place over something like this time period, it may also be too long, in which case the synchronous model is superior. [16] The generally weaker results for the asyn-

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the effect of the changes in the variables on local attachment, controlling for those lagged values and that of the response. I finally also simply extend the hierarchical model to the full panel (Table A9), with respondents nested in households nested in neighbourhoods nested in waves, in order to accommodate the spatial and temporal dimension of the data in the full panel; the group identifier is therefore the neighbourhood-wave. The results for all of these are, again, broadly similar to the main cross-sectional findings.

[16] Given the limited number of waves, I am constrained in choosing different lag specifications for asynchronous models.

Table 3: Predictors of belonging to neighbourhood, asynchronous model

	Model 1	Model 2
DV: Neighbourhood attachment		
Individual level		
Lagged No. of own children in house	0.04 (0.03)	0.03 (0.03)
Lagged 5-10 min commute	−0.02 (0.06)	−0.01 (0.06)
Lagged 10-30 min commute	−0.10 (0.04)*	−0.10 (0.04)*
Lagged 30+ min commute	−0.09 (0.05)	−0.11 (0.05)*
Lived 1-2 years in house	0.42 (0.09)***	
Lived 2-3 years in house	0.43 (0.10)***	
Lived 3-5 years in house	0.32 (0.08)***	
Lived 5-10 years in house	0.36 (0.08)***	
Lived 10+ years in house	0.47 (0.07)***	
Moved 0-15 km		−0.23 (0.08)**
Moved 15-30 km		−0.17 (0.20)
Moved 30-60 km		−0.57 (0.27)*
Moved 60+ km		0.76 (0.16)***
Lagged Match majority class	0.09 (0.04)*	0.11 (0.04)**
Lagged Match abv avg ethnicity	0.07 (0.05)	0.08 (0.04)
Lagged No. of family in house	0.11 (0.04)**	0.09 (0.04)*
Household level		
Lagged Own home	0.16 (0.04)***	0.19 (0.04)***

Contd.

Table 3: Predictors of belonging to neighbourhood, asynchronous model

Neighbourhood level		
Lagged Large urban	0.02 (0.11)	0.03 (0.11)
Lagged Urban	−0.11 (0.10)	−0.10 (0.10)
Lagged Town and fringe	0.07 (0.10)	0.06 (0.10)
Lagged Village	0.16 (0.10)	0.18 (0.10)
Lagged log(Population density)	−0.02 (0.02)	−0.06 (0.10)
Lagged log(Population turnover)	−0.02 (0.04)	−0.03 (0.04)
Lagged Neighbourhood attachment	1.87 (0.03)***	1.88 (0.03)***
(Intercept)	−0.63 (0.15)***	−0.25 (0.13)
Controls	Y	Y
Log Likelihood	−12466.28	−13372.46
N (Individuals)	24133	25813

Standard errors in parentheses. *Ref categories*: Age (65+);
Class (Routine); Education (No qualifications); Ethnicity (White);
Commute (¡5 min / wfh); Residential length (¡ 1 yr);
Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

chronous mode may validate this conclusion. Nonetheless, the persistence of the results here under multiple specifications, including very conservative ones, should assuage some concerns regarding the robustness and causal ordering of the factors studied.

5 Discussion

We might expect to believe that our primary geographic identity is that of our country. Here, I have shown that this is not necessarily the case, and that there are strong and persistent factors which drive attachment to our most immediate

social environments. I have provided evidence for the salience of local attachment cross-nationally. I have demonstrated that it is strongly predicted by all three of the areas studied—geographic mobility and residence, social ties, and homogeneity—in some cases very strongly, across several specifications, and when modelling extremely small geographic units. I have also demonstrated that these relationships are likely causal.

What we have now is a far better understanding of what is clearly a hugely important identity. We know what drives belonging to place, when looking at the smallest geographic units available and when studying the identity directly. We know that it is driven primarily by individual-level factors, but that we find evidence for the household level and the neighbourhood or district level, including the interaction of individual-level factors with contextual. The typical locally attached citizen is one who owns their own home, has children, has not moved far in their life, lives in a neighbourhood which looks like them, and who has a large and concentrated kin network. Their neighbourhood is typically more rural, though not uniformly, and they are usually older, with fewer qualifications.

That I find broadly similar results on the neighbourhood and district level, including for class homogeneity, on which we can compare them, points to a simultaneity of effect across these different geographies. Districts, though large, still represent a place where people live out their working and domestic lives and, though they are unlikely to become familiar enough with the population to be able to as strongly identify groups, they are likely still able to capture some of the stronger effect we would expect to see from neighbourhoods. [17] This lesser

[17] It may also be partly explained by the fact that, while potentially very large, NUTS-3 regions can also be relatively small, with a minimum population of

intimacy would suggest that the effect is diluted within larger geographies. It indicates that the effect of social mix, and the ability to find commonality between our in-group and identify distinctiveness with our out-group, is much more pronounced in our immediate environment. Our neighbourhood, rather than our region, is a place we necessarily spend more time in, even for those who do not spend much time in it compared to others. It is possible to become familiar with a far greater proportion of the population of our neighbourhood, and therefore to identify relevant social groups, than it is for somewhere as large and geographically dispersed as a wider district.

Though for the first time we are looking systematically at the relation between individual and contextual characteristics when it comes to social mix and attachment, these results reinforce the majority of studies which find a negative association between social mix and attachment (see Putnam (2007) or Laurence and Bentley (2015), for example). That I find roughly similar results with studies considering the composition effect itself, might mean that the distinction is immaterial. Such studies, however, suggest a variety of mechanisms to explain this relationship: reduced social cohesion, decreased contact, increased intolerance, conflict between natives and recent movers, and confusion regarding appropriate norms to follow (Laurence and Bentley 2015; Oliver 2010; Putnam 2007; Taylor, Gottfredson, and Brower 1985). While many of these theories touch upon social identity theory and intergroup relations more generally as explanations for their results, none have tested it in this way before. Finding an explicit result for the

10,725 in the model, and therefore may capture some neighbourhood effects more directly.

concordance of individual and contextual characteristics lends great weight to the social identity explanation.

What these results point to perhaps most of all is the salience of 'hyperlocal' effects when we consider attachment to small geographic units. The vast majority of people in developed democracies are highly geographically immobile across their lives. Even given this, it is remarkable how some of the strongest effects for the UKHLS data come from extremely short distances: those who live very close to their work or who work from home, those who have close family members living a mere 15 or 30 minutes away. Clearly, when people think of attachment to their neighbourhood they are thinking primarily in terms of these distances. At the same time, it seems that these attachments, though easily broken, are quickly formed again. Residential lengths of even a year have a positive impact on attachment, when compared to those who have lived in their house less than a year. We see similar effects for commuting too. Longer distances will also be associated with travelling by car or public transport. Unlike walking and, to a lesser extent, cycling these modes of transport are also ones which allow for less engagement with the neighbourhood. Finally, while this evidence supports the majority of the literature in finding attachment to be highest among those who have lived in the area the longest (Kasarda and Janowitz 1974; Livingston, Bailey, and Kearns 2008), it also validates those few studies which find that attachment develops quickly (Bonaiuto *et al.* 1999).

These results are also significant in the evidence they provide for the persistence of the influence of fundamental social categories and, to a lesser extent, communitarian values in how we vote. Two mutually exclusive narratives have, since around the turn of the century, attempted to describe the path many developed

democracies have taken. The first emphasises the rise of more inter-connected, cosmopolitan societies: mobile, based on acquired rather than ascribed identities: in which social characteristics like class and ethnicity are of declining importance (Beck 2006; Clark and Lipset 1991; Dalton 2008; Inglehart and Welzel 2014). At the same time, research points us the other way: to the persistence of communitarian values—family, place and small, tight-knit communities—and of fundamental social categories, such as race, class and gender, in shaping our politics and societies (Cramer 2016; Enos 2017; Evans and Tilley 2017; Fitzgerald 2018; Goodhart 2017; Hochschild 2016). This paper lends much weight to the second narrative. There is nuance, however. Evidence for the effect of contextual settlement characteristics in particular is inconsistent. And, while bonds to place are easily broken by mobility and distance, they are also quickly formed. It does not take long to live in a place before we develop attachment to it.

The vast majority of people in developed democracies are locally attached. We are living in an era so clearly shaped politically and socially by this identity we have been studying here. It is therefore vital that we understand it better. I have done that: providing a more robust and comprehensive understanding of it than we previously had. These findings also have important implications for what we focus on when we study this identity. While research into place-based social identities has historically focused on radical right voting (Bolet 2021; Cramer 2016; Fitzgerald 2018; Ziblatt, Hilbig, and Bischof 2020), the variety of predictors established here points us to a far richer range of effects that this identity may have. They also point us to the primacy of attachment to very small geographic units, previously greatly understudied in quantitative political science.

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Appendix †

Notes on methodology

European Values Study

- European Commission data the period of the EVS survey was not complete for every district in the model; these cases I left missing.
- NUTS-3 districts are revised every three years. The EVS does not provide codes for the same revision period; for instance, most codes are for the 2006–2010 period, though a small number are for 2010–2013. Commission data similarly is not provided based on NUTS codes for the same revision period. Where there were discrepancies in matching, I matched codes from different periods on a best-fit basis, preferencing codes from the Commission (i.e. changing those few EVS codes which did not match to the census data). Since the data is incomplete, this was an approximate match, not summing or dividing statistics based on mergers or splits of geographies. The Commission does also not provide any detailed data on the suitability of the match from one set to the next. Selecting from the first year of EVS fieldwork for that country. In practice, boundaries did not change significantly over the period.

UK Household Longitudinal Study

- Data access restrictions for assigning respondents to neighbourhoods prevented me from using all the waves in the UKHLS for which the response variable was available.

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† 'No place like home: The causes of attachment to neighbourhood', Albert Ward, Presented at FILL IN, DATE

- Some questions—those measuring distance the respondents lived from their parents or adult children—were not asked in wave 6. Where respondents hadn't moved house at any point between the two waves, I imputed values from the prior wave. If a respondent had moved house in that period, I matched values from the following wave. Note that the UKHLS only flags postcode changes, not actual address changes, so this does not capture intra-postcode moves, although this should not matter since these would be very short distances. This matching method imputes NA for any respondents who dropped out of the survey at any wave between the two waves of interest, where there are waves in-between. If a respondent had again moved in the period after, I took the mean of the response for the prior and post wave, rounded to the nearest integer—since integers correspond to broad time categories: less than 15 minutes, 15 to 30 minutes and so on—since these individuals who move house multiple times are potentially an important case to study, and therefore it would be inappropriate to systematically remove them from the analysis.

- The main disadvantage of using LSOAs is that, in some cases 1,500 is larger than some might consider their neighbourhood and so many therefore may mis-estimate the effect of contextual data, particularly for the 'homogeneity' hypotheses. Unfortunately, there are no practical alternatives to this. For instance, an alternative might be to use postcodes, the UK's smallest postal geography units. This had the advantage of being small, with a mean population of around 43 for the 2011 census, and recognisable to most people. However, this comes with significant disadvantages. Firstly, while a smaller population may be closer to what some consider their neighbourhood size, it may also be too small for what some consider it to be. The next level up, postcode districts, have a population larger than LSOAs (mean = 6,979), and suffer from the same variability issues as full postcodes ([121, 25,962], s.d. = 3,777). Secondly, while mean postcode population is small, it varies too greatly ([1, 3,215], s.d. = 39). Most significantly, however, is that these are first and foremost postal geographies, and so do not necessarily conform to obvious physical boundaries that might define neighbourhoods. Data linkage would also have been considerably more difficult: postcodes are subject to change every six months by Royal Mail—which would have presented difficulties over the whole panel, particularly in areas with high-turnover—do not conform to other statistical or government geographies and do not always have data available at that level. LSOAs are arguably close to the conceptualisation of a 'neighbourhood' which I focus on, one which allows people to live out their daily working and domestic lives, which is more likely to contain the amenities and service provision that they use on a daily basis.

- For house moves, where participants did not have a valid address for either the relevant or preceding wave, this is coded as missing.
- For length of residence, if there is a significant gap between residency periods—as interpreted by the respondent—at the same address, this applies to the most recent period.
- For distance to parents and adult children, the variable is again not constructed from actual addresses, rather a question which offers six approximate time periods to respondents. In order to compare these, I study each in separate subsets of the survey containing only respondent with adult children and parents living outside the house, respectively.
- Adult children are those older than 16 living outside of the household. Unlike relationships within the household, the UKHLS does not require respondents to specify between different types of parenthood outside of the household, such as between foster, step or biological. As such, whom the respondent considers their children or parents is left to them. Where there are conflicting relationships, such as if a respondent has both a biological and step father alive, the distance is to the one the respondent has the most contact with.
- Census settlement type is a categorisation on output area, the census geography below LSOA, although the categorisation takes into account contextual information about surrounding output areas. In practice, it is unlikely there will be much variation between LSOA and output area.
- For internal migration, I do not include internal migrants within the neighbourhood, or those with no usual address. Babies under one years old take the migration characteristics of their next of kin. If this is a migrant, then half are assigned as migrants and the other half to 'not moved', to take account of the fact that they would not have been born at the time the kin moved. Note also that, since this is UK census data, emigration figures do not include those who moved out of the UK. Unfortunately, migration statistics are sometimes only available at the Output Area (OA) level geography, one below LSOA. This means that, in these cases when figures are amalgamated to LSOA, some migration and emigration statistics will apply to people who only moved into or out of the OA but within the LSOA.
- Note that harmonisation of statistics collection across the UK is notoriously poor, with different statistical agencies for each constituent part of the country: England and Wales, Scotland and Northern Ireland. As such, it is impossible to obtain identical census outputs in all cases. See Table A1 for details of discrepancies. This was mostly mitigated by constructing broad ethnic and class groups.

- In households with joint owners or renters, the HRP is the one with the highest income; if income is the same, it is the eldest of the two. In households with a sole occupant that person is the HRP. If there is more than one family in a household, the HRP will be chosen from among the HRPs for the different families, in accordance with a set hierarchy. See (Office for National Statistics 2014, page 22). For the first wave of the survey in 1998, fed forward for those respondents still present by the waves studied, this is the person responsible for the rent or mortgage; in the case of joint responsibility, the eldest of the two.
- The NS-SeC classification was was not available for Scotland in the 2001 census. Instead, I use approximate social grade, a related measure. See Table A1.
- Full-time students, and those out of the labour market for extended periods—those who have never worked or are involuntarily long-term unemployed for more than a year—are not included in the analysis using the NS-SeC, in order to reflect how data from the census is coded.
- I derive ethnicity in the UKHLS from multiple sources—from the adult and youth questionnaire, as reported by other household members, that of biological parents—giving priority to self-reported information.
- For the 'white' ethnicity category, white travellers, Irish travellers and gypsies have their own category in the 2011 census, in 2001 they are listed as white, and so I have done so across the whole panel.
- Note that, because the 'mixed' ethnicity category was not broken down further in census outputs, and in order not to make assumptions about ethnic category based on mixed category, I include 'mixed' as its own group. I record respondents as matching the ethnic group of their area using these groupings.
- Note that there are many neighbourhoods in which there is no majority, and a few where there is no plurality (if groups are of exactly equal size.

Distance to parents and adult children questions

Respondents are presented with the following questions:

> *About how long would it take you to get to where your [mother / father] lives? Think of the time it usually takes door to door. About how long would*
>
> *it take you to get to where your son/daughter (aged 16 or over) lives? Think of the time it usually takes door to door.*

Respondents answer from a list of options: Less than 15 minutes; between 15-30 mins; between 30 mins - 1hour; between 1 and 2 hours; more than 2 hours; lives/works abroad

UKHLS local attachment question

Respondents are presented with the following question:

> *Here are some statements about neighbourhoods. Please answer how strongly you agree or disagree with each statement.*
>
> *I feel like I belong to this neighbourhood.*

Responses given on an inverted five-point Likert scale.

Table A1: Outlier census or linked data

Desired data	*Issue / Selected data*
Rural-urban indicators for Northern Ireland	Not available
Turnover by LSOA (or equivalent) for 2011 census.	Only available by output area ('small area' for Northern Ireland). When figures are amalgamated to LSOA, some migration and emigration statistics will apply to people who only moved into or out of the OA but within the LSOA.
Harmonised NS-SeC class schema for 2011 census	Some UK nations differ in how they classify residual occupational classes, notably students and the long term unemployed, in outputs. I have chosen to exclude all residual classes from the analysis.
Harmonised ethnic categories for 2011 census	Occasional discrepancy in ethnic categories between the UK nations. For instance, some define travellers as 'white' in outputs, while some do not. Amalgamated broad ethnic categories in order to overcome this.

Table A2: Harmonising census settlement classification for England and Wales, 2011 census

Settlement classification (England and Wales)	*Final classification*
A1 Major conurbation	1 - Large urban
B1 Minor conurbation C1 City and town - less sparse C2 City and town - sparse	2 - Urban
D1 Town and fringe - less sparse D2 Town and fringe - sparse	2 - Town and fringe
E1 Village - less sparse E2 Village - sparse	3 - Village
F1 Hamlet and isolated dwellings - less sparse F2 Hamlet and isolated dwellings - less sparse	4 - Isolated dwellings

Note: The division between the three 'rural' categories for England and Wales (2 to 4 and 6 to 8), is not based on population size but density, local context, and isolation from other settlements.

Table A3: Harmonising census settlement classification for Scotland, 2011 census

Settlement classification (Scotland)	*Final classification*
1 - Large Urban Area: Settlement of over 125,000 people	1 - Large urban
2 - Other Urban Area: Settlement of 10,000 to 125,000 people	2 - Urban
3 - Accessible Small Town: Settlement of 3,000 to 10,000 people, within 30 minutes drive of a settlement of 10,000 or more 4 - Remote Small Town: Settlement of 3,000 to 10,000 people, with a drive time of 30 to 60 minutes to a settlement of 10,000 or more 5 - Very Remote Small Town: Settlement of 3,000 to 10,000 people, with a drive time of over 60 minutes to a settlement of 10,000 or more	3 - Town and fringe
6 - Accessible Rural: Settlement of less than 3,000 people, within 30 minutes drive of a settlement of 10,000 or more 7 - Remote Rural: Settlement of less than 3,000 people, with a drive time of 30 to 60 minutes to a settlement of 10,000 or more	4 - Village
8 - Very Remote Rural: Settlement of less than 3,000 people, with a drive time of over 60 minutes to a settlement of 10,000 or more	5 - Isolated dwellings

Note: The distinction between settlements smaller than 3,000 residents for Scotland is based on travel time to the nearest large settlement. Therefore, the division into villages and isolated settlements is imperfect.

Table A4: National proportions of ethnic groups at the 2011 census

	Number	*Proportion*
White: Total	55,073,145	0.872
White: British	52,320,080	0.828
White: Irish	*Included above*	*Included above*
White: Gypsy / Traveller / Irish Traveller	62,981	0.001
White: Other	2,690,084	0.043
Asian / Asian British: Total	4,373,661	0.069
Asian / Asian British: Indian	1,452,156	0.023
Asian / Asian British: Pakistani	1,174,602	0.019
Asian / Asian British: Bangladeshi	451,741	0.007
Asian / Asian British: Chinese	433,444	0.007
Asian / Asian British: Other Asian	861,718	0.014
Black / Black British: Total	1,905,506	0.03
Black / Black British: African	1,021,973	0.016
Black / Black British: Caribbean	599,197	0.009
Black / Black British: Other Black	284,336	0.005
Mixed / British Mixed	1,250,414	0.02
Other: Total	580,049	0.009

Source: ONS 2013b

Table A5: Predictors of belonging to neighbourhood, asynchronous model full

	Model 1	Model 2
DV: Neighbourhood attachment		
Socio-demographic		
18 to 24	−1.04 (0.08)***	−1.00 (0.07)***
25 to 39	−0.59 (0.06)***	−0.62 (0.06)***
40 to 64	−0.37 (0.05)***	−0.38 (0.05)***
Female	0.11 (0.03)***	0.12 (0.03)***
School leaver	−0.13 (0.07)	−0.14 (0.06)*
Degree	−0.08 (0.07)	−0.09 (0.07)
Manager	0.10 (0.04)*	0.09 (0.04)*
Intermediate	−0.01 (0.05)	0.02 (0.04)
Black	0.08 (0.11)	0.06 (0.10)
South Asian	0.23 (0.09)**	0.25 (0.08)***
Asian	0.17 (0.15)	0.12 (0.14)
Mixed ethnicity	−0.06 (0.13)	0.01 (0.12)
Other ethnicity	−0.38 (0.22)	−0.30 (0.22)
Individual level		
Lagged No. of own children in house	0.04 (0.03)	0.03 (0.03)
Lagged 5-10 min commute	−0.02 (0.06)	−0.01 (0.06)
Lagged 10-30 min commute	−0.10 (0.04)*	−0.10 (0.04)*
Lagged 30+ min commute	−0.09 (0.05)	−0.11 (0.05)*
Lived 1-2 years in house	0.42 (0.09)***	
Lived 2-3 years in house	0.43 (0.10)***	
Lived 3-5 years in house	0.32 (0.08)***	
Lived 5-10 years in house	0.36 (0.08)***	
Lived 10+ years in house	0.47 (0.07)***	
Moved 0-15 km		−0.23 (0.08)**
Moved 15-30 km		−0.17 (0.20)
Moved 30-60 km		−0.57 (0.27)*
Moved 60+ km		0.76 (0.16)***
Lagged Match majority class	0.09 (0.04)*	0.11 (0.04)**
Lagged Match abv avg ethnicity	0.07 (0.05)	0.08 (0.04)
Lagged No. of family in house	0.11 (0.04)**	0.09 (0.04)*
Household level		
Lagged Own home	0.16 (0.04)***	0.19 (0.04)***

Contd.

Table A5: Predictors of belonging to neighbourhood, asynchronous model full

Neighbourhood level		
Lagged Large urban	0.02 (0.11)	0.03 (0.11)
Lagged Urban	−0.11 (0.10)	−0.10 (0.10)
Lagged Town and fringe	0.07 (0.10)	0.06 (0.10)
Lagged Village	0.16 (0.10)	0.18 (0.10)
Lagged log(Population density)	−0.02 (0.02)	−0.06 (0.10)
Lagged log(Population turnover)	−0.02 (0.04)	−0.03 (0.04)
Lagged Neighbourhood attachment	1.87 (0.03)***	1.88 (0.03)***
(Intercept)	−0.63 (0.15)***	−0.25 (0.13)
Log Likelihood	−12466.28	−13372.46
N (Individuals)	24133	25813

Standard errors in parentheses. *Ref categories*: Age (65+);
Class (Routine); Education (No qualifications); Ethnicity (White);
Commute (¡5 min / wfh); Residential length (¡ 1 yr);
Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A6: Testing alternative population dynamics (EVS)

	Model 1	Model 2
DV: Attachment to locality		
Socio-demographic		
18 to 24	−0.50 (0.07)***	−0.50 (0.07)***
25 to 39	−0.26 (0.04)***	−0.26 (0.04)***
40 to 64	−0.22 (0.04)***	−0.22 (0.04)***
Female	0.16 (0.03)***	0.16 (0.03)***
Manager	−0.12 (0.04)**	−0.12 (0.04)**
Intermediate	−0.00 (0.05)	−0.00 (0.05)
School leaver	−0.17 (0.05)***	−0.17 (0.05)***
Degree	−0.48 (0.06)***	−0.48 (0.06)***
Individual level		
No. of own children in house	0.07 (0.02)**	0.07 (0.02)**
No. of family members in house	0.02 (0.03)	0.02 (0.03)
Match majority class in district	0.09 (0.04)*	0.09 (0.04)*
District level		
Large urban	−0.15 (0.05)**	−0.14 (0.05)**
Urban	−0.12 (0.04)**	−0.12 (0.04)**
Town and fringe	−0.06 (0.05)	−0.05 (0.05)
Village	−0.09 (0.05)	−0.09 (0.05)
log(Population density)	−0.31 (0.09)***	−0.31 (0.09)***
log(Net migration)	−0.02 (0.10)	
log(Crude rate of net migration)		0.05 (0.08)
(Intercept)	1.26 (0.13)***	1.23 (0.13)***
Log Likelihood	−17887.15	−17886.98
N (Individuals)	29604	29604
N (Districts)	746	746
N (Countries)	29	29

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A7: Distance to parents and adult children (UKHLS Wave 9)

	Model 1	Model 2
DV: Neighbourhood attachment		
Socio-demographic		
18 to 24	−9.36 (36.95)	−0.75 (0.19)***
25 to 39	−0.97 (0.31)**	−0.51 (0.17)**
40 to 64	−0.44 (0.10)***	−0.03 (0.16)
Female	0.13 (0.07)	0.25 (0.06)***
School leaver	−0.34 (0.13)**	0.26 (0.21)
Degree	−0.25 (0.14)	0.33 (0.21)
Manager	0.05 (0.10)	0.16 (0.08)*
Intermediate	−0.05 (0.11)	0.16 (0.09)
Black	0.05 (0.26)	0.04 (0.17)
South Asian	0.55 (0.28)*	0.20 (0.13)
Asian	0.09 (0.49)	0.41 (0.26)
Mixed	0.17 (0.37)	−0.23 (0.20)
Other ethnicity	0.46 (0.65)	−0.33 (0.41)
Individual level		
No. of own children in house	−0.14 (0.12)	0.26 (0.05)***
Five to 10 minutes commute	−0.43 (0.15)**	−0.02 (0.10)
10 to 30 minutes commute	−0.31 (0.11)**	−0.11 (0.07)
More than 30 minutes commute	−0.60 (0.14)***	−0.22 (0.08)**
Lived in house 1 to 2 years	0.51 (0.25)*	0.13 (0.14)
Lived in house 2 to 3 years	0.98 (0.27)***	0.40 (0.14)**
Lived in house 3 to 5 years	0.56 (0.22)*	0.16 (0.13)
Lived in house 5 to 10 years	0.58 (0.21)**	0.26 (0.12)*
Lived in house more than 10 years	1.05 (0.19)***	0.38 (0.12)**
Class matches majority group	0.28 (0.10)**	0.15 (0.08)
Ethnicity matches groups above nat avg	0.09 (0.12)	0.11 (0.09)
Household level		
Owns home	0.20 (0.10)	0.52 (0.08)***
No. of family members in house	0.30 (0.26)	0.33 (0.13)*
Neighbourhood level		
Large Urban	−0.13 (0.20)	−0.43 (0.18)*
Urban	−0.35 (0.19)	−0.69 (0.17)***
Town and fringe	0.12 (0.21)	−0.17 (0.19)
Village	0.14 (0.22)	−0.05 (0.20)
log(Population density)	−0.04 (0.04)	−0.03 (0.03)
log(Population turnover)	−0.05 (0.05)	−0.02 (0.03)

Contd.

Table A7: Distance to parents and adult children (UKHLS Wave 9)

Adult children 15 to 30 minutes away	−0.22 (0.10)*	
Adult children 30 min to 1 hr away	−0.38 (0.12)**	
Adult children more than 1hr away	−0.36 (0.10)***	
Parents 15 to 30 min away		−0.27 (0.08)**
Parents 30 min to 1hr away		−0.38 (0.10)***
Parents more than 1 hr away		−0.25 (0.07)***
(Intercept)	0.69 (0.42)	−0.29 (0.35)
Log Likelihood	−3075.08	−4541.08
N (Individuals)	5382	7065
N (Households)	4038	4972
N (Neighbourhoods)	3621	4488

Standard errors in parentheses. *Ref categories*: Age (65+);
Class (Routine); Education (No qualifications); Ethnicity (White);
Commute (¡5 min / wfh); Residential length (¡ 1 yr);
Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A8: Predictors of belonging to neighbourhood, lagged DV

	Model 1	Model 2
DV: Neighbourhood attachment		
Socio-demographic		
18 to 24	−0.98 (0.08)***	−0.93 (0.07)***
25 to 39	−0.61 (0.06)***	−0.62 (0.06)***
40 to 64	−0.36 (0.05)***	−0.36 (0.05)***
Female	0.12 (0.03)***	0.13 (0.03)***
School leaver	−0.14 (0.07)*	−0.16 (0.06)*
Degree	−0.10 (0.07)	−0.10 (0.07)
Manager	0.07 (0.04)	0.06 (0.04)
Intermediate	−0.01 (0.04)	0.00 (0.04)
Black	0.08 (0.10)	0.08 (0.10)
South Asian	0.17 (0.08)*	0.20 (0.08)*
Asian	0.13 (0.14)	0.10 (0.13)
Mixed ethnicity	−0.01 (0.12)	0.08 (0.12)
Other ethnicity	−0.41 (0.21)	−0.42 (0.20)*
Individual level		
No. of own children in house	0.12 (0.03)***	0.10 (0.03)***
5-10 min commute	−0.09 (0.06)	−0.11 (0.05)*
10-30 min commute	−0.13 (0.04)**	−0.14 (0.04)***
30+ min commute	−0.23 (0.05)***	−0.24 (0.05)***
Lived 1-2 years in house	0.42 (0.09)***	
Lived 2-3 years in house	0.43 (0.09)***	
Lived 3-5 years in house	0.35 (0.08)***	
Lived 5-10 years in house	0.38 (0.07)***	
Lived 10+ years in house	0.48 (0.07)***	
Moved 0-15 km		−0.22 (0.07)**
Moved 15-30 km		−0.25 (0.19)
Moved 30-60 km		−0.62 (0.26)*
Moved 60+ km		−0.75 (0.15)***
Match majority class	0.11 (0.04)**	0.12 (0.04)**
Match abv avg ethnicity	0.12 (0.04)**	0.12 (0.04)**
No. of family in house	0.18 (0.04)***	0.16 (0.04)***
Household level		
Own home	0.23 (0.04)***	0.24 (0.04)***

Contd.

Table A8: Predictors of belonging to neighbourhood, lagged DV

Neighbourhood level		
Large urban	0.01 (0.10)	−0.01 (0.10)
Urban	−0.15 (0.10)	−0.14 (0.09)
Town and fringe	0.11 (0.10)	0.16 (0.09)
Village	0.15 (0.10)	0.16 (0.09)
log(Population density)	−0.03 (0.02)	−0.03 (0.01)*
log(Population turnover)	−0.08 (0.04)	−0.09 (0.04)*
Lagged variables		
Lagged neighbourhood attachment	1.85 (0.03)***	1.86 (0.03)***
(Intercept)	−0.83 (0.14)***	−0.39 (0.12)**
Log Likelihood	−13227.03	−14363.33
N (Individuals)	25598	27711

Standard errors in parentheses. *Ref categories*: Age (65+); Class (Routine); Education (No qualifications); Ethnicity (White); Commute (¡5 min / wfh); Residential length (¡ 1 yr); Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A9: Predictors of belonging to neighbourhood, hierarchical model on full panel

	Model 1	Model 2
DV: Neighbourhood attachment		
Socio-demographic		
18 to 24	−1.04 (0.05)***	−1.04 (0.05)***
25 to 39	−0.83 (0.04)***	
40 to 64	−0.49 (0.04)***	
Female	0.14 (0.02)***	
School leaver	−0.36 (0.05)***	
Degree	−0.28 (0.05)***	
Manager	0.04 (0.03)	
Intermediate	0.00 (0.03)	
Black	0.09 (0.07)	
South Asian	0.34 (0.06)	
Asian	0.14 (0.10)	
Mixed ethnicity	−0.12 (0.09)	
Other ethnicity	−0.13 (0.16)	
Individual level		
No. of own children in house	0.22 (0.02)***	
5-10 min commute	−0.06 (0.04)	
10-30 min commute	−0.17 (0.03)***	
30+ min commute	−0.26 (0.04)***	
Lived 1-2 years in house	0.18 (0.06)**	
Lived 2-3 years in house	0.29 (0.06)***	
Lived 3-5 years in house	0.33 (0.06)***	
Lived 5-10 years in house	0.43 (0.05)***	
Lived 10+ years in house	0.69 (0.05)***	
Moved 0-15 km		
Moved 15-30 km		
Moved 30-60 km		
Moved 60+ km		
Match majority class	0.17 (0.03)***	
Match abv avg ethnicity	0.19 (0.03)**	
No. of family in house	0.08 (0.03)**	
Household level		
Own home	0.35 (0.03)***	

Contd.

Table A9: Predictors of belonging to neighbourhood, hierarchical model on full panel

Neighbourhood level		
Large urban	−0.01 (0.08)	−0.01 (0.08)
Urban	−0.24 (0.08)**	
Town and fringe	0.08 (0.08)	
Village	0.14 (0.08)	
log(Population density)	−0.08 (0.01)***	
log(Population turnover)	−0.17 (0.03)***	
(Intercept)	0.49 (0.14)***	
Log Likelihood	−31359.84	
N (Individuals)	52175	
N (Households)	32098	
N (Neighbourhoods)	25241	

Standard errors in parentheses. *Ref categories*: Age (65+); Class (Routine); Education (No qualifications); Ethnicity (White); Commute (¡5 min / wfh); Residential length (¡ 1 yr); Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A10: Predictors of belonging to neighbourhood, synchronous model with all predictors lagged

	Model 1	Model 2
DV: Neighbourhood attachment		
Socio-demographic		
18 to 24	−0.97 (0.09)***	−0.94 (0.08)***
25 to 39	−0.60 (0.07)***	−0.63 (0.06)***
40 to 64	−0.34 (0.05)***	−0.34 (0.05)***
Female	0.12 (0.03)***	0.13 (0.03)***
School leaver	−0.14 (0.07)*	−0.16 (0.07)*
Degree	−0.09 (0.07)	−0.10 (0.07)
Manager	0.08 (0.04)	0.08 (0.04)
Intermediate	−0.01 (0.05)	0.01 (0.05)
Black	0.08 (0.11)	0.07 (0.10)
South Asian	0.17 (0.09)	0.19 (0.09)*
Asian	0.19 (0.15)	0.15 (0.14)
Mixed ethnicity	−0.06 (0.13)	0.04 (0.13)
Other ethnicity	−0.34 (0.23)	−0.28 (0.23)
Individual level		
No. of own children in house	0.22 (0.05)***	0.21 (0.05)***
5-10 min commute	−0.11 (0.07)	−0.11 (0.06)
10-30 min commute	−0.13 (0.05)**	−0.14 (0.05)**
30+ min commute	−0.23 (0.06)***	−0.25 (0.06)***
Lived 1-2 years in house	0.40 (0.10)***	
Lived 2-3 years in house	0.39 (0.10)***	
Lived 3-5 years in house	0.30 (0.09)***	
Lived 5-10 years in house	0.34 (0.08)***	
Lived 10+ years in house	0.46 (0.08)***	
Moved 0-15 km		−0.16 (0.08)
Moved 15-30 km		−0.29 (0.21)
Moved 30-60 km		−0.81 (0.29)**
Moved 60+ km		−0.83 (0.17)***
Match majority class	0.15 (0.07)*	0.13 (0.07)*
Match abv avg ethnicity	0.31 (0.11)**	0.28 (0.11)**
No. of family in house	0.31 (0.06)***	0.26 (0.06)***
Household level		
Own home	0.20 (0.08)*	0.20 (0.08)*
Neighbourhood level		
Large urban	−0.34 (0.24)	−0.35 (0.24)
Urban	−0.28 (0.21)	−0.29 (0.20)
Town and fringe	0.19 (0.20)	0.13 (0.20)

Contd.

Table A10: Predictors of belonging to neighbourhood, synchronous model with all predictors lagged

Village	0.03 (0.19)	−0.02 (0.18)
log(Population density)	−0.07 (0.03)*	−0.08 (0.03)*
log(Population turnover)	−0.07 (0.09)	−0.11 (0.09)
Lagged variables		
Lagged Neighbourhood attachment	1.90 (0.03)***	1.90 (0.03)***
Lagged No. of own children in house	−0.13 (0.05)*	−0.13 (0.05)*
Lagged 5-10 min commute	0.03 (0.06)	0.03 (0.06)
Lagged 10-30 min commute	−0.04 (0.05)	−0.04 (0.05)
Lagged 30+ min commute	0.03 (0.06)	0.01 (0.06)
Lagged Match majority class	−0.04 (0.07)	−0.01 (0.07)
Lagged Match abv avg ethnicity	−0.19 (0.11)	−0.16 (0.11)
Lagged Own home	−0.00 (0.08)	0.04 (0.08)
Lagged No. of family in house	−0.15 (0.06)*	−0.12 (0.06)*
Lagged Large urban	0.38 (0.25)	0.40 (0.24)
Lagged Urban	0.16 (0.21)	0.19 (0.21)
Lagged Town and fringe	−0.08 (0.20)	−0.04 (0.20)
Lagged Village	0.18 (0.19)	0.23 (0.19)
Lagged log(Population density)	0.05 (0.03)	0.05 (0.03)
Lagged log(Population turnover)	0.02 (0.09)	0.05 (0.03)
(Intercept)	−0.78 (0.15)***	−0.40 (0.13)**
Log Likelihood	−11911.80	−12790.11
N (Individuals)	23327	24946

Standard errors in parentheses. *Ref categories*: Age (65+);
Class (Routine); Education (No qualifications); Ethnicity (White);
Commute (¡5 min / wfh); Residential length (¡ 1 yr);
Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A11: Predictors of belonging to locality full model (EVS)

DV: Attachment to locality	Model 1	Model 2	Model 3	Model 4	Model 5
Individual level					
Age (Ref: 65+)					
18 to 24	−0.44 (0.05)***	−0.43 (0.06)***	−0.44 (0.06)***	−0.46 (0.06)***	−0.50 (0.07)***
25 to 39	−0.23 (0.04)***	−0.26 (0.04)***	−0.26 (0.04)***	−0.27 (0.04)***	−0.26 (0.04)***
40 to 64	−0.18 (0.03)***	−0.21 (0.03)***	−0.21 (0.03)***	−0.21 (0.03)***	−0.22 (0.04)***
Female	0.15 (0.02)***	0.14 (0.02)***	0.14 (0.02)***	0.14 (0.02)***	0.16 (0.03)***
Education (Ref: No quals)					
School leaver	−0.19 (0.04)***	−0.19 (0.05)***	−0.18 (0.05)***	−0.19 (0.05)***	−0.17 (0.05)***
Degree	−0.50 (0.05)***	−0.52 (0.05)***	−0.52 (0.05)***	−0.52 (0.05)***	−0.48 (0.06)***
Occupation (Ref: Routine)					
Manager	−0.17 (0.03)***	−0.08 (0.04)*	−0.09 (0.04)*	−0.08 (0.04)*	−0.12 (0.04)**
Intermediate professions	−0.05 (0.03)	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	−0.00 (0.05)
No. of own children in house		0.07 (0.02)***	0.07 (0.02)***	0.07 (0.02)***	0.07 (0.02)**
Match majority class in district		0.13 (0.04)***		0.13 (0.04)***	0.09 (0.04)*
Match plurality class in district			0.10 (0.03)**		
No. of family members in house				0.03 (0.03)	0.02 (0.03)
District level					
Urbanisation (Ref: Isolated)					
Large urban					−0.15 (0.05)**
Urban					−0.12 (0.04)**
Town and fringe					−0.06 (0.05)
Village					−0.09 (0.05)
log(Population density)					−0.31 (0.09)***
log(Net migration)					−0.02 (0.10)
(Intercept)	1.14 (0.11)***	1.05 (0.11)***	1.05 (0.12)***	1.05 (0.11)***	1.26 (0.13)***
Log Likelihood	−21634.46	−20666.98	−20668.51	−20666.57	−17887.15
N (Individuals)	35747	34163	34163	34163	29604
N (Districts)	845	845	845	845	746
N (Countries)	31	31	31	31	29

Standard errors in parentheses.
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A12: Predictors of belonging to neighbourhood full model (UKHLS wave 9)

DV: Neighbourhood attachment	Model 1	Model 2	Model 3	Model 4	Model 5
Socio-demographic					
18 to 24	−1.33 (0.07)***	−1.19 (0.10)***	−1.25 (0.09)***	−1.17 (0.10)***	−1.15 (0.10)***
25 to 39	−1.24 (0.06)***	−1.03 (0.09)***	−1.21 (0.08)***	−0.99 (0.09)***	−0.94 (0.09)***
40 to 64	−0.59 (0.05)***	−0.55 (0.07)***	−0.59 (0.06)***	−0.53 (0.07)***	−0.52 (0.07)***
Female	0.18 (0.03)***	0.19 (0.04)***	0.19 (0.04)***	0.20 (0.04)***	0.19 (0.04)***
School leaver	−0.23 (0.07)***	−0.27 (0.09)**	−0.32 (0.09)***	−0.29 (0.09)**	−0.30 (0.10)**
Degree	−0.16 (0.07)*	−0.16 (0.10)	−0.22 (0.09)*	−0.20 (0.10)*	−0.21 (0.10)*
Manager	0.18 (0.05)***	0.17 (0.06)**	0.16 (0.05)**	0.12 (0.06)*	0.09 (0.06)
Intermediate	0.10 (0.05)	0.08 (0.07)	0.09 (0.06)	0.03 (0.07)	0.01 (0.07)
Black	0.02 (0.10)	−0.17 (0.13)	−0.10 (0.11)	−0.06 (0.13)	−0.03 (0.14)
South Asian	0.51 (0.08)***	0.19 (0.10)	0.29 (0.09)**	0.19 (0.10)	0.20 (0.11)
Asian	0.09 (0.17)	0.13 (0.20)	0.14 (0.18)	0.15 (0.20)	0.16 (0.21)
Mixed	−0.21 (0.13)	−0.20 (0.16)	−0.08 (0.15)	−0.17 (0.16)	−0.16 (0.16)
Other ethnicity	−0.51 (0.23)*	−0.70 (0.33)*	−0.60 (0.27)*	−0.66 (0.33)*	−0.62 (0.33)
Individual level					
No. of own children in house		0.26 (0.05)***	0.25 (0.04)***	0.27 (0.05)***	0.27 (0.05)***
Five to 10 minutes commute		−0.13 (0.08)	−0.15 (0.08)*	−0.13 (0.08)	−0.09 (0.09)
10 to 30 minutes commute		−0.19 (0.06)**	−0.23 (0.05)***	−0.19 (0.06)**	−0.18 (0.06)**
More than 30 minutes commute		−0.31 (0.07)***	−0.36 (0.06)***	−0.32 (0.07)***	−0.31 (0.07)***
Class matches majority group		0.17 (0.06)**	0.21 (0.06)***	0.17 (0.06)**	0.19 (0.06)**
Ethnicity matches groups above nat avg		0.27 (0.06)***	0.32 (0.06)***	0.24 (0.06)***	0.16 (0.07)*

Contd.

Table A12: Predictors of belonging to neighbourhood full model (UKHLS wave 9)

Lived in house 1 to 2 years		0.27 (0.12)*		0.22 (0.12)	0.27 (0.12)*
Lived in house 2 to 3 years		0.54 (0.12)***		0.50 (0.12)***	0.50 (0.13)***
Lived in house 3 to 5 years		0.35 (0.11)**		0.27 (0.11)*	0.29 (0.11)*
Lived in house 5 to 10 years		0.49 (0.10)***		0.42 (0.10)***	0.45 (0.11)***
Lived in house more than 10 years		0.81 (0.10)***		0.69 (0.10)***	0.71 (0.10)***
Moved 0 to 15 km from previous wave			−0.42 (0.11)***		
Moved 15 to 30 km from previous wave			−0.42 (0.28)		
Moved 30 to 60 km from previous wave			−0.57 (0.39)		
Moved 60 km+ from previous wave			−0.88 (0.24)***		
No. of family members in house			0.24 (0.11)*	0.23 (0.11)*	0.25 (0.11)*
Household level					
Owns home				0.35 (0.06)***	0.34 (0.06)***
Neighbourhood level					
Large urban					−0.16 (0.13)
Urban					−0.41 (0.13)***
Town and fringe					0.06 (0.14)
Village					0.13 (0.15)
log(Population density)					−0.03 (0.02)
log(Population turnover)					−0.05 (0.03)
(Intercept)	1.24 (0.07)***	0.39 (0.14)**	1.13 (0.10)***	0.04 (0.18)	0.49 (0.23)*
Log Likelihood	−12811.87	−8605.65	−9732.86	−8557.90	−8270.70
N (Individuals)	20298	13916	15703	13872	13455
N (Households)	11863	8682	9402	8652	8376
N (Neighbourhoods)	9330	7287	7700	7266	7038

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Ethnicity (White); Commute (¡5 min / wfh); Residential length (¡ 1 yr); Mobility (Not moved); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A13: Predictors of belonging to neighbourhood: homogeneity (UKHLS Wave 9)

DV: Neighbourhood attachment	Model 1	Model 2	Model 3
Socio-demographic			
18 to 24	−1.15 (0.10)***	−1.16 (0.10)***	−1.16 (0.10)***
25 to 39	−0.94 (0.09)***	−0.94 (0.09)***	−0.96 (0.09)***
40 to 64	−0.53 (0.07)***	−0.53 (0.07)***	−0.54 (0.07)***
Female	0.19 (0.04)***	0.19 (0.04)***	0.19 (0.04)***
School leaver	−0.26 (0.10)**	−0.29 (0.10)**	−0.29 (0.10)**
Degree	−0.17 (0.10)	−0.21 (0.10)*	−0.21 (0.10)*
Manager	0.10 (0.06)	0.01 (0.07)	0.09 (0.06)
Intermediate	0.09 (0.07)	−0.04 (0.07)	0.01 (0.07)
Black	−0.01 (0.14)	−0.02 (0.14)	−0.07 (0.21)
South Asian	0.21 (0.11)	0.21 (0.11)	0.15 (0.19)
Asian	0.17 (0.21)	0.13 (0.21)	0.12 (0.24)
Mixed	−0.16 (0.16)	−0.17 (0.16)	−0.19 (0.20)
Other ethnicity	−0.59 (0.33)	−0.64 (0.33)	−0.69 (0.35)*
Individual level			
No. of own children in house	0.27 (0.05)***	0.27 (0.05)***	0.27 (0.05)***
Five to 10 minutes commute	−0.10 (0.09)	−0.09 (0.09)	−0.08 (0.09)
10 to 30 minutes commute	−0.18 (0.06)**	−0.17 (0.06)**	−0.16 (0.06)**
More than 30 minutes commute	−0.31 (0.07)***	−0.31 (0.07)***	−0.30 (0.07)***
Lived in house 1 to 2 years	0.28 (0.12)*	0.27 (0.12)*	0.26 (0.12)*
Lived in house 2 to 3 years	0.51 (0.13)***	0.50 (0.13)***	0.48 (0.13)***
Lived in house 3 to 5 years	0.30 (0.11)**	0.29 (0.11)*	0.28 (0.11)*
Lived in house 5 to 10 years	0.46 (0.11)***	0.44 (0.11)***	0.44 (0.11)***
Lived in house more than 10 years	0.72 (0.10)***	0.71 (0.10)***	0.70 (0.10)***
Class matches majority group			0.19 (0.06)**
Class matches plurality group	0.19 (0.05)***		

Contd.

Table A13: Predictors of belonging to neighbourhood: homogeneity (UKHLS Wave 9)

Manager, live in maj manager area		0.33 (0.08)***	
Intermediate, live in maj intermediate area		–	
Routine, live in maj routine area		−0.08 (0.10)	
Ethnicity match group above nat avg	0.16 (0.07)*	0.17 (0.07)*	0.16 (0.07)*
No. of family members in house	0.24 (0.11)*	0.23 (0.11)*	0.23 (0.11)*
Household level			
Owns home	0.34 (0.06)***	0.33 (0.06)***	0.35 (0.06)***
Neighbourhood level			
Large Urban	−0.15 (0.13)	−0.14 (0.13)	−0.16 (0.14)
Urban	−0.40 (0.13)**	−0.39 (0.13)**	−0.41 (0.13)**
Town and fringe	0.07 (0.14)	0.07 (0.14)	0.06 (0.14)
Village	0.13 (0.15)	0.15 (0.15)	0.14 (0.15)
log(Population density)	−0.03 (0.02)	−0.02 (0.02)	−0.03 (0.02)
log(Population turnover)	−0.05 (0.03)	−0.06 (0.03)*	−0.05 (0.03)
(Intercept)	0.39 (0.23)	0.54 (0.23)*	0.50 (0.24)*
Log Likelihood	−8269.78	−8265.57	−8269.85
N (Individuals)	13455	13455	13455
N (Households)	8376	8376	8376
N (Neighbourhoods)	7038	7038	7038

Standard errors in parentheses. Note: Majority intermediate homogeneity coefficient removed due to low variance. *Ref categories*: Age (65+); Class (Routine); Education (No qualifications); Ethnicity (White); Commute (¡5 min / wfh); Residential length (¡ 1 yr); Mobility (Not moved); Settlement (Isolated); Class homogeneity (Majority group does not match respondent / No maj group); Ethnic homogeneity (Resp group below avg in area)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A14: Ordered logit model (EVS)

DV: Attachment to locality (ordered)	Model 1	Model 2	Model 3	Model 4	Model 5
Socio-demographic					
18 to 24	−0.36 (0.05)***	−0.35 (0.05)***	−0.36 (0.05)***	−0.38 (0.05)***	−0.42 (0.06)***
25 to 39	−0.19 (0.03)***	−0.21 (0.03)***	−0.21 (0.03)***	−0.22 (0.04)***	−0.22 (0.04)***
40 to 64	−0.17 (0.03)***	−0.20 (0.03)***	−0.20 (0.03)***	−0.20 (0.03)***	−0.21 (0.03)***
Female	0.14 (0.02)***	0.13 (0.02)***	0.13 (0.02)***	0.13 (0.02)***	0.15 (0.02)***
Manager	−0.17 (0.03)***	−0.11 (0.03)***	−0.11 (0.03)**	−0.11 (0.03)***	−0.13 (0.04)***
Intermediate	−0.02 (0.03)	0.04 (0.04)	0.05 (0.04)	0.04 (0.04)	0.00 (0.04)
School leaver	−0.20 (0.04)***	−0.20 (0.04)***	−0.19 (0.04)***	−0.20 (0.04)***	−0.19 (0.04)***
Degree	−0.47 (0.05)***	−0.49 (0.05)***	−0.48 (0.05)***	−0.49 (0.05)***	−0.46 (0.05)***
Individual level					
No. of own children in house		0.05 (0.02)**	0.05 (0.02)**	0.06 (0.02)**	0.05 (0.02)*
Match majority class in district		0.06 (0.03)		0.06 (0.03)	0.04 (0.04)
Match plurality class in district			0.05 (0.03)		
No. of family members in house				0.03 (0.03)	0.01 (0.03)
District level					
Large urban					−0.15 (0.04)***
Urban					−0.10 (0.04)**
Town and fringe					−0.11 (0.05)*
Village					−0.08 (0.05)
log(Population density)					−0.34 (0.08)***
log(Net migration)					−0.04 (0.09)
0—0.5	−1.11 (0.10)***	−1.06 (0.10)***	−1.06 (0.11)***	−1.06 (0.10)***	−1.30 (0.13)***
0.5—1	−0.12 (0.10)	−0.06 (0.10)	−0.06 (0.11)	−0.06 (0.10)	−0.33 (0.13)**
Log Likelihood	−36005.86	−34501.71	−34502.00	−34501.11	−29748.30
N (Individuals)	35747	34163	34163	34163	29604
N (Districts)	845	845	845	845	746
N (Countries)	31	31	31	31	29

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*

Table A15: Belonging to country (EVS)

DV: Attachment to country	Model 1	Model 2	Model 3	Model 4	Model 5
Socio-demographic					
18 to 24	−0.12 (0.05)*	−0.13 (0.06)*	−0.13 (0.06)*	−0.11 (0.06)	−0.11 (0.07)
25 to 39	−0.02 (0.04)	−0.04 (0.04)	−0.04 (0.04)	−0.03 (0.04)	−0.03 (0.04)
40 to 64	0.00 (0.03)	−0.01 (0.03)	−0.01 (0.03)	−0.01 (0.03)	0.00 (0.04)
Female	0.03 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	−0.00 (0.03)
Manager	0.12 (0.03)***	0.10 (0.04)*	0.12 (0.04)**	0.10 (0.04)*	0.10 (0.04)*
Intermediate	0.06 (0.03)	0.03 (0.04)	0.05 (0.05)	0.03 (0.04)	0.01 (0.05)
School leaver	0.00 (0.04)	−0.00 (0.05)	−0.00 (0.05)	−0.00 (0.05)	0.01 (0.05)
Degree	−0.03 (0.05)	−0.02 (0.06)	−0.02 (0.06)	−0.02 (0.06)	−0.03 (0.06)
Individual level					
No. of own children in house		0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.01 (0.02)
Match majority class in district		−0.04 (0.04)		−0.04 (0.04)	−0.04 (0.04)
Match plurality class in district			−0.00 (0.04)		
No. of family members in house				−0.04 (0.03)	−0.01 (0.03)
District level					
Large urban					0.26 (0.05)***
Urban					0.11 (0.04)**
Town and fringe					0.15 (0.05)**
Village					0.15 (0.05)**
log(Population density)					0.14 (0.09)
log(Net migration)					0.08 (0.10)
(Intercept)	0.65 (0.11)***	0.68 (0.12)***	0.66 (0.12)***	0.69 (0.12)***	0.41 (0.14)**
Log Likelihood	−21155.69	−20163.03	−20163.45	−20162.36	−17706.88
N (Individuals)	35747	34163	34163	34163	29604
N (Regions)	845	845	845	845	746
N (Countries)	31	31	31	31	29

Standard errors in parentheses
Ref categories: Age (65+); Class (Routine); Education (No qualifications); Settlement (Isolated)
****p ¡ 0.001; **p ¡ 0.01; *p ¡ 0.05*