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Non-employment, age, and the economic cycle

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Abstract

We describe the relationship between non-employment rates and age in Britain and consider how this relationship has been changing with the economic cycle. Using data from the British Household Panel Survey for survey years 1991–2008 and Understanding Society for 2009, we show that non-employment rates have changed most for people in the youngest and oldest age groups. Young people have been hit particularly hard by the current recession and non-employment rates are higher now than during the early-1990s recession, especially for those without educational qualifications. Among older men and women, non-employment rates have been in longer-term decline and the current recession has had a less marked effect.

Keywords

BHPS, Understanding Society, non-employment, recession

Introduction

One of the most important determinants of the evolution of individuals' life chances is how their participation in paid work varies over the life course, and it is well known that there is a broadly U-shaped relationship between the probability of non-employment and age on average (see e.g. ONS 2009, Anyadike-Danes 2007). At the start of the life course, young people enter work at different ages depending on educational choices and preferences and their ability to find suitable employment. Non-employment rates then decline with age until individuals' late thirties or early forties. Thereafter, rates of non-employment begin to increase with age, reflecting exits from work due to family care, sickness, disability, and retirement. Labour market withdrawal increases as people approach and pass the state pension age and, after age 70, very few people work. Although there has been an increase in the proportion of young people remaining in full-time education and in the labour market

participation rates of women of middle and older ages (National Equality Panel 2010; ONS 2009), there remains a U-shaped relationship between non-employment rates and age on average. But how does this relationship change as the economy goes from bust to boom and back? In particular, how do the effects of the current Great Recession on non-employment differ from those of the recession of the early 1990s?

A recession is commonly defined as a decline in Gross Domestic Product (GDP) in two or more consecutive quarters. From the beginning of 2008, GDP in the UK fell for six consecutive quarters, the first such recessionary period since the early 1990s. In 2009, UK GDP contracted by 4.8%, which represents its steepest fall since 1921 (Crafts and Fearon 2010). Furthermore, the preceding financial crisis triggered the first contraction in the global economy since the Second World War (Keeley and Love 2010), and the subsequent recession was, in

most OECD countries, the worst economic downturn since the Great Depression (Jenkins et al 2011). We compare the impact of the Great Recession on non-employment with that of the early 1990s recession in particular, using data covering 1991 to 2009, and looking at all age groups.

We differentiate between generic changes in the level of non-employment rates (shifts up or down in the U-shape) and age-specific changes in slope (changes in the nature of the U-shape itself). Other things being equal, we expect non-employment rates for people of all ages to increase with a recession; with a boom, we expect rates to decline. But other things are not equal: there are systematic differences by age group in labour market advantage and disadvantage that translate into differences in the sensitivity of employment rates to the economic cycle. Young people are vulnerable because, by definition, they have not accumulated labour market experience or skills learned on the job. The youngest groups also have the option of remaining in full-time education (which counts as non-employment). Older workers are also expected to be vulnerable to job loss or less likely to be hired relative to middle-aged groups because employers may view their skills and experience as outdated and there is less time to recoup investments in training before retirement. (Greater eligibility for redundancy payments in the former group relative to the latter may moderate the job loss differential.) Among semi- or fully-retired individuals, non-employment rates may fall with recession: there is an incentive to return to employment to replace income lost from recession-related decreases in income from private pensions and other financial assets, and older people may be more willing to take on part-time rather than full-time jobs. In sum, we expect the impact of the economic cycle on the slope of the non-employment/age relationship to be greatest at the youngest and the oldest ages.

In this paper, we describe the relationship between non-employment rates and age in Britain and show how this relationship has been changing with the economic cycle over the last two decades, with a specific comparison of the current Great Recession with the recession of the early 1990s. We look at not only the raw association between non-employment rates and age, but also the association that remains after controlling for factors such as

educational qualifications, region, marital status, and so on. Our research complements previous work about the impact of recessions on the British labour market by, inter alia, Bell and Blanchflower (2010), Government Equalities Office (2010), Gregg and Wadsworth (2010*a, b*), and Office for National Statistics (2009). There are several distinctive features to our work.

First, we focus on non-employment rates rather than unemployment rates and describe the variation of rates with age and sex in greater detail. Looking at non-employment rates means that the population at risk is all adults, whereas the population at risk of unemployment is a subset of all adults who are economically active. We study all adults aged 15–69 years and therefore include discouraged workers of pre-retirement age, individuals who are beyond the state retirement pension age, and young people regardless of whether they are in full-time education. As explained earlier, changes in rates of economic activity are likely to be important features of labour market changes for these age groups in macroeconomic booms and busts. On changes in economic activity rates, see Gregg and Wadsworth (2010*a, b*).

A second feature of our research is that we showcase newly-released data from the UK's new household panel survey, Understanding Society. These data refer to calendar year 2009, and are used along with data from each year between 1991 and 2008 from the British Household Panel Survey (BHPS). We therefore cover a full turn of the British economic cycle including coverage of the recession of the early 1990s, the recovery and boom thereafter through to the mid-2000s, and a period including the Great Recession that began at the end of 2007. Most previous work for Britain on the labour market and the economic cycle has been based on annual cross-sectional data from the Labour Force Survey (LFS) (e.g. Bell and Blanchflower 2010; Government Equalities Office 2010; Gregg and Wadsworth 2010*a, b*; Office for National Statistics 2009). Analysis based on cross-sectional data from household panels remains valuable nonetheless. It is important to benchmark the results from different types of data source against each other. Our work reported below illustrates that trends in non-employment rates derived from our data sets are consistent with those derived from the larger LFS, and that

Understanding Society data are comparable with BHPS data. Of course, the particular strength of household panel surveys is their capacity to describe labour market transitions and histories in greater detail than is possible with the LFS. Analysis of labour market dynamics is a task for the future, when data from more than one wave of Understanding Society are available.

The BHPS and Understanding Society data that we use are described in more detail in the second section. In the third section, we describe trends in non-employment rates by age for men and women, highlighting the differences between recession and boom years. In the next two sections, we consider the extent to which the picture changes if one controls for a range of other characteristics besides age. We report results derived from estimates of probit regression models for the probability of non-employment, fitted separately to data for each year and sex. In addition, probabilities predicted from the fitted models are used to illustrate how changes with the economic cycle in the non-employment and age relationship differ by education level. The final section contains a summary and conclusions.

Data from Understanding Society and the British Household Panel Survey

Our research draws on data for 2009 from Understanding Society and for 1991 to 2008 from the BHPS. Understanding Society is the UK's new household panel study and replaces the BHPS which ended in its current form in 2008. (The surveys are documented [online at http://www.iser.essex.ac.uk/survey/bhps/documentation](http://www.iser.essex.ac.uk/survey/bhps/documentation) and [at http://www.understandingsociety.org.uk/design/content/default.aspx](http://www.understandingsociety.org.uk/design/content/default.aspx).) Understanding Society aims to interview annually 100,000 individuals across 40,000 households in the UK. Our analysis uses a subset of data from the new General Population Sample, that relating to 'wave 1-year 1' which was collected in 2009. This is approximately one half of the initial target sample (each wave of data is collected over a two year period). Former BHPS sample members are also tracked and interviewed as part of the Understanding Society design, but data from this component are not yet available (nor are data from the Understanding Society ethnic minority boost sample).

Understanding Society and the BHPS have similar household panel designs, aiming to be

nationally representative samples of the private household population of the initial year, with sample members tracked over time and (re-)interviewed at approximately annual interviews. Both Understanding Society and the BHPS collect information about incomes, labour market status, housing tenure and conditions, household composition, education, health, and many other aspects of people's lives. There are, however, a number of important differences between the two surveys that need to be taken into account when combining data in analysis.

First, there are differences in the samples. Understanding Society wave 1 aims to be representative of the UK private household population in 2009/2010, whereas BHPS wave 1 was designed to represent the British private household population in 1991. Subsequent BHPS waves have become less representative of the contemporary population because the sample design does not take account of post-1991 immigration to the UK, and there has been sample attrition over time. The BHPS sample weights account for the latter aspect but not the former, and so a fundamental difference in composition between the two samples inevitably remains. In addition, Understanding Society samples individuals and households from England, Wales, Scotland, and Northern Ireland, whereas the original BHPS sample did not cover Northern Ireland. (We do not use data from the BHPS extension samples for Wales, Scotland and Northern Ireland that were introduced in the late 1990s. The samples' substantially different sampling probabilities make sample combination unduly reliant on the general survey weights provided.) Throughout our analysis, we use the relevant BHPS and Understanding Society cross-sectional weights for each survey year.

A second difference between the surveys concerns when interviews for each wave are undertaken during the calendar year. The great majority of BHPS interviews were held in the autumn of each calendar year, between September and December. In contrast, Understanding Society interviews are held in every month of the calendar year.

To maximise comparability between the Understanding Society and BHPS data used in the analysis for this paper, and also to abstract from potential issues related to seasonal employment, most of the results that we report are based on the Understanding Society sub-sample, with interviews

from September through December. We also exclude respondents in Northern Ireland from these samples. After these selections, we have between approximately 6,000–8,000 men and women aged between 15 and 69 for each year between 1991 through 2009. (More details on sample numbers appear in the Appendix tables.)

Third, there are some differences between the surveys in questions about similar topics – though there are also many similarities. For example, many of the same questions are used to elicit information about labour market status: we define non-employment in exactly the same way in the two surveys. If the respondent is undertaking paid employment or self-employment at the date of the interview (whether on a part-time or full-time basis), or is temporarily absent from such work because of e.g. holiday or sickness, he or she is counted as ‘employed’. Non-employed individuals are those who are not employed and include persons who are unemployed, involved in family care, retired, long-term sick or disabled, or in full-time education.

Other examples of fully comparable variables include the respondent’s age at interview (in years), sex, marital (civil) status, and household composition (number, age, and sex of each household member), and the government region in which the household is located. These regions refer to London, the rest of the South East, the South West, East Anglia, East Midlands, West Midlands, Yorkshire and Humberside, the North West, the North East, Wales and Scotland.

Highest educational level, housing tenure, health status, and ethnic minority membership are examples of variables that were asked about in different ways between the surveys. (The BHPS core questionnaire remained largely fixed throughout the 18 waves in order to maintain cross-wave comparability. Understanding Society modified questions to reflect changes in socio-economic institutions since 1991.)

To maximise comparability between the two data sources used in our analysis, we differentiate only three educational qualification levels: no qualifications, qualifications to GCSE or equivalent level, and qualifications higher than GCSE or equivalent. (GCSE refers to the General Certificate of Secondary Education, a qualification awarded at the end of compulsory schooling at age 16. Subsequent opportunities in further or other higher post-

compulsory schooling are largely determined by GCSE passes.) There are four categories of housing tenure of the dwelling in which the respondent lives: owned-outright, owned with a mortgage, local authority or housing association tenancy, or other (all remaining tenures). The principal question about health status in Understanding Society asks a respondent whether his or her health is excellent, very good, good, fair, or poor (this is Question 1 from the Short Form 12 questionnaire – SF-12; see Ware et al 1996). This question was also used in BHPS waves 9 or 14 but, in all other waves, the self-rated health question allowed responses of excellent, good, fair, poor, or very poor. The derived binary variable we use in our analysis is ‘poor health’ which for Understanding Society and BHPS waves 9 and 14 refers to those reporting fair or poor health, and for respondents answering the other question, poor health refers to those reporting fair, poor, or very poor health. The variable is not entirely comparable, as evidenced by small but noticeable differences in distributions of poor health in BHPS years around waves 9 and 14, and between BHPS wave 18 and Understanding Society.

Regarding ethnic minority group membership, Understanding Society asks more detailed questions than the BHPS. But a more substantial issue for analysis of the current kind is that the number of respondents within different groups is very small. (This was one of the reasons for the Understanding Society boost sample of ethnic minority groups.) One cannot simply differentiate between ‘white British’ respondents and the remainder because the residual category hides large and genuine diversity in labour market behaviour between ethnic minority groups (National Equality Panel 2010). For the current paper, we have instead classified respondents in both surveys according to whether they arrived in the UK after age 15, on the grounds that this was a more reasonable way of classifying a common feature of ethnic minority group disadvantage. (About 3% of the BHPS sample arrived in the UK after the age of 15, compared with almost 9% of the Understanding Society sample. This difference is due to post-1991 immigration to the UK.) Arrivals after 15 had their compulsory schooling outside the UK and, for most, English was not learnt during childhood. We anticipate that this implies lasting disadvantage in the labour market as evidenced, for example, by differences in the

probability of job search success between natives and immigrants (e.g. Frijters et al 2005).

Non-employment rates, age, and the economic cycle

In this section, we describe the non-employment/age relationship and how it varies with the economic cycle. It is not feasible to summarise non-employment rates in detail simultaneously across the dimensions of age (ranging between 15 and 69 years) and calendar time (1991 to 2009). Hence, first, we show the details of variation by age for selected years (representing two economic cycle troughs and one peak) and then, second, we show the details of variation by calendar year for six age groups. In both cases, men and women are analysed separately.

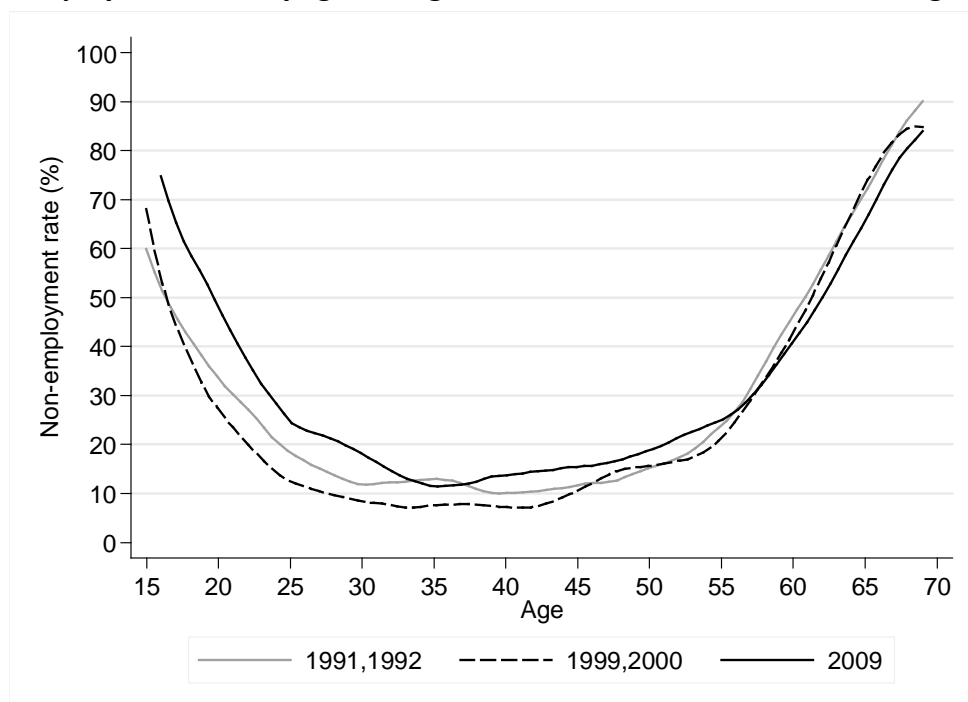
The U-shaped relationship between non-employment rates and age is shown in Figure 1 (for men) and Figure 2 (for women). Each figure summarises rates by age at three dates: ‘1991,1992’ and ‘1999,2000’ (two years of data pooled from the BHPS analysis sample in each case) and ‘2009’ (data from all twelve months of Understanding Society data collection). The dates correspond to a trough,

a peak, and a further trough in the economic cycle. A local polynomial smoother has been used in order to smooth out random variability in rates from one age to another, and thereby reveal the key features of the non-employment/age relationship more clearly.

How does the U-shaped relationship change with the economic cycle? Observe that the U-shaped curves do not simply shift up vertically between the early 1990s recession and subsequent peak or shift down vertically between the peak and Great Recession. And there are clear differences between the pictures for men and women in any given year.

Put differently, what stands out most is the substantial increase in non-employment rates among young people in the two recession periods compared to the peak period, and especially in the current recession. For the average 20 year old man or woman, the non-employment rate at the start of the 1990s was around 35%, fell to around 30% at the turn of the century, but then increased substantially, to around 50%, by 2009. Some of this is due to increases in participation in post-compulsory education, which itself tends to increase during economic downturns (Clark 2011).

Figure 1. Non-employment rates by age among men: BHPS 1991–2008; Understanding Society 2009



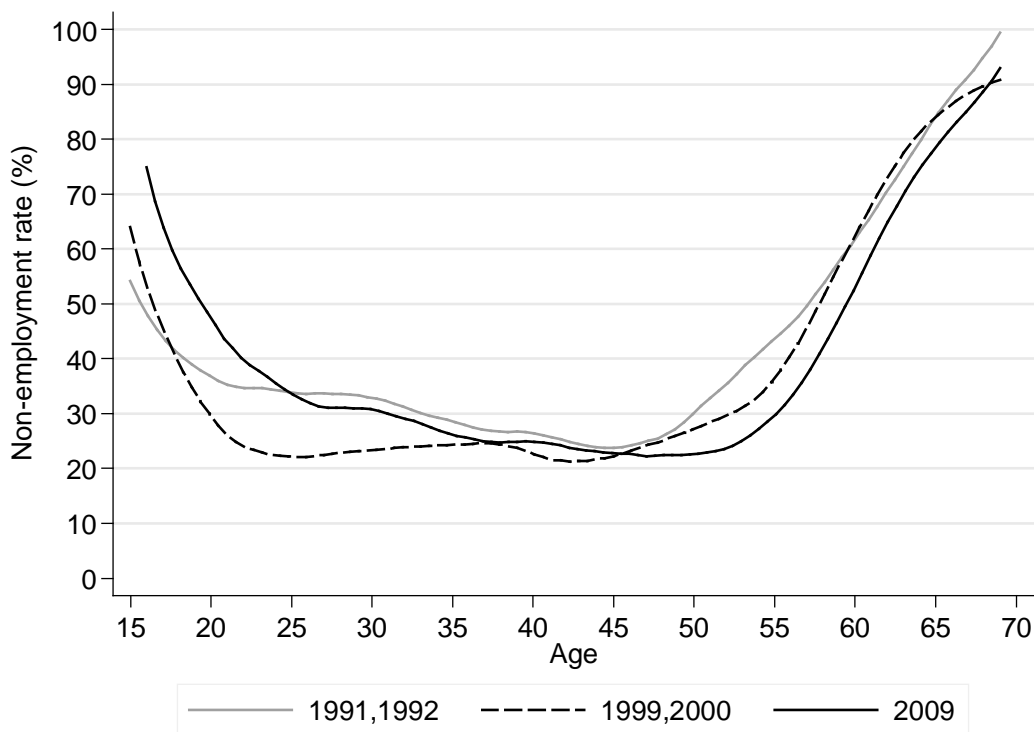
Note. Estimates derived using local polynomial smooth of degree one.

At the other end of the age range, the changes associated with the economic cycle are quite different. For the average man or woman aged over 60, the current recession is associated with a decrease of around 5 percentage points in non-employment rates compared to rates in the boom years a decade before. The early-1990s recession is, however, not associated with lower non-employment rates than in the boom years for men or women.

For the in-between age range, from 25–60 years, differences between men and women are more apparent. Women have non-employment rates that are about 10 percentage points higher than men’s (around 30% compared to 20%) and there is less variation with age. As a result, the U-

shape curve describing women’s non-employment rates has a flatter bottom than does that for men. In addition, the economic cycle has different impacts for men and women in this middle age group. For men, both recessions raised non-employment rates – there is a vertical shift upwards in the line over this age range, broadly speaking. But the increase is markedly greater for the current recession than the early 1990s one, particularly towards the younger end of the age range. For women, both recessions increased non-employment rates relative to the peak years for those in the 25–45 age range but, for women aged 45–60, the recessions had quite different effects: non-employment rates increased in the early-1990s recession, but decreased in the current recession.

Figure 2. Non-employment rates by age among women: BHPS 1991–2008; Understanding Society 2009

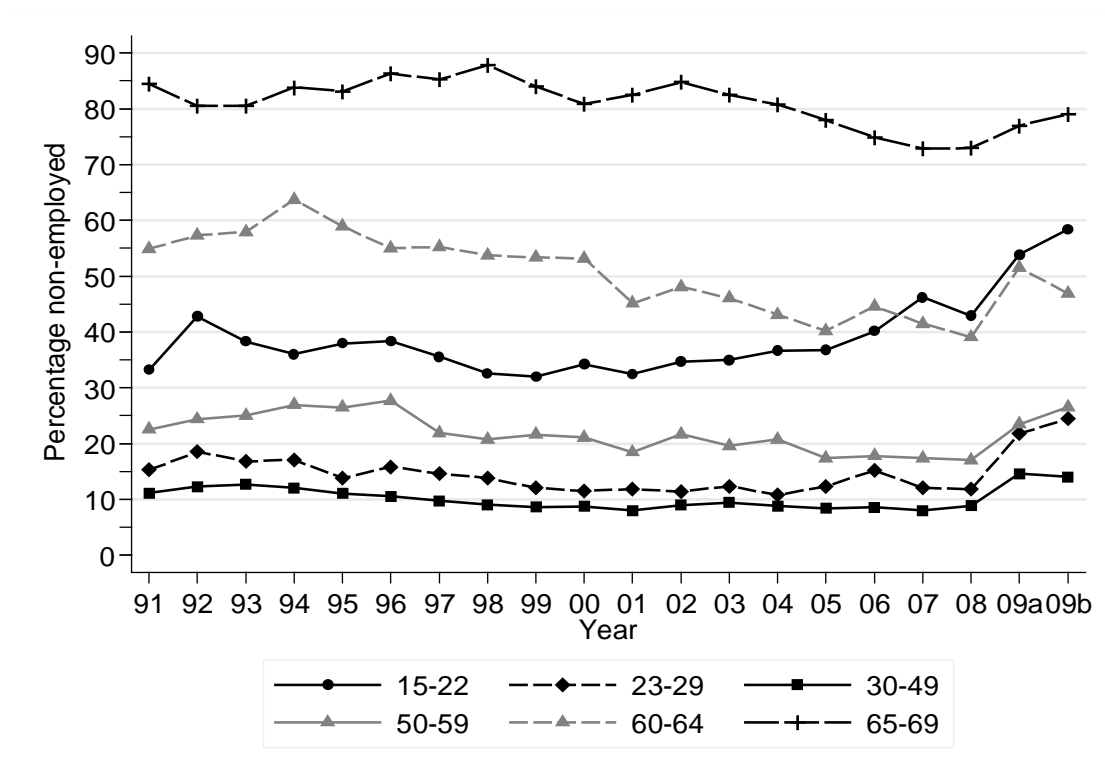


Note. Estimates derived using local polynomial smooth of degree one.

In sum, there is ample evidence that the current recession has changed the relationship between non-employment and age, and in particular at the extremes of the age distribution. This finding has also been reported in analyses based on Labour Force Survey data (GEO 2010; ONS 2009; Bell and Blanchflower 2010).

We now look in greater detail at year-on-year trends in non-employment rates over the full 19 year period in order to show changes over the full turn of the economic cycle rather than concentrating on only selected bust and boom years. See Figure 3 (for men, whom we discuss first) and Figure 4 (for women).

Figure 3. Percentage of men non-employed, by age and survey year: BHPS 1991–2008, Understanding Society 2009

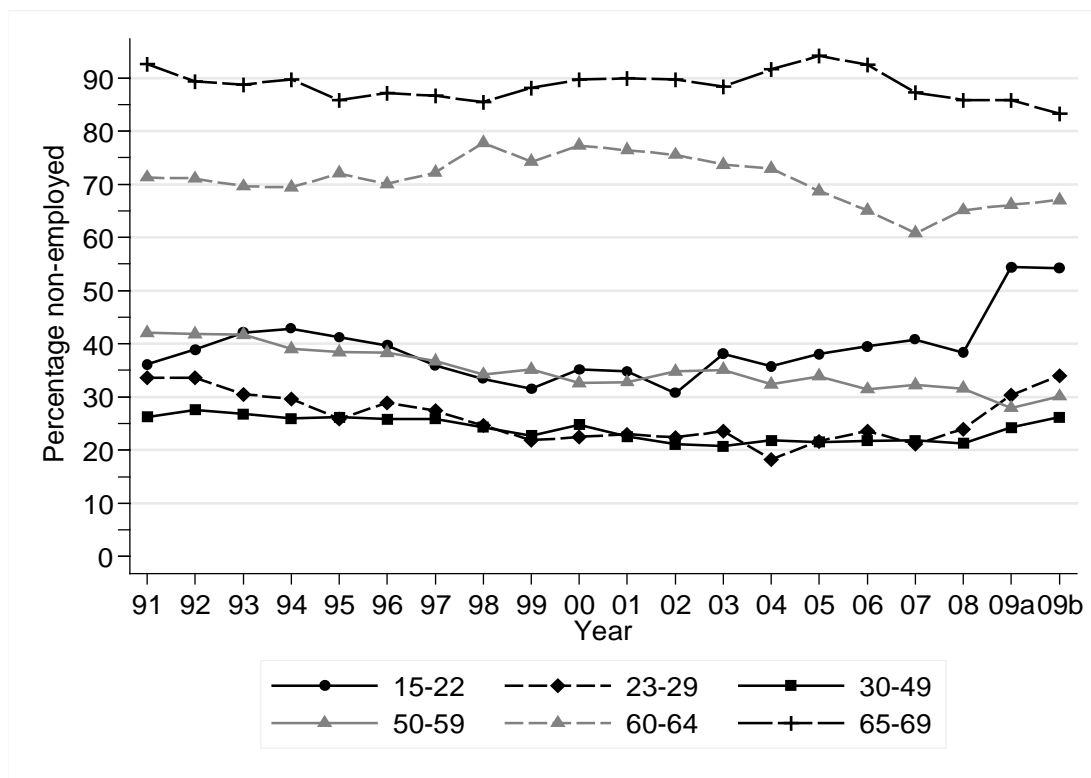


Notes. For Understanding Society, year 09a refers to interviews between January and August 2009, and year 09b refers to interviews from September 2009 onwards

Between the early- to mid-1990s and 2008, non-employment rates generally fell among older men, from around 85% to around 75% for men aged 65–69, and from around 60% to 40% for men aged 60–64. However, non-employment rates then increased markedly in 2009 for both groups, to nearly 80% and 50% respectively. Non-employment rates also fell over the period since the early-mid 1990s for men aged 23–59, although from much lower starting points. The increase in non-employment rates in the current recession is also apparent for this age group, especially for men aged 23–29 years for whom non-employment rates increased by more than 10 percentage points between Autumn 2008 and Autumn 2009. (Observe also that the 1990s recessionary peak in non-employment rates

occurs around 1992 for younger men, but several years later for older age groups.) The trend in non-employment rates for men aged 15–22 is distinctive, however, with rates starting to rise much earlier than for other groups, in around 2000. For this group of men, the non-employment rate was about as high, 45%, in the mid-2000s (when the British economy was doing well) as in 1992 (when there was a recession). The rate continued to increase, reaching almost 60% by the end of 2009. The increase between 2000 and 2007 mostly reflects increasing participation in post-compulsory education, while the large jump between 2008 and 2009 also reflects the increase in unemployment associated with the recession.

Figure 4. Percentage of women non-employed, by age and survey year: BHPS 1991–2008, Understanding Society 2009



Notes. For Understanding Society, year 09a refers to interviews between January and August 2009, and year 09b refers to interviews from September 2009 onwards.

For women, the trends in non-employment rates are broadly similar to those for men. (What differs more between the sexes is non-employment rate levels, which are generally higher for women than men.) Non-employment rates among women aged 65–69 fluctuated around 85% until the early-2000s. They fell thereafter until they increased again between 2008 and 2009 but not to their earlier level. Thus a larger proportion of older women were in work during the current recession than in the early-1990s recession. For women of other ages, and as for men, non-employment rates have tended to decline since the early- to mid-1990s, and then increase sharply after 2007. As for men, the exceptional group is women aged 15–22, for whom the increase in the non-employment rate also began around 2000 and, again, part of this rise can be attributed to an increased participation in post-compulsory education.

In sum, looking at the detailed year-on-year trends reveals that turning points in time series of non-employment rates do not coincide exactly with peak and trough years of the economic cycle. For example, non-employment rates for older men and

women took several years to fall after the early-1990s recession, and rates for the youngest group began to rise from around 2000 while rates for other age groups continued to fall until the late-2000s. But Figures 3 and 4 also confirm that the Great Recession is associated with higher non-employment rates than the early-1990s recession, particularly for young people.

Non-employment and age, controlling for other characteristics

Figures 1–4 describe the non-employment/age relationship on average. What is not revealed is the nature of the relationship if one controls for differences in characteristics other than age and sex. To what extent does the relationship remain U-shaped if one takes account of differences in, say, educational qualifications, region of residence, or marital status? And has this relationship changed over time as well?

To examine the non-employment/age relationship adjusted for differences in characteristics, we fit probit regression models of the probability of being non-employed, separately

for each survey year and sex, for individuals aged 15–69. The explanatory variables besides age are: highest educational qualification, whether arrived in the UK after age 15, housing tenure, government region, whether the respondent's household has access to a car, self-reported health status, marital status, household type and presence of children in particular. This list of variables is similar to that used in regression modelling of the probability of unemployment (cf. Bell and Blanchflower 2010), except that we estimate separate rather than pooled models for men and women.

There is an issue of how to specify 'age' in these regression models. A very flexible specification would be ideal in order to capture all aspects of the U-shape revealed by Figures 1 and 2. However, this is not feasible: with few respondents of any given age, one has to either use some parametric form or some grouping along the age range. We experimented with a range of specifications: quadratic and higher order polynomials, linear and cubic splines, and several categorical definitions of age group. The polynomials tended to over-smooth. Categorical variables appeared to summarise the data as well as spline specifications and they are easier to interpret. We therefore report results for the case in which adjusted differences in non-employment rates are summarised using the same six age groups as employed in Figures 3 and 4. In preliminary analysis, we also experimented with a number of interaction effects between age and other explanatory variables, but these were never statistically significant – which is probably a reflection of small cell size – and so no specifications with interactions are reported in the paper.

When fitting the probit regression models, we use the relevant cross-sectional weight for each year. Standard errors are calculated using the commonly-used estimator that adjusts for clustering of individuals within households (White 1980). The details of our regression estimates are presented in the Appendix to the paper. We report average marginal effects (AMEs) rather than probit coefficients, because AMEs are more easily interpreted – they are in the probability metric. For a given explanatory variable, the AME is derived by first calculating, for each respondent, the change in the probability of non-employment associated with a unit change in that explanatory variable, holding all other explanatory variables at their observed

values. Second, these probability changes are averaged across the estimation sample. Since 30–49 is the reference age category used in the regressions, we are particularly interested in the AMEs for each of the binary variables that indicate membership of the other age groups: these tell us how much higher (or lower) the non-employment probability is for those other groups relative to persons aged 30–49.

In the rest of this section, we first summarise the estimates concerning the non-employment/age relationship adjusted for differences in other characteristics (drawing on the AME estimates in the Appendix), and then illustrate the estimates in greater detail by comparing the experience of individuals with different levels of educational qualification. For brevity, discussion of the associations between non-employment rates and other explanatory variables is omitted.

Non-employment, age and the economic cycle

The estimates for men indicate that the U-shaped non-employment age relationship remains when other characteristics are adjusted for. Compared with 20–49 year olds, younger and older men have more positive AMEs. However, there are some important changes across calendar years.

For example, men aged 15–22 were significantly more likely than men aged 30–49 to be non-employed in all years, but the magnitude of the differential varies with the economic cycle. In 2009, young men were 32 percentage points more likely than otherwise similar men aged 30–49 to be non-employed. This is considerably higher than in any other year, and compares to a differential of between 17 and 20 percentage points for years in the early 1990s. Therefore the current recession has had a more harmful impact on the relative employment prospects of young people than the previous recession did. (A similar but smaller effect emerges for men aged 23–29.) The relatively large increase in unemployment among young people during the Great Recession has been noted in research based on the Labour Force Survey (ONS 2009; Bell and Blanchflower 2010; Gregg and Wadsworth 2010c). Here we are looking at non-employment rather than unemployment, and trends in non-employment are partly driven by higher rates of participation in education during the recession (Clark 2011).

In contrast, non-employment probabilities for age groups 60–64 and 65–69 were lower in 2009 than during the previous two decades. For example, in 2009, men aged 60–64 were about 30 percentage points more likely to be out of work than men aged 30–49, other things being equal. For most of the 1990s, this differential was greater than 36 percentage points, and around 30% throughout the 2000s. Men aged 65–69 were 58 percentage points more likely to be out of work than similar men aged 30–49 in 2009, which is the lowest the differential has been since the early 1990s.

Similar patterns arise for women. Between 1991 and 2008, women aged 15–22 were between 10 percentage points and 17 percentage points more likely to be non-employed than similar women aged 30–49. However in 2009 this differential increased substantially, to 22 percentage points. Women aged 23–29 had similar probabilities of non-employment to women aged 30–49 in most years, except that in 2009 they were 5 percentage points more likely to be without employment. Therefore, as for young men, the current recession is associated with substantially lower employment rates for young women – rates that are lower than during the previous recession.

Women aged 50–59 were 20 percentage points more likely to be non-employed in the early-1990s than their 30–49 peers, and this differential fell to around 12 percentage points during the upswing of the economic cycle. However, in 2009, the adjusted non-employment probability differential halved to 7 percentage points. A similarly large effect arises for women aged over 60, particularly those aged 65–69, for whom the probability of non-employment fell from being 60 percentage points greater than the probability for women aged 30–49 in 2007 and 2008 (and in the recession of the early-1990s) to 50 percentage points in 2009.

In sum, the adjusted estimates provide additional evidence that the current recession has changed the relationship between age and non-employment for both men and women – significantly raising the probability of non-employment among the young, while reducing it among older people relative to the recession of the early 1990s. These findings for non-employment rates are consistent with Bell and Blanchflower (2010) who document that increases in unemployment rates associated with the current recession are particularly concentrated among

young workers, and more so than in previous recessions, while the impact on workers aged between 40 and the state retirement pension age has been small.

Non-employment, age, and the economic cycle: differences by education level

We now illustrate how changes with the economic cycle in the non-employment/age relationship vary by education level. We use the probit regression estimates to predict non-employment probabilities by age and education level, with separate calculations for men and women, and year. (To control for differences in other characteristics, we take a UK-born person who lives in the South-East outside London, has access to a car, is not in poor health, lives with a partner but no children, and is a house-owner with a mortgage.) We focus on 1992 (relating to the recession of the early-1990s), 2000 (a boom year), and 2009 (the current recession).

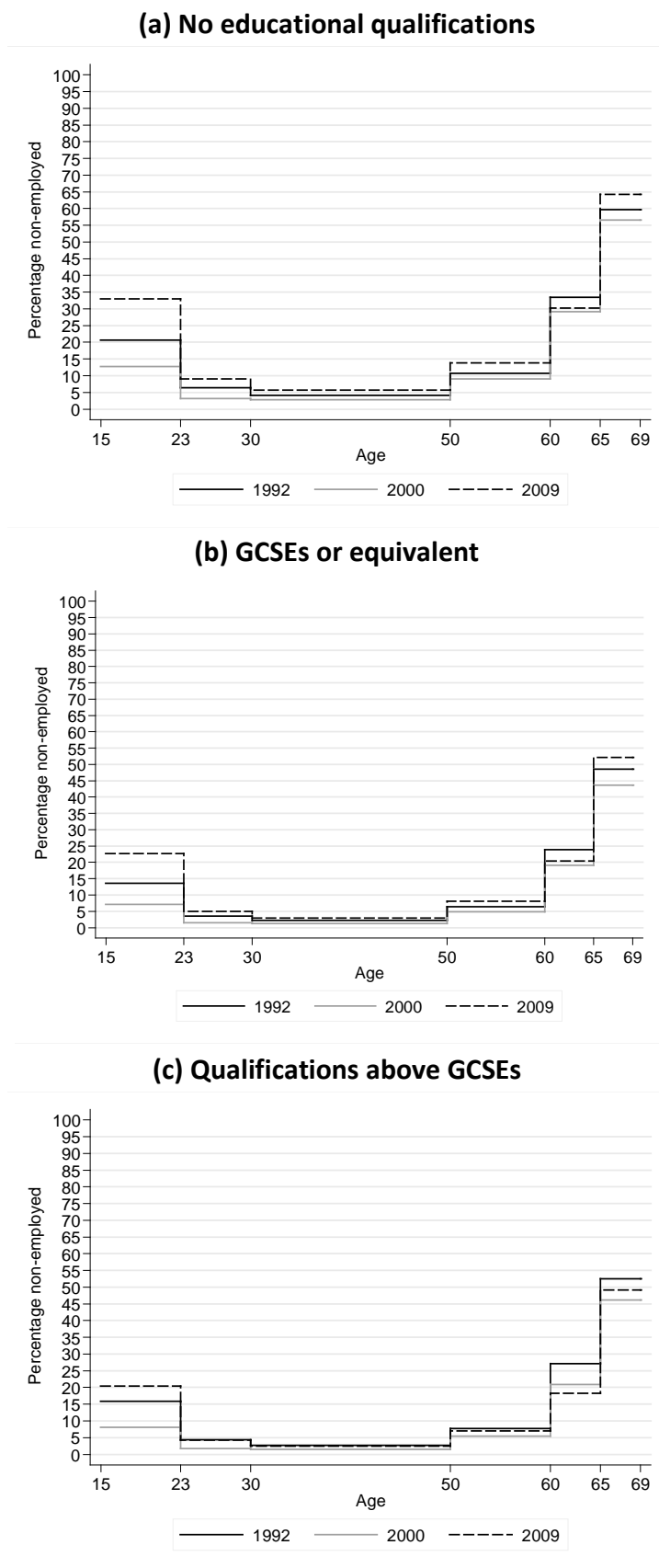
The results for men are displayed in Figure 5, with the situation for those without educational qualifications shown in panel (a). Panel (b) shows the situation for men with GCSE or equivalent qualifications and panel (c) is for men with higher qualifications. A comparison of predicted non-employment probabilities across education levels, illustrates that having more educational qualifications is protective against non-employment, regardless of the business cycle. For each year, men with no qualifications are predicted to have higher non-employment rates than men with some qualifications at all ages. From ages 23 to 50, non-employment probabilities vary little with the economic cycle – the profiles in each panel are very close together over this age range – but there are differences in non-employment probabilities by education level. For instance, the average middle-aged man with no educational qualifications has a non-employment rate of around 5%, but the rate is approximately half that for men with qualifications.

The gradients in non-employment rates by educational level are even more striking at the two extremes of the age range and, again, the main difference is between those with no educational qualifications and those with some qualifications. There is also greater sensitivity of non-employment rates to the economic cycle for the youngest age group.

For example, men under the age of 23 with no qualifications are predicted to have a 34% probability of non-employment in 2009, other things being equal, compared with a rate of 20% in 1992 and 14% in 2000. If they have GCSE or equivalent qualifications, the corresponding non-employment probabilities are 25%, 15%, and 7%; for those with higher qualifications, the probabilities are around 20%, 16%, and 8%.

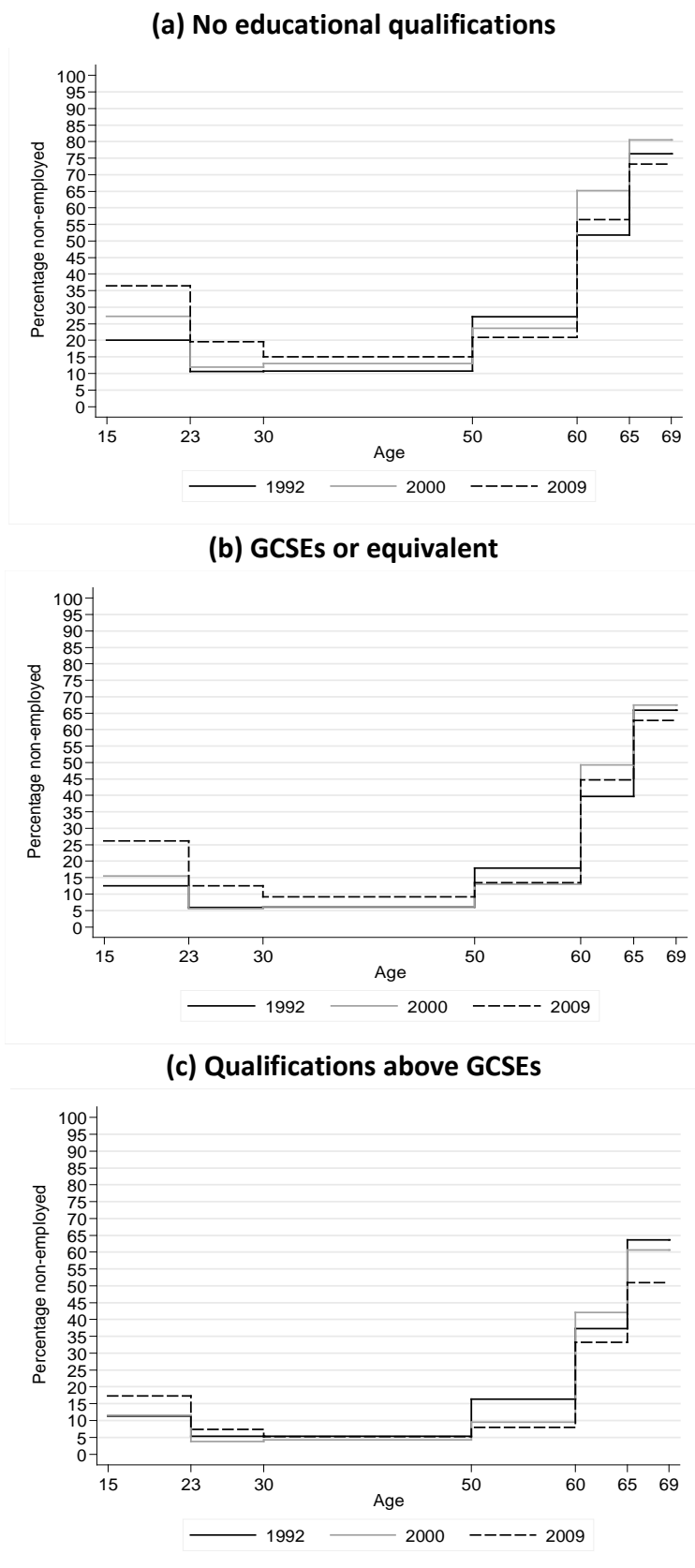
Among men aged 65 or more, predicted non-employment rates are between 55% and 65% for those with no educational qualifications, but between about 45% and 55% for those with some qualifications. For this group, and also men aged 50–64, and by contrast with the youngest group, it is not so clear that non-employment rates are higher in the current recession than the early-1990s one.

Figure 5. Men’s predicted probabilities of non-employment by age, by education level and year



Notes. Predicted probabilities derived using the probit regression estimates summarised in the Appendix tables: see text for details.

Figure 6. Women’s predicted probabilities of non-employment by age, by education level and year



Notes. Predicted probabilities derived using the probit regression estimates summarised in the Appendix tables: see text for details.

For women, it is also the case that educational qualifications are protective against non-employment with gradients being most striking at the two extremes of the age range, and the main difference is between those with no educational qualifications and those with some qualifications. See Figure 6, panels a–c. Among women aged 15–22 with no qualifications, the predicted non-employment rate is around 36% in 2009, compared with rates of 26% in 1992 and 17% in 2000. For those with GCSE or equivalent qualifications, the corresponding probabilities are much lower (26%, 12%, and 15%), and lower still for those with higher qualifications (17%, 12%, and 12%).

We remarked earlier on the decline in the average non-employment rate among older women between the previous economic cycle peak and 2009 (Figures 2 and 4). Figure 6 shows that this decrease occurred for all three education groups. (In analysis not reported, we find that the decline began in the mid-2000s for all three groups.) Among women over 50, it is also clear that non-employment rates in the current recession are lower than in 1992 for those with qualifications to a level greater than GCSE or equivalent. For those with lower or no educational qualifications, the picture is less clear.

Summary and conclusions

Using data from the first wave of Understanding Society relating to 2009 and from 18 waves of BHPS data covering 1991–2008, we have described the U-shaped relationship between non-employment rates and age, and considered how the details of this relationship have changed with the economic cycle. Unlike much previous work which has analysed unemployment rates among people of ‘working age’ (conventionally defined as 16 to 59 for women and 16 to 64 for men), we consider all adults aged between 15 and 69. Hence the at-risk population for our analysis includes young people (who may be more likely to stay in post-compulsory education in recessionary periods) and discouraged workers

(whose status is likely to be sensitive to macro-economic conditions), and individuals older than the state retirement pension age (who may re-enter work in a recession in order to maintain incomes).

Our results suggest that changes for individuals towards the youngest and oldest ends of the age range account for the largest changes over time in non-employment rate levels and in their U-shaped relationship with age. We show that employment rates of young people, especially young people with no qualifications, have been hit particularly hard by the current recession and by more so than in the recession of the early-1990s. While this is partly due to higher rates of participation in post-compulsory education, our evidence is consistent with other research documenting large increases in unemployment among young people. The rates of middle-aged men and women were affected considerably less. We also find that non-employment rates among older men and women declined from the mid-2000s and the current recession has not fully offset this trend.

In addition to providing substantive analysis of non-employment rates, our paper has had the role of showcasing newly-released data from Understanding Society. We have shown that the data may be combined with data from the BHPS to look at longer-term trends in labour market behaviour (though we have also drawn attention to some inevitable non-comparabilities that researchers should be aware of), and the combined data sets yield estimates of trends that are consistent with those derived from the Labour Force Survey. In the future, there will be panel data from Understanding Society, so analysts can consider labour market transitions and histories, and for much larger samples than we have used in this paper, thereby enabling better analysis of small-sized groups including, for examples, differences by ethnic minority group. The full potential of Understanding Society data for labour market analysis has yet to be realised.

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Appendix. Average marginal effects on the probability of non-employment, by sex and year (probit regression estimates)

MEN	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Age: 15–22	0.169*** (0.03)	0.242*** (0.03)	0.178*** (0.03)	0.211*** (0.03)	0.196*** (0.03)	0.185*** (0.03)	0.165*** (0.03)	0.140*** (0.03)	0.190*** (0.03)	0.171*** (0.03)
Age 23–29	0.025 (0.02)	0.044** (0.02)	0.036* (0.02)	0.047** (0.02)	0.009 (0.02)	0.023 (0.02)	0.016 (0.02)	0.030 (0.02)	0.032 (0.02)	0.009 (0.02)
Age 50–59	0.098*** (0.02)	0.114*** (0.02)	0.113*** (0.02)	0.126*** (0.02)	0.145*** (0.02)	0.172*** (0.02)	0.134*** (0.02)	0.118*** (0.02)	0.117*** (0.02)	0.117*** (0.02)
Age 60–64	0.368*** (0.04)	0.376*** (0.04)	0.393*** (0.04)	0.415*** (0.04)	0.425*** (0.04)	0.408*** (0.04)	0.424*** (0.04)	0.370*** (0.04)	0.376*** (0.04)	0.362*** (0.04)
Age 65–69	0.641*** (0.04)	0.596*** (0.04)	0.601*** (0.04)	0.620*** (0.04)	0.675*** (0.04)	0.705*** (0.03)	0.681*** (0.04)	0.694*** (0.04)	0.625*** (0.05)	0.602*** (0.04)
GCSE or equivalent	-0.054*** (0.02)	-0.067*** (0.02)	-0.065*** (0.02)	-0.083*** (0.02)	-0.036* (0.02)	-0.061*** (0.02)	-0.069*** (0.02)	-0.054** (0.02)	-0.065*** (0.02)	-0.070*** (0.02)
Above GCSE or equivalent	-0.059*** (0.02)	-0.044** (0.02)	-0.056*** (0.02)	-0.048** (0.02)	-0.049*** (0.02)	-0.042** (0.02)	-0.054*** (0.02)	-0.068*** (0.02)	-0.053*** (0.02)	-0.057*** (0.02)
UK arrival aged 15+	0.093*** (0.04)	0.031 (0.04)	0.081* (0.05)	0.030 (0.05)	0.001 (0.05)	0.038 (0.05)	-0.027 (0.05)	0.004 (0.05)	0.028 (0.06)	-0.039 (0.04)
Own house – mortgage	-0.061*** (0.02)	-0.086*** (0.02)	-0.072*** (0.02)	-0.070*** (0.02)	-0.053*** (0.02)	-0.051*** (0.02)	-0.058*** (0.02)	-0.090*** (0.02)	-0.105*** (0.02)	-0.121*** (0.02)
Local authority tenant	0.076*** (0.03)	0.081*** (0.03)	0.071** (0.03)	0.089*** (0.03)	0.100*** (0.03)	0.109*** (0.03)	0.060** (0.03)	0.032 (0.03)	0.032 (0.03)	0.038 (0.03)
Other tenancy	0.036 (0.03)	0.034 (0.04)	-0.030 (0.03)	0.008 (0.03)	0.052 (0.03)	0.061** (0.03)	0.040 (0.03)	-0.001 (0.03)	-0.072** (0.03)	-0.077** (0.03)
North East	0.058* (0.03)	0.060* (0.03)	0.076** (0.04)	0.019 (0.04)	-0.002 (0.04)	0.058 (0.04)	0.060 (0.04)	0.080** (0.04)	0.080** (0.04)	0.039 (0.04)
North West	0.040 (0.02)	0.022 (0.03)	0.050* (0.03)	0.023 (0.03)	0.003 (0.03)	0.008 (0.03)	0.026 (0.03)	0.007 (0.03)	0.020 (0.03)	0.017 (0.03)
Yorkshire/Humberside	-0.013 (0.03)	-0.028 (0.03)	0.016 (0.03)	-0.025 (0.03)	-0.002 (0.03)	-0.006 (0.03)	0.038 (0.03)	0.018 (0.03)	0.026 (0.03)	-0.026 (0.03)
East Midlands	0.006 (0.03)	-0.02 (0.03)	0.040 (0.03)	0.013 (0.03)	0.018 (0.03)	0.033 (0.03)	0.052* (0.03)	0.041 (0.03)	0.058* (0.03)	0.005 (0.03)
West Midlands	0.013 (0.03)	-0.016 (0.03)	0.033 (0.03)	0.008 (0.03)	-0.006 (0.03)	0.015 (0.03)	0.034 (0.03)	0.042 (0.03)	0.022 (0.03)	0.019 (0.03)
East Anglia	-0.015 (0.03)	-0.035 (0.03)	0.053* (0.03)	-0.035 (0.03)	-0.041 (0.03)	-0.023 (0.03)	-0.015 (0.03)	0.003 (0.03)	-0.009 (0.03)	-0.046 (0.03)

Rest of South East	-0.021 (0.02)	-0.013 (0.03)	0.007 (0.03)	-0.047* (0.03)	-0.058** (0.03)	-0.019 (0.03)	-0.009 (0.03)	-0.001 (0.03)	0.018 (0.03)	-0.016 (0.03)
South West	-0.009 (0.03)	-0.025 (0.03)	-0.014 (0.03)	-0.050* (0.03)	-0.028 (0.03)	-0.012 (0.03)	0.008 (0.03)	0.017 (0.03)	0.025 (0.03)	0.012 (0.03)
Wales	0.033 (0.03)	0.028 (0.04)	0.057 (0.04)	0.054 (0.04)	0.084** (0.04)	0.052 (0.03)	0.060* (0.03)	0.079** (0.03)	0.073** (0.03)	0.024 (0.04)
Scotland	-0.009 (0.03)	-0.004 (0.03)	0.026 (0.03)	0.030 (0.03)	0.019 (0.03)	0.005 (0.03)	0.055* (0.03)	0.045 (0.03)	0.059* (0.03)	0.010 (0.03)
1+ cars in household	-0.128*** (0.02)	-0.139*** (0.02)	-0.150*** (0.02)	-0.115*** (0.02)	-0.120*** (0.02)	-0.149*** (0.03)	-0.135*** (0.03)	-0.103*** (0.02)	-0.077*** (0.03)	-0.087*** (0.03)
Poor health	0.117*** (0.02)	0.151*** (0.02)	0.146*** (0.02)	0.161*** (0.02)	0.148*** (0.02)	0.131*** (0.02)	0.156*** (0.02)	0.148*** (0.02)	0.188*** (0.02)	0.143*** (0.02)
Separated/divorced/widowed	0.067** (0.03)	0.081** (0.03)	0.154*** (0.03)	0.103*** (0.03)	0.046 (0.03)	0.079** (0.03)	0.038 (0.03)	0.052* (0.03)	0.061* (0.03)	0.049 (0.03)
Single never married	0.060*** (0.02)	0.070*** (0.02)	0.088*** (0.02)	0.033 (0.02)	0.054** (0.02)	0.075*** (0.02)	0.088*** (0.02)	0.080*** (0.02)	0.068*** (0.02)	0.075*** (0.02)
Responsible for child < 16	0.097 (0.06)	0.323*** (0.10)	0.236*** (0.08)	0.190** (0.08)	0.122 (0.08)	0.170** (0.08)	0.298*** (0.09)	0.199** (0.10)	0.110 (0.10)	0.211** (0.11)
Household size	0.008 (0.01)	0.013** (0.01)	0.014** (0.01)	0.005 (0.01)	0.013** (0.01)	0.014** (0.01)	0.011** (0.01)	0.013** (0.01)	0.008 (0.01)	0.012** (0.01)
Child < 5 in household	0.033 (0.02)	0.048** (0.02)	0.034 (0.02)	0.018 (0.02)	0.018 (0.02)	0.020 (0.02)	0.019 (0.02)	-0.003 (0.02)	0.010 (0.02)	0.0145 (0.02)
F	28.719	28.040	26.957	29.246	26.407	24.375	24.983	25.727	23.401	23.587
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. persons	4043	3774	3621	3642	3533	3692	3682	3544	3467	3431
No. HH	3447	3212	3083	3084	3007	3112	3111	3053	3013	2992

MEN	2001	2002	2003	2004	2005	2006	2007	2008	2009
Age: 15–22	0.122*** (0.03)	0.158*** (0.04)	0.178*** (0.04)	0.201*** (0.04)	0.146*** (0.03)	0.172*** (0.03)	0.245*** (0.04)	0.200*** (0.04)	0.322*** (0.04)
Age 23–29	0.002 (0.02)	–0.006 (0.02)	0.005 (0.02)	–0.011 (0.02)	–0.005 (0.02)	0.018 (0.02)	0.015 (0.02)	–0.008 (0.02)	0.053** (0.03)
Age 50–59	0.115*** (0.02)	0.125*** (0.02)	0.061*** (0.02)	0.097*** (0.02)	0.094*** (0.02)	0.083*** (0.02)	0.089*** (0.02)	0.079*** (0.02)	0.119*** (0.03)
Age 60–64	0.323*** (0.04)	0.334*** (0.04)	0.272*** (0.04)	0.301*** (0.04)	0.295*** (0.04)	0.331*** (0.04)	0.322*** (0.04)	0.284*** (0.04)	0.296*** (0.04)
Age 65–69	0.653*** (0.04)	0.673*** (0.04)	0.597*** (0.04)	0.622*** (0.04)	0.626*** (0.04)	0.579*** (0.04)	0.586*** (0.04)	0.608*** (0.04)	0.580*** (0.04)
GCSE or equivalent	–0.057** (0.02)	–0.062** (0.03)	–0.076*** (0.03)	–0.045* (0.03)	–0.056** (0.03)	–0.083*** (0.03)	–0.041 (0.03)	–0.029 (0.03)	–0.083** (0.03)
Above GCSE or equivalent	–0.075*** (0.02)	–0.084*** (0.02)	–0.085*** (0.02)	–0.056*** (0.02)	–0.066*** (0.02)	–0.116*** (0.03)	–0.073*** (0.03)	–0.053** (0.03)	–0.101*** (0.03)
UK arrival aged 15+	–0.041 (0.05)	0.006 (0.06)	–0.006 (0.04)	–0.068* (0.04)	0.034 (0.06)	0.005 (0.06)	–0.010 (0.05)	0.058 (0.05)	0.117*** (0.04)
Own house – mortgage	–0.102*** (0.02)	–0.102*** (0.02)	–0.133*** (0.02)	–0.105*** (0.02)	–0.087*** (0.02)	–0.112*** (0.02)	–0.090*** (0.02)	–0.111*** (0.02)	–0.126*** (0.02)
Local authority tenant	0.047* (0.03)	0.113*** (0.03)	0.069** (0.03)	0.087*** (0.03)	0.112*** (0.03)	0.093*** (0.03)	0.147*** (0.03)	0.129*** (0.03)	0.088** (0.04)
Other tenancy	–0.005 (0.03)	–0.051 (0.03)	–0.085** (0.03)	–0.092*** (0.03)	–0.039 (0.03)	–0.036 (0.03)	0.025 (0.03)	0.013 (0.03)	–0.040 (0.03)
North East	0.057* (0.03)	0.091** (0.04)	0.073* (0.04)	0.064 (0.05)	0.049 (0.04)	0.139*** (0.04)	0.074** (0.04)	0.100** (0.04)	0.144*** (0.05)
North West	0.076*** (0.03)	0.049 (0.03)	0.094*** (0.03)	0.035 (0.03)	0.004 (0.03)	0.097*** (0.03)	0.121*** (0.03)	0.101*** (0.03)	0.083** (0.04)
Yorkshire/Humberside	0.049* (0.03)	0.011 (0.03)	0.025 (0.03)	–0.048 (0.03)	0.018 (0.03)	0.046 (0.03)	0.066** (0.03)	0.071** (0.03)	0.190*** (0.04)
East Midlands	0.069** (0.03)	0.028 (0.03)	0.032 (0.03)	–0.022 (0.03)	–0.006 (0.03)	0.056* (0.03)	0.035 (0.03)	0.083** (0.03)	0.075* (0.04)
West Midlands	0.072** (0.03)	0.026 (0.03)	0.003 (0.03)	–0.029 (0.03)	–0.031 (0.03)	0.063** (0.03)	0.042 (0.03)	0.018 (0.03)	0.075** (0.04)
East Anglia	0.024 (0.03)	0.012 (0.03)	0.030 (0.03)	–0.020 (0.03)	0.025 (0.03)	0.088*** (0.03)	0.103*** (0.03)	0.072** (0.03)	0.067* (0.04)

Rest of South East	0.004 (0.02)	-0.021 (0.03)	0.009 (0.03)	-0.007 (0.03)	0.018 (0.03)	0.052* (0.03)	0.038 (0.03)	-0.001 (0.03)	0.061* (0.03)
South West	0.035 (0.03)	0.015 (0.03)	0.015 (0.03)	-0.058* (0.03)	-0.011 (0.03)	0.040 (0.03)	0.039 (0.03)	0.028 (0.03)	0.059 (0.04)
Wales	0.097*** (0.03)	0.059 (0.04)	0.077** (0.04)	0.017 (0.04)	0.006 (0.04)	0.073** (0.04)	0.085** (0.04)	0.060 (0.04)	0.057 (0.05)
Scotland	0.054* (0.03)	0.039 (0.03)	0.060 (0.04)	0.002 (0.04)	-0.021 (0.04)	0.083** (0.03)	0.093*** (0.04)	0.082** (0.04)	0.062* (0.04)
1+ cars in household	-0.090*** (0.03)	-0.038 (0.03)	-0.082*** (0.03)	-0.095*** (0.03)	-0.095*** (0.03)	-0.106*** (0.03)	-0.105*** (0.03)	-0.110*** (0.03)	-0.171*** (0.03)
Poor health	0.125*** (0.02)	0.102*** (0.02)	0.114*** (0.02)	0.172*** (0.02)	0.118*** (0.02)	0.158*** (0.02)	0.130*** (0.02)	0.119*** (0.02)	0.166*** (0.03)
Separated/divorced/widowed	0.029 (0.03)	0.029 (0.03)	0.032 (0.03)	0.039 (0.03)	0.014 (0.03)	0.078** (0.03)	0.033 (0.03)	0.008 (0.03)	0.016 (0.04)
Single never married	0.114*** (0.02)	0.095*** (0.02)	0.070*** (0.02)	0.065*** (0.02)	0.103*** (0.03)	0.117*** (0.02)	0.089*** (0.02)	0.108*** (0.03)	0.078*** (0.03)
Responsible for child < 16	0.031 (0.08)	0.126 (0.08)	0.007 (0.07)	0.090 (0.08)	0.126 (0.10)	0.082 (0.07)	0.093 (0.08)	0.027 (0.10)	0.062 (0.07)
Household size	0.014** (0.01)	0.010* (0.01)	0.002 (0.01)	0.008 (0.01)	0.015** (0.01)	0.017*** (0.01)	0.013** (0.01)	0.013** (0.01)	0.013 (0.01)
Child < 5 in household	-0.021 (0.02)	-0.002 (0.03)	-0.028 (0.03)	0.016 (0.03)	-0.021 (0.03)	0.003 (0.03)	-0.015 (0.03)	0.003 (0.03)	-0.034 (0.04)
F	24.740	21.977	23.626	22.867	21.599	25.446	24.224	22.413	21.847
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. persons	3364	3260	3178	3106	3060	3079	2964	2842	2819
No. HH	2923	2850	2782	2724	2668	2662	2569	2461	2499

Notes. * $p < .10$, ** $p < .05$, *** $p < .01$.

The reference categories in the probit regressions are: aged 30–49, no educational qualifications, arrived (or born) in the UK before age 15, house is owned outright, government region is London, no cars available to household, not in poor health, living with partner (legally married or cohabiting), no responsible for a child aged under 16 years, youngest child in household aged over 5 years (if children present).

WOMEN	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Age: 15–22	0.134*** (0.03)	0.124*** (0.03)	0.167*** (0.03)	0.128*** (0.03)	0.101*** (0.03)	0.151*** (0.03)	0.108*** (0.03)	0.110*** (0.03)	0.112*** (0.03)	0.161*** (0.03)
Age 23–29	0.012 (0.02)	–0.001 (0.02)	–0.009 (0.02)	–0.011 (0.02)	–0.023 (0.02)	0.001 (0.02)	0.013 (0.02)	–0.009 (0.02)	–0.014 (0.02)	–0.014 (0.02)
Age 50–59	0.213*** (0.03)	0.200*** (0.03)	0.236*** (0.03)	0.194*** (0.03)	0.193*** (0.03)	0.169*** (0.03)	0.151*** (0.03)	0.144*** (0.03)	0.176*** (0.03)	0.123*** (0.03)
Age 60–64	0.440*** (0.03)	0.416*** (0.03)	0.441*** (0.03)	0.439*** (0.03)	0.454*** (0.04)	0.412*** (0.04)	0.443*** (0.04)	0.524*** (0.03)	0.486*** (0.04)	0.496*** (0.04)
Age 65–69	0.645*** (0.02)	0.586*** (0.03)	0.604*** (0.03)	0.602*** (0.03)	0.566*** (0.03)	0.573*** (0.03)	0.561*** (0.03)	0.574*** (0.03)	0.614*** (0.03)	0.616*** (0.03)
GCSE or equivalent	–0.069*** (0.02)	–0.092*** (0.02)	–0.086*** (0.02)	–0.062*** (0.02)	–0.063*** (0.02)	–0.085*** (0.02)	–0.073*** (0.02)	–0.089*** (0.02)	–0.077*** (0.02)	–0.127*** (0.02)
Above GCSE or equivalent	–0.106*** (0.02)	–0.110*** (0.02)	–0.114*** (0.02)	–0.092*** (0.02)	–0.102*** (0.02)	–0.123*** (0.02)	–0.125*** (0.02)	–0.157*** (0.02)	–0.150*** (0.02)	–0.179*** (0.02)
UK arrival aged 15+	0.069** (0.03)	0.007 (0.04)	0.053 (0.04)	–0.004 (0.04)	0.061 (0.04)	0.069* (0.04)	0.078* (0.05)	0.070 (0.05)	0.007 (0.04)	0.033 (0.05)
Own house mortgage	–0.127*** (0.02)	–0.135*** (0.02)	–0.119*** (0.02)	–0.138*** (0.02)	–0.164*** (0.02)	–0.148*** (0.02)	–0.144*** (0.02)	–0.139*** (0.02)	–0.138*** (0.02)	–0.145*** (0.02)
Local authority tenant	0.000 (0.02)	–0.011 (0.03)	0.015 (0.03)	0.045 (0.03)	–0.038 (0.03)	–0.022 (0.03)	–0.009 (0.03)	–0.044 (0.03)	–0.013 (0.03)	–0.011 (0.03)
Other tenant	–0.033 (0.04)	0.010 (0.04)	0.022 (0.04)	0.059* (0.04)	–0.024 (0.04)	0.054 (0.04)	–0.062* (0.04)	–0.037 (0.04)	–0.026 (0.04)	–0.074* (0.04)
North East	0.036 (0.04)	0.009 (0.04)	–0.008 (0.04)	–0.013 (0.04)	0.008 (0.04)	–0.010 (0.04)	0.017 (0.04)	0.037 (0.04)	0.049 (0.04)	0.042 (0.04)
North West	–0.044* (0.03)	–0.011 (0.03)	–0.030 (0.03)	–0.036 (0.03)	0.019 (0.03)	0.042 (0.03)	0.035 (0.03)	0.042 (0.03)	0.067** (0.03)	0.034 (0.03)
Yorkshire/Humberside	–0.022 (0.03)	0.000 (0.03)	–0.002 (0.03)	–0.007 (0.03)	0.035 (0.03)	0.054* (0.03)	0.088*** (0.03)	0.092*** (0.03)	0.085*** (0.03)	0.078** (0.03)
East Midlands	–0.000 (0.03)	0.011 (0.03)	–0.003 (0.03)	–0.006 (0.03)	0.054 (0.04)	0.019 (0.03)	0.035 (0.03)	0.053 (0.04)	0.056* (0.03)	0.037 (0.03)
West Midlands	–0.038 (0.03)	–0.000 (0.03)	0.005 (0.03)	0.006 (0.03)	0.030 (0.03)	0.019 (0.03)	0.022 (0.03)	0.031 (0.03)	0.036 (0.03)	0.059* (0.03)
East Anglia	–0.006 (0.03)	0.014 (0.03)	–0.026 (0.03)	–0.017 (0.03)	0.001 (0.03)	0.048 (0.03)	0.052 (0.03)	0.011 (0.03)	0.019 (0.03)	–0.004 (0.03)

Rest of South East	-0.046*	0.003	-0.029	-0.036	-0.000	0.007	0.018	0.016	0.026	0.007
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
South West	-0.004	0.028	0.027	0.023	0.027	0.064*	0.046	0.049	0.043	0.059*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Wales	0.025	0.046	0.022	0.028	0.071*	0.090**	0.075**	0.112***	0.099***	0.065*
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Scotland	-0.032	-0.005	0.009	-0.013	0.021	-0.010	0.028	0.070**	0.060*	0.022
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
1+ cars in household	-0.085***	-0.102***	-0.085***	-0.079***	-0.100***	-0.115***	-0.135***	-0.105***	-0.075***	-0.092***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Poor health	0.108***	0.151***	0.117***	0.134***	0.143***	0.126***	0.127***	0.126***	0.171***	0.113***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Separated/divorced/widowed	0.024	0.030	0.046*	0.060***	0.047*	0.012	0.046*	0.009	-0.003	0.007
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Single never married	0.016	0.060**	0.070***	0.060**	0.079***	0.036	0.035	0.051**	0.040*	0.021
	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.025)	(0.02)	(0.025)
Responsible for child < 16	0.092***	0.117***	0.130***	0.0960***	0.111***	0.093***	0.058**	0.080***	0.111***	0.118***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Household size	0.020***	0.015**	0.023***	0.032***	0.034***	0.027***	0.038***	0.023***	0.014**	0.017**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Child < 5 in household	0.240***	0.249***	0.197***	0.165***	0.161***	0.135***	0.173***	0.189***	0.136***	0.123***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)
F	37.514	32.941	31.473	32.044	28.546	26.958	26.633	26.762	26.453	25.985
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. persons	4510	4292	4136	4121	4008	4153	4144	4041	3966	3941
No. HH	4007	3742	3609	3606	3510	3602	3606	3566	3497	3463

WOMEN	2001	2002	2003	2004	2005	2006	2007	2008	2009
Age: 15–22	0.132*** (0.03)	0.101*** (0.03)	0.166*** (0.03)	0.126*** (0.04)	0.123*** (0.03)	0.163*** (0.04)	0.139*** (0.03)	0.133*** (0.04)	0.216*** (0.04)
Age 23–29	0.004 (0.02)	0.032 (0.02)	0.036 (0.03)	–0.037* (0.02)	–0.032 (0.02)	0.000 (0.02)	–0.053** (0.02)	–0.031 (0.02)	0.052* (0.03)
Age 50–59	0.150*** (0.03)	0.185*** (0.03)	0.172*** (0.03)	0.148*** (0.03)	0.166*** (0.03)	0.128*** (0.03)	0.146*** (0.03)	0.139*** (0.03)	0.065** (0.03)
Age 60–64	0.504*** (0.04)	0.523*** (0.04)	0.503*** (0.04)	0.487*** (0.04)	0.451*** (0.04)	0.411*** (0.04)	0.389*** (0.04)	0.433*** (0.04)	0.385*** (0.04)
Age 65–69	0.632*** (0.03)	0.654*** (0.03)	0.645*** (0.03)	0.666*** (0.03)	0.698*** (0.03)	0.662*** (0.03)	0.614*** (0.04)	0.589*** (0.04)	0.516*** (0.04)
GCSE or equivalent	–0.100*** (0.03)	–0.140*** (0.03)	–0.106*** (0.03)	–0.092*** (0.03)	–0.078*** (0.03)	–0.100*** (0.03)	–0.126*** (0.03)	–0.115*** (0.03)	–0.093*** (0.03)
Above GCSE or equivalent	–0.165*** (0.02)	–0.191*** (0.03)	–0.172*** (0.03)	–0.162*** (0.03)	–0.182*** (0.03)	–0.189*** (0.03)	–0.201*** (0.03)	–0.207*** (0.03)	–0.183*** (0.03)
UK arrival aged 15+	–0.009 (0.04)	0.036 (0.04)	–0.001 (0.04)	0.014 (0.05)	–0.012 (0.04)	–0.011 (0.05)	–0.010 (0.05)	0.022 (0.05)	0.105*** (0.03)
Own house mortgage	–0.160*** (0.02)	–0.161*** (0.02)	–0.137*** (0.02)	–0.150*** (0.02)	–0.124*** (0.02)	–0.116*** (0.02)	–0.119*** (0.02)	–0.150*** (0.03)	–0.172*** (0.02)
Local authority tenant	–0.001 (0.03)	–0.018 (0.03)	0.036 (0.03)	0.006 (0.03)	0.058* (0.03)	0.074** (0.03)	0.048 (0.03)	0.052 (0.03)	0.018 (0.03)
Other tenant	–0.048 (0.04)	–0.085** (0.04)	–0.056 (0.04)	–0.077** (0.04)	–0.007 (0.04)	–0.055 (0.04)	–0.040 (0.04)	–0.016 (0.04)	–0.089*** (0.03)
North East	0.097** (0.04)	0.047 (0.04)	–0.000 (0.04)	0.008 (0.04)	–0.016 (0.04)	0.050 (0.04)	0.034 (0.04)	0.081* (0.04)	0.007 (0.04)
North West	0.075** (0.03)	0.017 (0.03)	–0.015 (0.03)	–0.002 (0.03)	–0.014 (0.04)	0.030 (0.03)	–0.004 (0.04)	0.037 (0.03)	0.008 (0.04)
Yorkshire/Humberside	0.092*** (0.03)	0.060* (0.03)	0.050 (0.04)	0.008 (0.03)	–0.016 (0.04)	–0.007 (0.04)	–0.016 (0.04)	0.033 (0.03)	–0.014 (0.04)
East Midlands	0.095*** (0.03)	0.049 (0.03)	0.011 (0.04)	0.025 (0.03)	0.035 (0.04)	0.050 (0.04)	0.059 (0.04)	0.061 (0.04)	–0.014 (0.04)
West Midlands	0.072** (0.03)	0.033 (0.03)	0.007 (0.04)	0.003 (0.03)	0.017 (0.04)	0.074* (0.04)	0.020 (0.04)	0.054 (0.04)	0.017 (0.04)
East Anglia	0.051 (0.03)	–0.010 (0.03)	0.019 (0.04)	–0.005 (0.03)	0.016 (0.04)	0.032 (0.04)	0.029 (0.04)	0.067* (0.04)	0.007 (0.04)

Rest of South East	0.036 (0.03)	-0.015 (0.03)	-0.009 (0.03)	-0.019 (0.03)	-0.016 (0.03)	-0.011 (0.03)	-0.035 (0.04)	0.005 (0.03)	0.016 (0.04)
South West	0.084** (0.03)	-0.002 (0.03)	0.009 (0.04)	-0.029 (0.03)	-0.044 (0.04)	0.014 (0.04)	-0.018 (0.04)	0.021 (0.04)	-0.018 (0.04)
Wales	0.121*** (0.04)	0.041 (0.04)	-0.003 (0.04)	-0.004 (0.04)	0.037 (0.04)	0.061 (0.04)	0.046 (0.04)	0.075* (0.04)	0.044 (0.04)
Scotland	0.048 (0.04)	0.010 (0.04)	-0.018 (0.04)	-0.011 (0.04)	-0.051 (0.04)	-0.010 (0.04)	-0.046 (0.04)	0.009 (0.04)	0.003 (0.04)
1+ cars in household	-0.058** (0.03)	-0.076*** (0.03)	-0.075*** (0.03)	-0.117*** (0.03)	-0.122*** (0.03)	-0.119*** (0.03)	-0.093*** (0.03)	-0.093*** (0.03)	-0.136*** (0.03)
Poor health	0.123*** (0.02)	0.123*** (0.02)	0.140*** (0.02)	0.170*** (0.02)	0.103*** (0.02)	0.117*** (0.02)	0.166*** (0.02)	0.124*** (0.02)	0.183*** (0.02)
Separated/divorced/widowed	0.015 (0.025)	0.028 (0.02)	-0.023 (0.02)	-0.075*** (0.02)	-0.047** (0.02)	-0.020 (0.03)	-0.035 (0.03)	-0.043* (0.03)	0.037 (0.02)
Single never married	0.048* (0.03)	0.035 (0.03)	0.012 (0.03)	0.008 (0.03)	0.029 (0.02)	0.018 (0.03)	0.066** (0.03)	0.051** (0.03)	0.064** (0.03)
Responsible for child < 16	0.084*** (0.02)	0.094*** (0.02)	0.073*** (0.02)	0.085*** (0.02)	0.082*** (0.02)	0.081*** (0.02)	0.091*** (0.02)	0.096*** (0.02)	0.046* (0.03)
Household size	0.028*** (0.01)	0.035*** (0.01)	0.028*** (0.01)	0.023*** (0.01)	0.020*** (0.01)	0.018*** (0.01)	0.018*** (0.01)	0.020** (0.01)	0.029*** (0.01)
Child < 5 in household	0.157*** (0.02)	0.148*** (0.02)	0.157*** (0.03)	0.148*** (0.02)	0.153*** (0.03)	0.115*** (0.03)	0.147*** (0.03)	0.135*** (0.03)	0.101*** (0.03)
F	26.975	27.726	25.880	27.010	24.770	22.934	23.392	25.017	23.533
P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. persons	3845	3752	3663	3607	3578	3567	3484	3364	3568
No. HH	3391	3335	3243	3174	3119	3098	3014	2928	3218

Notes. * $p < .10$, ** $p < .05$, *** $p < .01$.

The reference categories in the probit regressions are: aged 30–49, no educational qualifications, arrived (or born) in the UK before age 15, house is owned outright, government region is London, no cars available to household, not in poor health, living with partner (legally married or cohabiting), no responsible for a child aged under 16 years, youngest child in household aged over 5 years (if children present). See main text for definitions of explanatory variables.